TRANSFORMATION

FOR OUR CUSTOMERS

ANNUAL REPORT

2019

KEY FIGURES

		2019	2018	Change
Sales and profit				
Total sales	K €	632,865	659,725	– 4.1 %
Operating profit	K €	65,152	95,130	– 31.5 %
Operating profit margin	%	10.3 %	14.4 %	– 4.1 Pp
Net income	K €	48,357	68,879	– 29.8 %
Return on sales	%	7.6	10.4	– 2.8 Pp
Operating cash flow	K €	65,380	62,547	4.5 %
Balance sheet				
Total shareholders' equity and liabilities	K €	659,575	624,160	5.7 %
Cash and cash equivalents	K €	111,980	108,380	3.3 %
Shareholders' equity	K €	393,445	372,225	5.7 %
Equity ratio	%	59.6	59.6	0.0 Pp
Return on equity	%	12.3	18.5	– 6.2 Pp
Capital expenditures	K €	34,914	33,669	3.7 %
Workforce				
Workforce (average)		3,253	3,101	4.9 %
Personnel costs	K €	211,008	198,885	6.1 %
Per employee	K €	65	64	1.6 %
Sales per employee	K €	195	213	– 8.5 %
Per share				
Earnings	€	4.90	6.98	– 29.8 %
Dividend	€	1.25[1]	2.30	– 45.7 %

[1] Subject to the approval of the Supervisory Board and the Annual General Meeting

All percentages in this Annual Report were derived on the basis of amounts in thousands of euros. Rounding differences might result from their presentation in millions of euros.

CORPORATE PROFILE

Pfeiffer Vacuum – a name that stands for innovative solutions, high technology and dependable products, along with first-class service. For more than 125 years we have been setting standards in vacuum technology with these attributes. One very special milestone was the invention of the turbopump at our Company more than 50 years ago. Thanks to our know-how, we continue to be the technology and world market leader in this field. To no small degree, this also manifests itself in our strong profitability. Our extensive line of solutions, products and services ranges from vacuum pumps, measurement and analysis equipment as well as leak detectors right through to complex vacuum systems. And quality always plays a key role in this connection: Products from Pfeiffer Vacuum are constantly being optimized through close collaboration with customers from a wide variety of industries, through ongoing development work and through the exceptional enthusiasm and commitment of our people. These are virtues that we will continue to embrace!

WORKFORCE
3,276
worldwide

ESTABLISHED
1890

HEADQUARTERS
Asslar, Germany

PURPOSE OF THE COMPANY

To develop, manufacture and market components and systems for vacuum generation, measurement and analysis as well as helium leak detectors

MANUFACTURING SITES

- Asslar, Germany
- Dresden, Germany
- Göttingen, Germany
- Annecy, France
- Asan, Republic of Korea
- Wuxi, China
- Cluj, Romania
- Indianapolis, USA
- Yreka, USA
- Ho Chi Minh City, Vietnam

1 TO OUR SHAREHOLDERS

2 GROUP MANAGEMENT REPORT

3 CONSOLIDATED FINANCIAL STATEMENTS

4 FURTHER INFORMATION

The following symbols will lead you to further interesting information:

You will find more information online. They are not part of the audited Group Management Report and the audited Consolidated Financial Statements.

Additional information on this topic can be found within this report

These links and references were inserted for better understanding. They are not part of the audited Group Management Report and the audited Consolidated Financial Statements.

We publish our annual report exclusively in digital format. It is available as PDF with complete content Moreover, you can access further information on our

Strategy Microsite

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TO OUR SHARE-HOLDERS

LETTER FROM THE CEO

↗ Video message of the CEO

»2019 WAS A SUCCESSFUL YEAR OF PREPARING OUR TRANSFORMATION TO IMPLEMENT OUR GROWTH STRATEGY.«

Dr. Eric Taberlet
Chief Executive Officer

Nathalie Benedikt
↗ CV

Dr. Eric Taberlet
↗ CV

Wolfgang Ehrk
↗ CV

Dear Shareholders,

The year 2019 was a successful year of preparing our transformation to implement our growth strategy. A year in which we succeeded in further strengthen Pfeiffer Vacuum Technology AG as a company. We succeeded in strengthening our market position in a challenging economic environment. We outperformed the market growth in both the semiconductor as well as in the industrial segment, supported by break-through solutions we provided to our customers.

In 2019, we achieved our adjusted financial targets announced in September: Although we strengthened our market position, our revenue decreased by 4.1 percent to € 632.9 million compared to the record result of 2018. This decline is mainly due to the difficult conditions in the coating market and the restrained demand from the semiconductor industry. Our operating profit was influenced by the measures we took to strengthen our market position and, at € 65.2 million, also met our adjusted expectations. The current rise in expenses is part of the driving force behind our transformation process. I remain confident that we will achieve our goal of increasing the EBIT margin to over 20 percent by 2025. At the same time, we want to significantly expand our market share to more than 20 percent and further reduce the gap to the market leader.

The basis for this is our pronounced innovative strength, an extensive investment program, which is part of the targeted growth strategy that we have been consistently pursuing since 2018. We are investing in the expansion and modernization of our global production capacities, in strengthening our research and development activities and in the renewal of our information technology infrastructure.

Ladies and gentlemen, let me give you a few specific examples that demonstrate our innovation leadership: We introduced in 2019 our HiLobe product line. These intelligent, high performance Roots pumps for low and medium vacuum applications are particularly innovative for their exceptional short pump-down times, power and energy efficiency. Our just introduced new leak detector ASM 306 S is another example. This leak detector has attracted a great deal of attention in the industry due to its break-through technology. Our products are used to develop break-through scientific applications, such as with CERN, the renowned European Laboratory for Particle Physics in Geneva and enable leading technologies in many markets.

Dear stakeholders, we are investing heavily in our global production network. In 2019, this mainly concerned modernization measures and capacity expansions at our site in France and Romania, and establishing production capabilities in China. Further investments are on the agenda – particularly at our largest production sites in Germany and France to intensify our journey towards industry 4.0. 2020 will therefore be marked by increased growth investments. The aim of our joint efforts at all locations around the globe is to position the company for the promising market opportunities and strengthen it for the opportunities ahead.

We see our global presence, combined with our passion for customer focus, as an important competitive advantage. For this reason, we intend to open a new research and development center in California's Silicon Valley in the current fiscal year. Our local team will work to quickly develop solutions and processes based on our product portfolio that are tailored to the needs of technology companies on the West Coast of the United States. Many of our OEM customers are located there. We are convinced that the direct exchange of information will intensify our customer relationships and, of course, have a positive impact on our future business development.

As part of the transformation process within our growth strategy, we have reorganized our Management Board team. At the end of June 2019, the two members of the Management Board, Dr. Matthias Wiemer and Dr. Ulrich von Hülsen, left the Management Board by mutual agreement. I would like to take this opportunity to express my sincere thanks for their years of great commitment.

I am very pleased that Wolfgang Ehrk has joined Pfeiffer Vacuum as a member of the Management Board and Chief Operating Officer. He is a proven expert in the vacuum industry and has been responsible right from the very beginning for the performance, efficiency and flexibility of the global operating infrastructure and associated processes. In the short period of collaboration, it has already become evident that Mr. Ehrk is a strong asset to the Management Board and that we work together very well.

→ VISIT OUR STRATEGY MICROSITE

We are also working closely together with our main shareholder and partner, the Busch Group, as part of our Relationship Agreement. This agreement was completed in May 2019.

On behalf of my Management Board team, I would like to take this opportunity to express my sincere thanks to the employees who, as in previous years, have made outstanding contributions to our company with great commitment and supported the transformation process.

Our thanks also go to you, our esteemed shareholders. You have remained loyal to us throughout the 2019 financial year, despite end-market and stock market volatility which affected us during the year. My commitment to you is that we will continue our efforts to lead our Pfeiffer Vacuum Technology AG into a sustainably successful future. We would be pleased if you would accompany us on this journey.

With kind regards

Your

Dr. Eric Taberlet

Dr. Eric Taberlet,
Chief Executive Officer of Pfeiffer Vacuum Technology AG

THE SUPER-VISORY BOARD

Henrik Newerla
↗ CV

Ayla Busch
Chairwoman
↗ CV

Filippo Th. Beck
↗ CV

Matthias Mädler
↗ CV

Götz Timmerbeil
Deputy
Chairman
↗ CV

Manfred Gath
retired as of
December 31, 2019

REPORT OF THE SUPERVISORY BOARD

Dear Shareholders,

Pfeiffer Vacuum Technology AG is currently implementing a comprehensive transformation process with the goal to create a global, integrated and agile company. For this purpose, the Management Board, in close coordination with the Supervisory Board, has developed an ambitious strategy with an investment program. During the past fiscal year, close monitoring of the development of these structures and strategic goals and their implementation was the focus of the work of the Supervisory Board.

In fiscal 2019, the Supervisory Board of Pfeiffer Vacuum Technology AG duly and diligently exercised all the duties vested in it by law and the Articles of Association. It continuously and conscientiously monitored the work of the Management Board, accompanied and advised on the strategic development of the Company and important individual initiatives with a view to sustainable value creation and satisfied itself about the legality and expediency as well as the economic efficiencies of the managerial work on the basis of the Management Board's reports and partly by consulting external experts.

Cooperation between Supervisory Board and Management Board

The Management Board informed the Supervisory Board and/or the Supervisory Board chairwoman regularly, comprehensively and in a timely manner about the competitive environment, planned business policy and all strategic and crucial operational decisions. In the same way, the Management Board discussed key financial and non-financial performance indicators with the Supervisory Board as a basis for evaluating the economic situation of the Company.

The Management Board reported during Supervisory Board meetings in oral or written form and answered questions from the Supervisory Board. Outside of the meetings, an intensive exchange of information with the Supervisory Board was also ensured with regular reports on the economic development and the key occurrences of the Company and the Corporate Group. The Supervisory Board is satisfied that Management Board reporting met the statutory and Supervisory Board's requirements and the principles of good corporate governance.

Business transactions requiring approval were decided by the Supervisory Board after these had been carefully reviewed and discussed with the Management Board.

Personnel changes in Management Board and Supervisory Board

Effective end-of-day June 30, 2019, Dr. Matthias Wiemer and Dr. Ulrich von Hülsen resigned from the Management Board. On July 1, 2019, Mr. Wolfgang Ehrk was appointed by the Supervisory Board as a member of the Management Board, effective starting January 1, 2020, and assigned him the function of Chief Operations Officer (COO) within the Management Board. As COO, Mr. Ehrk is responsible for the areas of Global Operations, Continuous Improvement, Purchasing, Quality and EHS (Environment, Health and Safety), as well as Supply Chain.

On the Supervisory Board, there were two changes on the part of the employee representatives: Mr. Helmut Bernhardt, on his retirement and accompanying departure from the Company, also stepped down from the Supervisory Board on June 30, 2019. He was succeeded on the Supervisory Board by Matthias Mädler, Head of the departments Vacuum Design/Simulation and CAD Standards (formerly R&D Services) at Pfeiffer Vacuum GmbH. At year-end, the membership of Mr. Manfred Gath also ended when he left the Company on reaching retirement age. He was replaced on the Supervisory Board by Mr. Stefan Röser, full-time Chairman of the Pfeiffer Vacuum GmbH Employee Representative Council. The proportion of women on the Supervisory Board is 16.7 %, and 33.33 % on the Management Board, in each case as of the reporting date of March 25, 2020.

Supervisory Board meetings and issues of Supervisory Board work

In fiscal 2019, the Supervisory Board addressed the current situation of the Company and the Corporate Group in depth in a total of **11 meetings**. It dealt with all issues of importance to the Company and discussed them in detail with the Management Board. Meetings of the Supervisory Board committees were also held. Outside the meetings, the Supervisory Board adopted a number of resolutions by written circular.

In addition to its ongoing involvement with the Company's sales and earnings development and the Group's financial position and profitability, a particular focus of the Supervisory Board's work was on implementing the corporate strategy adopted in 2018 together with the associated capital investment program, and on the reorganization of the global management structure, the compliance management system and the strategic cooperation with the Busch Group based on the relationship agreement concluded between Pfeiffer Vacuum Technology AG and Busch SE on May 20, 2019.

At the meetings on **January 16**, **February 20**, **March 14** and **July 4, 2019**, the Supervisory Board dealt in detail with the new corporate strategy adopted in 2018 and its supporting investment program. The Supervisory Board received reports from the Management Board on the progress made in implementing the strategy and discussed these in depth with the Management Board. At its meeting on March 14, 2019, the Supervisory Board approved the concretized strategy submitted by the Management Board.

The new, Group-wide organizational structure which the Board of Management adopted in October 2018 was the subject of the meetings on **January 16**, **February 20** and **July 4, 2019**. The aim of the reorganization is to establish a functionally organized corporate to ensure that the global strategy of the Company is pursued uniformly throughout the Group. This should create better conditions for the Group to optimize processes, exploit efficiencies and become more agile in the market. The Supervisory Board supports this objective.

At its meetings on **February 20**, **March 14**, **July 4**, **September 4**, and **November 4, 2019**, the Supervisory Board deliberated in depth on the Compliance Management System and the Compliance Organization of the Company, and discussed these with the Management Board. In particular, the Supervisory Board satisfied itself as to the implementation of the recommendations made by PricewaterhouseCoopers GmbH to further improve the compliance management system based on the expert analysis conducted in 2018.

The strategic cooperation with the Busch Group was addressed by the Supervisory Board at its meetings on **January 16**, **February 20**, **March 14**, **May 20**, **July 4**, **October 9** and **November 4, 2019**. The cooperation with the Busch Group is focuses particularly on the areas of purchasing, sales and service, research and development and IT and is also intended to ensure uniform standards in the fields of compliance and risk management. In the first three of these meetings, the Supervisory Board received reports from the Management Board on the status in relation to preparing the relationship agreement with Busch SE, which forms the contractual basis for the strategic cooperation between the companies. The Supervisory Board was informed in detail about the progress of the contractual negotiations and about the coordination with the responsible antitrust authorities. The Supervisory Board sought support by obtaining its own expert legal opinion from an independent international law firm not involved in the negotiations with the Busch Group, which examined and confirmed the legal admissibility of the agreement.

In its meeting on **May 20, 2019**, which was conducted as a telephone conference, the Supervisory Board then dealt in detail with the draft contract for the relationship agreement submitted by the Management Board and received a detailed report from the Management Board on the earnings benefits expected from the strategic cooperation in the various business segments. Overall, the Management Board assumes that the cooperation with the Busch Group will enable synergies to be realized in the lower double-digit million euro range in the medium term. After detailed examination and consideration of the advantages and disadvantages to be expected from the strategic cooperation, the Supervisory Board approved the conclusion of the relationship agreement with Busch SE. In view of her role on the board of Busch SE and the potential conflict of interest in this respect, the Chairman of the Supervisory Board, Ms. Ayla Busch, did not participate in this discussion or in the resolution on the relationship agreement.

At its meetings on **July 4**, **October 9** and **November 4, 2019**, the Supervisory Board was then informed about the status regarding implementation of the relationship agreement concluded on May 20, 2019. With regard to the provisions on legal transactions with related parties in general and on the strategic cooperation with the Busch Group in particular, which were newly included in the German Stock Corporation Act with ARUG II, the Supervisory Board discussed setting up a special committee, in the form of a related party transaction committee, at its meeting on **November 4, 2019**. Subsequently, the Supervisory Board resolved by written circular on **November 7, 2019** to set up such a committee for related party transactions (in short: "RPT Committee") and appointed Mr. Matthias Mädler, Mr. Henrik Newerla and Mr. Götz Timmerbeil as its members.

The responsibilities of the RPT Committee were defined as follows by the Supervisory Board:

1. *Advising and supervising the Management Board in the conclusion and implementation of measures in relation to and from legal transactions with affiliated companies pursuant to § 15 of the German Stock Corporation Act ("AktG") and related parties pursuant to § 111a of the German Stock Corporation Act ("AktG");*

2. *Granting approval for transactions with related parties pursuant to § 111b (1) of the German Stock Corporation Act ("AktG") in conjunction with § 107 Sub-Para. 3, sentences 4–6, AktG, in place of the Supervisory Board;*

3. *Ongoing advising and supervision of the Management Board in the implementation of the Relationship Agreement with Busch SE in accordance with the law and the Articles of Association, in particular also with a view to ensuring that performance and consideration in implementing the Relationship Agreement are in an appropriate relationship to each other and that the Company does not suffer any disadvantages from the Relationship Agreement and its implementation which are not compensated for.*

At the Supervisory Board meeting on **March 14, 2019**, the Supervisory Board, in the presence of representatives of the auditor, discussed in detail the annual financial statements and the consolidated financial statements of the Company for the 2018 fiscal year prepared in accordance with International Financial Reporting Standards (IFRS), the proposal of the Management Board for the dividend payout ratio and the appropriation of capital, the Management Report and the Consolidated Financial Statements for the 2018 fiscal year and the audit reports of the auditor, and discussed these in detail with the auditor. A particular focus of the discussion with the auditors was the early warning system for risks. Following a detailed review, the Supervisory Board approved the annual financial statements and the consolidated financial statements for the 2018 fiscal year at this meeting. At the same meeting, the Supervisory Board received a report from the Management Board on the risk management system and discussed this with the Management Board. The basis for this discussion was the presentation of the Risk Management Report 2018 by the Management Board in which compliance was explicitly included as a new risk category. At this meeting, the Supervisory Board also addressed the agenda for the 2019 Annual General Meeting.

In its meeting held as a conference call on **March 27, 2019**, the Supervisory Board, following a detailed preliminary discussion on 20 February 2019, addressed the degree to which the members of the Management Board had achieved their targets for short-term and long-term variable remuneration and determined these targets for the 2018 fiscal year. Furthermore, the Supervisory Board considered the determination of targets (KPIs) for the members of the Management Board for the year 2019, on which it subsequently passed resolutions by written circular on April 16 and May 10, 2019.

The Supervisory Board examined the Separate Non-Financial Consolidated Report for the 2018 fiscal year prepared by the Management Board and approved it by written circular on **April 18, 2019**. At its meeting on **November 4, 2019**, the Supervisory Board addressed the preparation of the non-financial report for 2019, which will be drawn up in accordance with the Global Reporting Initiative. At the same meeting, the Supervisory Board resolved to commission PricewaterhouseCoopers to conduct a business audit of the non-financial report to obtain limited assurance.

In its meetings on **February 20**, **March 19**, **May 2**, **May 23**, **July 4**, **August 5**, **October 10** and **November 4, 2019**, the Supervisory Board dealt with the general course of business, the financial results and the strategic orientation of the Company as well as measures to continue to increase the profitability and efficiency of the overall Company.

At its meeting on **November 4, 2019**, the Supervisory Board critically reviewed the efficiency of its activities according to the recommendation in § 5.6 of the German Corporate Governance Code in the version dated February 7, 2017.

With the exception of the meetings on February 20, May 2, October 9 and December 12, 2019, the members of the Supervisory Board were present in full at all its meetings. One member of the Supervisory Board was absent from each of the meetings on February 20, May 2 and October 9, and two members were absent from the meeting on December 12. This means that every member of the Supervisory Board attended more than 75 % of all meetings. Moreover, the Supervisory Board members who did not attend participated in the resolutions in each case by submitting written votes.

Supervisory Board Committees

The work of the Supervisory Board in fiscal 2019 was again accompanied and prepared by its committees. The Management Board Committee, the Nomination Committee and the Audit Committee were appointed, and the Related Party Transactions Committee (RPT Committee) has been in place since November.

At its first meeting, which was held in the form of a telephone conference on **December 10, 2019**, the **RPT Committee** elected Mr. Götz Timmerbeil as its Chairman and Mr. Henrik Newerla as its Deputy Chairman and discussed the upcoming tasks of the committee.

The composition of Supervisory Board committees is therefore as follows:

Management Board Committee
- Ayla Busch (Chairwoman)
- Filippo Th. Beck
- Henrik Newerla
- Götz Timmerbeil

Nomination Committee
- Ayla Busch (Chairwoman)
- Filippo Th. Beck
- Götz Timmerbeil

Audit Committee
- Götz Timmerbeil (Chairman)
- Filippo Th. Beck
- Ayla Busch

RPT Committee
- Götz Timmerbeil (Chairman)
- Matthias Mädler
- Henrik Newerla

On **January 16, 2019**, the **Management Board Committee** reported to the full Supervisory Board on the search for a new Chief Operations Officer. At its meeting on **February 20, 2019**, the committee discussed the degree to which the members of the Management Board had achieved their targets for variable compensation in 2018. In addition, the Management Board Committee was engaged with long-term planning of the Management Board composition in light of the set strategic objectives. Furthermore, the committee was concerned in the reporting year with the legal proceedings relating to the departure of the former Chairman of the Management Board, Manfred Bender. Following the ruling of the Regional Court of Frankfurt am Main, the Higher Regional Court of Frankfurt am Main also dismissed his action against the decision of the Annual General Meeting on May 23 2018 to withhold discharge; the decision is final and binding. Two lawsuits by Mr. Bender are currently still pending before the Limburg an der Lahn Regional Court regarding his dismissal as a member of the Management Board and the termination of his employment contract for good cause.

The **Audit Committee** met on **March 14** and **November 4, 2019**, with all committee members and representatives of the auditor attending both meetings. At its meeting on March 14, 2019 the committee examined the annual financial statements and consolidated financial statements of the Company for the 2018 fiscal year, the proposal of the Management Board for the dividend payout ratio and the appropriation of capital, the management report for the Company and the Corporate Group for the 2018 fiscal year, and the auditor's reports in preparation for addressing them at the plenary meeting and discussed these in detail with the auditor. At its meeting on November 4, 2019 the committee discussed and determined the course and scope of the audit for the 2019 fiscal year, the main areas of emphasis and specific questions about the audit with the auditors, in addition to the regular contact with the auditors.

No meetings of the **Nomination Committee** were held in fiscal 2019.

Corporate Governance

The Supervisory Board recognizes the principles of good governance and also addressed this issue in fiscal 2019. An essential basis for this is the extensive recognition and observance of the recommendations of the German Corporate Governance Code (GCGC) based on the version of February 7, 2017. As a listed company, Pfeiffer Vacuum Technology AG is subject to the obligation under § 161 Sub-Para. 1 of the German Stock Corporation Act to declare the extent to which the recommendations of the German Corporate Governance Code have been and will be complied with, or which recommendations have not been or will not be applied, and to justify deviations from recommendations (statement of compliance). The Management Board and Supervisory Board, the latter represented by the Supervisory Board Chairwoman, Ms. Ayla Busch, submitted a statement of compliance on November 5, 2019, which had been approved by the Supervisory Board in its meeting on November 4, 2019. The statement of compliance is available on the Company's website.

The members of the Supervisory Board of Pfeiffer Vacuum Technology AG are obliged to disclose to the Supervisory Board any possible conflicts of interest, in particular those which could arise through consulting or executive functions at customers, suppliers, lenders or other third parties. With the exception of addressing the strategic cooperation with the Busch Group, which is a majority shareholder in the Company through its subsidiary Pangea GmbH and in which the Supervisory Board Chairman, Ms. Ayla Busch, is a shareholder and a board member, there are no indications of actual or potential conflicts of interest in the 2019 fiscal year. In order to deal with the potential conflict of interest regarding the person of Ms. Ayla Busch, Mr. Götz Timmerbeil acted as contact person and discussion leader in the meetings when dealing with the strategic cooperation for the Supervisory Board; Ayla Busch will abstain from voting on the strategic cooperation. Ms. Ayla Busch did not participate in the resolution on the Supervisory Board's approval for the conclusion of the relationship agreement with Busch SE or in the factual discussion of this. In November 2019, the Supervisory Board established the RPT Committee, of which Ms. Ayla Busch is not a member, to further advise and supervise the Management Board in the implementation of the relationship agreement concluded with Busch SE.

Review of the Content of the 2018 Separate Non-Financial Group Report

The Supervisory Board reviewed and approved on April 18, 2019, the reporting on the issues identified in the German Act to Strengthen Non-Financial Reporting by Companies in their Management Reports and Consolidated Management Reports (CSR Directive Implementation Act) within the framework of the Separate Non-Financial Consolidated Report of Pfeiffer Vacuum Technology AG for the reporting period from January 1 through December 31, 2018. The Supervisory Board, with the assistance of Pricewaterhouse Coopers GmbH, Frankfurt am Main, reviewed the content of the non-financial reporting within the framework of an audit to obtain limited assurance in accordance with the International Standard on Assurance Engagements (ISAE) 3000 (Revised). The audit did not reveal any circumstances that would have led the auditing firm to conclude that the Separate Non-Financial Consolidated Financial Statements of Pfeiffer Vacuum Technology AG for the period from January 1 through December 31, 2018, had not been prepared in all material respects in accordance with § 315c, German Commercial Code ("HGB").

Audit of Annual and Consolidated Financial Statements

At its meeting on November 4, 2019, the Supervisory Board decided to commission the auditing company PricewaterhouseCoopers GmbH, Wirtschaftsprüfungsgesellschaft, Frankfurt am Main, to audit the annual financial statements and the consolidated financial statements of the Company, prepared in accordance with IFRS and, to the extent required by law, of the subsidiaries. Pursuant to § 315e of the German Commercial Code, the Company did not prepare consolidated financial statements presented in accordance with the rules of the German Commercial Code. PricewaterhouseCoopers GmbH was also commissioned to audit the report on "non-financial performance" and "non-financial consolidated statements", which was approved by the Supervisory Board at the meeting on November 4, 2019.

At the meeting on November 4, 2019 the Audit Committee and the auditor defined the following key audit points: for the operating companies: realization of earnings, application of IFRS 16, valuation of inventories, valuation and completeness of provisions, accounting for pensions, current and deferred taxes, related party transactions and completeness and accuracy of reporting; for the holding company and consolidation: valuation of goodwill, deferred taxes, investments in affiliated companies, relationship agreement with Busch SE.

The Annual Financial Statements and Management Report as well as the Consolidated Financial Statements, presented in accordance with IFRS, together with the Group Management Report, all for the 2019 fiscal year, were audited by the independent auditor and received his unqualified endorsement.

In accordance with § 289b of the German Commercial Code ("HGB"), the Company has prepared the non-financial statement for the 2019 fiscal year as part of the management report and, in accordance with § 315b of the German Commercial Code ("HGB"), the non-financial consolidated statement as part of the Group management report. The content of the non-financial statement was reviewed by the Supervisory Board with the assistance of PricewaterhouseCoopers GmbH, Wirtschaftsprüfungsgesellschaft, Frankfurt am Main, as part of an audit to obtain limited assurance in accordance with the International Standard on Assurance Engagement (ISAE) 3000 (Revised). The audit did not reveal any facts that would have led the auditing firm to conclude that the non-financial statements of Pfeiffer Vacuum Technology AG for the period from January 1 through December 31, 2019, had not been prepared, in all material respects, in accordance with § 289c and § 315c of the German Commercial Code ("HGB"). In the audit opinion, the non-financial statement is identified as other information within the meaning of ISA 720 (revised). At its meeting on March 25, 2020, the Supervisory Board approved the non-financial statements for the 2019 fiscal year.

The Annual Financial Statements, Management Report for the Company and the Corporate Group, as well as the audit reports from the independent auditor were submitted to all members of the Supervisory Board in a timely fashion. They were discussed in detail at the Audit Committee meeting as well as at the Supervisory Board meeting relating to the financial statements on March 25, 2020. The independent auditor attended both meetings, reported on the major findings of his audit and was available to answer additional questions from the Supervisory Board. On the basis of its own thorough review, the Supervisory Board concurred with the results of the audit conducted by the independent auditor. Given the concluding results of its review, the Supervisory Board raised no objections to the Annual and Consolidated Financial Statements. It has approved the Annual and Consolidated Financial Statements, with the Financial Statements thus being formally adopted. The Supervisory Board discussed in detail with the Management Board its proposal regarding the distribution of a dividend and then concurred with the Management Board's proposal regarding appropriation of the Company's earnings.

Additionally, the Management Board of Pfeiffer Vacuum Technology AG has drawn up a report on relationships with affiliated companies for the fiscal year 2019 ("dependency report"), in accordance with § 312 Sub-Para. 1 of the German Stock Corporation Act ("AktG") and afterwards presented this report to the Supervisory Board.

PricewaterhouseCoopers GmbH, Wirtschaftsprüfungsgesellschaft, Frankfurt am Main, audited the dependency report and issued the following auditor's report:

"According to our professional audit and judgment we confirm that:

1. the actual disclosures in the report are correct and,

2. the Company's payment for legal transactions as included in the report was not unreasonably high."

The Management Board's dependency report as well as the related independent auditor's report were submitted the Supervisory Board. The Supervisory Board reviewed both the dependency report as well as the auditor's report. Final review was made in the Supervisory Board meeting on **March 25, 2020**. The independent auditor attended this meeting, reported on the audit of the dependency report and the major findings of the audit and was available to answer additional questions from the Supervisory Board. After the final review the Supervisory Board concurred with the dependency report of the Management Board and the audit report of the auditor and had no objections against the declaration of the Management Board at the end of the dependency report regarding the relationship with affiliated companies.

Acknowledgments

The Supervisory Board would like to sincerely thank the Management Board, the Employee Council and the entire staff of the Group for their dedication and commitment in the successful 2019 fiscal year.

Adoption of this Report

The Supervisory Board adopted this Supervisory Board Report in the resolution dated March 25, 2020 pursuant to § 171 Sub-Para. 2 of the German Stock Corporation Act ("AktG").

Asslar, March 25, 2020

On behalf of the Supervisory Board

Ayla Busch

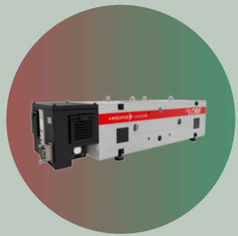
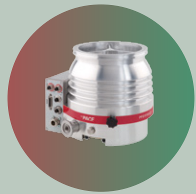
Ayla Busch
(Chairwoman of the Supervisory Board)

AREAS OF OUR PRODUCT PORT-FOLIO

VACUUM GENERATION

Backing pumps
- Rotary vane pumps
- Multi-stage Roots pumps
- Dry process pumps
- Roots pumping stations

Turbopumps
- Hybrid
- Magnetically levitated
- Turbo pumping stations
- SplitFlow

↗ All products for vacuum generation

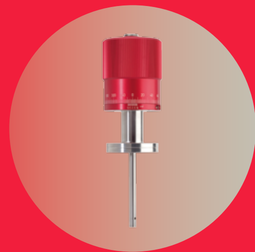
MEASUREMENT AND ANALYSIS EQUIPMENT

- Mass spectrometers
- Gauge heads
- Gas analysis equipment

↗ All products for measurement and analysis equipment

INSTALLATION ELEMENTS

- Feedthroughs
- Valves
- Components
- Manipulators



↗ All installation elements

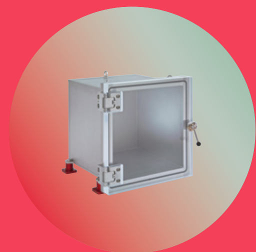
VACUUM SYSTEMS

- Contamination management solutions
- Multi-stage vacuum systems
- Integrity testing

↗ Alle vacuum systems

VACUUM CHAMBERS

- Cylindrical
- Horizontal
- Vertical
- Cubical
- Modular
- For any pressure range



↗ All vacuum chambers

LEAK DETECTION

- Leak detectors
- Micro-Flow

↗ All products for leak detection

VACUUM SOLUTIONS

OUR VACUUM SOLUTIONS – TAILORED TO THE NEEDS OF OUR CUSTOMERS

Our customers' fields of application are extremely diverse – and so are their expectations and demands on our products. Thankfully, we have a portfolio of vacuum solutions that is just as broad. This allows us to design individual vacuum solutions tailored to the specific needs of our customers.

KEY FACTORS FOR COMPILING A VACUUM SOLUTION

- Number and types of gases in one container
- Pressure and flow velocity
- Intended final pressure and base pressure
- Pumping speed and throughput

APPLICATION EXAMPLES FOR VACUUM SOLUTIONS:

- Analysis technology
- Chemical industry
- Coating of glasses, architectural glass, tools, flat screens, Blu-ray discs
- Drying processes
- Food and beverage industry
- Leak detection for the automotive industry
- Manufacturing solar cells
- Paper manufacturing
- Pharmaceutical industry
- Semiconductor production
- Solar thermal plants
- Space simulation
- Steel degassing

OUR GUIDELINE: TECHNOLOGICAL EXCELLENCE AND HIGHEST QUALITY STANDARDS

For each vacuum solution we design, the same guidelines apply: technological excellence matched with the highest quality standards from the development stage right through to commissioning. We know that for each of our customers, the perfect vacuum solution looks different. This is why the same standards apply to all our various products for evacuating, measuring, and analyzing vacuum – consultation and service included.

ELEMENTS OF VACUUM SOLUTIONS

TURBOPUMPS
High and ultra-high vacuum
Magnetic and hybrid bearing turbopumps and turbo pumping stations

BACKING PUMPS
Low and medium vacuum
Rotary vane, diaphragm, Roots, side channel, screw and piston pumps in addition to pumping stations

VACUUM CHAMBERS
Depending on process conditions
Low, medium, and high vacuum chambers in individual shapes and sizes

MEASUREMENT AND ANALYSIS EQUIPMENT
For all pressure ranges
Leak detectors, gas analyzers, gauges, and mass spectrometers

COMPONENTS
Valves and components
Gaskets, filters, valves, flanges, electrical feedthroughs, manipulators, bellows components, and other accessories

SERVICE
Flexible service module
Technical training and seminars, on-site service, comprehensive service contracts, regional service centers, replacement products, and original replacement parts

CONSULTATION
Absolute customer orientation
Needs assessment, design, and calculation of vacuum systems as well as product consultation

SYSTEMS
Individual technologies
Multi-stage vacuum systems, special pumping stations, calibration and decontamination systems

↗ More about our vacuum solutions

SHARE PERFORMANCE

Share price development in the year of strategic realignment, long-term return

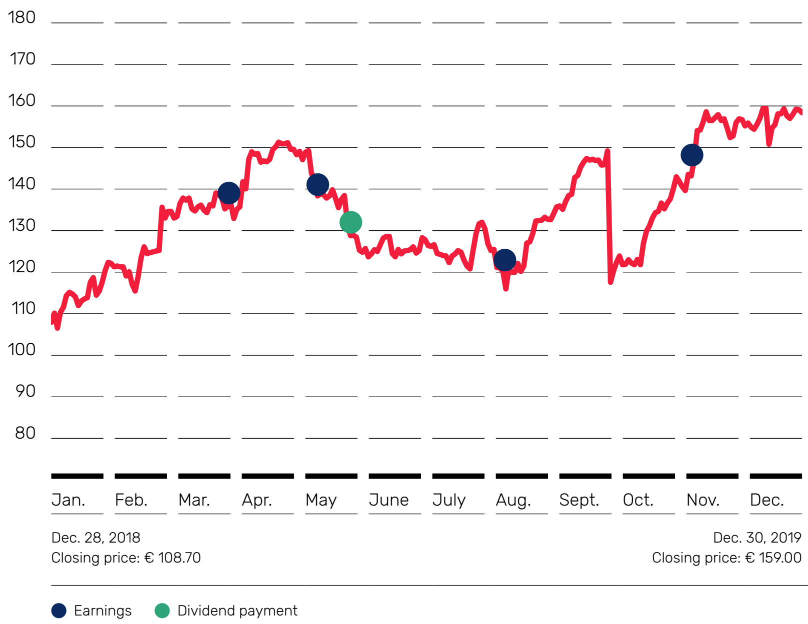
The Pfeiffer Vacuum Technology AG share (Pfeiffer Vacuum) started the trading year on January 2, 2019 at a price of € 110.90 and reached the high for the year of € 160.00 on December 6 and 9, 2019. In the first quarter 2019, Pfeiffer Vacuum shares were able to recover significantly. The loss in the share price recorded in the second half of 2018 and, in particular, during the market weakness in the fourth quarter of 2019 was regained. Following an annual low of € 107.30 on January 3, 2019, the share price rose to € 129 by the end of June 2019.

Following a profit warning on July 19, 2019, the share price rose to around € 130 by the end of July after a brief phase of uncertainty.

At the beginning of August, the share came under pressure related to the softer overall market. In the further course of the third quarter, particularly from mid-August and during September, the share price was able to advance into the € 150 range. With a profit warning on September 24, due to an expected postponement of orders from customers in the semiconductor and coating market segments from the end of 2019 to 2020, the share fell to € 118.30. However, the share recovered within about one month.

SHARE PRICE DEVELOPMENT OF PFEIFFER VACUUM IN 2019

in €



Feb. 21, 2019	Sales increase of 12.4 % in 2018
Mar. 28, 2019	2018 earnings
May 7, 2019	Q1 earnings, sales plus 9.8 %
May 20, 2019	Strategic cooperation agreement signed with Busch Group
May 23, 2019	Annual General Meeting 2019
May 28, 2019	Dividend payment (2018)
July 19, 2019	Profit warning for fiscal 2019
Aug. 6, 2019	H1 earnings, sales 8.0 % below previous year
Sept. 24, 2019	Profit warning for fiscal 2019
Nov. 5, 2019	Q3 earnings, sales plus 2.0 %

In the fourth quarter, a recovery set in with a friendly overall market. An annual high of € 160 was recorded on December 6. The year-end closing price for 2019 was € 159.00 on December 30.

Compared to the TecDAX, SDAX, DAX and HDAX benchmark indices, the Pfeiffer Vacuum share developed in a volatile market within a range of 17 % to 26 % during fiscal 2019 as a whole. In the medium to long term, the Pfeiffer Vacuum share continues to perform significantly better than the SDAX, DAX and HDAX.

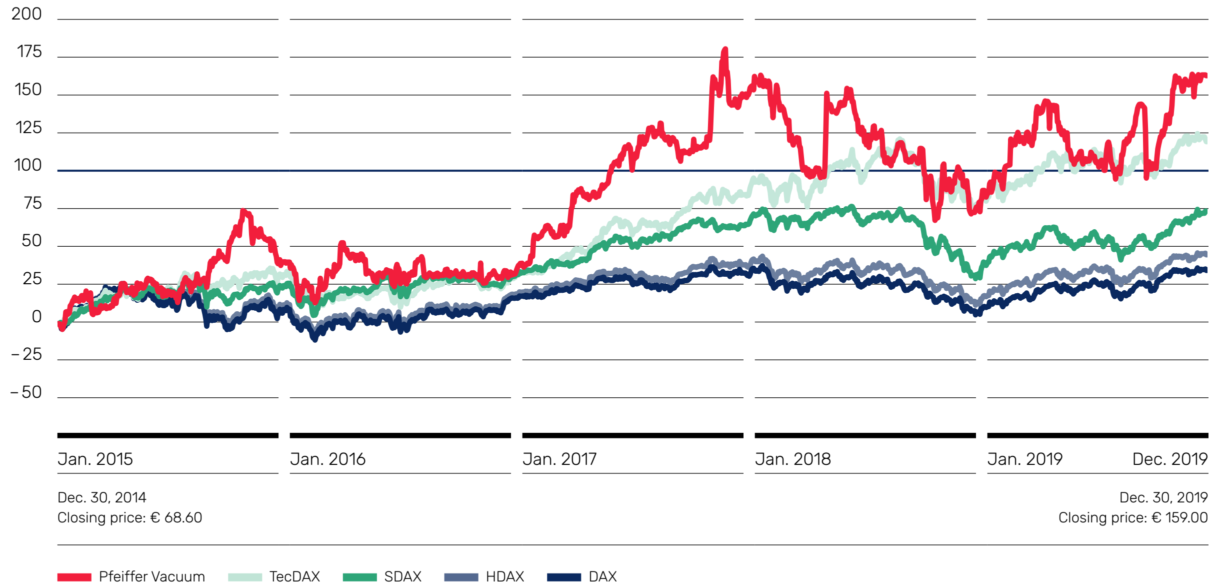
Pfeiffer Vacuum Technology AG:
Member of major international stock indices

SELECTED INDICES

Ticker	Name	Index weighting
		in %
TDXP	Deutsche Börse TecDAX Total Return Selection Index	0.69
SDYP	Deutsche Börse SDAX Performance Index (XETRA)	1.37
HDAX	Deutsche Börse AG HDAX Index	0.06
NMDP	Deutsche Börse Technology All Share Performance Index	0.96
BEUMCHD	Bloomberg Europe Machinery Diversified Index	0.90

RELATIVE SHARE PRICE DEVELOPMENT OF PFEIFFER VACUUM, SDAX, TECDAX, DAX AND HDAX BETWEEN 2015 AND 2019

in %



The Pfeifer Vacuum share is listed in numerous European and international indices. The average daily XETRA trading volume was 17,095 shares in 2019. With a weighting of 0.69 % in the TecDAX, the share has ranked 29th out of a total of 30 index values.

The Pfeiffer Vacuum share is also listed in the SDAX. The listing in the TecDAX also shows the Pfeiffer Vacuum share in HDAX and other international indices. For example, in the MSCI World IMI Index, an index of more than 5,500 stocks from over 20 developed countries.

Dividend proposal of € 1.25 per share

Pfeiffer Vacuum closed the 2019 fiscal year with positive operating results and would like its shareholders to participate in this success.

Against the backdrop of increased expenses related to the implementation of our strategy, which will be especially intense in 2020, as well as expected investments in 2020, the Management Board and Supervisory Board will propose to the Annual Shareholder's Meeting on May 20, 2020 a dividend of € 1.25 per share (prior year € 2.30 per share) for the fiscal year 2019. With a total pay-out of € 12.3 million, 25.5 % of the company profits would be paid-out to shareholders (prior year 33.0 %).

Broadly diversified investor structure and anchor investor with sector expertise

With Pangea GmbH, the family-owned investment company of the international vacuum group Busch SE, Pfeiffer Vacuum has a long-term oriented anchor shareholder.

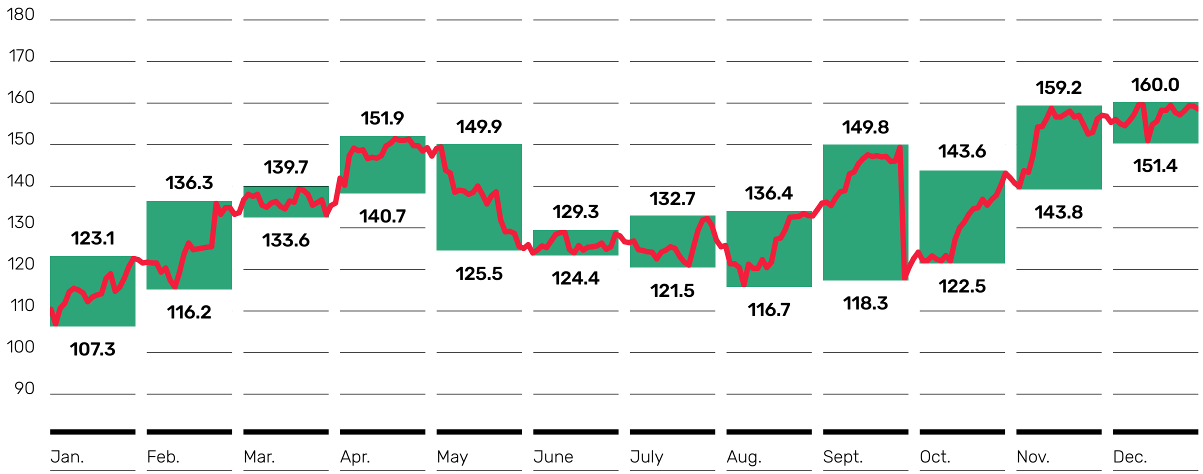
Shareholders with other noteworthy shares are international fund companies such as Allianz Global Investors, Norges Bank and Investmentaktiengesellschaft für langfristige Investoren TGV (TGV). In addition, Hakuto Co., Ltd., a trading partner of Pfeiffer Vacuum, also holds Pfeiffer Vacuum shares.

The multitude of institutional investors, including insurance companies, pension funds, investment advisors and family offices, ensure a structurally broad diversification.

Geographically, Germany and France form a solid core of European shareholders. Including the neighboring member states, in particular the Nordic countries, Benelux, Italy, the U.K. and Switzerland, over 75 % of Pfeiffer Vacuum shares are held in the E.U. In Asia, Pfeiffer Vacuum has another long-term anchor shareholder and trading partner with Hakuto Co., Ltd., Japan.

MONTHLY HIGHS AND LOWS OF THE PFEIFFER VACUUM SHARE IN 2019

in €

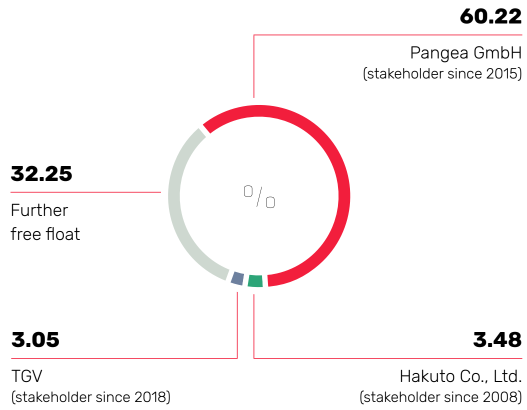


Dec. 28, 2018
Closing price: € 108.70

Dec. 30, 2019
Closing price: € 159,00

SHAREHOLDER STRUCTURE AS OF DEC. 31, 2019

in %



Good analyst coverage: multipliers and opinion leaders

As a TecDAX and small cap value company, Pfeiffer Vacuum regularly receives international attention and comprehensive support from approximately nine analysts. Regular analyst studies are available to investors for informed opinion.

Additional well-known buy-side analysts from international fund companies and insurance companies analyze Pfeiffer Vacuum's financial results for their own investment opportunities. As well as publishing comprehensive sector studies, many analysts have in-depth knowledge of peer groups and Pfeiffer Vacuum customers.

More than half of the analyst firms follow not just Pfeiffer Vacuum but also at least one peer group company.

PFEIFFER VACUUM ANALYSTS

As of January 22, 2020

Bank	Analyst	Rating	Peer group
Bankhaus Lampe	Veysel Taze	Hold	Yes
Commerzbank	Adrian Pehl	Hold	–
DZ Bank	Harald Schnitzer	Hold	Yes
HSBC	Philip Saliba	Hold	Yes
Independent Research	Markus Friebel	Sell	Yes
Jefferies Intern.	Martin Comtesse	Hold	Yes
Kepler Cheuvreux	Craig Abbott	Buy	Yes
Oddo BHF	Stephane Houri	Sell	–
M.M. Warburg	Eggert Kuls	Hold	Yes

Pfeiffer Vacuum is constantly available for its stakeholders and values an exchange of opinions and market assessments. We want to establish a sound pool of knowledge with our shareholders, investors and analysts and continue to develop it further through external and internal perspectives of markets, technologies and projects.

Comprehensive investor relations activities, member of the industry association DIRK[1]

With a broad range of investor relations activities, we always strive for open, transparent communication about the development of Pfeiffer Vacuum. As a member of the German Investor Relations Association (DIRK), Pfeiffer Vacuum is committed to adhering to the standards for transparent communication with investors. Conference calls with the CEO and CFO take place on a quarterly basis to explain business results. In dialogue with investors and analysts, the Management Board receives regular feedback on the Company's strategy and performance.

A long-term orientation and continuity are crucial success factors for sustainable, successful relationship management with stakeholders. All stakeholders take the center stage of any activity focused on their needs. Each quarter, our CEO, CFO and Head of Investor Relations have conversations with an average of 50 investors and analysts at roadshows, conferences, during phone calls, as well as corporate appointments in Asslar and Annecy.

The Annual General Meeting took place on May 23, 2019 in Wetzlar. A similar number of shareholders and guests as in the previous year had the opportunity to talk to the Management Board and the Supervisory Board in person. Attendance amounted to 76.86 % compared to 72.23 % in 2018. In the votes, a large majority of the shareholders agreed with the proposals of the management.

Ahead of the Annual General Meeting, the shareholders were able to download all relevant documents, as well as the ballot sheet, from the broad information offerings on the Internet at ↗ Annual General Meeting.

PFEIFFER VACUUM SHARE DATA

		2019	2018	2017	2016	2015
Share capital	in € millions	25.3	25.3	25.3	25.3	25.3
Number of shares issued	in units	9,867,659	9,867,659	9,867,659	9,867,659	9,867,659
Highest trading price	in €	160.00	164.20	174.50	103.45	115.60
Lowest trading price	in €	107.30	105.00	87.80	75.28	65.69
Trading price at year-end	in €	159.00	108.70	156.15	88.82	93.55
Market capitalization at year-end	in € millions	1,568.95	1,072.62	1,540.84	876	923
Dividend per share	in €	1.25[1]	2.30	2.00	3.60	3.20
Dividend yield	in %	0.8[1]	2.1	1.3	4.1	3.4
Earnings per share	in €	4.90	6.98	5.46	4.77	4.25
Price/earnings ratio		32.4	15.6	28.6	18.6	22.0
Free float[2]	in %	39.78	49.98	61.04	72.81	72.81

[1] Subject to the approval of the Supervisory Board and the Annual General Meeting
[2] According to the definition of Deutsche Börse

1 Deutscher Investor Relations Verband – German Investor Relations Association

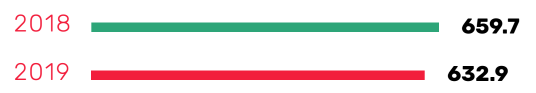
2 GROUP MANAGEMENT REPORT

THE YEAR 2019 AT A GLANCE

For Pfeiffer Vacuum, 2019 was a year where a partly weaker market environment led to sales declines. At the same time the Group's strategic realignment was implemented with unchanged decisiveness. As expected, the related additional expenses burdened the profitability development. Market conditions changed during the year and therefore sales and earnings were below the expectations set at the beginning of the year. However, the company achieved the revised expectations set during the year. There was no change in Pfeiffer Vacuum's commitment to its strategic goals: by the year 2025, the investment program focusing on growth and profitability is expected to take full effect and result in a market share and an operating profit margin of over 20 % each.

As a result of a weakness in the coating market and tendentially restrained demand on the part of our customers in the semiconductor industry, **sales revenues** showed a 4.1 % decline from the record level of the previous year, from € 659.7 million to € 632.9 million. This result fell within the previously forecast range that envisaged a sales volume of € 620 to 640 million, revenue nevertheless, for the outlined reasons, remained below our own expectations formed at the beginning of the financial year and formulated as expected revenue growth in last year's forecast report.

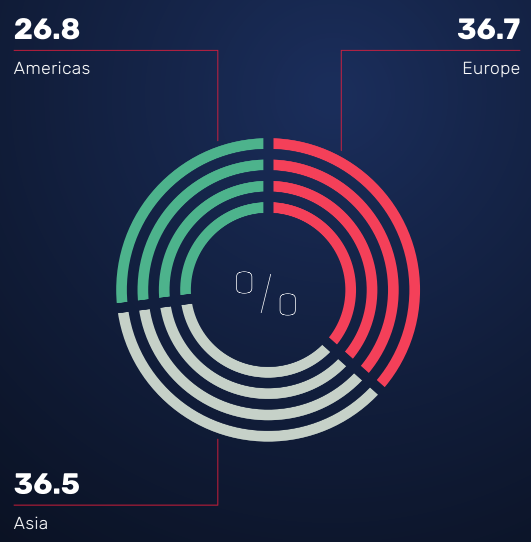
SALES
in € million



As a direct consequence of the declining sales trend, negative scale effects had an impact on the earnings situation. In addition, the Group is currently in an transformation phase related to the strategic realignment. The related measures to strengthen the market and the competitive position will initially, and thus also in 2019, negatively impact earnings development. Essentially, these two effects led to the to the falling of the operating profit from € 95.1 million in fiscal year 2018 to € 65.2 million in fiscal year 2019. The resulting operating profit margin, or **EBIT margin**, of 10.3 % in fiscal year 2019 was thus not at about the level of 2018 (14.4 %), as articulated in the last Annual Report Outlook.

SALES BY REGION

in %



The development of the operating profit during the course of 2019 subsequently resulted in the forecast for the EBIT margin being finally adjusted to around 10 %. This adjusted forecast was achieved.

EBIT MARGIN
in %

With a nearly unchanged financial result and an almost unchanged tax ratio, **net income** of € 48.4 million largely followed the development of the operating profit. Compared to the previous year, there was a decrease of 29.8 %.

NET INCOME
in € million

Overall, sales and therefore also operating results were below expectations set at the beginning of the fiscal year. However, Pfeiffer Vacuum made significant progress in the execution of the growth strategy and reconfirms the goal to achieve market share and EBIT margin of over 20 % by 2025. It is always possible that market developments can put pressure on results, such as in 2019 the developments in the semiconductor and coating market. However, we believe that with progress in our strategic transformation results will improve, particularly related to operational efficiency improvements. In addition, market recoveries and the associated economies of scale will make further contributions.

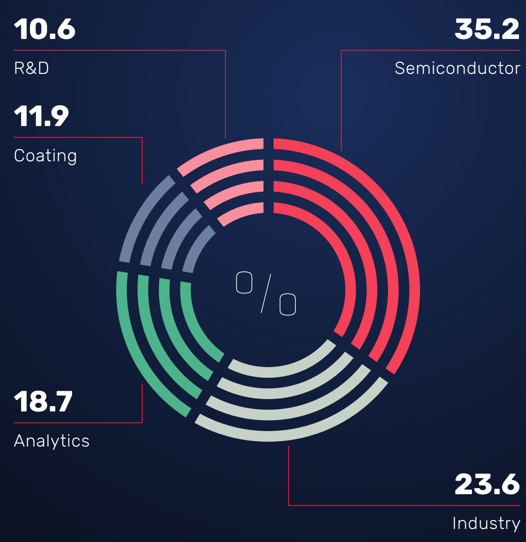
Equity ratio constant

The continued outstanding **financial position** of the Pfeiffer Vacuum Group is illustrated by stable balance sheet structures. **Equity** again improved year on year, growing by € 21.2 million from € 372.2 million at the end of 2018 to € 393.4 million on December 31, 2019. Even after the first-time application of the new accounting rules related to rental and lease contracts (Note 3) and the resulting increase in financial liabilities, the equity ratio, following 59.6 % at the close of the preceding fiscal year, remained constant at 59.6 % at the end of the reporting period. Financial liabilities amounted to € 73.6 million on the reporting date of December 31, 2019 (previous year: € 60.3 million). This corresponds to only about 11.2 % of the balance sheet total (Note 23 and Note 30) and was offset by cash and cash equivalents of € 112.0 million, which means that the Group continues to be debt-free on a net basis.

Despite the decreasing EBIT the **operating cash flow** increased from € 62.5 million in the previous year to € 65.4 million in the year under review. Besides the positive impact resulting from the decrease in inventories and trade accounts receivables the new applicable rules for the accounting of rental and lease contracts caused a reclassification of cash out from rental and leasing payments from operating cash flow to cash flow from financing activities in the amount of € 5.3 million. Even without considering this impact the operating cash flow developed better than the EBIT.

SALES BY MARKET

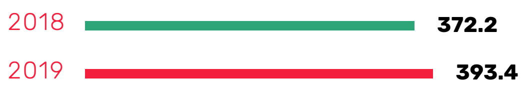
in %



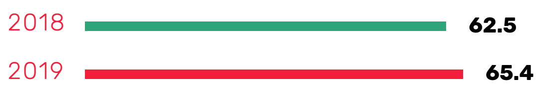
Overall, our key balance sheet figures also developed according to expectations compared with the previous year's reporting date.

NET DEBT
in € million

TOTAL EQUITY
in € million



OPERATING CASH FLOW
in € million



Investment program continued largely as planned

The investment program adopted in 2018 in the amount of € 150 million was continued in 2019. Overall, investments related to this program are primarily for the expansion and modernization of production capacities.

Funds will also be made available for research and development and IT to improve operational efficiency and achieve the transformation. The timing of these investments is continuously evaluated and, if necessary, adjusted to take into account longer than planned delivery times or to adapt the successful implementation of the investments to new circumstances or expectations. This was also the case in 2019 and may well occur again in the future due to the high complexity and scope of the investments.

Another important element of the investment program and the new growth strategy in 2019 to call out is the expansion of the site in Wuxi, China. By doubling its original size, the new facility is setting an additional milestone in Pfeiffer Vacuum's development in China. This will enable the Company to respond even better to the needs of its customers, while simultaneously supporting strategic growth in the local coating and semiconductor market.

Numerous new products came onto the market again during the past 2019 financial year: With its new HiPace 700 H turbopumps, Pfeiffer Vacuum presented high-compression models in early 2019. With a compression ratio of ≥ 2 x 10^7 for hydrogen, they are suitable for generating high and ultra-high vacuum. The high compression ratio results in a low residual gas spectrum in the chamber, which is desirable for certain mass spectrometric applications. The new Roots pumps of the HiLobe series were introduced at ComVac 2019 at the Hannover Messe. For the first time, the experts from Pfeiffer Vacuum presented these new vacuum pumps which can be used to cover a wide range of industrial vacuum applications, such as electron beam welding, vacuum furnaces or freeze drying. Pumps from the HiLobe series are particularly useful for rapid evacuation (load-lock chambers or leak detection systems). They are also suitable for use in coating applications.

Further growth and significant improvement in operating profit margin planned

The growth strategy that we adopted in 2018 remains based on continued organic sales growth complemented by inorganic growth from acquisitions. Both, market share and EBIT margin are to increase to more than 20 % by the year 2025. Pfeiffer Vacuum's strategy thus remains clearly focused on further growth (see Outlook page 078).

This includes not only developing new products but also expanding the Company's global presence. The focus is on selected Asian countries, above all the fast growing China. Here, we have implemented initial measures with the already mentioned expansion at the Wuxi site.

In order to implement the growth strategy as rapidly as possible, the Management Board was restructured and and a realignment of the functions made as of January 1, 2019 (see also the explanations in the section "Corporate Governance Report") (see page 082). A new position of Chief Operations Officer (COO) was created, with responsibility for the performance, efficiency and flexibility of the global operational infrastructure and processes. The previously interim position of COO has now been made permanent with the appointment of Mr. Wolfgang Ehrk to the Management Board of Pfeiffer Vacuum Technology AG from January 1, 2020 (see page 082).

A further element of our Pfeiffer Vacuum strategy is to implement global responsibilities. Therefore, the leadership structure within the Group was newly organized in 2019. For a successful strategy execution we also invest in technical talents and additional experts.

A strategic cooperation with the Busch Group was agreed in May 2019. The general objective is to improve our competitive position in the vacuum technology industry. The cooperation aims to realize synergies in the areas of purchasing, sales and service, IT and research & development.

THE PFEIFFER VACUUM GROUP

CORPORATE PROFILE

Since 1890, and thus for 130 years now, we have been developing, producing and selling a comprehensive product portfolio in the vacuum technology sector and also offering after-sales service worldwide. Since the invention of the turbopump more than 50 years ago, we have been one of the world's leading suppliers of vacuum solutions. Our product portfolio ranges from hybrid and magnetically levitated turbopumps, as well as backing pumps and measurement and analysis equipment, right up to complex vacuum systems.

We manufacture our high-tech products at a total of ten locations in Europe, Asia and North America. The Group currently has 20 sales and service companies. With their expertise and commitment, our employees meet the requirements of our customers from sales markets in analytics, industry, research and development, coating and semiconductors.

Despite the slower pace of demand in the past fiscal year 2019, the semiconductor sales market remained a strong market, in terms of the sales revenue generated for Pfeiffer Vacuum. This was followed by the industry and analytics markets.

Global customer proximity with manufacturing, sales and service locations worldwide

Pfeiffer Vacuum manufactures in Germany in Asslar, as well as in Göttingen and Dresden. Within Europe, there are also **production sites** in Annecy, France and Cluj, Romania. In Asia, we are represented by our Asan production site in the Republic of Korea, by Ho Chi Minh City in Vietnam and also, since October 2019, by Wuxi, China. In the USA, there are production sites in Indianapolis and Yreka.

In addition, we are present with **sales and service branches** at more than 20 locations around the globe.

Globally, 3,276 employees (December 31, 2019) are engaged in taking Pfeiffer Vacuum another step forward each day.

Markets and market position

Products from Pfeiffer Vacuum are employed in numerous branches of industry. Our customers in every region and every sector trust in the reliability of our products. In terms of the overarching industrial sector, Pfeiffer Vacuum divides these customers into the following markets: semiconductor, industry, analytics, research & development (R&D) and coating. Overall, we consider ourselves to be number two in the world market in the markets we serve.

LOCATIONS AND EMPLOYEES WORLDWIDE

THE AMERICAS	EUROPE	ASIA
380 EMPLOYEES	2,060 EMPLOYEES	836 EMPLOYEES
169.7 SALES IN € MILLIONS	232.0 SALES IN € MILLIONS	231.2 SALES IN € MILLIONS

Production
Sales and Service

TOTAL

3,276
EMPLOYEES

632.9
SALES IN € MILLIONS

↗ Pfeiffer Vacuum

Pfeiffer Vacuum's products and solutions are used in key markets of the future. Already today, many innovative processes, such as in nanotechnology, in the manufacture of LEDs or in research, are inconceivable without the use of vacuum technology. Technological progress resulting from research and development activities in these fields of technology leads to new products and manufacturing processes. The dynamic development of people's private and professional communication behavior is leading to ever new applications based on new technologies in the semiconductor industry. The increasing demand for energy combined with the need to conserve resources is changing the way energy is generated. These trends, as well as other social and industrial trends, offer Pfeiffer Vacuum additional sales opportunities.

APPLICATION EXAMPLES

Semiconductor	Industry	Analytics	R&D	Coating
Lithography	General applications	Mass spectrometers	Renewable energies	Solar cell technology
Metrology	Electron beam welding	Electron microscopy	Nanotechnology	Display coating (LED, OLED)
CVD (Chemical Vapor Deposition)	Freeze drying	Surface analysis	Particle accelerators	Data storage
PVD (Physical Vapor Deposition)	Vacuum drying	Gas analysis	Space simulation	Glass coating
Etching	Steel degassing	Biotechnology	Plasma physics	Surface protection
Ion implanter	Leak detection	Life science	Materials science	Tool coating

One of our strengths is that we serve all markets and are therefore not depending on developments in individual market segments. In 2019, for example, weaker demand in the semiconductor industry was partially offset by revenue growth in the industry segment.

Broad range of applications for future technologies

Semiconductor

Our vacuum pumps are used in the semiconductor industry for the production of microprocessors and handling systems. Customers primarily use a large number of medium and large backing pumps, but also turbopumps and measurement instruments. With our decontamination systems, chip manufacturers can significantly increase their yield. A key growth driver in the semiconductor industry is the rapid development of communications technology. New applications for vacuum technology are arising in areas such as nanotechnology. Our semiconductor customers are mainly located in Asia, the USA and, to a lesser extent, Europe.

Industry

In this segment, we unite a heterogeneous group of industrial customers who require our vacuum solutions for certain production steps. Industrial trends such as quality improvements, energy saving and generation, electromobility or environmental protection are opening up new fields of application. Examples of applications include metallurgy, tube production and air-conditioning and refrigeration technology. A further field of application is the still young solar thermal technology. The absorber tubes needed for this technology are evacuated using our pumping stations and are continuously tested for leaks with our leak detectors. Our customers in the "Industry" segment come primarily from Europe, the USA and, increasingly, also from Asia.

Analytics

Our largest customers in this market are OEM (original equipment manufacturer) customers, i.e. suppliers of industrial systems or analytical instruments. Complex analytical devices such as scanning electron microscopes are primarily used for industrial quality assurance. This sector is characterized in particular by megatrends in the fields of life science, biotechnology and security. Ever smaller and lighter portable analyzers are needed in environmental technology, security technology or for doping analyses. The analytics industry therefore mostly demands small and medium-sized turbopumps, backing pumps and measurement instruments. Our most important customers for analytics products come from the USA, Japan, the United Kingdom and Germany.

Research & Development

Cooperation with research institutes has a long tradition at Pfeiffer Vacuum. Whether physics or chemistry laboratories at universities, renowned research institutions such as the Fraunhofer Institute and the Max Planck Institute or large multinational research institutions such as CERN in Geneva – they all utilize our pumps, mass spectrometers, leak detectors or vacuum solutions. In close cooperation with research institutions in Europe, the USA and Asia, new applications are constantly emerging, for example in the field of energy generation or healthcare technology.

Coating

Without vacuum, many things that are used in daily life could not be produced in the desired quality. The anti-reflective coatings on eyeglass lenses, the production of flat screens, functional coatings for textiles, the production of OLEDs and LEDs, and coatings for solar cells or architectural glass are all produced in vacuum chambers, for example. High-quality tools are coated and hardened under vacuum to make them even more durable. Systems for generating renewable energy are among the megatrends that promise further growth. The coating industry mainly requires medium and large backing pumps and turbopumps, but also measurement equipment and complete vacuum systems. Customers who use our coating technology come from all industrial nations around the globe.

COMPANY STRATEGY

Innovation as the basis for growth: Market share to rise to over 20 %

Pfeiffer Vacuum develops, produces and markets quality and technologically sophisticated vacuum solutions. The Company sees itself as a quality market leader and has a long-term strategic goal to sell its products through quality, not price. This sales strategy also includes emphasizing the long-term cost advantages over the life of a Pfeiffer Vacuum product (the total cost of ownership) for customers. These advantages result, among other things, from lower maintenance and repair costs, longer service lives and lower energy consumption in comparison with rival products.

Pfeiffer Vacuum's guiding principle remains to always be close to its customers. With a worldwide presence, we live up to this claim and ensure that our customers are always the focus of our actions. Pfeiffer Vacuum has set itself the goal of expanding its market share to over 20 % and significantly strengthening its position as number two in the global vacuum industry. The market position is to be strengthened by growth with new and innovative products, new solutions and a broader range of services.

Pfeiffer Vacuum's strategy is clearly focused on further growth. In this context, the global presence of the Company is to be expanded. The focus is on selected Asian countries. China is the primary focus due to its exceptionally high growth rates in the semiconductor market. Pfeiffer Vacuum will benefit in all market segments Semiconductor, Coating, Analytics, Industry and Research & Development from the megatrends today and in the future. In the fields of semiconductors and coatings, these trends include digitization, the expansion of renewable energies, electro mobility and the ever larger high-resolution displays. The rapid developments in the life science industry, nanotechnology and the security industry offer additional growth opportunities for the market segments Analytics, Industry and Research & Development.

Pfeiffer Vacuum will do its utmost to be a strong partner to our customers implementing these new technologies. The Pfeiffer Vacuum transformation solely serves our customers.

STRATEGIC FOCUS OF PFEIFFER VACUUM

8 elements characterize Pfeiffer Vacuum's growth strategy

1. **PRODUCT PORTFOLIO**
   Integrated products and solutions
2. **CUSTOMERS**
   Strong cooperation
3. **CHINA**
   A new growth market
4. **SELECTIVE ACQUISITIONS**
   To strengthen the technology and market position
5. **OPERATIONS**
   Global footprint combined with strategic and local procurement
6. **ORGANIZATION**
   Global leadership and expert functions
7. **BUSINESS PROCESSES**
   Integration and standardized systems, process quality and digitalization
8. **STRATEGIC COOPERATION**
   Cooperation with the Busch Group

↗ Strategy Microsite

Extensive growth investments: EBIT margin to rise to over 20 % by 2025

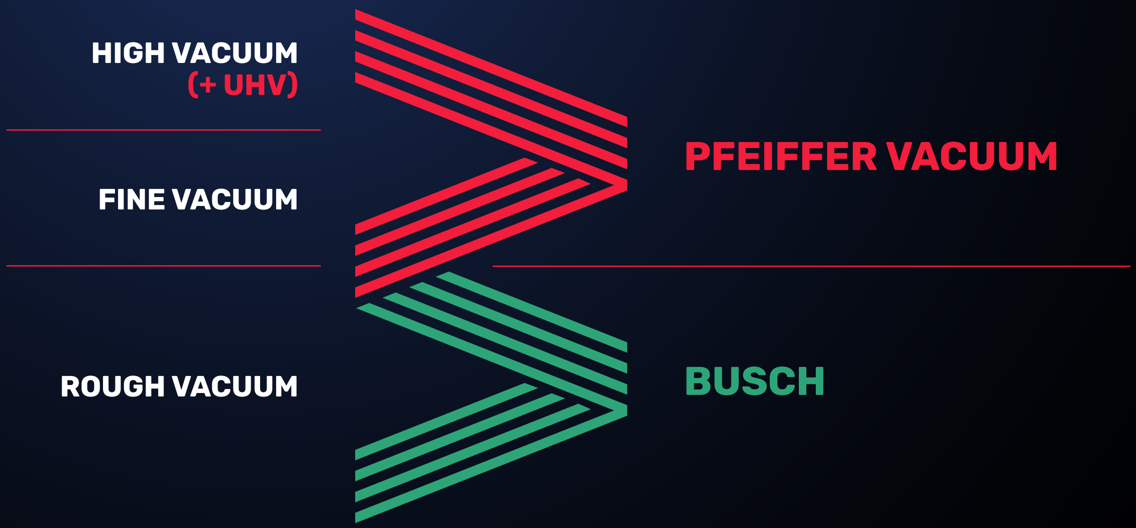
To further drive Pfeiffer Vacuum's dynamic development, the Management Board launched a € 150 million investment program in 2018. In fiscal 2018 and 2019, around € 50 million was realized so far. Most of the remaining investments are expected to be made in 2020 and 2021. Amongst others, the funds will be used for the expansion and modernization of production capacities. In addition, expenditure on new research and development and IT projects will be increased over the coming years. The primary goal is to improve operational efficiency and achieve digital transformation. We strive to increase the EBIT margin to over 20 % by the year 2025 with these introduced measures (see Outlook page 078).

Cooperation agreement concluded with the Busch Group

A complementary measure to improve the competitive position in the vacuum technology industry is the strategic cooperation with the Busch Group which was agreed upon in May 2019. The Busch Group in Maulburg holds through a subsidiary 60.22 % of Pfeiffer Vacuum shares. The Busch Group has a complementary product portfolio of vacuum pumps and solutions for the rough vacuum market. Since signing the cooperation agreement in May 2019, both companies have been working to realize synergies in the central areas of purchasing, sales and services, IT and research and development.

POSITIONING AND CLASSIFICATION OF PFEIFFER VACUUM AND BUSCH

Pfeiffer Vacuum and Busch have different target markets and a complementary product portfolio. Cooperation between the companies thus offers the opportunity to realize growth through cross-selling or to gain access to new markets by operating service centers jointly.



Strategy Microsite

MANAGEMENT SYSTEM

Tight control through annual sales and profitability targets

The Management Board of Pfeiffer Vacuum Technology AG assumes responsibility for the strategic leadership of the Corporate Group. All Group companies are managed by the Management Board and the global organization by setting annual sales and profitability and qualitative strategy targets (management by objectives). The most relevant key figures in this context are sales, operating profit („EBIT"), EBIT margin and income before taxes. Regardless of the primary Group management and for a better understanding of the course of the business, the current financial position and the future development, this Management Report details further key figures, for example net income, earnings per share, or ROCE. All subsidiaries in the Group are responsible in principle for all market segments, continue to have self-directed management and essentially make their own decisions within central guidelines and strategic targets on how to attain the defined targets (sales, operating profit and operating profit margin as well as earnings before taxes). The supervisory bodies of the subsidiaries, including the members of the Management Board of Pfeiffer Vacuum Technology AG and the global organization, must be involved in major decisions.

Target achievement is attained through detailed target/actual comparisons and variance analyses as part of the monthly reporting system, which is supplemented by market information. This shall ensure that undesirable developments can be identified and corrected at an early stage. In addition, monthly conference calls and physical-presence conferences with the management of the operating subsidiaries shall ensure that all business development issues are discussed. In addition, face-to-face meetings are held by Group management and the global organization with staff at the local site.

For countries in which Pfeiffer Vacuum is not represented directly through a subsidiary, sales targets are agreed with the local sales partner. Here, too, the achievement of sales targets is measured by target/actual comparisons. A further steering instrument is the variable remuneration of the local management of the foreign subsidiaries and the sales staff. This sensitizes employees to cost structures, and thus to the long-term success of the Company, even if they do not work in areas of the Company which have a direct influence on sales.

In order to implement the individual areas of the strategy outlined above and the associated goals more quickly and with greater focus, a new division of responsibilities within the Management Board was decided with effect from January 1, 2019. The Company was therefore organized in accordance with its global business functions (see also the paragraphs in the section "Corporate Governance Report" of this Management's Discussion and Analysis) (see also page 082).

GROUP STRUCTURE

Pfeiffer Vacuum – global presence

As of December 31, 2019, the Pfeiffer Vacuum Group still comprised a total of 32 companies.

Central roles in the Corporate Group are assumed by Pfeiffer Vacuum GmbH, Asslar, Germany and Pfeiffer Vacuum SAS, Annecy, France. Pfeiffer Vacuum GmbH is responsible for the development and production of all Pfeiffer Vacuum products, as well as for sales in Germany, and central investment management for the Group. This company had a total of 865 employees as of December 31, 2019 (December 31, 2018: 808). To a certain extent, Pfeiffer Vacuum SAS is the French counterpart to Pfeiffer Vacuum GmbH. The company employed 732 people at year-end (December 31, 2018: 718), is the central development and production facility for the semiconductor and coating market and is responsible for sales in France. With a total of 1,597 employees, these two companies employ almost half of the Group's workforce (3,276 at the end of 2019).

As further Group companies with their own production facilities, Pfeiffer Vacuum Components & Solutions GmbH, Dreebit GmbH, Pfeiffer Vacuum Semi Korea Ltd., Pfeiffer Vacuum Romania S.r.l., Nor-Cal Products, Inc. and Advanced Test Concepts, LLC., as well as Nor-Cal Products Viet Nam Co., Ltd. and, since October 2019, Pfeiffer Vacuum (Shanghai) Co., Ltd. (located in Wuxi) are entrusted with the manufacture and assembly of their own products.

The other Group companies are legally independent corporations that perform sales and service tasks. In legal terms, all companies are essentially organized in a legal form comparable to the German limited liability company (GmbH).

The complete structure of the Group as of December 31, 2019 is as follows:

THE PFEIFFER VACUUM CORPORATE GROUP AS OF DEC. 31, 2019

	Headquarters	Equity Share (in %)
Pfeiffer Vacuum Technology AG	Germany	
Pfeiffer Vacuum GmbH	Germany	100.0
Pfeiffer Vacuum Austria GmbH	Austria	100.0
Pfeiffer Vacuum (Schweiz) AG	Switzerland	99.4
Pfeiffer Vacuum (Shanghai) Co., Ltd.	China	100.0
Pfeiffer Vacuum (India) Private Ltd.	India	27.0[1]
Pfeiffer Vacuum Ltd.	Great Britain	100.0
Pfeiffer Vacuum Scandinavia AB	Sweden	100.0
Pfeiffer Vacuum Singapore Pte. Ltd.	Singapore	100.0
Pfeiffer Vacuum Taiwan Corporation Ltd.	Taiwan	100.0
Pfeiffer Vacuum Benelux B. V.	The Netherlands	100.0
Pfeiffer Vacuum (Xi'an) Co., Ltd.	China	100.0
Pfeiffer Vacuum Malaysia SDN. BHD.	Malaysia	100.0
Pfeiffer Vacuum Inc.	USA	100.0
Advanced Test Concepts, LLC.	USA	100.0
Nor-Cal Products Holdings, Inc.	USA	100.0
Nor-Cal Products, Inc.	USA	100.0
Nor-Cal Products Viet Nam Co., Ltd.	Vietnam	100.0
Nor-Cal Products Europe Ltd.	Great Britain	100.0
Nor-Cal Products Korea Co., Ltd.	Republic of Korea	100.0
Nor-Cal Products Asia Pacific Pte. Ltd.	Singapore	100.0
Pfeiffer Vacuum California Realty Holdings, LLC.	USA	100.0
Pfeiffer Vacuum Indiana Realty Holdings, LLC.	USA	100.0
Pfeiffer Vacuum New Hampshire Realty Holdings, LLC.	USA	100.0
Pfeiffer Vacuum Holding B. V.	The Netherlands	100.0
Pfeiffer Vacuum Italia S. p. A.	Italy	100.0
Pfeiffer Vacuum (India) Private Ltd.	India	73.0[1]
Pfeiffer Vacuum Korea Ltd.	Republic of Korea	75.5[2]
Pfeiffer Vacuum Components & Solutions GmbH	Germany	100.0
Pfeiffer Vacuum SAS	France	100.0
Pfeiffer Vacuum Romania S. r. l.	Romania	100.0
Pfeiffer Vacuum Semi Korea, Ltd.	Republic of Korea	100.0
Pfeiffer Vacuum Korea Ltd.	Republic of Korea	24.5[2]
Dreebit GmbH	Germany	100.0

[1 and 2] Group shareholding in total 100.0 %

RESEARCH AND DEVELOPMENT

Our claim: technological leadership

Our primary goal is to offer our customers innovative products and solutions with the highest process efficiency. Our innovative strength is the decisive key to our future business success. In addition to its own research and development (R&D) activities at three locations worldwide, Pfeiffer Vacuum works closely with customers and suppliers on projects to jointly advance new technologies to market maturity at an early stage.

In addition, we have an established network with various national and international universities and research institutions. The core topics of Pfeiffer Vacuum's R&D are derived from the needs of our customers, most of whom operate globally and in very different markets in some cases. They can be assigned to megatrends such as energy, healthcare and the environment, and frequently concern the fields Industry 4.0, the internet of things, digitalization and predictive maintenance.

Important R&D projects in the 2019 fiscal year were aimed at supplementing missing product groups in the portfolio and renewing existing ones. In the OEM business, we were able to win new lines from important customers with our customer-specific pumps and increase the volume of existing lines.

Our claim to be a technology leader is supported by the fact that many of our employees are active in engineering and engineering-related activities for us. Of these, a total of 220 employees were assigned to R&D in 2019 (previous year: 214). As a result of its R&D activities, Pfeiffer Vacuum filed a total of 53 (previous year: 34) new patent families in fiscal 2019.

In the 2019 fiscal year, research and development expenses amounted to € 29.6 million (previous year: € 28.7 million). The R&D share of 4.7 % was higher than the previous year's level (4.3 %) due to the weaker development of sales (see also page 043).

In 2020, we intend to further improve our competitiveness and innovative capability by establishing a technology center in California's Silicon Valley. The planned site is located in immediate proximity to several important OEMs in the semiconductor and analytical industries and so forms a link with our already established European development centers. One of the goals we wish to pursue with the technology center is to significantly improve the speed of implementation in product development and to be close to the development trends.

BUSINESS REPORT

OVERALL ECONOMIC AND INDUSTRY-SPECIFIC DEVELOPMENT

Overall economic development

Global economy shows weaker growth than expected

The global economy ended the year 2019 with growth of 2.9 %. This is the conclusion of the International Monetary Fund (IMF) its latest estimate, World Economic Outlook. Compared to 2018, this corresponds to a significant decline of 0.7 percentage points. In October 2019, the IMF analysts still expected to pass the 3 % hurdle. The surprisingly weak economic development in some emerging countries – above all in India, Mexico and South Africa– led to the course correction.

According to the IMF, the economy in emerging and developing countries grew by 3.7 %, after 4.5 % in the previous year. For the industrialized nations, the IMF economists determined that gross domestic product would grow by 1.7 % in 2019 (previous year: 2.2 %).

Trade disputes, geopolitical tensions and the dramatic effects of climate change – such as the fires in Australia, the drought in Africa and the tropical storms in the Caribbean – have created great uncertainty. A continued easing of monetary policy by numerous central banks around the world, according to the IMF experts, was instrumental in ensuring that the slowdown in growth was not even more pronounced.

Europe

Economic output in the eurozone rose by 1.2 %, which is significantly slower than in the previous year when the increase was 0.7 percentage points higher. The two largest economies, Germany and France, suffered significant losses.

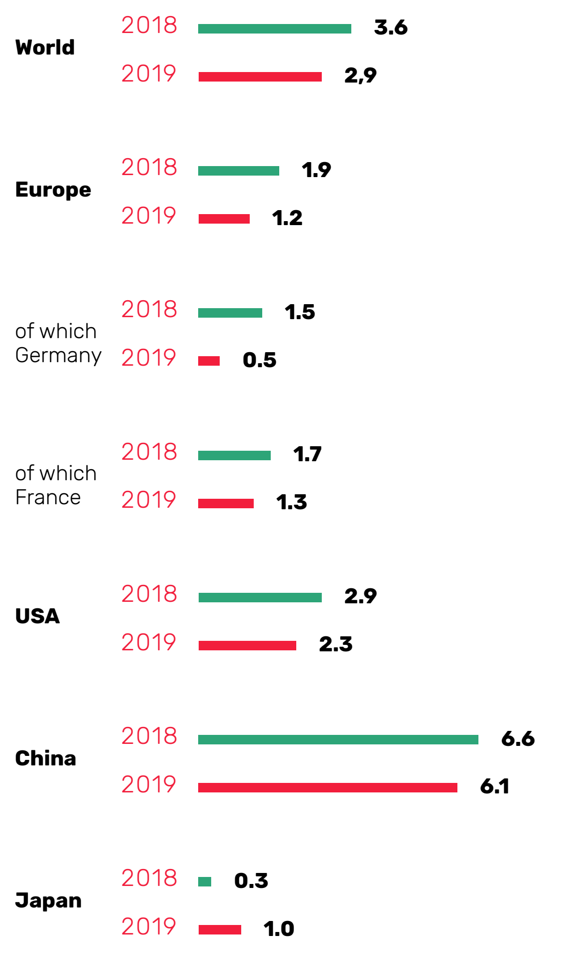
Growth in Germany slowed noticeably from 1.5 % in 2018 to 0.5 % in 2019. In France, the decline was more moderate at 0.4 percentage points. The French economy grew by a total of 1.3 %. Italy achieved only a slight increase of 0.2 % (2018: 0.8 %). Spain's economy also rose at a slower pace, but improved by a comparatively strong 2.0 % (2018: 2.4 %).

USA

For the U.S. economy, the IMF expects economic output to increase by 2.3 %, after 2.9 % in 2018. The reduced growth is also due to the disgruntlement towards some trading partners resulting from the threat or introduction of customs barriers.

GROSS DOMESTIC PRODUCT

(real change compared with previous year[1]) in %



[1] Data relating to the previous year may differ from the previous year's report due to statistical revisions.

Asia

As in the previous year, China's economic growth was affected by tense trade relations with the United States. The economy grew by 6.1 % in 2019, after growth of 6.6 % was achieved in the previous year. According to the IMF, Japan's economic output grew by 1.0 % in 2019 (previous year: 0.3 %). India, on the other hand, saw a very significant decline in its growth. Violent political unrest is currently raging on the subcontinent, which the IMF says is becoming an increasingly dangerous development in the world's largest democracy. In addition, consumption in India has weakened more than expected because rural incomes are increasing only slowly and loans are less in demand. The IMF assumes that the Indian economy grew by only 4.8 % in 2019, after 6.8 % in the previous year.

Mechanical engineering and the vacuum industry hold their own in a difficult economic environment

As reported by the German Mechanical Engineering Industry Association (VDMA), production in German mechanical engineering decreased in real terms by 1.8 % in the first ten months of 2019, while incoming orders declined by 9 % during the same period. The capacity utilization in October 2019 at 83.9% was below the long-term average of 86.2 %. The association attributes this to the fact that many customers of industry players are cautious due to the weak global economy, the trade disputes between the USA and China and the profound structural change in the automotive industry, and are currently postponing or stopping their investments. Therefore, manufacturing output will be around € 218 billion in 2019. This corresponds to a decrease of around 2.0%.

THE VACUUM TECHNOLOGY MARKET

Total market size in %
12M 2018: € 4.88 billion
Source: ISVT

With an order volume of over € 15 billion the USA was, before China, the most important sales market for German mechanical engineering companies in 2019.

The German Electrical and Electronic Manufacturers' Association (ZVEI) expects global sales in the semiconductor market to have shrunk by 12.0 % to a good 413 billion U.S. dollars in 2019. Semiconductor sales on the German market also declined by 12.0% and reached a level of around 13 billion U.S. dollars. The reasons for this were primarily the trade conflicts between the USA and China, or the USA and Europe, the upcoming Brexit and the weakening automotive market.

COURSE OF BUSINESS

Against the background of the rather subdued macroeconomic dynamics, Pfeiffer Vacuum's sales performance showed a declining trend in 2019 compared to the year 2018. While last year's forecast, based on the assumptions made at the time, was still expecting sales growth with a single-digit percentage, the summer of 2019 showed that the greatly reduced customer demand in the semiconductor and coating market, in particular, cannot be compensated for and that there would be no increase in sales. Most recently, therefore, the sales forecast specified a range of € 620 to € 640 million, which was achieved with sales of € 632.9 million in 2019. After € 659.7 million in 2018 — the best year in the company's history to date — this equals a decrease of 4.1 %.

Against the background of the declining sales development and the resulting negative economies of scale and with the continued creation of future-oriented corporate structures in the area of organizational structure and process organization, the operating profit in 2019 fell below the level of 2018. An operating profit of € 65.2 million means a resulting operating profit margin, or EBIT margin, of 10.3 %. After € 95.1 million or 14.4 % in the very successful year 2018, the consistency of margins expected in last year's forecasts was not achieved for the aforementioned reasons. The same applies to the expected development of earnings before taxes, which developed in parallel with the operating profit. By contrast, the EBIT margin of around 10 % for the 2019 financial year, which was finally forecast for September 2019, was indeed achieved.

A glance at the balance sheet of the Pfeiffer Vacuum Group reveals that the financial position remained virtually unchanged. The Group is debt-free on a net basis and continues to have a high equity ratio. The continuing good liquidity situation enables us to take the necessary steps for the successful further development of the Group on our own. All planned investments for the further development of Pfeiffer Vacuum as well as the distribution of dividends to our shareholders are also to be financed from the cash flow from operating activities in the future. Particularly as a result of a differentiated and very conscious selection and validation process and longer delivery times, the investments in 2019 of € 34.9 million did not reach the originally planned investment volume of € 40 to € 60 million.

However, we do not intend to adjust our planning and we remain committed to all existing projects. We are convinced that the medium-term corporate goals can only be achieved through these successfully implemented investments.

PROFITABILITY, FINANCIAL POSITION, AND LIQUIDITY

With a sales volume of € 632.9 million in the fiscal year, we achieved a decline of € 26.8 million or 4.1% from the record level of € 659.7 million in 2018. The reason for this development was, in particular, the more pronounced reluctance on the part of our customers in the semiconductor and coating industry, which predominantly impacted the Asia region.

In the following, we explain the sales generated in 2019 by segment, region, product and market.

With regard to the sales by segment, it should be noted that the registered office of the company that invoiced the sales is decisive for the allocation of sales. Therefore, the segment-related presentation shows the sales by subsidiaries. In contrast, sales by region include all sales in a specific region, regardless of which company of the Pfeiffer Vacuum Group invoiced the sales. Sales by segment and sales by region differ from each other to a greater or lesser extent. Sales in the Asia segment, for example, differ significantly from those in the Asia region, since the Asia segment contains only the direct sales of our Asian subsidiaries. In contrast, the Asia region also includes sales generated directly by our companies producing outside of Asia with Asian customers, for example, with customers in Japan or China.

In terms of sales by segment, sales by the German company are significantly higher than sales in Germany by region due to direct deliveries to agencies or customers outside Germany.

Sales by Segment

USA

The USA segment showed a satisfactory development in the past fiscal year 2019 and, as a result, stood out positively from the general trend in the Group. With the exception of sales in the coating sector, all markets served showed a positive development, which was particularly pleasing for industry customers and in the research & development market segment. Overall, however, the development of the US dollar exchange rate favored the development of sales with a single-digit million amount.

Europe (excluding Germany and France)

This segment also saw a decline in sales, although the development of the individual sales companies was very different. The Austrian sales company, for example, reported very encouraging development again, while the sales unit in Switzerland was below the previous year's level due to lower demand from the semiconductor industry. In Britain, sales were almost stable in the past financial year. Therefore, we continue to see no significant effects on sales revenues as a result of the U.K.'s departure from the E.U. beyond the consequences of a potential negative development in the exchange rate of the pound sterling.

Germany

In particular, due to weaker business with our customers in the coating industry, primarily system integrators in the solar sector, sales in the Germany segment declined after a successful 2018. In contrast, however, sales with customers from the heterogeneous industry market developed very positively, which partially compensated for the decline in the coating market.

Asia (excluding Republic of Korea)

As the only segment besides the USA, the Asia segment (excluding Republic of Korea) showed an increase in sales in 2019. The development here continues to be characterized by our local sales unit in China, which showed a slightly positive trend in the year under review. Significant losses in the coating market, particularly in the solar sector, were offset by growth in the other markets. For the remaining countries in this segment, the sales level was largely stable.

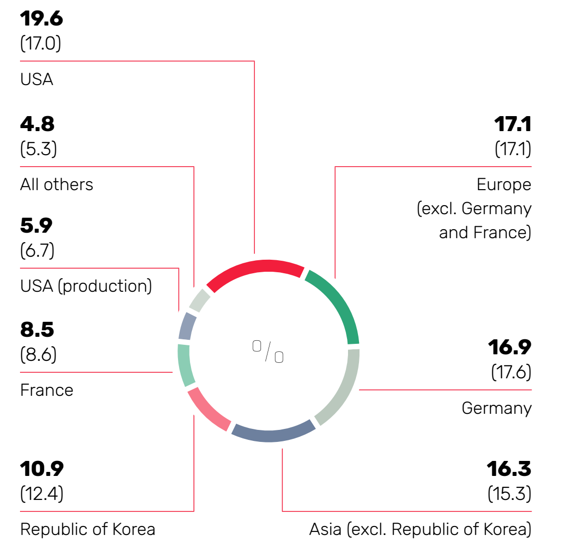
Republic of Korea

Our major semiconductor customers in Asia are addressed mainly by the production and sales company managed in the South Korea segment. As a result of the cautious demand from our customers in the past fiscal year, sales also declined accordingly.

France

After a successful 2018, sales in France showed a downward trend in 2019. In addition to the development of demand in France itself, the foreign business, mainly in China, which was conducted directly out of France was also a major factor.

SALES BY SEGMENT
in % (previous year)



USA (production)

The weaker year-on-year sales of Nor-Cal Products Inc., Yreka, USA, which is included in this segment, were largely caused – as in large parts of the rest of the group – by

SALES BY SEGMENT

	2019	2018	Change	
	in € millions	in € millions	in € millions	in %
USA	123.8	112.2	11.6	10.3
Europe (excl. Germany and France)	108.0	112.8	– 4.8	– 4.3
Germany	107.0	116.0	– 9.0	– 7.7
Asia (excl. Republic of Korea)	103.0	101.2	1.8	1.8
Republic of Korea	69.3	81.6	– 12.3	– 15.1
France	54.0	57.0	– 3.0	– 5.4
USA (production)	37.5	44.5	– 7.0	– 15.8
All others	30.3	34.4	– 4.1	– 11.8
Total	**632.9**	**659.7**	**– 26.8**	**– 4.1**

the semiconductor and coating industry. This development affected all product areas equally.

All others

This segment combines those Group companies which differ from the other segments due to segment-related characteristics (such as economic conditions, range of functions, product portfolio, sales markets, distribution channels) and thus cannot be assigned to any other segment. Accordingly, this segment has a very heterogeneous composition. The decrease of € 4.1 million is therefore characterized by a variety of different factors and largely follows the downward trend of Pfeiffer Vacuum in the 2019 fiscal year.

Sales by Region

Europe

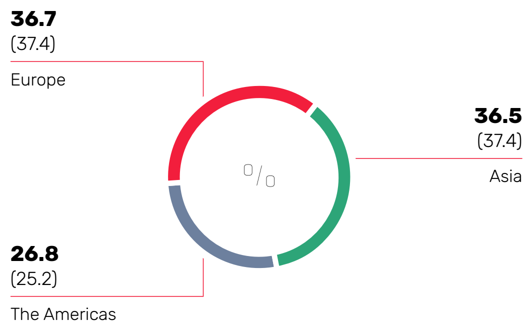
After years of a very satisfactory development, sales in Europe decreased by 6.0 % in 2019. Similarly to the rest of the Group, the decline in sales in this region was largely shaped by developments in the semiconductor and coating market segments. However, the development in the individual countries was quite different. Above-average sales declines were recorded in Germany, Switzerland and the Netherlands, in particular, while we achieved very pleasing growth in Austria and Sweden.

Asia

Due to low demand in the semiconductor and coating markets, the largest absolute decline in sales was recorded in the Asia region. Within the region, the Republic of Korea was significantly weaker than in the previous year, while we saw a comparatively smaller decline in sales in China. Particularly noteworthy was the positive development in Taiwan, where a slight increase in sales was achieved.

SALES BY REGION

in % (previous year)



The Americas

With sales of € 169.7 million achieved, the region improved slightly compared to 2018. The development of sales in the North and South America region continues to be influenced to a large extent by developments in the USA. The decline in the coating market, which was also recorded here, was largely offset by a pleasing development of sales with our customers in research & development and in industry. The share of total sales was 26.8 % in 2019 and, as a result, it completes the overall very balanced picture of the regional sales distribution in the Group.

SALES BY REGION

	2019	2018	Change	
	in € millions	in € millions	in € millions	in %
Europe	232.0	247.0	– 15.0	– 6.0
Asia	231.1	246.6	– 15.5	– 6.3
The Americas	169.7	165.9	3.8	2.2
Rest of World	0.1	0.2	– 0.1	– 42.6
Total	**632.9**	**659.7**	**– 26.8**	**– 4.1**

Sales by Product – Turbopumps and service largely stable

Turbopumps

With a sales volume of € 191.6 million, sales of turbopumps were almost maintained at the high level of the previous year (€ 192.1 million). This is a very gratifying development, since the decline in sales in the coating market was almost completely offset by corresponding growth in other markets, particularly, in the industry market segment. This development also resulted in this product group having the highest share of sales (30.3 %) in 2019.

SALES BY PRODUCT

	2019	2018	Change	
	in € millions	in € millions	in € millions	in %
Turbopumps	191.6	192.1	– 0.5	– 0.3
Instruments and components	184.6	193.7	– 9.1	– 4.7
Backing pumps	124.2	143.4	– 19.2	– 13.4
Service	112.8	111.6	1.2	1.1
Systems	19.7	18.9	0.8	4.5
Total	**632.9**	**659.7**	**– 26.8**	**– 4.1**

Instruments and components

After this product group developed very well in the previous year – due in part to the acquisition-related growth – there was a decline in 2019. The decline was recorded in all regions and markets, even though the coating and semiconductor sectors also had a significant impact here.

Backing pumps

In this product area, the strongest decline in sales was recorded in both absolute and relative terms in 2019. Similarly to sales of instruments and components, the weakness in the semiconductor and coating industry was a major reason for this development.

This was offset with sales improvements that we achieved with customers from the industry market segment, but which only compensated to a small degree for the aforementioned decline in sales.

Service

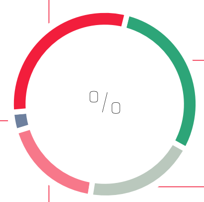
The strongly semiconductor-oriented service business shows a slightly positive trend in 2019. As often observed in the past, this is related to a rather weak development in the area of product sales. There were no regional specifics here in 2019.

Systems

Sales in this project-driven sector rose slightly from € 18.9 million in the previous year to € 19.7 million in the past fiscal year and are mainly attributable to customers from the semiconductor industry.

SALES BY PRODUCT

in % (previous year)



SALES BY MARKET

	2019	2018	Change	
	in € millions	in € millions	in € millions	in %
Semiconductor	222.6	243.9	- 21.3	- 8.7
Industry	149.5	135.3	14.2	10.5
Analytics	118.5	116.7	1.8	1.5
Coating	75.6	99.6	- 24.0	- 24.1
Research & Development	66.7	64.2	2.5	3.8
Total	**632.9**	**659.7**	**- 26.8**	**- 4.1**

Sales by Market – strong development in the industry segment

Semiconductor

The continuing weak demand in the semiconductor industry was of considerable significance for Pfeiffer Vacuum's sales development in 2019. Although the second half-year showed the anticipated recovery, it was unable to offset the weak start to the year and thus fell below the expectations at the beginning of the year 2019. In regional terms, this weakness was particularly pronounced in Asia and Europe, while overall sales in the U.S. stagnated to a large extent.

Industry

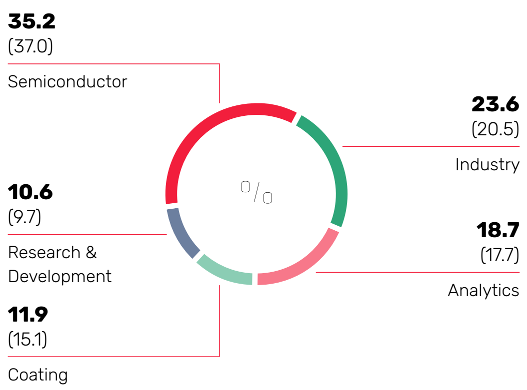
Our most heterogeneous market segment includes a broad spectrum of customers ranging from the automotive and metalworking industries to the food industry. This market developed positively beyond the economic trend in 2019 and showed very pleasing growth with an increase of 10.5 %. Due to its heterogeneity, positive and negative trends continued to balance each other out extremely well, both in individual sectors and regionally.

Analytics

After years of partially significant growth, sales in this market segment increased slightly again in 2019. Our customers in this sector use the entire product range, although there is a focus on turbopumps. The development of sales of turbopumps is therefore significantly influenced by this market segment. In regional terms, growth was achieved in Asia, while demand in Europe declined.

SALES BY MARKET

in % (previous year)



Coating

The overall decline observed in 2019 was recorded in practically all major regions and was impacted by the development in the solar industry. In the fourth quarter of the year, there was virtually no further impetus, with the result that sales in the entire market segment fell sharply during this period, leading to the weakest quarter of the past year.

Research & Development

At € 66.7 million, sales in the research & development market segment were € 2.5 million higher than in the previous year (€ 64.2 million) and thus marks a clearly positive trend over the past few years. Due to the high number of state-owned and partly state-owned research institutes, this segment develops largely independently of economic influences, but was additionally strengthened in the past year by the increased worldwide research activities.

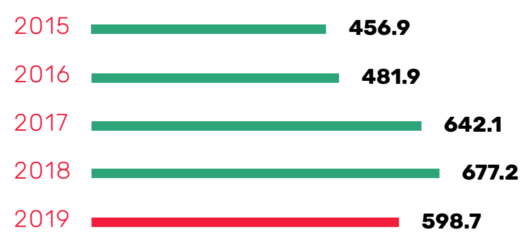
New orders and orders on hand

After new orders of € 677.2 million in 2018, this figure declined to € 598.7 million in the past fiscal year. This corresponds to a decline of 11.6 %. The book-to-bill ratio, the ratio of incoming orders and sales, was 0.95 in 2019 after a strong figure of 1.03 in the previous year.

The order volume on hand as of December 31, 2019, amounted to € 110.7 million and was thus 23.6 % lower than the previous year's figure of € 144.9 million. As in earlier years, the visibility of orders on the basis of average sales in 2019 remains unchanged at about two months.

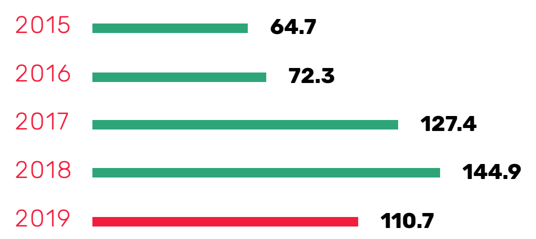
DEVELOPMENT OF ORDER INTAKE

in € millions



DEVELOPMENT OF ORDER BACKLOG

in € millions



Profitability

Gross profit also burdened by negative economies of scale

The cost of sales decreased in 2019 from € 424.5 million to € 417.0 million mainly due to the decline in sales. This decline of € 7.5 million or 1.8 % was less than the decline in sales, which was mainly due to negative economies of scale. In addition, the implementation of the growth strategy also had a negative impact on earnings in this area. Overall, this resulted in a reduction in the gross margin, i.e., the ratio of gross profit to sales. After 35.7 % in the previous year, the gross margin was at 34.1 % in 2019.

In absolute terms, the gross profit of € 235.2 million in the previous year declined by € 19.3 million to € 215.9 million in 2019. In addition to the influences already mentioned, the weaker euro over the course of the year also had a positive impact on the development of the gross profit and gross margin.

GROSS PROFIT
in € millions

GROSS MARGIN
in %

Selling and administrative expenses

Total selling and administrative expenses in 2019 amounted to € 124.0 million. After € 117.5 million in the prior year, this represents an increase of € 6.5 million, roughly half of which relates to the development of administrative and general costs and half to sales and marketing costs.

This development is basically due to the implementation of the growth strategy. In addition to the creation of new Group structures, the focus on further business growth and the implementation of a Group-wide uniform IT system landscape that started in this fiscal year also contributed to this.

Overall, the share of selling and administrative expenses in total sales rose from 17.8 % in the previous year to 19.6 % in fiscal 2019.

Research and development expenses remain at a high level

As a high-tech company, we view research and development expenses as an indispensable investment for the future. Therefore, we continue to focus on innovation in vacuum technology through our own research projects and by consistently fostering teaching and science. Accordingly, research and development expenses in 2019 were again higher than in the previous year.

Following € 28.7 million in 2018, a total of € 29.6 million was recorded in the past fiscal year. Due to the decline in sales, the percentage share of research and development costs amounted to 4.7 % after 4.3 % in the previous year. Adjusted for subsidies for expenses for research and development services included in other operating income in the amount of € 3.1 million (previous year: € 3.6 million), the net research and development expenses totaled € 26.5 million in fiscal 2019 (previous year: € 25.1 million).

Other operating income and expenses

As in previous years, other operating income and other operating expenses (Note 9) principally includes the Group's foreign exchange gains and losses. The other operating income of € 7.8 million in the year 2019 (previous year: € 11.3 million) in addition contained subsidies for expenses of € 3.1 million (previous year: € 3.6 million) and miscellaneous income of € 0.6 million (previous year: € 2.3 million), principally resulting from gains on disposal.

In 2019, the other operating expenses of € 4.9 million (previous year: € 5.2 million) also contained virtually only the foreign exchange losses recorded. After € + 0.8 million in the previous year, the net foreign exchange results in 2019 stood at € – 0.2 million. The balance of other operating income and expenses fell overall from € 6.1 million to € 2.9 million in the year under review.

Operating profit

At € 65.2 million, the operating profit in fiscal 2019 was € 29.9 million below the previous year's figure of € 95.1 million. This corresponds to a decrease of 31.5 % compared to the record figure of the previous year. This development resulted, in particular, from negative economies of scale, the continued implementation of the growth strategy and the lower balance of other operating income and expenses. Personnel expenses, which are one part of all functional costs and increased from € 198.9 million in the previous year to € 211.0 million in the past year 2019, are a contributing factor to the earnings development. The measures taken to implement the growth strategy are also reflected here. The operating profit attained of € 65.2 million corresponds to an operating profit margin or EBIT margin of 10.3 % (previous year: 14.4 %). The EBIT margin anticipated in the previous year's forecast at approximately the level of 2018 was not able to be achieved for the reasons outlined above. Nevertheless, the EBIT margin attained of 10.3 % corresponds to the last forecast level of around 10 %.

OPERATING PROFIT
in € millions

EBIT MARGIN
in %

OPERATING PROFIT PER EMPLOYEE
in K €

With regard to the segments it can be seen that the two large production sites in Germany and France with 43.1 % and 13.0 % account – as in the previous year – for the largest part of the overall operating profit (previous year: 47.0 % and 16.7 %). However, negative economies of scale resulting from declining sales caused a relative decrease, while Europe (excluding Germany and France) recorded another increase in operating profit share from 9.7 % in 2019 to now 12.0 %. Despite of the overall weaker sales development the portions in the Republic of Korea and Asia (excluding the Republic of Korea) were increased from 6.3 % and 12.1 % in the previous year to 9.6 % and 14.8 % in the year under review. This applies also to the USA segment (10.0 %, previous year: 6.1 %), while the portion of the USA (production) segment was adversely affected by the sales development and thus declined.

The operating profit before depreciation and amortization (earnings before interest, taxes, depreciation and amortization, EBITDA, or operating profit without depreciation and amortization (for tangible and intangible assets) in 2019 amounted to € 84.6 million. After € 113.7million in the previous year, this represented a decrease of € 29.1 million. For better comparability with the previous year, the depreciation/amortization of € 19.5 million (previous year: € 18.6 million) was determined without taking into account the amortization of right of use assets.

Financial income – influenced by the application of new accounting rules

With interest rates virtually unchanged, the financial result of – € 0.6 million was slightly below the previous year's level (– € 0.5 million) (Note 10). The new accounting rules for leasing contracts to be applied for the first time from the reporting year 2019 meant that an interest component from these contracts must now be shown (Note 3). With additional interest expenses of € 0.1 million, the effects on the Pfeiffer Vacuum Group are negligible.

Income taxes

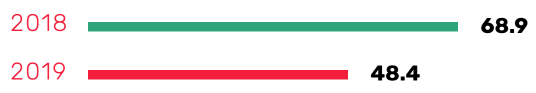
After the tax ratio had been 27.2 % in 2018 this ratio was 25.0 % in the fiscal year 2019. There were no significant changes. With a similar relative burden and as a result of lower earnings before taxes, tax expenses in absolute terms decreased by € 9.5 million from € 25.7 million in 2018 to € 16.2 million in 2019 (Note 24).

Net income

Following an absolute record level of after-tax earnings in the previous year of € 68.9 million, this figure fell to € 48.4 million in 2019 as a result of the aforementioned developments. This corresponds to a decrease of € 20.5 million or 29.8 %.

INCOME BEFORE TAXES
in € millions

NET INCOME
in € millions



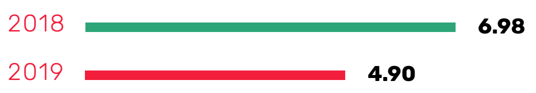
As a result, the net return on sales, i.e., the ratio of net income to sales, fell from 10.4 % in the previous year to 7.6 % in 2019.

Earnings per share

Since there were no changes in the number of shares outstanding in the year under review, earnings per share changed in line with net income. After the record value of € 6.98 in the previous year, a total of € 4.90 was achieved in 2019 (Note 35).

EARNINGS PER SHARE

in €



Financial position

Investment program and new accounting rules increase total assets

The development of the financial position of the Pfeiffer Vacuum Group on the assets side is due in particular to the increase in property, plant and equipment from € 126.1 million in the previous year to € 154.7 million (Note 12). Mainly decisive for this, were the increased acquisitions of fixed assets as a result of the investment program, which — taken in isolation — led to an increase in this balance sheet item by € 29.1 million. In addition, the first-time application of the new accounting rules for rental and leasing contracts (IFRS 16 "Leases") (Note 3) resulted in the rights of use resulting from rental and leasing contracts being recognized as an asset.

This led to a further increase in property, plant and equipment of € 15.4 million. The effects of the first-time application of IFRS 16 are explained in detail in the Notes to the Consolidated Financial Statements (Note 3). In contrast, the lower volume of business led to a decrease in inventories and trade accounts receivable. Inventories were reduced from € 133.2 million in fiscal 2018 to € 128.5 million (Note 15), while trade receivables decreased from € 92.2 million to € 87.9 million (Note 16). Cash and cash equivalents rose from € 108.4 million at the end of fiscal 2018 to € 112.0 million on December 31, 2019.

PFEIFFER VACUUM CONSOLIDATED BALANCE SHEETS

(Abstract)

	Dec. 31, 2019	Dec. 31, 2018	Change
	in € millions	in € millions	in € millions
Total non-current assets	**300.8**	**268.4**	**32.4**
Cash and cash equivalents	112.0	108.4	3.6
Other current assets	246.8	247.4	– 0.6
Total current assets	**358.8**	**355.8**	**3.0**
Total assets	**659.6**	**624.2**	**35.4**
Equity	**393.4**	**372.2**	**21.2**
Total current liabilities	**126.7**	**130.9**	**– 4.2**
Total non-current liabilities	**139.5**	**121.1**	**18.4**
Total liabilities	**266.2**	**252.0**	**14.2**
Total shareholders' equity and liabilities	**659.6**	**624.2**	**35.4**

A detailed analysis of the development of cash and cash equivalents can be found in the section “Liquidity” (see page 046) below. Overall, the balance sheet total assets rose by € 35.4 million from € 624.2 million to € 659.6 million as of December 31, 2019.

Equity increases by € 21.2 million to € 393.4 million

On the liabilities side of the balance sheet, the first-time application of IFRS 16 (Note 3) led to an increase in long and short-term financial liabilities, which from fiscal 2019 have to be shown in this item as liabilities from rental and leasing contracts that have been entered into. In total, these liabilities increased from € 60.3 million in the previous year to € 73.6 million at the end of fiscal 2019 (Note 23 and Note 30). As a result of the again lower discount rate, pension provisions rose from € 55.6 million to € 64.1 million (Note 25). However, the most significant change compared to the previous year was equity (Note 19). It increased by € 21.2 million from € 372.2 million to € 393.4 million. This net increase was due to the net income generated in the year under review (€ 48.4 million) and the dividend payment to the shareholders of Pfeiffer Vacuum Technology AG (€ 22.7 million) (Note 20) as well as the net decrease by € 4.4 million in other equity components. The development of other equity components was mainly due to the effects of the foreign exchange conversion and the valuation of separately recorded pension provisions recorded directly as equity on the balance sheet date. Due to the proportionately roughly equal increase in equity and total assets, the equity ratio is unchanged at 59.6 %. The Pfeiffer Vacuum Group therefore maintains its above average equity base as compared to the industrial sector. The existing financial liabilities are below average compared to the balance sheet total and do not restrict the Group’s financial flexibility.

The Group remains debt-free on a net basis – despite the additional liabilities from rental and leasing contracts to be reported under IFRS 16.

The decline in the volume of business was also the main reason for the reduction in net working capital by € 3.6 million to € 165.8 million.

Liquidity

Following € 62.5 million in the year 2018 the operating cash flow in the fiscal year 2019 totaled € 65.4 million. This represents an increase by € 2.9 million or 4.5 %. In fact income before taxes decreased compared to 2018 (€ - 30.1 million) but in parallel the decrease in working capital and provisions led to an increased cash-inflow. Additionally it has to be considered that the first-time application of IFRS 16 resulted in a shift of the repayment amounts of rental and leasing payments to the cash flow from financing activities while they had been recorded in operating cash flow formerly. This had a positive impact of € 5.3 million on operating cash flow. Overall, cash flow per share thus increased from € 6.34 in 2018 to € 6.63 in the year under review. The further increased level of this figure still represents Pfeiffer Vacuum Group’s ability to internally generate all cash required to fund operating activities and strategy implementation.

CHANGE IN NET WORKING CAPITAL

	Dec. 31, 2019	Dec. 31, 2018	Change
	in € millions	in € millions	in € millions
Inventories	128.5	133.2	-4.7
Trade accounts receivable[1]	90.7	92.5	-1.8
Trade accounts payable[2]	-53.4	-56.3	2.9
Net working capital	**165.8**	**169.4**	**-3.6**

[1] including contract assets
[2] including short-term contract liabilities

CASH FLOW MARGIN
in %

CASH FLOW PER SHARE
in €

As a consequence a of the investment program as pronounced in 2018 and adjusted afterwards according to which a total of € 150 million was to be invested within the Pfeiffer Vacuum Group in the following years, capital expenditures compared to the years before 2018 were again high in 2019, exceeded the 2018 level of € 33.7 million and totaled € 34.9 million. As in the year before the capital expenditures were the main determinant for the cash-out flow from investing activities in this period. Further details on the composition of the investment volume can be found in the section "Capital expenditures and financing" below (see page 047). Capital expenditure was offset by proceeds from the sale of property, plant and equipment amounting to € 0.6 million (previous year: € 2.2 million), resulting in an overall cash outflow from investment activities of € 34.3 million (previous year: € 31.5 million).

In the year under review, the first-time application of the regulations for accounting for leases (IFRS 16) (Note 3) resulted in the redemption portion of rental and leasing installments being shown within the cash flow from financing activities (€ 5.3 million). Together with the dividend payment of € 22.7 million (previous year: € 19.7 million) (Note 20) and newly taken on financial liabilities of € 0.1 million (previous year: repayments of € 0.1 million), the cash outflow from financing activities totaled € 27.9 million in 2019. In the previous year, the cash outflow from financing activities was largely characterized by the dividend payment and totaled € 19.8 million.

Taking currency effects into account, the total cash inflow in 2019 was € 3.6 million (previous year: € 11.0 million) and led to a 3.3 % increase in cash and cash equivalents to € 112.0 million.

At the balance sheet date, Pfeiffer Vacuum also had unused credit lines amounting to € 13.7 million (previous year: € 13.9 million). Free liquidity is invested in interest-bearing financial instruments where possible. A cash management system is in place in the Group companies in Asslar and Annecy to bundle liquidity. Conservative and largely short-term investment vehicles, such as money market or time deposits at financial institutions, dominate where financial investments are concerned. Speculative transactions are not conducted. Both liquidity management as well as steering of the interest-rate change risk are thus primarily handled at Corporate Headquarters, taking into consideration all relevant matters within the corporate Group (Note 33 and Note 34).

REPRESENTATION OF CASH FLOW FROM OPERATING ACTIVITIES
(Abstract)

	2019	2018
	in € millions	in € millions
Earnings before taxes	64.5	94.6
Income taxes paid	– 18.7	– 22.7
Depreciation/amortization	24.2	18.6
Other non-cash changes	3.3	0.1
Effects of changes in assets and liabilities	– 7.9	– 28.1
Net cash provided by operating activities (operating cash flow)	**65.4**	**62.5**

Capital expenditures and financing

As planned, the operating business, investments made in 2019 and the increased dividend payment were solely financed by the Group's own funds. It is currently planned to continue to finance the strategy-supporting investment plan approved by the Board of Management and the Supervisory Board purely from internal funds. The inclusion of financial liabilities in future cases should only be examined with a view to financing major acquisitions. This approach, which had already been implemented in the past, resulted in financial liabilities of € 60.1 million as of the balance sheet date December 31, 2019. Additional financial liabilities resulted from the aforementioned first-time application of IFRS 16. Capital expenditure in 2019 amounting to € 34.9 million (previous year: € 33.7 million) was attributable, among other things, to modernization measures and capacity expansions at the Asslar (Germany), Annecy (France) and Wuxi (China) production sites. In addition, necessary replacement investments were made in machinery and operating and office equipment. The investment volume of € 34.9 million was above the high level of the previous year (€ 33.7 million). However, due to the differentiated evaluation carried out in the year under review and, if necessary, adjustment of all investment projects and also due to long delivery times for measures already commissioned, the capital expenditure of € 40 to 60 million originally forecast was not achieved. Nevertheless, Pfeiffer Vacuum remains committed to the planned measures. We refer you in this respect to the relevant comments in the Outlook.

Allocation of capital expenditures for tangible and intangible assets to the reported segments compared to the previous year is comprised as follows:

CAPITAL EXPENDITURES BY SEGMENT

	2019	2018
	in € millions	in € millions
France	10.9	8.0
Germany	9.8	7.3
Asia (excluding Republic of Korea)	3.8	2.8
Republic of Korea	2.5	1.9
Europe (excluding Germany and France)	0.6	0.5
USA	0.5	5.0
USA (production)	0.2	0.3
All others	6.6	7.9
Total	**34.9**	**33.7**

The balance sheet of the Pfeiffer Vacuum Group has long demonstrated an above industry average equity base, which is at a high level despite the burdens from the reporting of liabilities from rents and leases as a result of the first-time application of IFRS 16. The equity ratio of 59.6 % at the end of the previous year was unchanged and thus remains above average for the mechanical engineering sector. The ratio of current assets as the ratioquotient of short-term assets to short-term liabilities amounted to 283 % (previous year: 272 %) and continues to reflect the further improved financing concept and high credit rating of Pfeiffer Vacuum.

The continued high capital expenditure of € 34.9 million (previous year: € 33.7 million) and a slightly higher depreciation/amortization volume of € 19.5 million in 2019 resulted in a depreciation expense ratio (ratio of capital expenditure to depreciation/amortization) of 180 % compared to 181 % in the previous year (without taking the influence of rights of use into account).

CURRENT ASSETS RATIO

in %

DEPRECIATION EXPENSE RATIO

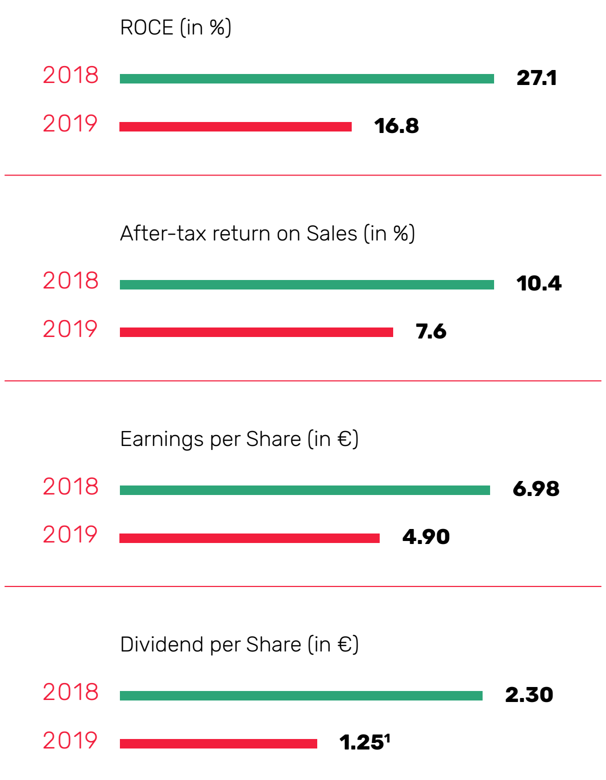
in %

Value Reporting

Due to the weaker sales volume and the expenses in connection with the strategy and transformation process which the company is currently carrying out, the key figures of value reporting show a declining development. In addition to the ROCE (return on capital employed; operating profit relative to the total of fixed assets and working capital) as a parameter for the yield on capital employed, the Company's return on sales and earnings per share are also presented here.

The Management Board therefore confirms the medium-term goals of the company, and also the projected achievement of an EBIT margin of more than 20 % in 2025. In 2020 we expect increased expenses in connection with the realization of the growth strategy. This is due to the strategy implementation, which will be particularly intense during 2020, and also due to increased investments. As a result, the management board proposes an adapted dividend pay-out of € 1.25 per share (see Outlook page 079 and Note 20). The resulting pay-out ratio would be of 25.5 % (prior year 33.0 %).

KEY VALUE REPORTING INDICATORS



[1] Subject to approval by the Supervisory Board and the Annual General Meeting

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NON-FINANCIAL CONSOLIDATED STATEMENT 2019

NON-FINANCIAL CONSOLIDATED STATEMENT 2019

LEGAL FRAMEWORK OF THE NON-FINANCIAL CONSOLIDATED STATEMENT

For the 2019 fiscal year, Pfeiffer Vacuum Technology AG ("Pfeiffer Vacuum") prepared a non-financial Group Statement in accordance with the "Law to Strengthen the Non-Financial Reporting of Companies in their Management Reports and Group Management Reports" ("CSR-RUG"). This report meets the requirements of §§ 315b and 315c in conjunction with 289c to 289e of the German Commercial Code ("HGB"). In the same way as for financial reporting, it shows for the entire Group how material non-financial issues are managed. Information that does not relate to the entire Group is indicated accordingly.

The contents of this statement were audited by PricewaterhouseCoopers GmbH Wirtschaftsprüfungsgesellschaft, Frankfurt am Main, on behalf of the Supervisory Board. A business audit was performed to obtain limited assurance in accordance with the International Standard on Assurance Engagements (ISAE) 3000 (Revised). The audit report is found following the Independent Auditor's Report of the Consolidated Financial Statements and of the Group Management Report. References to statements outside the Group Management Report are additional information and are not part of the audit of the separate non-financial Group Statement.

As in the previous year, we have waived the option of using a reporting framework such as the Global Reporting Initiative (GRI) this year. In the near future, we will select a framework that is a perfect fit for our future sustainability strategy. Corporate social and environmental responsibility was established as a separate strategic focus area in 2019 and will be further expanded in 2020. In particular, a global interdisciplinary CSR team will be set up with managers from the specialist areas of Purchasing, Research & Development, Compliance, Communications, Environment and Occupational Safety and Health.

The Group's sustainability strategy is essentially based on three pillars: Employees, responsible operations and innovation, and is intended to provide solutions to optimize the impact on ecological, economic and social aspects.

Material issues

The present statement provides information on the main developments in the 2019 fiscal year in respect of the five legally required aspects of environmental issues, respect for human rights, employee concerns, social issues and the fight against corruption and bribery. The aspect relating to social issues was not considered to be of material significance and is included in the section on employee concerns.

Pursuant to § 289c of the German Commercial Code ("HGB"), disclosures must be made that are essential for an understanding of the course of business, business results and business situation and the effects on the five aspects. The management concepts in each case, including the due diligence applied, the results of the concepts and key performance indicators, must be described. According to § 289c (3) Nos. 3 and 4 of the German Commercial Code ("HGB"), material risks associated with business activities, products and services and which may very likely or will have serious negative effects on the five aspects must also be disclosed.

This report covers a number of management concepts and key figures for the Group's main production sites. These include the German sites in Asslar, Göttingen and Dresden, Annecy in France, Cluj in Romania, Asan in South Korea, Yreka and Nashua in the USA and Ho Chi Minh City in Vietnam.

The business operations of the Pfeiffer Vacuum Group are influenced by a variety of non-financial factors. By managing these issues appropriately, Pfeiffer Vacuum can create an important foundation for long-term corporate success.

For this statement, the non-financial issues to be reported on were identified for the first time in 2017 within the framework of a three-step materiality analysis and were reassessed in 2019. An external identification of the material issues was followed by an internal analysis with prioritization and subsequent validation and review.

For the external analysis, a comprehensive list was compiled of relevant topics that occur in the Group's value chain and which are taken into account by sustainability standards such as GRI, relevant rating agencies and institutional investors. Managers and employees from a wide range of specialist areas scrutinized this list in terms of its impact on society and the environment and its relevance to business.

The results of this survey covered the topics of compliance, energy, water, diversity and equal opportunities, supply chains and products.

These were evaluated and documented with measures and risks. In a final evaluation, those issues were prioritized where business activities have a high impact on the environment and society and which are also of major business relevance for the Group.

For the sake of completeness, the aspect of social concerns is included with the associated issue in the chapter employee concerns. This also applies to local engagement and commitment to society as well as to the Group's impact in relation to employee concerns.

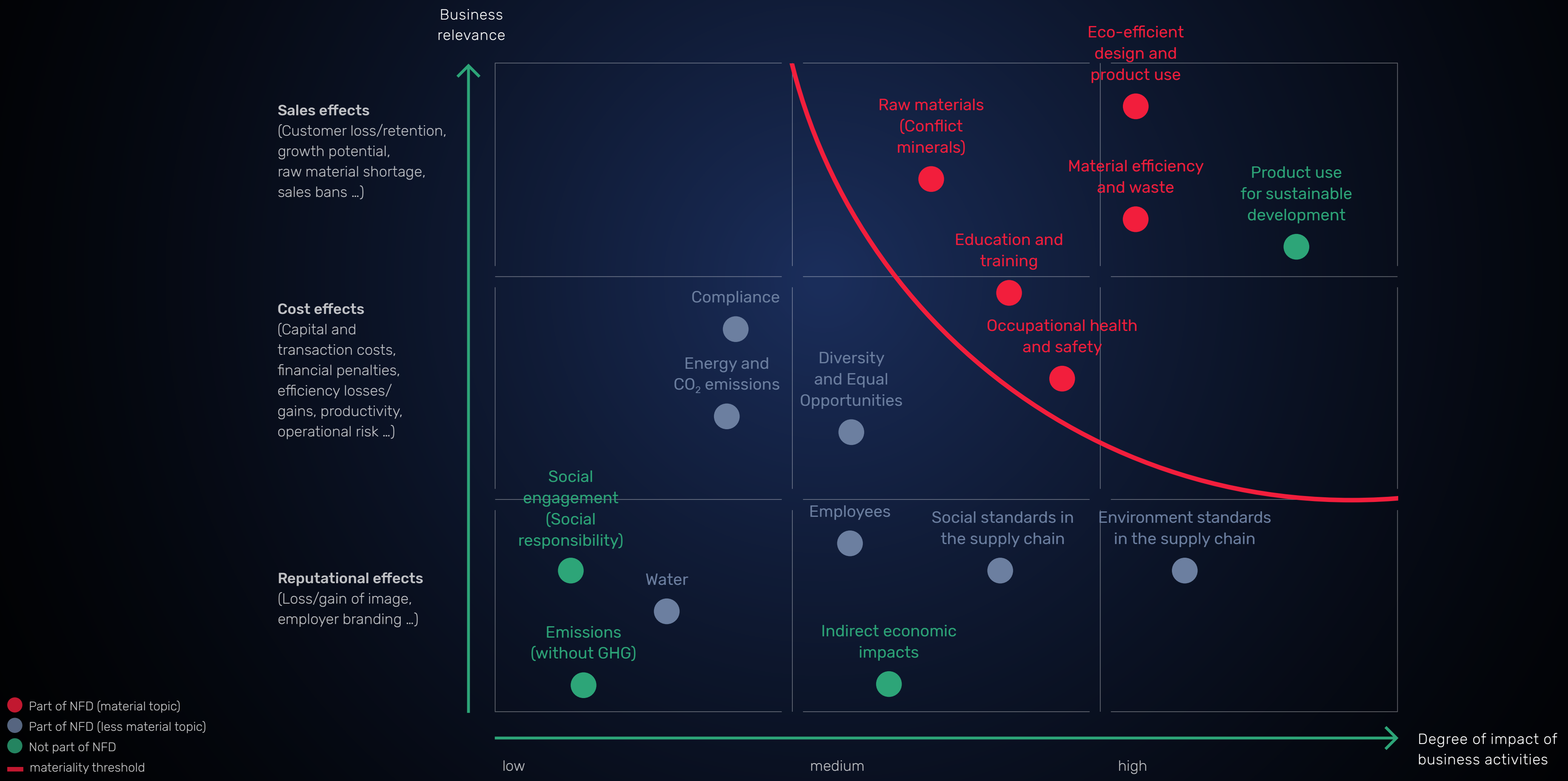
In the following table, the main topics are assigned to the four aspects to be reported on.

ASPECTS AND ISSUES OF THE NON-FINANCIAL CONSOLIDATED STATEMENT

Environmental concerns	Respect for human rights	Employee concerns	Combating corruption and bribery
Energy	Conflict minerals	Occupational health and safety	Compliance
Environmental friendliness (reduce materials, recycle water) and energy efficiency of products	Social standards in the supply chain	Employee structure	
Environmental standards in the supply chain		Diversity	
		Employee qualifications/training	
		Further development and training	
		Social responsibility	

The following graphic shows the current materiality analysis.

MATERIALITY OF SUSTAINABILITY TOPICS



Risk assessment according to CSR-RUG

Pfeiffer Vacuum has a risk management system that is established on a Group-wide basis in order to identify risks at every level of the organization and to take appropriate measures to counter them. During the year under review, after taking into consideration risk mitigation measures, we were unable to identify any risks, that are associated with our business operations, our business relationships as well as our products and services and that are very likely to, or will have serious negative impacts on the aspects presented in the table of aspects and issues of the non-financial consolidated statement. For more information, refer also to the section entitled "Opportunities and risk report" (see page 064).

ENVIRONMENTAL CONCERNS

Products from Pfeiffer Vacuum have an impact on the environment in all phases of their life cycle, from development through to disposal. Raw materials, semifinished products, pre-products, energy and water are required in connection with manufacturing processes. The consumption of resources begins right from the supply chain with procurement. During the manufacturing phase, electricity, water and materials such as stainless steel, aluminum and grey cast iron are consumed at all production sites and waste is generated, for example in the form of metal chips. In the utilization phase, the main factors are electricity consumption, noise emissions and material properties in the respective application. Continuous improvement of environmental management at the Annecy, Asslar and Asan production sites is supported by certification to the environmental management standard ISO 14001.

Environmental standards in the supply chain

Pfeiffer Vacuum procures pre-products from a large number of suppliers. Inadequate environmental standards on the part of suppliers can result in air, soil and water pollution, as well as climate damage or loss of biodiversity. For this reason, Pfeiffer Vacuum strives to collaborate with partners along the entire supply chain who observe and demonstrably manage environmental regulations, for example through an environmental management system.

There was no uniform Group-wide approach at Pfeiffer Vacuum to environmental standards in the supply chain in the reporting year. However, responsibility for managing the corporate supply chain was organized globally in early December 2019. Global networking of management and standardization of supplier policies are planned for the coming years.

At Pfeiffer Vacuum's major manufacturing locations, the primary responsibility for ensuring compliance with environmental standards in the supply chain is decentralized and lies with the employees of the respective procurement department. They require suppliers to comply with at a minimum with the legal environmental regulations. There is a code of conduct (or corresponding agreements with suppliers) for this purpose, which calls for compliance with statutory requirements and the implementation of environmental measures. Suppliers who are considered for the series delivery of production-related parts must accept these conditions.

Yreka and Ho Chi Minh City use a supplier questionnaire to evaluate potential new suppliers. In Annecy, Asslar and Göttingen, the agreements also stipulate that the development or use of a suitable environment management system is expected. This aims to reduce the environmental impact as far as possible.

A binding obligation on suppliers to comply with criteria that go beyond the legal requirements has not yet been established. A software solution for managing global supply chain relationships was selected in 2018 and introduced at the Annecy site. The integration of further locations is planned for the coming years. This will ensure that suppliers to every production location will be subject the same binding requirements relating to environmental regulations and standards.

Supply chain security can only be guaranteed if the mandatory requirements are checked for compliance. The main production sites monitor compliance with environmental standards by carrying out quality audits at the individual suppliers' sites. The audits are based on the international quality and environmental certification standards such as ISO and OCHAS. Thus, in addition to a catalog of requirements, it is also examined whether certified management systems exist or whether any conspicuous features can be identified during site inspections.

With the support of a software solution linked to leading global risk management systems, counterparty risks, country risks, environmental risks, and geopolitical events are monitored and checked for their impact on the Group's supply chains. Changes in risk assessment and risk situations are communicated to all relevant areas of the Group. This enables Group-wide supply chains and suppliers to be assessed for risks in real time and measures to limit risks to be taken immediately.

Energy

The operation of the production facilities and administration buildings requires energy. This is not only a cost factor, but also causes harmful emissions in the form of CO_2 and other greenhouse gases. Even though the manufacture of vacuum pumps is not very energy-intensive compared to the mechanical engineering industry, Pfeiffer Vacuum reports on energy management in view of the overall social relevance of the topic.

In 2019, a global energy management office was created which, in a first step, recorded energy sources and consumption figures centrally for all locations in order to analyze their resource efficiency and reduction in energy use. On the basis of the results of this analysis, measures will be derived for optimizing energy consumption over the coming years.

The current local control of energy consumption will therefore be supported by the global energy management officer in the future.

In the reporting year, work began at the Annecy and Asslar sites to install energy consumption meters with measuring systems for analyzing and controlling energy requirements. The metering systems are equipped with sensors for diagnostics and predictive maintenance. The aim is to implement these metering systems throughout the Group. Pfeiffer Vacuum strives to achieve an increase in energy efficiency of between 10 % and 20 % when making new equipment purchases. New buildings, as well as renovations and extensions to existing buildings, such as the expansion of production operations in Annecy that commenced in 2019, are planned and implemented in an energy-efficient manner. For the coming years, Pfeiffer Vacuum is seeking to modernize and expand and run operations in an energy and resource efficient manner.

For environmentally friendly energy production, there is a combined heat and power plant in Asslar and a local biomass plant in Annecy. Photovoltaic systems for their own consumption and for feeding into the grid are installed at the locations in Asslar and Culemborg and are planned for Dresden. Further energy-saving measures will be implemented throughout the Group in the coming years. The installation or replacement of conventional light sources with LED lighting at the locations in Asslar, Annecy, Asan and Yreka was continued in the reporting year. A briquetting plant has been in operation at the Asslar site since 2019, which briquettes aluminum chips from the production process for efficient disposal. In addition, to lower CO_2 consumption during transportation, this measure enables the Group to achieve a higher resale value for the waste materials.

Certified energy management systems in accordance with ISO 50001 and/or 14001 are in place at the Asan, Asslar and Annecy sites. Group-wide standardization is planned for the coming years. Local energy officers at the sites coordinate all measures and obligations to meet local statutory requirements. At locations where services were provided by external energy service providers in previous years, the company has employed its own staff since 2019. Evaluations and analyses of energy consumption are discussed in energy circle meetings with related departments such as Facility Management, Purchasing and Engineering, and specific improvement measures are identified. Regular energy audits serve to comprehensively analyze and review the measures. In addition, promising employee suggestions are welcomed.

The primary source of energy within the Pfeiffer Vacuum Group is electricity. A further energy source for obtaining heat is gas in the form of natural gas and/or liquified gas.

The following table shows the consumption of electricity and natural gas at the key production sites. A total of 35,958 MWh of electricity and 9,297 MWh of gas were consumed in the reporting year.

One of the main impacts of energy consumption is the emission of greenhouse gases such as carbon dioxide (CO_2), which is shown in the following table. The preparation of a CO2 consumption balance is a complex process that is accompanied by many different determinants. Pfeiffer Vacuum began reporting on its CO_2 emissions in the 2018 fiscal year. The basis for assessment is determined using the internationally recognized calculation standard of the Greenhouse Gas Protocol. Pfeiffer Vacuum reports direct emissions from the operation of its systems and buildings, as well as indirect emissions from purchased energy, on this basis.

At the production sites in Europe, Asia and the USA listed in the table below, 13,107 tons of CO_2^e (carbon dioxide equivalents) were emitted in the electricity and natural gas consumption categories under consideration. An expanded inventory, data collection and reporting of greenhouse gas emissions is planned for the coming years.

ENERGY CONSUMPTION IN 2019

	Europe	Asia	USA	
Consumption category	Sites Asslar, Annecy, Göttingen and Cluj	Sites Asan and Ho Chi Minh City	Sites Yreka and Nashua	Total
	in MWh	in MWh	in MWh	in MWh
Electricity	24,392	7,135	4,431	**35,958**
Natural gas[1]	7,065	156	2,076	**9,297**

[1] Yreka uses LPG instead of natural gas

CO_2^e-EMISSIONS IN 2019

	Europe	Asia	USA	
Emissions per consumption category	Sites Asslar, Annecy, Göttingen and Cluj	Sites Asan and Ho Chi Minh Stadt	Sites Yreka and Nashua	Total
	in t	in t	in t	in t
CO_2^e from electricity	6,086	3,932	973	**10,991**
CO_2^e from natural gas[1]	1,434	32	650	**2,116**

[1] Yreka uses LPG instead of natural gas

Water

The supply of drinking water is a global challenge of increasing relevance. Water use is managed decentrally at the production sites, and global water management has not yet been established. In fiscal 2019, Pfeiffer Vacuum recorded its Group-wide water consumption for the first time. The data will create transparency and a basis for further analyses. Given the increasing relevance of the topic of water, particularly in terms of the adequacy of global supply and availability, Pfeiffer Vacuum plans to comprehensively analyze and further track its Group-wide water consumption. Water is employed in manufacturing and cleaning processes, as a coolant, industrial water or drinking water within the corporate Group.

We will develop our water consumption over the next few years and report on this accordingly.

Environmental friendliness and energy efficiency of products

A variety of resources are consumed during the manufacturing phase of our products. In terms of environmental impact, it is the choice of materials in product development and the use of materials in the production process that are decisive.

Pfeiffer Vacuum has significant influence over material efficiency and the environmental compatibility of its products during the product development process. In order to manage research and development throughout the corporate Group, a Global Development Organization has been in place since 2019, which reports to the CEO. As a highly innovative and responsible company, Pfeiffer Vacuum will be defining the goals of resource efficiency, reduction of material consumption and emissions in the corporate process chains in the coming years. Strategic measures include Group-wide coordination and steering of global research and development activities, as well as the advancement of digitization technologies. New technologies such as artificial intelligence, augmented reality and big data play an important role in this context.

Due to the individuality and physical limitations of our different product technologies, there are no Group-wide targets for energy, environmental or resource efficiency. However, depending on the area of application and the manufacturing process, there are different specifications to take into account resource and environmental protection aspects. The specifications include, for example, increasing energy efficiency, testing the environmental friendliness of the materials used, reducing the amount of raw materials used, processes to reduce emissions and waste, and the avoidance of hazardous substances. By using an appropriate product design, products can be developed, for example, with smaller dimensions and modern drives, which allow for savings and conservation of the materials and resources used.

In the production process, Pfeiffer Vacuum strives to increase material efficiency and to handle all materials employed in an environmentally compatible manner at its principle production sites. Increasing the material efficiency of aluminum, for example, would result in a reduced environmental impact (under the same production conditions) since large quantities of energy are required for aluminum manufacturing and, in some cases, environmentally hazardous waste materials are produced. Pfeiffer Vacuum adheres to statutory requirements for hazardous materials to ensure the environmentally compatible handling of the raw materials and pre-products used. Examples here include the EU's REACH chemicals directive and the RoHS directive for restricting the use of certain hazardous substances in electrical equipment.

In addition to the environmental aspects mentioned above in the manufacturing phase, the energy efficiency of the products during the utilization phase is also an important design aspect. This is specified in internal procedural instructions at the two development sites in Asslar and Annecy. As a voluntary commitment, each new product development is required to reduce the energy consumption during product use by 5 % compared with the previous model. In 2019, a correspondingly improved energy balance was achieved for two product lines.

By using innovative control and drive technology, energy savings of up to 90 % can be achieved depending on the application.

RESPECT FOR HUMAN RIGHTS

Conflict minerals

Pfeiffer Vacuum customers are increasingly demanding proof that the products they purchase are "conflict-free," that is, that they do not contain any conflict minerals. The term "conflict minerals" refers to the raw materials tantalum, tin, gold and tungsten, if their extraction and trade in these raw materials contribute to financing or otherwise supporting armed groups in the Democratic Republic of Congo or its neighboring countries. These conflicts endanger human rights and the protection and development of local communities. Pfeiffer Vacuum is facing up to its responsibility in the supply chain within the framework of a voluntary commitment to avoid conflict minerals.

Pfeiffer Vacuum utilizes the potentially critical minerals tantalum, tin, tungsten and gold, primarily in connection with bought-in electronic components. The Company therefore strives to reduce the likelihood of conflict minerals being used through employing appropriate processes.

Since Pfeiffer Vacuum does not procure metals directly from the smelters, the supply chains are examined in collaboration with suppliers. At the manufacturing locations with their own procurement departments in Asslar, Annecy, Yreka and Ho Chi Minh City, suppliers are asked about their use of conflict minerals. If the potential use of conflict minerals is confirmed, suppliers are obliged to implement measures within a reasonable period of time to ensure compliance. If necessary, conflict-free components are procured from a second supplier.

Due to the high degree of complexity and dynamic nature of the issue, Pfeiffer Vacuum has outsourced the process at its Asslar facility to a specialized service provider and implemented software in 2019. This should promote the necessary transparency and completeness of the information. This software will also be rolled out to other parts of the Group in the coming years. For its Asslar site, Pfeiffer Vacuum is also pursuing the objective of continuing to utilize only raw materials that are originate from certified smelters in accordance with the appraisal of the Responsible Minerals Initiative (RMI). Certified smelters extract ores and minerals in accordance with defined environmental and social standards. Currently, unobjectionable but non-certified smelters are also permitted.

The companies in Asslar, Yreka and Ho Chi Minh City provide a conflict mineral statement if required. This commitment to conflict-free products includes a standardized conflict mineral reporting template ("CMRT") of the Responsible Minerals Initiative, which contains detailed information on the country of origin of all smelters and refineries used. In Yreka and Ho Chi Minh City, new suppliers are also required to sign a conflict mineral reporting template.

In the reporting year, no suppliers were excluded due to conflict minerals at any location.

Social standards in the supply chain

Pfeiffer Vacuum strives to comply with social legislation and standards worldwide. Observance of social standards includes respect for human and labor rights, as well as safety in the workplace. This also has an indirect impact on the protection and development of local communities. Since Pfeiffer Vacuum's principal manufacturing facilities are located in industrialized countries, Pfeiffer Vacuum has classified the likelihood of social standards being violated as rather low, given the strict legal requirements that apply in each case. The major risks for the violation of social standards therefore lie in the global supply chains, in particular.

Since 2019, suppliers have been required by the Code of Conduct to confirm their compliance with legal obligations concerning human rights and compliance with all health and safety regulations when concluding a contract. In addition, suppliers of production-relevant products are obliged to meet enhanced requirements for social standards in individual agreements. In Yreka and Ho Chi Minh City, new suppliers are required to comply with ethical and labor standards.

In addition, the software platform for risk management in purchasing described in the section "Environmental standards in the supply chain" (see page 054) also identifies risks relating to social standards.

EMPLOYEE CONCERNS

Employee structure

Pfeiffer Vacuum employed a total of 3,276 people at the end of 2019 (Note 39). This represents an increase of 2.24 % over the previous year's figure of 3,204 employees. This development can be observed in all regions in which Pfeiffer Vacuum operates and results from the expanded business activities as well as preparations for implementing the growth strategy.

Diversity – Pluralism as a strategic goal of personnel recruitment

Pfeiffer Vacuum has a global standing and so unites a multitude of people of different origin under one umbrella brand. Our employees are proud of the successful cooperation between different cultures and nationalities. For several years now, Pfeiffer Vacuum has belonged to the "Diversity Charter", an initiative by the German Federal Government. The "Diversity Charter" represents a fundamental commitment to fairness and appreciation of people in companies. Of the 3,276 employees, 599 are female and 2,677 are male (Note 39). Therefore, the proportion of women constitutes 18 % of the entire workforce. Vacuum technology is a special discipline within mechanical field of engineering in which there is generally only a very limited new generation of female talent. The Supervisory Board of Pfeiffer Vacuum Technology AG has been under female chairmanship since October 2017. With the appointment of Ms. Nathalie Benedikt as Chief Financial Officer in 2017, the Management Board of Pfeiffer Vacuum had a female quota of 50 % as of December 31, 2019. Since January 2020, the Management Board has a female quota of 33 %.

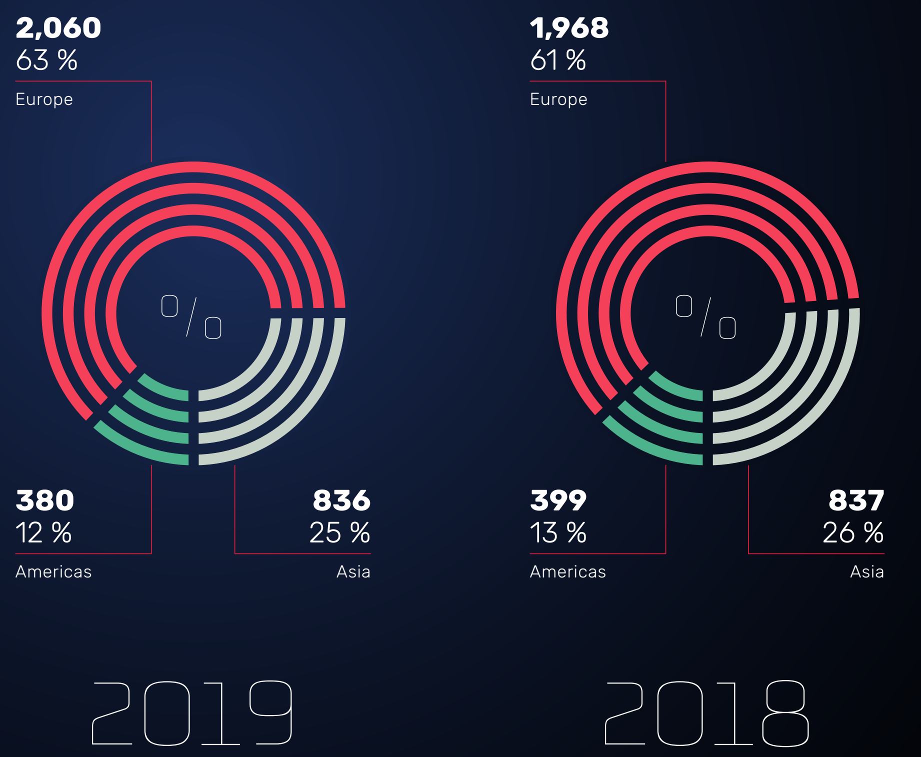
Training and further development

Pfeiffer Vacuum offers training in a variety of vocations. The promotion of young talent is of great importance for the Company. At various locations, we offer company apprenticeships for industrial mechanics, in the business administration area, as well as in warehouse logistics. In fiscal 2019, Pfeiffer Vacuum made available a total of 92 apprenticeships worldwide (previous year: 96).

In addition to the company apprenticeship, Pfeiffer Vacuum in Germany participates very successfully in the “Studium Plus” project, a dual degree program of the Technical University of Mittelhessen. Furthermore, a partnership exists with the Georg-August University Göttingen in relation to the company apprenticeships. In this way, we secure our young talent in industrial and mechanical engineering as well as in the area of business informatics.

Also, many of our subsidiaries offer temporary internships for graduates and students and/or temporary positions for students who work during their vacation. This enables young people to gain an insight into operational processes and to qualify themselves as potential employees.

COMPOSITION OF WORKFORCE BY REGIONS



In cooperation with different schools and universities, we perform guided tours of the Company and present ourselves to the public at career fairs. In France especially, several of our skilled workers give lectures on vacuum technology and corporate governance at universities.

The success of Pfeiffer Vacuum is decisively based on the expertise, the loyalty, and the high motivation of our employees. The expert knowledge of our service and sales employees, in particular, plays an important role in the collaboration with our customers. They benefit from the many years of experience which our experts can draw upon in relation to physical and chemical reactions of the most diverse molecules and substances under vacuum conditions.

Most projects are developed by our customers together with our Sales and Market teams which, in turn, also consult the relevant experts from the areas of Research & Development as well as Production and Service as necessary. The skilled knowledge of our employees is also of major importance in the manufacture and installation of our products. The ultimate goal is to offer our customers a perfect vacuum solution for their application.

PROFESSIONAL QUALIFICATIONS OF THE WORKFORCE

	2019	2018
	Number	Number
Graduates of universities, colleges, and universities of applied sciences	1,236	1,201
Employees with professional training	1,496	1,448
Employees without professional training	452	459
Apprentices	92	96
Total	**3,276**	**3,204**

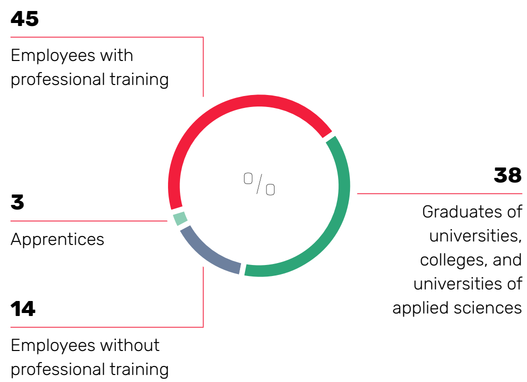
Good training and the readiness to adapt to changes in market forces by continuous development are thus the best prerequisites for all employees, regardless of age, in order to secure jobs and sustain professional success. Further training plays a critical role in our Company in all locations.

New employees complete an introductory course in the basic principles of Vacuum Technology, while sales and service employees receive advanced training courses about products and service measures. Practical programs exist for the qualification of executives, and foremen and group leaders are trained in leadership and management techniques. Furthermore, the Company pays attention to specialized advanced training to transfer technical innovations to the Company. Chinese, German, English or French language courses are offered depending on location and need.

The provision of further training options is generally linked to the local conditions and requirements. The topics of employee development, leadership and work-life balance will play an important strategic role in the coming years. Pfeiffer Vacuum adopted a global human resources strategy (HR strategy) for this purpose for the first time in 2018.

RELATIVE DISTRIBUTION OF THE PROFESSIONAL QUALIFICATIONS OF THE WORKFORCE

in %



Remuneration and incentive schemes

The incentive scheme of Pfeiffer Vacuum also differs according to local conditions and customs. The sales personnel basically receive performance-related incentives via a bonus scheme oriented to sales growth and profit. Added to that – depending on the location – are other bonus, incentive or employee participation schemes.

Pension scheme

The pension scheme is similarly varied in the individual locations. Apart from a purely public scheme in France funded by the French subsidiary, the worldwide pension scheme includes additional measures and payments into pension funds, the offer of a pension plan and direct insurance with the additional option of deferred compensation.

Social responsibility

We take our social responsibility towards our employees seriously.

The illness rates in Asslar and Göttingen amounted to 6.41 % and 6.53 % respectively. In Annecy, the illness rate was significantly lower with 3.34 %. The rate of staff fluctuation also differed depending on the geographical location. In Asslar it was 3.35 % in the past fiscal year and 3.59 % in Göttingen, which means that the fluctuation rate has fallen compared with the previous year. In Annecy, the rate of staff fluctuation in the course of 2019 was 3.83 % following a high level in 2018.

GROUP-WIDE KEY FIGURES FOR TRAINING AND EDUCATION

	2019	2018
	Number	Number
Training measures[1]	3,000	2,100
Training participants[1]	12,600	11,000
Apprentices	92	96

[1] The figures were rounded to the nearest hundred.

Occupational health and safety

The health of its workforce, operations and the conditions of the buildings are key factors in the creation of value within the corporate Group and is a major prerequisite for satisfying the high quality and safety requirements that apply to the products and services of the Pfeiffer Vacuum Group. As a responsible employer, Pfeiffer Vacuum would like to limit the number of accidents and the frequency of days lost due to illness as far as possible. This benefits not only every employee, but also the corporate Group itself, since inadequate occupational safety and health protection can result in costs due to absenteeism, reduced production capacity and lower product quality. For this reason, we pursue the goal of ensuring that occupational safety and health protection are at a high level.

In the areas of production, service, administration and sales, there are different requirements for occupational safety in each case, which is why the following comments refer primarily to the Company's principal production sites.

Since fiscal 2019, the topic of occupational safety and health protection has been managed Group-wide. Compliance with the respective country-specific legal requirements is the minimum applicable requirement for occupational safety and health protection throughout the Group. In 2019, a global occupational health and safety policy was developed that takes a preventive approach. In regular meetings, sources of danger and suggestions for improvement are analyzed and concrete measures agreed. In addition, training courses are held at regular intervals throughout the Group in which, in addition to general safety requirements and protective measures, specific findings are also discussed in order to continuously expand the knowledge and experience of all employees.

The wearing of safety equipment is mandatory throughout the Group and includes all employees and other persons who are present in the production areas.

Pfeiffer Vacuum laid down standardized globally uniform, binding safety requirements during the fiscal year. These are communicated to employees in extensive information campaigns and training measures.

All data relating to occupational health and safety is recorded and evaluated monthly and are available to management and the centrally responsible officers as part of regular communication and as required for managing specific measures.

The subsidiary in Asan had its occupational health and safety concept certified in accordance with OHSAS 18001.

The table below shows the key indicators for occupational health and safety at the principal production sites in the regions Europe, Asia and the USA. The accident frequency (lost time injuries frequency rate (LTIFR): accidents with lost working time of at least one day/shift) was 14.4 in 2019. There were no fatalities in 2019. For the next reporting year, the key indicators for occupational safety will be extended to all Group sites.

Health protection aims to prevent work-related disorders and occupational diseases. For this reason, attention is paid to ergonomics in the workplace, for example. Health protection in Annecy, Yreka, Ho Chi Minh City and Göttingen is managed by the respective environment, health and safety department and in Asan by an external service provider. The health protection concept at the production site in Asslar is managed by the HR department and includes measures such as health consultations with a company physician, a vaccination program and fitness club memberships for employees.

Pfeiffer Vacuum in Annecy offers employees similar programs and has also established a cross-departmental committee that develops measures to increase the well-being of employees. At Yreka, as part of an ergonomic assessment of workplaces, various recommendations were implemented, such as mobile workplaces and optimized lighting. Employees also have the opportunity to proactively suggest improvements to the employee suggestion committee.

FREQUENCY OF ACCIDENTS AND FATALITIES IN 2019

	Europe	Asia	USA	
Key accident figures	Sites Asslar, Annecy, Göttingen and Cluj	Sites Asan and Ho Chi Minh City	Sites Yreka and Nashua	**Gesamt**
LTI (Lost Time Injuries: Accidents requiring at least one day of absence)	53	5	1	**59**
LTIFR (Lost Time Injuries Frequency Rate: LTI per 1 million working hours)	19.7	6.7	1.5	**14.4**
Work-related deaths	0	0	0	**0**
FAR (Fatal Accident Rate: frequency of fatalities) in %	0.0	0.0	0.0	**0.0**

COMBATING CORRUPTION AND BRIBERY

In the oligopolistically structured vacuum technology market, Pfeiffer Vacuum is exposed to the risk of corruption and antitrust incidents as a result of its widely ramified supply chains and global business relationships. Relevant offenses can distort market conditions and impede fair competition. Violations are associated with repercussions for customers and business partners, as well as for economic performance as a whole. If an infringement is discovered, there is a potential risk of heavy fines, damage to reputation and loss of customers.

The central element of Pfeiffer Vacuum compliance management is the Pfeiffer Vacuum code of conduct. This code serves as the fundamental basis for the daily actions of all employees and corporate bodies worldwide, in their dealings with one another and with all stakeholders: customers, business partners and the general public. During the 2019 fiscal year, the code of conduct was published in all corporate languages and made available to all employees through the Company's global websites (↗ Code of Conduct) as well as inhouse. All Group employees are trained in understanding the individual rules and their application via software-based e-learning or face-to-face training. In 2019, around 80 % of employees worldwide participated successfully in the code of conduct training courses and confirmed their understanding and binding application in a corresponding written declaration.

Business partners are obliged to comply with the legal requirements in all business dealings.

The global head of compliance together with an international team are responsible for the Group-wide coordination and management of compliance. The team comprises several employees with responsibility for operational compliance issues, risk management and export control. The Compliance Manager reports directly to the Chief Financial Officer. The Supervisory Board is informed regularly about current developments and issues. Further reports are made as required.

In addition to implementing the Group-wide Pfeiffer Vacuum compliance program, the principal tasks of the compliance organization include the formalized assessment of risks and opportunities, including the annual review of the internal control system. By means of internal audits, international subsidiaries and corporate divisions, such as Sales and Purchasing, are regularly evaluated and reviewed with respect to particularly risk-exposed issues.

For the prevention and clarification of possible violations, employees and external third parties can contact the compliance department in confidence at any time. Since the 2019 fiscal year, a central whistleblowing hotline has been available for reporting suspected cases. Reports can be made anonymously using a reporting form on the Company's homepage. In the 2019 fiscal year, there were no reports in which corruption or bribery incidents were confirmed.

The Group-wide introduction of an online system for anonymous reporting of violations is planned for 2020. In 2019, information and application concepts in all Group languages were drawn up in preparation for introduction and training at all Group sites. IT environments and technical media are being upgraded to ensure all employees have equal access to the content.

The implementation of the whistleblowing hotline and the expansion of global risk and opportunity management will be central topics of compliance management in 2020.

RISK AND OPPORTUNITIES REPORT

ASSESSMENT OF THE MANAGEMENT BOARD OF OVERALL RISKS AND OPPORTUNITIES

In order to achieve sustained success and remain competitive, Pfeiffer Vacuum always seeks to identify early on and actively utilize opportunities that present themselves. However, seizing opportunities also means consciously taking risks. Handling these responsibly has a decisive influence on the success of the company. Overall, we strive to achieve a balanced relationship between opportunities and risks by facing and countering them systematically and in a controlled manner.

An early risk warning system is necessary not only from a business management point of view, but also due to legal regulations, in particular § 91, Sub-Para. 2 of the German Stock Corporation Act ("AktG").

The assessment of the overall risk and opportunity situation is based, on the one hand, on the consideration of all significant individual risks and opportunities, which are reported as part of the Group-wide risk and opportunity assessment process and summarized in risk categories. On the other hand, the identification and evaluation of opportunities, while weighing up potential risks, which we make a component of our strategic orientation and short-term and medium-term corporate planning, serves to secure the long-term success of the company.

The results of these processes are regularly analyzed and reported to the Management Board.

In the 2019 fiscal year risk and opportunity management at Pfeiffer Vacuum was reviewed and aligned with the internal and external requirements. Opportunity-based and at the same time risk-conscious action is encouraged. The presentation of opportunities and risks in this report differs from the previous year since we have further developed both the categorization and the assessment criteria used for evaluation. As a result of a largely differentiated, cause-related consideration and assessment, our reporting has changed in comparison to the previous year with regard to our overall presentation and assessment of individual risks. Our assessment of the overall risk has not changed significantly. We are of the opinion that the risk and opportunity management system in place is suitable for identifying, analyzing and quantifying existing and potential risks and opportunities in order to manage them adequately.

It is our task to master future challenges and seize opportunities that arise in order to achieve the goals we have set ourselves. Taking into consideration the risks and opportunities discussed in this Risk and Opportunity Report, there are no identifiable risks to Pfeiffer Vacuum Technology AG and its major subsidiaries that could jeopardize the Company's continued existence, either as of the balance sheet date or at the time of preparation of the financial statements. In accordance with § 317, Sub-Para. 4 of the German Commercial Code ("HGB"), the auditor examined whether the early risk warning system is suitable for the early identification of risks that could jeopardize the Company. This examination revealed no objections.

RISK AND OPPORTUNITY MANAGEMENT SYSTEM

We define risks as possible future events that could have a negative impact on the achievement of our corporate goals and that involve uncertainty about the occurrence of an event. Accordingly, we define opportunities as potential events that may result in positive deviations from our corporate goals. Our Group-wide risk and opportunity reporting covers strategic, operational, legal, financial and compliance risks and corresponding opportunities. The aim is to identify, evaluate, control, monitor and systematically report on these in time.

Organization and processes of risk and opportunity management system

Overall responsibility for Pfeiffer Vacuum's effective risk and opportunity management system bears the Management Board. The system is being continuously developed and adapted to the latest requirements in close coordination between the Management Board and the Global Compliance & Risk Management department (Compliance). The Compliance department is responsible for organizing, controlling and monitoring this system. Pfeiffer Vacuum views risk and opportunity management as a Company-wide task in which all employees of the local corporate units as well as global functional areas play a crucial role. The principles, procedures, responsibilities and reporting requirements within the Group are set out in the Group policy: Risk Management. The business units and their operational managers are responsible for identifying, assessing and managing opportunities and risks. The managers responsible are required to report on all relevant risks.

Identification of risks and opportunities

We view the identification of risks and opportunities at Pfeiffer Vacuum as an ongoing task and a component of our existing business processes. It comprises the systematic consideration and analysis of internal and external events and developments that could have a positive or negative impact on the achievement of our corporate goals.

With the step towards an integrated and process-oriented organization and a global and company-wide network of experts, as well as the worldwide sales network, we always try to seize opportunities as they arise and identify and control potential risks in a quick and purposeful manner. Potential opportunities are also discussed, analyzed and specified in detail as part of the strategy and planning processes and are implemented in the form of operational or strategic projects.

We conduct market and competition analyses in order to be able to explicitly make optimum use of industry and overall economic opportunities. This provides us with a good overview to further broaden our market share by specifically using our potential. By being in contact with our customers, we strive to identify trends early on and thus enable us to actively shape changes in the marketplace.

The monthly Group reporting system supports risk and opportunity management with a wide range of key figures and reports, which serve as an important basis for the business units, Management Board and Supervisory Board to regularly discuss current business and draw conclusions. Regular management meetings and the exchange of information with representatives from Group units are also firmly established practices that give business unit heads and our subsidiaries the opportunity to exchange information with each other and the Management Board and discuss potential risks and opportunities.

In addition to monthly reporting, our internal controlling system (ICS) helps us to identify risks in daily processes and thus avoid potential errors. The processes reviewed in this connection are first and foremost ones that have a major impact on Pfeiffer Vacuum's net income. Regularly conducted controls should protect against human error, system errors, and breaches of internal regulations.

To ensure the completeness and comparability of the identified risks, a risk register with main and subcategories was developed as part of the risk management policy. Identifying the cause of the risk is decisive for being able to classify any identified risks. This makes it possible to aggregate the results at both the reporting unit and Group level.

Risk assessment

The identified risks are assessed on the basis of two dimensions: the impact of the risk and the probability of occurrence (likelihood). For assessing both, the risk impact and the likelihood, the following four categories are differentiated: low, medium, high and significant (formerly: low, medium and high). For the Group and its subsidiaries apply the following assessment criteria, which express the impact of the risk as a financial component in terms of its quantitative impact in relation to the EBIT:

RATING: RISK IMPACT

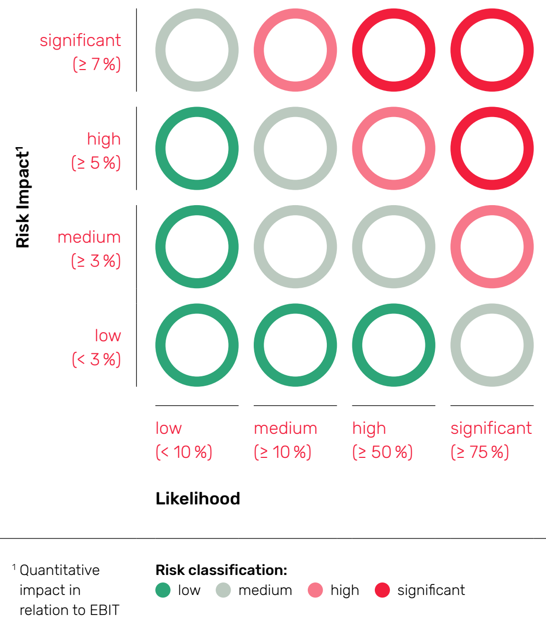
Category	Impact on EBIT
Low	< 3 %
Medium	≥ 3 %
High	≥ 5 %
Significant	≥ 7 %

RATING: LIKELIHOOD

Category	Definition of frequency	Definition of probability
Low	≤ 1 occurrence in 10 years	Rare < 10%
Medium	> 1 occurrence in 10 years	Possible ≥ 10 %
High	> 1 occurrence in 4 years	Most likely ≥ 50 %
Significant	≥ 1 occurrence per year	Almost certain ≥ 75 %

The assessment of the risk is the product of the impact of the risk and the likelihood. On this basis, risks are classified into low, medium, high and significant (previously: low, medium, high) according to the following chart.

RISK CLASSIFICATION MATRIX



[1] Quantitative impact in relation to EBIT

As part of the risk assessment method, potential risks are assessed before risk-responding measures are taken (gross risks) and the residual risks are assessed after the implementation of risk-responding activities have already been taken or are still necessary (net risks). The assessment in this report reflects only the net risks. In order to remain consistent with the forecast, a period of one year was used as the basis for assessing the risks in this report.

Opportunity/risk reporting and management

Systematic risk and opportunity reporting takes place in a multi-stage process. The local Group units prepare reports in accordance with the risk management policy. These are reviewed by the compliance department, aggregated and provided to global functional area managers for review, validation and feedback. Based on the information provided by the risk managers, a report will be prepared for the Management Board, which decides on further control measures if necessary. A Group risk report is prepared on the basis of all these findings.

In the event of occurrences or circumstances that owing to their significance or materiality require immediate disclosure of information outside regular risk reporting procedures, this must be done ad hoc to the Management Board, the compliance department or the emergency intervention committee (EIC) that has been set up.

On the basis of the identified and assessed risks, the risk managers have the task of defining and implementing suitable risk-responding measures for material risks and monitoring the effectiveness of the measures. When deciding on respond measures, the costs and benefits of any measures must be taken into account.

Both the global function heads and the compliance department work in close coordination with the risk managers and monitor the progress of the measures planned to control risk. In addition, strategic focus topics, their progress and effects on the company are discussed at regular meetings of the Management Board.

EXPLANATION OF RISKS AND OPPORTUNITIES

In the following, all material Group risks and opportunities that are considered relevant from today's perspective are explained. The risk presentation differs from the previous year since the categorization and the assessment criteria used for valuation have been further developed.

OVERVIEW OF GROUP RISKS

Risk category	Risk classification			
	low	medium	high	significant
Strategic risks				
Macroeconomic and socio-political	●			
Market development		●		
Cooperations	●			
Acquisition and integration	●			
Product portfolio and technology	●			
Organizational development		●		

OVERVIEW OF GROUP RISKS

Risk category	Risk classification			
	low	medium	high	significant
Operational risks				
Research and development		●		
Procurement	●			
Supply chain	●			
Production	●			
Environment, health, safety, quality		●		
Sales, service and marketing		●		
Human resources management		●		
Information technology/ information security		●		
External incidents			●	
Cost improvement		●		
Financial risks				
Foreign exchange	●			
Liquidity position	●			
Legal and compliance risks				
Contract management		●		
Taxes		●		
Patents and intellectual property rights		●		
Data protection		●		
Export control		●		
Antitrust law		●		
Compliance, others	●			
Sustainability	●			

Strategic risks and opportunities

Macroeconomic and socio-political

As a globally operating corporate Group, Pfeiffer Vacuum is dependent upon the global development of the economy. Economic downturns, financial market and exchange rate fluctuations, geopolitical uncertainties and tensions, and military conflicts can have a direct negative impact on our business development. Market-specific economic weaknesses, in particular in the semiconductor market, can also have a disproportionately high impact on the development of Pfeiffer Vacuum's sales revenues. In addition, uncertainties arising from international trade conflicts, economic policy sanctions, but also the increasing effects of climate change, can bear potential risks in the form of lost sales or cost increases for the Group.

We continuously monitor macroeconomic and socio-political developments, communicate and discuss our findings and assessments within the company-wide network of experts in order to identify potential risks in time and to find and implement suitable risk management measures.

Pfeiffer Vacuum has a balanced regional and market segment-related distribution of sales (see page 039). This leads to a balance in the overall structure of sales in economically weak and growing markets and industries. This is because all regions and market segments are rarely affected to the same extent by deteriorating economic development. The management of economic risk also includes the control of capacities and costs.

By using flexible working time models, we try where possible to adjust production capacities to changing developments in the order situation.

With Great Britain's withdrawal from the European Union, an unregulated Brexit seems to have been initially avoided. In the transition phase, which will last until at least the end of 2020, Great Britain and the EU intend to negotiate their future relations for the period after Brexit. During the transition phase, Great Britain will remain in the EU internal market and the European Customs Union, and all EU rules will continue to apply. There are no customs controls, import or travel restrictions.

Until then, the country will still pay its contributions to the EU budget, but these are expected to cease from 2021 onwards. The EU states in eastern and southern Europe therefore fear that they will receive less aid, which could lead to a weakening of the economy in the countries concerned. Rapid agreement is now called for on a new EU budget that leaves aid intact for the economically weaker member states.

The continued loose monetary policy of the major central banks around the world is to be regarded as favorable to growth. Investment activity and the domestic market in the euro zone will also continue to be stimulated by the expansive monetary policy of the European Central Bank. As also explained in the forecast, and based on the expectations of external market observers, the global semiconductor market is expected to grow significantly in the coming years. We see this as an opportunity to benefit disproportionately from this trend in the medium and long term.

We are confident that our broad strategic realignment, with its focus on clearly defined topics, will help us to mitigate risks while simultaneously providing an opportunity to advance the dynamic development of Pfeiffer Vacuum.

Market development

Sales in Pfeiffer Vacuum's individual market segments are closely linked to global economic developments. The research and development market, for example, depends on government spending and focuses where research projects are concerned. The semiconductor market follows its own cycles, which offers enormous opportunities during boom phases and involves major risks during weak phases. The coating market is closely linked to developments in the solar industry and recorded a slowdown in this fiscal year. The industry market segment brings together a heterogeneous group of industrial customers who require our vacuum solutions for certain production stages. Different industrial trends enable new areas of application for our vacuum solutions and help us to counteract negative general economic developments.

The development in the product categories goes hand in hand with the trends in the individual market segments. This means that smaller turbopumps and analysis equipment are more likely to be required in the analytical industry, which tends to respond on an early cyclical basis. Large quantities of backing pumps are employed in the semiconductor market, but also in other industries that are generally in line with developments in mechanical engineering.

In order to reduce the risks stemming from dependence upon individual market segments and products, Pfeiffer Vacuum places a great deal of value on its broad-based alignment.

Pfeiffer Vacuum is subject to intense competition. In our opinion, we mitigate this risk by selling our products not on price but on quality. Our market position should be expanded primarily through new products and solutions, as well as a broader range of services. We see it as an opportunity that our business units are set to benefit from current and future megatrends such as digitization, electromobility, the expansion of renewable energies and rapid developments in the life science industry, nanotechnology and the security sector

Cooperations

With the goal we have set ourselves of always being close to our customers by our worldwide presence we want to ensure that our customers are always the focus of our activities. Intensive cooperation with our customers, especially the OEMs, helps us to recognize requirements and trends at an early stage and thus actively shape changes in the market.

We see a considerable opportunity to strengthen our competitive position in the vacuum technology industry in the strategic cooperation with Busch SE (Busch Group), which was agreed in May 2019. Since the signing of the cooperation agreement, both companies have been working to realize synergies in the central areas of purchasing, sales and service, research & development and IT. The objectives of the cooperation are to strengthen the competitive position in the market for vacuum technology, to better exploit the growth opportunities that arise and to improve cost structures (see page 031).

From the strategic cooperation with the Busch Group, for example in research and development projects as well as procurement and sales processes, we expect to be able to support growth and achieve an improved competitive position in the coming years. With respect to the consolidation in the vacuum industry, this collaboration shall also support the objective of positioning Pfeiffer Vacuum as a technology leader and a strong number two in the global vacuum business. The decision to enter into a strategic cooperation is based on the many similarities between the two companies as international vacuum technology groups, which have a complementary product range with solutions for different target markets. Price advantages are to be realized by bundling the purchasing volume. Complementary product and service offerings will expand the market presence of both companies. Collaboration on individual research and development projects is expected to lead to greater innovative strength and higher profitability.

Acquisition and integration

The integration of companies into the purchaser's group always represents a special challenge. In order to prevent as far as possible the risk that the expectations placed on the acquisition may not fully realized, we conduct detailed due diligence reviews in advance of a company acquisition. Analyzed here in particular are the legal situation, technical equipment, production planning, and the current and expected financial position of the company to be acquired.

To minimize legal and financial risks, renowned law firms and auditing companies with many years of experience in acquisitions of the required size are used as advisors in the preparation and execution of the acquisition. Taken as a whole, these measures aim to ensure that all aspects of the corporate acquisition are taken into consideration. They also enable information about potential synergies resulting from the acquisition. These measures are intended to significantly reduce the risk of unforeseen developments. However, this risk can never be entirely eliminated since a successful acquisition depends upon many other additional factors. This also applies for the integration which follows after acquisition.

To restrict integration-related risks, proven Pfeiffer Vacuum guidelines, which ensure structured and successful business operations, are implemented promptly in the newly acquired companies. Directly after acquisition, these companies are also integrated into the reporting system in the Pfeiffer Vacuum Group to allow targeted management of the individual companies. Besides extensive reporting, this also includes regular communication via telephone conferences or meetings at the locations of these companies. In addition, the standardized risk management system is implemented in the newly acquired Group companies in order to identify the risk of possible misdevelopments in time.

Product portfolio and technology

Products and services that do not meet customer needs can lead directly to potential sales decreases and thus to a loss of market share and reputation. Therefore, the key risk factors for Pfeiffer Vacuum include a lack of innovative strength and the loss of quality of products and services.

For this reason, from the very beginning we have set ourselves the primary goal of offering our customers reliable, durable, high-performance and energy-efficient products. We reduce these risks through ongoing customer contact and the resulting market proximity. The information thus obtained about the needs of our customers enables us to develop and offer products that are suited to their demands. This allows us to expand both our competitive position as well as our brand recognition.

In addition, we will steadily increase spending on new research and development projects in the coming years in order to benefit from megatrends and offer innovative products.

In addition, maintaining high quality standards is of utmost importance to us. We received certification to ISO 9001:2008 for the first time in 1995, and this has since been sustained without interruption. Innovative products and a steady expansion of the product portfolio offer us ways to better and more broadly serve existing markets and opportunities to generate additional sales volume by gaining market share. Selective acquisitions can help us to expand our technology or market access in order to strengthen our own market position.

Organizational development

Pfeiffer Vacuum's growth strategy and the related challenges are extensive and involve the entire organization. The implementation of our growth strategy, such as the expansion and modernization of production capacities, the harmonization of processes and systems by standardizing the ERP landscapes, projects in the areas of research & development and the realization of synergies in the core business units through cooperation with the Busch Group, present a multitude of tasks that need to be harmonized. Both the scope of the tasks and their complexity create some of our employees with challenges.

The potential risks that may arise from the fact that individual employees and managers may be more heavily burdened due to their involvement in various projects. This can lead to delays in implementation or to unplanned additional costs. We mitigate these risks by promoting open communication, by reaching rapid decisions on an ongoing basis and providing additional resources as required.

Operational risks and opportunities

Procurement, supply chain, production

On the procurement market there are fundamental risks, in particular in the form of supply bottlenecks, dependence on individual suppliers, price increases, quality problems, adverse changes in the economic and political environment and external disruptions. These could have a negative impact on our internal business processes and lead to cost increases.

We mitigate these risks by carefully analyzing and selecting our potential suppliers and by conducting ongoing supplier qualification programs. We also use external business information databases. We counteract possible supply bottlenecks and supplier dependencies primarily by continuously examining alternative suppliers (second source suppliers). We try to reduce risks from expected market shortages of raw materials and associated price increases, by means of long-term framework contracts wherever possible. Further measures include the targeted optimization of strategic and local procurement, close cooperation with supply chain management and the accelerated realization of synergy effects from the cooperation with the Busch Group described above.

We pay special attention to the continuous optimization of our measures and processes against the increasing complexity in the supply chain. Achieving maximum efficiency can become a success factor in competition here.

We seize the opportunity to improve our processes, reduce costs and at the same time offer better service.

Interruptions to production or production losses due to internal or external incidents, but also a lack of production capacity, are the main risks that can impede product availability on time. In order to reduce technically caused downtimes to a minimum, modern production machinery and equipment as well as qualified technicians are deployed. Regular service and preventive maintenance of the machinery and efficient energy management also contribute to further risk prevention. The desired best possible design of our production networks helps us to optimize the interaction and control of our production sites, avoid possible capacity bottlenecks and focus even more on the needs of our customers.

We see further investments in the expansion, modernization and optimization of our production, logistics and service processes as an opportunity to offer our customers high-quality solutions even faster.

Environment, health, safety, quality

Deficits in connection with occupational safety, environmental protection, health protection and the quality of our products and services could have a negative impact on the financial position and profitability of Pfeiffer Vacuum, and in the worst case could lead to a loss of reputation. We therefore place the highest demands on safety, environmental and health protection and the product quality.

As a responsible employer, Pfeiffer Vacuum endeavors to limit the number of accidents and the frequency of days lost due to illness as far as possible. We also take our customers' security requirements very seriously. Nevertheless, not all events can always be avoided. We prevent risks relating to quality deficiencies by continuously optimizing our quality and process management. At Pfeiffer Vacuum, the issue of occupational safety is the responsibility of at least one central internal contact (Environment, Health and Safety Department) or external contact at the principal manufacturing locations. Regarding the measures of our quality and EHS management, we refer to the detailed explanations in the section "Non-Financial Consolidated Statement 2019" (Note 050).

External incidents

As a globally operating company, Pfeiffer Vacuum cannot avoid external risks. Increasing effects of climate change, natural disasters, fire, accidents, but also the spread of diseases across countries and continents, can lead to business interruptions or property damage to the company's assets, as well as endanger the health of our employees.

As far as possible and economically justifiable, we have taken out insurance to minimize the financial consequences of such risks. In addition, we implement possible preventive measures and optimize contingency plans to quickly recover our business activities. Furthermore, we repeatedly are subject to local safety management audits.

The coronavirus outbreak has been affecting life and economic activities in China since January 2020. The health and safety of all our employees is our highest priority. For this reason, rules of conduct and safety have been established for the Group. Among other things, business trips have been restricted, homeworking enabled and communication by using video conferences preferred. Furthermore, we continuously analyze actual developments and adapt our measures accordingly.

The quarantine measures adopted by the Chinese government may impact the economy. Production losses in Chinese industry could noticeably intensify the effects of the coronavirus on the German economy. Currently, it is not possible to adequately assess the extent to which the coronavirus will negatively impact business development, such as through delays in the supply chain.

Human resources management

As a provider of vacuum solutions, which represents a special field of mechanical engineering, we are dependent on a high level of education, training and commitment of our employees. Competition for a diverse and highly qualified workforce, such as specialists, experts or talents in all areas continues to be intense in our industry and the regions in which we do business. There is a general risk of losing qualified employees or of not being able to recruit, develop and retain enough qualified personnel for our company to meet the high demands of our customers. This could have a negative impact on customer satisfaction. If this adversely affected current business and order acquisition, negative effects on profitability, the financial position and liquidity could not be ruled out.

As part of our human resources controlling, we monitor structural changes within our workforce and can thus identify and counteract undesirable developments at an early stage. We minimize this risk with strategic human resources projects that are implemented globally. These projects strengthen employer branding and the recruitment, retention and development of employees and specialists.

The strong changes of the Pfeiffer Vacuum organization could affect the commitment of the people who work for the Company as well as their loyalty to the corporate Group. We have therefore increasingly implemented change management initiatives and communication measures.

Information technology and information security

Due to the increasing digitization in all business processes, the requirements regarding confidentiality, integrity and availability of electronically processed information and the associated use of information technology (IT) are high. In addition to the increased threat of cybercrime, the regulatory requirements for handling information are also increasing, for example as a result of the EU general data protection regulation.

The confidentiality, integrity and availability of information, data and systems is threatened not only by cyber attacks and direct physical interference but also by a lack of awareness and misconduct of employees.

This also includes the risks of system failures, data loss and virus or hacker attacks that could lead to an interruption of business activities. A further indirect consequence could be reputational damage.

We keep the risk of data losses to a minimum by performing daily backups of our complete corporate data. Our corporate database with sensitive information from manufacturing, materials management, order processing, financial and cost accounting are subject to a high security standard. All files created by our employees within the server environment are also backed up on a daily basis. Our backup tapes are stored in secure, fireproof locations.

The activities of our in-house support team reduce system outages to a low level. The Company also uses regularly updated virus scanners and modern firewalls to protect its hardware and software against the risk of computer viruses and hacking.

The occurrence of risks in connection with information security and IT could have a high impact on the Group's results.

Within the framework of risk management, information security and IT risks are systematically recorded and assessed with the support of the specialist departments. Despite preventive safety measures for logical access protection for program maintenance and IT-operations, risks in this environment cannot be completely excluded.

All employees are obliged to handle information such as confidential business, customer and employee data with care, to use information systems securely and to deal with risks transparently.

An information security management system in accordance with the ISO/IEC 27001 standard is currently being set up and implemented. The target is to comprehensively plan, implement and continuously improve the handling of these risks and the security measures.

Sales, service and marketing

The potential loss of important customers or failure to acquire new customers could have a negative impact on our sales and service activities. Reasons for this could be inadequate customer relationship management, inadequate response time or flexibility, or delayed market entry. Dependence on individual customers or their investment behavior also bears risks.

Pfeiffer Vacuum's challenge is thus clearly aligned to expanding our global presence. The focus is on selected Asian countries, especially China.

The realignment of our global sales organization, consisting of sales, service, support and business development, combined with a regional and market segment-specific network of specialists, should help us to identify our customers' needs early on, optimize our customer relationship management and at the same time manage our resources in an appropriate manner.

The globally active sales teams are interlinked, and pursue uniform Pfeiffer Vacuum's sales rules. In addition, there are regular product training courses for the permanently expanded product range, which enable sales staff to explain the technological and qualitative advantages of our products and offer suitable solutions for the customer.

The sales organization is controlled by setting annual sales and profit targets (management by objectives) (see page 032). Linked to this is a variable remuneration of the local management of sales companies and sales staff. Target achievement is measured as part of the annual target assessment activities by means of target/actual comparisons and deviation analyses.

Research and development

Pfeiffer Vacuum develops, produces and distributes vacuum solutions that are highly demanding in terms of technology and quality. Pfeiffer Vacuum's business success and reputation depend heavily on the development of innovative products and solutions. New technical possibilities, trends and changing customer needs may require changes in technology and new business models.

According to our philosophy as a technology leader in the vacuum industry, our primary goal is to offer our customers innovative products and solutions with maximum process efficiency. Our innovative strength is the decisive key to our future business success. In order to utilize opportunities here early on and to minimize the probability of occurrence and the economic impact of the risk, Pfeiffer Vacuum collaborates closely with customers and suppliers on projects that enable it to jointly advance new technologies to market maturity early on. In addition to our own research & development at three locations worldwide, we have an established network with various national and international universities and research institutes.

Cost improvement

In order to achieve our long-term goal of an EBIT margin of more than 20 % by the year 2025 (see Outlook page 078), we have set ourselves the task of continuously improving operating efficiency. This goal can be influenced by internal or external events or undesirable developments. Performance is controlled by means of detailed target/actual comparisons and deviation analyses as part of monthly reporting. These are additionally supplemented by market information. In addition, a regular exchange with the management of the operating companies and functional heads within the Group aims to ensure that business developments are communicated and discussed promptly. These measures are intended to ensure that any possible irregularities are identified and corrected at an early stage.

Financial risks

Foreign exchange

As a result of our pronounced international operations and the high percentage of export business that this involves, we are subject to a foreign exchange risk.

A distinction must be made with respect to the way foreign exchange risks are controlled: the Company conducts active currency management for all intra-group sales invoiced in U.S. dollars or Korean won. In order to minimize the impact of exchange rates on future sales of this kind, we enter into forward exchange contracts and occasionally forward exchange options for the aforementioned currencies (Note 33). Moreover, there is a valuation risk in some companies at the close of the fiscal year that stems from intercompany accounts receivable denominated in foreign currencies. Both, gains and losses from realized options and futures contracts, as well as the valuation results stemming from foreign currency accounts receivable, can be controlled to a certain extent. These are reflected in the Consolidated Statements of Income.

In addition to this, the Consolidated Statements of Income also include the income and expenses of non-German subsidiaries that do not report in euros and must therefore first be converted into euros. The line items in the Statements of Income are converted into euros at the annual average exchange rate and then adjusted for intercompany sales and services. Preliminarily leaving selling and general administrative costs out of consideration, the Company's sales are listed in the foreign currency with corresponding manufacturing costs listed predominantly in euros. Sales invoiced in U.S. dollars, for example, are subject to a foreign exchange risk (currency risk) while manufacturing costs are mainly incurred in euros and are not influenced by exchange rate fluctuations. The magnitude of sales and gross profit are therefore influenced directly by the exchange rate and are externally stipulated and non-hedgeable. A certain degree of compensation for this effect results from the fact that the subsidiaries outside of the eurozone record their own selling and general administrative costs, which change counter to sales (natural hedge). As a function of the development of the euro relative to the respective foreign currency – there can be both positive as well as negative effects on sales and operating profit.

Liquidity position

The risk of a customer's insolvency always exists, independently of the economic situation (default risk). There are general liquidity risks of being unable to satisfy required payment obligations in a timely manner. The system of accounts receivable management that has been practiced at Pfeiffer Vacuum, along with monitoring of our customers' payment patterns, minimizes creditworthiness risks and thus accounts receivable losses (Note 16). Moreover, our dependence upon individual customers is limited.

Financial liabilities amounted to € 73.6 million on December 31, 2019 (corresponding to a share of 11.2 % of the balance sheet total) (Note 23 and Note 30). With cash and cash equivalents of € 112.0 million, there is therefore no net debt, as in previous years. This means that there is sufficient room for maneuver financially to assure the survival of the Company, even in difficult economic times. Our operational business generates sufficient liquid assets to enable the Company to continue to grow from within.

Legal and compliance risks and opportunities

Contract management, taxes, patents and intellectual property rights

As a result of Pfeiffer Vacuum's international business operations, the Company is subject to different country-specific legal risks. National and international contract law and taxation are of particular significance in this connection. These areas can have a direct impact on the Company's profitability and financial position.

In order to minimize potential risks, we have set ourselves the goal, among other things, of reviewing global contract management and optimizing it in line with the growing requirements.

Moreover, as is the case for many other globally operating technology companies, a growing number of cases involving "intellectual property rights" can also harbor potential risks for Pfeiffer Vacuum. Possible damages resulting from the violation of such rights may lead to payments of compensation claims right up to a conviction to refrain from selling a product or using a certain technology.

Standardized terms and business conditions of contracts are always used to minimize the risk from product and service contracts.

In the case of special contracts, the contract instrument is first reviewed in-house and then by external legal counsel, if necessary. The expertise required to assess day-to-day business is provided by our qualified staff in the legal, patent, tax and sales departments. For complex questions of national and international taxation or patent matters, we use the assistance of external tax consultants and patent attorneys. Product liability risks are covered by appropriate insurance. No legal disputes are currently pending whose outcome could have a material impact on the Company's earnings or financial position.

Compliance, export control, antitrust law, data protection, sustainability

The focus of our compliance activities is primarily on the fields of anti-corruption, antitrust, data protection, information security and export control, as the occurrence of such risks can have a significant impact on our business activities and thus on our profitability, financial position and liquidity. Failure to do so could result in loss of reputation, criminal or civil prosecution, fines, penalties, injunctions, profit skimming, disqualification from participating in certain transactions or other restrictions.

To reduce these risks, the company has implemented a global compliance management system. The aim of this is to avoid compliance breaches as far as possible by means of preventive measures, to detect any misconduct at an early stage, to react quickly in the event of confirmed violations and to penalize misconduct.

The effectiveness and efficiency of our compliance program is of central importance and we place particular emphasis on its strict implementation. In this way we set binding standards for our employees.

The cornerstone of this compliance program is an analysis and assessment of compliance risks in the various global functions and Group companies. These risk analyses form the basis for a corresponding compliance risk classification and the detailed design of compliance measures.

Violations of export control regulations can have massive consequences for the company as well as for the responsible actors: In addition to a reputation risk, there is also the threat of loss of export privileges and a personal liability risk. To counteract this, the company has set up a global export control organization to analyze local and international laws and monitor their compliance.

Pfeiffer Vacuum also views itself as being exposed to competition and antitrust risks. These result, in particular, from the fact that the Pfeiffer Vacuum Group operates in a market characterized by oligopolies. New compliance measures were implemented and shall contribute to an improved risk situation going forward.

Protecting the personal rights of its customers, people, shareholders and suppliers has always been an important and fundamental objective for the Pfeiffer Vacuum Group. As a trustworthy partner, the careful handling of the data made available to us is a priority for us. We are constantly developing our data protection measures to meet our responsibility. Unauthorized access to sensitive data, such as personnel master data, can result in liability consequences. Added to this is the associated loss of reputation.

The operational tasks of data protection management are anchored in the different departments. The risk analysis as well as the measures and monitoring are supported by the compliance management system.

Pfeiffer Vacuum estimates the compliance risk as relevant, while the probability of occurrence is low. Pfeiffer Vacuum significantly improved its compliance management system in the years 2018 and 2019. In our opinion, the new compliance measures have a positive effect and thus contributing to the management of the risk situation.

With the new global corporate strategy, sustainability has become a component of the corporate mission statement of the Pfeiffer Vacuum Group. Sustainability, for the Group, means first and foremost ethical action with respect for all stakeholders and responsibility for the economic, ecological and social impact. The trend towards increased sustainability requirements in our customer industries continues. We intend to exploit the resulting opportunities in a growing market even more systematically in the future through more sustainable innovations. For further information in connection with sustainability, please refer to the section "Non-Financial Consolidated Statement 2019" (see page 050).

MISCELLANEOUS

Risk management as it relates to consolidated accounting pursuant to § 315, Sub-Para. 4, German Commercial Code ("HGB")

The purpose of an internal consolidated accounting control system is to ensure adequate certainty by implementing controls that – despite identified risks – enable consolidated financial statements to be prepared in accordance with applicable standards.

The Management Board bears overall responsibility for the internal control and risk management system in respect to the consolidated accounting process. All companies included in the Consolidated Financial Statements are covered by a strictly defined management and reporting organization.

The principles, the organizational and procedural structures, as well as the processes of the individual control and risk management systems relating to consolidated accounting, are stipulated throughout the entire Corporate Group in guidelines and organizational procedures that are adapted if needed to reflect current external and internal developments. Our internal experts also work together with external counterparts on a case-by-case basis. This enables us to ensure that our accounting is in compliance with IFRS accounting and valuation regulations.

In respect of the consolidated accounting process, we consider those characteristics of the internal control and risk management system to be key that can have a decisive influence on consolidated accounting and on the overall view presented in the Consolidated Financial Statements. In particular, these are the following elements:

- Identification of the major fields of risk and areas of control that are relevant to the consolidated accounting process
- Monitoring controls for enabling the consolidated accounting process to be supervised by the Management Board
- Preventive control measures in the finance and accounting systems of the Corporate Group and the companies included in the Consolidated Financial Statements, as well as in operational corporate processes that generate key information for drawing up the Consolidated Financial Statements, including the Management Report for the Corporate Group (including separation of functions)
- Measures that assure proper IT-based processing of facts and data that relate to consolidated accounting.

Rating

Pfeiffer Vacuum Technology AG is not subject to any official rating by Moody's, Standard & Poor's or similar agencies

SUBSEQUENT EVENTS

There have been no significant changes to the Company's situation or the industry environment since the beginning of the 2020 fiscal year.

OUTLOOK

Overall economic development

The International Monetary Fund (IMF) expects the global economy to regain momentum in 2020. In their current forecast, the "World Economic Outlook", the experts assume that the global economy will grow by 3.3 % this year, while they estimate growth for 2019 at only 2.9 %. The IMF economists' current expectations for global growth are thus lower than in the last forecast of October 2019, when the IMF forecast growth of 3.4 % for 2020. The IMF revised its forecast for 2021 to 3.4 %, compared with 3.6 % previously. The recovery will not be as strong as the IMF experts predicted in October 2019.

The main reason for the lowered forecast is the surprisingly negative news from some emerging markets, including South Africa, Mexico and especially India. Although growth in India is forecast to increase to 5.8 % in 2020 and 6.5 % in 2021, the IMF has significantly lowered its forecast from October 2019 by 1.2 and 0.9 percentage points respectively. Despite the recent rapprochements, the trade dispute between the USA and China, geopolitical risks in the Middle East and the devastating effects of climate change are weighing on further global growth.

For China, for example, experts expect economic growth to cool further to 5.8 % in 2021, after 6.0 % in the current year and 6.1 % in 2019, while IMF economists also forecast a gradual decline in growth in the USA - from 2.3 % in 2019 to 2.0 % in 2020 and 1.7 % in 2021.

The IMF sees a reverse trend in the euro zone, albeit with lower growth rates. After 1.2 % last year, economists anticipate 1.3 % this year and 1.4 % next year. The economy in Germany is expected to grow comparatively strongly. Following meagre growth of an estimated 0.5 % in 2019, the IMF expects gross domestic product (GDP) to increase by 1.1 % this year and by 1.4 % in 2021.

Analysts at the IMF assume that the global economic situation will stabilize and that the export-oriented German industry will benefit from this. The IMF economists refer to the first partial agreement in the trade dispute between the USA and China. This will reduce the negative effect of all trade disputes on the global economy in 2020 from 0.8 to 0.5 percentage points. The continuing loose monetary policy of the major central banks around the world and the easing of fears of an unregulated withdrawal of the U.K. from the European Union are also encouraging. According to the IMF economists, both factors are providing tailwind for the global economy.

Mechanical engineering

The German Mechanical Engineering Industry Association ("VDMA") forecasts a further decline in production of 2 % in real terms for the current year 2020. If the business climate brightens, order books would fill up again in the course of the year. According to the economists from the VDMA, however, continued easing of the trade dispute between the USA and China is of particular importance for this.

In its study "Opportunities for the global semiconductor market" from April 2019, the auditing and consultancy organization PricewaterhouseCoopers ("PwC") assumes that the global semiconductor market will grow significantly in the coming years. The study's authors expect an average sales increase of 4.6 % per year up to 2022. Global chip sales alone would rise to a level of 575 billion U.S. dollars by then. The annual growth rates in Europe (3.5 %) would lag behind those in the USA (4.3 %) and Asia (4.8 %).

According to PWC authors, the automotive industry will develop into the most important sales market for chip manufacturers – even ahead of the business with chips for data processing. Accordingly, semiconductors for the support of artificial intelligence (AI) will remain a key growth driver in the automotive sector.

As a result, about twice as many semiconductors are needed in electric and hybrid cars as in conventional vehicles. PwC expects global sales of chips for alternative drive trains, infotainment, ADAS driver assistance systems, driving safety and other automotive applications to rise to almost 68 billion dollars by 2022. At the same time, the huge potential of AI chips in autonomous cars is still completely untapped.

Positive signals for the year 2020 are also coming from the German Electrical and Electronic Manufacturers' Association ("ZVEI"). The association's representatives forecast sales increases of 4.0 % to 429 billion dollars for the global semiconductor market, driven in part by the launch of 5G technology and the use of artificial intelligence. According to the association's representatives, the German market should even grow by 5.0 %.

Long-term growth trend of the relevant markets intact

Pfeiffer Vacuum structures its customers into the semiconductor, industrial, analytics, research & development and coating markets. The **semiconductor** market segment is generally regarded as cyclical. After annual increases in demand from 2015 to 2018 and particularly strong demand dynamics in 2018, this market paused in 2019. For 2019, we expected demand to be subdued in the first half of 2019 and to strengthen in the second half as manufacturers planned to build-out their production facilities. The increase in demand occurred, but not to the extent originally expected, as some important customers postponed the build-out of their production facilities from 2019 to 2020. We consider the market dynamics to be intact, and expect that market demand will rise in the first half of 2020 and that sales will increase in the year 2020. There are unchanged good opportunities for the future: Fundamentally, Pfeiffer Vacuum remains convinced that demand for products from the semiconductor industry will grow generally and at an above-average rate in nearly all areas of daily life as digital innovations become increasingly complex - even though this development is typically characterized by strong cyclicality.

In the **industry** market segment, order growth is mainly driven by new product developments and materials as well as the general trend towards energy efficiency and resource conservation. Unchanged from previous years, Pfeiffer Vacuum also expects a comparatively stable growth trend in the medium term.

For the **analytics** market segment, Pfeiffer Vacuum anticipates moderate growth from the already high level of the previous year. Our expectations are based on increased demand in the food industry, for pharmaceutical and environmental analysis, as well as increased challenges in material analysis.

Analytical instruments are specially used in areas of masspectrometry and medical technology such as medication analysis and development. This is another area where we see future potential.

The **research & development** market segment is dependent on political decisions concerning the funding of projects and research institutions. Here, we also anticipate slight growth in sales in 2020.

The **coating** market segment includes customers in the fields of display (LED, OLED), architectural glass, solar and many other areas of surface finishing. In 2019, demand was affected by the decline in the solar market. This market is currently in a transformation phase. Technological developments in the solar market could significantly increase the efficiencies of the solar cells. This points to the potential for renewed growth. However, the timing of the recovery is difficult to predict.

Overall, the market fundamentals of the highly differentiated customer markets that Pfeiffer Vacuum serves are long-term intact and accompanied by further growth.

Sales growth expected for 2020

Based on a recovery in demand, especially in the semiconductor market segment, we expect organic sales growth for fiscal 2020. The extent of growth will depend heavily on the impact of the coronavirus on our customers, especially in the Chinese and Asian markets. Currently, we are not able to assess the impact and therefore is not reflected in our planning. Contingency plans are in place to remedy and minimize potential disruptions, but a financial impact is possible and currently cannot be predicted. Excluding potential negative effects from this development, we expect sales to grow significantly above the 2019 level.

Increase in EBIT margin to more than 20 % by 2025

In fiscal year 2018, the implementation and realization of strategic measures was decided. This included setting a strategic goal to increase market share and EBIT margin to over 20 % by 2025. During the investment and implementation phase of the strategic measures, operating expenses will initially increase and weigh on earnings. This is primarily due to requiring and investing in our global management structure, expert functions and first-class production facilities in order to achieve our strategic goals. In 2019, the global management structure was implemented and many expert functions filled.

As a result of the investments already made and further investments planned, the 2020 operating profit margin is expected to remain at 2019 levels, even as sales are expected increase. Particularly for 2020 we expect some of the large strategic investments and projects to transfer to the implementation phase.

Many of our investments are interconnected and dependent on each other. Therefore, it is possible that adjustments need to be made to assure the success of these projects.

Due to the continuing low level of interest rates, we anticipate the development of earnings before taxes to be largely in line with operating results.

Capital investment of € 150 million

In fiscal 2018, an investment program of € 150 million was approved to achieve the strategic goals. Originally planned as a 3-year program, we now expect that this program will not be completed before the end of 2021. The primary objectives of the investment program continue to include investments in the expansion and modernization of production capacities, the intensification of research and development, the promotion of Industry 4.0 objectives and the expansion of the Company's presence in Asia as a whole and China in particular. In addition, we are implementing a uniform global ERP system. In 2018 and 2019, a total of € 68.6 million has already been invested from this program.

The investments currently planned for the 2020 fiscal year as part of the € 150 million investment program are likely to be in a range of € 40 to 60 million, depending on timing since certain measures scheduled for 2020 implementation could be realized in the following year.

Strategic cooperation with the Busch Group

In June 2019, we started to analyze synergies from the strategic partnership with the Busch Group. We expect this cooperation to have a positive impact on margins and earnings. In 2020, the first concrete measures are to be implemented, particularly in the area of purchasing. However, we are not yet expecting an impact on earnings in 2020 since the projects are still in the implementation phase.

Dividend of € 1.25

Against the backdrop of increased expenses related to the implementation of our strategy, which was especially intense in the year, as well as expected investments in 2020 the Management Board is proposing a dividend of € 1.25 per share (prior year € 2.30 per share) for the fiscal year 2019. With a total pay-out of € 12.3 million, 25.5 % of the company profits would be paid-out to shareholders (prior year 33.0 %).

DIVIDEND FIGURES

		2019	2018
Payout ratio[1]	in %	25.5	33.0
Dividend per share	in €	1.25[2]	2.30
Dividend yield	in %	0.8[2]	2.1

[1] proposed distribution in comparison to the net income of the respective year
[2] subject to the approval of the Supervisory Board and the Annual General Meeting

Forward-looking statements

The statements, estimates and other information in our outlook are based on assumptions related to the development of the future overall economy and the industry and our success in implementing our strategy. These assumptions reflect the understanding at the time of preparing the Group Management Report. There are risks and uncertainties relating to the probability of the statements and estimations made here, meaning that the actual developments may deviate significantly.

Assuming no major deterioration in global economic development in general and in China specifically, Pfeiffer Vacuum is convinced that it will be able to further increase sales and maintain its profitability at or slightly above the previous year's level, in fiscal year 2020. We believe that these expectations are realistic. However, uncertainties about geopolitical developments and the resulting decline in demand, as well as currency volatility and health emergencies, pose a risk to achieve these goals.

OTHER INFORMATION

Takeover-relevant information pursuant to § 315a Sub-Para 1 of the German Commercial Code ("HGB")

The subscribed capital of Pfeiffer Vacuum Technology AG as of December 31, 2019, remains unchanged at K € 25,261 and consists of a total of 9,867,659 no-par-value shares. There are no different classes of shares currently or previously existent, so all shares have the same rights, in particular the same voting and dividend entitlement rights. Accordingly, the calculated share of the subscribed capital amounts to € 2.56.

As of December 31, 2019, Dr. Karl Busch, Ms. Ayhan Busch, Ms. Ayla Busch, Mr. Sami Busch and Mr. Kaya Busch, all of Germany, according to their own statements, held a total of 60.22 % of the voting rights in the Company (previous year: 50.02 %). No further information is available to us. The shares are held indirectly through Pangea GmbH, Maulburg, Germany, and other independent legal entities belonging to the family-run Busch Group, and are deemed to be held by the persons named. To the best of our knowledge, there were no other shareholders with a holding of more than 10 % as of December 31, 2019 and also as of December 31, 2018.

Amendments to the Articles of Association can be adopted by the Annual General Meeting by a simple majority of the voters present at the Annual General Meeting, unless the law requires a larger majority. To the best of our knowledge, there are no restrictions on voting rights or the transfer of shares. According to the Articles of Association of the Company and §§ 84 and 85 of the German Stock Corporation Act ("AktG"), Management Board members are appointed by the Supervisory Board for a maximum of five years. Reappointments or extensions to the term of office are permitted for a maximum of five years in each case.

Through a resolution of the Annual General Meeting on May 23, 2018, the Management Board is authorized to increase the subscribed capital one or more times by € 12,630,602.24 or 4,933,829 shares in exchange for cash and/or contributions in kind (authorized capital). This authorization is valid until May 23, 2023 and requires the approval of the Supervisory Board.

According to the resolution of the Annual General Meeting on May 23, 2019, the Management Board is authorized to issue fractional bonds with option or conversion rights and/or option or conversion obligations, profit participation rights and income bonds (or combinations of these instruments) with an aggregate nominal value of up to € 200,000,000.00 and to grant the holders conversion rights of up to 2,466,914 no-par bearer shares of the Company having a pro-rata amount of the share capital of up to € 6,315,299.84. This authorization is valid until May 22, 2024 and requires the approval of the Supervisory Board.

At the Annual General Meeting on May 21, 2015, the shareholders authorized the Management Board to repurchase treasury shares pursuant to § 71 Sub-Para. 1 No. 8, German Stock Corporation Act ("AktG"). This authorization covers the buyback of a proportionate amount of the share capital of up to € 2,526,120.70 (986,766 shares corresponding to 10.0 % of the share capital at the time the resolution was adopted), requires the approval of the Supervisory Board and is valid through May 20, 2020.

It remains unchanged as of December 31, 2019 that the Corporate Group does not own treasury shares.

For information relating to the employment contracts of the members of the Management Board, please refer to the corresponding paragraphs in the compensation report (see page 086).

There are no further aspects that would require discussion within the context of § 315a Sub-Para. 1, German Commercial Code ("HGB").

CORPORATE GOVERNANCE REPORT AND DECLARATION ON CORPORATE GOVERNANCE

Pfeiffer Vacuum complies with virtually all Code recommendations

On November 4, 2019, the Management and Supervisory Boards of Pfeiffer Vacuum Technology AG submitted the Statement of Compliance for the year 2019 required pursuant to § 161 of the German Stock Corporation Act ("AktG"). It was made permanently accessible to shareholders on the Corporation's website (↗ Pfeiffer Vacuum / Corporate Governance).

Since the submission of the last statement of compliance on December 5, 2018, Pfeiffer Vacuum Technology AG complies with all recommendations of the German Corporate Governance Code, as amended on February 7, 2017, with the following two exceptions:

- The German Corporate Governance Code recommends a deductible for the Supervisory Board's D&O insurance (Paragraph 3.8). The Supervisory Board's actual D&O insurance does not contain a deductible. A deductible would not improve the Supervisory Board's overall motivation and sense of responsibility as the members work for the benefit of the Group.

- The German Corporate Governance Code recommends that a term limit is established for the period on the Supervisory Board (Paragraph 5.4.1). In the financial year 2018, the Supervisory Board set a specified limit of 15 years for the period of membership on the Supervisory Board. All members of the Supervisory Board fulfill this requirement, with the exception of Mr. Götz Timmerbeil: the Supervisory Board made an exception for him, since he possesses a high level of expertise and many years of knowledge of the Company, which the Supervisory Board would not like to forgo at this point in time and after the resolved changes to the Supervisory Board in the past three years.

Dual management system: Management Board and Supervisory Board

As a stock corporation based in Asslar, Germany, Pfeiffer Vacuum Technology AG is also subject to the provisions of the German Stock Corporation Act ("AktG"). One of the basic principles enshrined in this is the dual management system, which assigns the management of the Company to the Management Board and the appointment, advice and supervision of the Management Board to the Supervisory Board. These two bodies are strictly separated as corporate organs, both in terms of their members and their responsibilities. Both bodies work together closely in the interests of the Company.

Management Board

In the 2019 fiscal year, the Management Board consisted of
- Dr. Eric Taberlet, Chief Executive Officer (CEO), Diploma in Engineering,
- Nathalie Benedikt, Chief Financial Officer (CFO), Diploma in Business Administration,
- Dr. Ulrich von Hülsen, Diploma in Physics, (until June 30, 2019), and
- Dr. Matthias Wiemer, Diploma in Engineering, (until June 30, 2019).

Dr. Ulrich von Hülsen resigned from the Management Board of Pfeiffer Vacuum Technology AG, at his request and by mutual agreement with the Supervisory Board, with effect from the end of June 30, 2019. Dr. Matthias Wiemer also resigned from the Management Board of Pfeiffer Vacuum Technology AG with effect from the end of June 30, 2019 by mutual agreement with the Supervisory Board.

The members of the Management Board are responsible for the further development and strategy of the Company. They are also involved in the day-to-day running of the Company and bear operational responsibility.

In order to implement the individual areas of the growth strategy – gaining market share, strengthening the global production and value chain, expanding R&D activities – in a faster and more focused way, it was decided to redefine the allocation of responsibilities in the Management Board with effect from January 1, 2019. The Company was organized in line with its global business functions.

From January 1, 2019, the responsibilities of the Board of Management members were as follows:

FUNCTIONS OF THE MANAGEMENT BOARD MEMBERS
(until June 30, 2019)

Dr. Eric Taberlet CEO & CSO	**Nathalie Benedikt** CFO	**Dr. Ulrich von Hülsen** CTO	**Interim-Manager** COO	**Dr. Matthias Wiemer** Vorstandsmitglied
• Group Strategy • Global Sales & Service	• Compliance • CSR • Finance & Controlling • Investor Relations • IT • Communication • HR	• Global R&D • Product Management • Digitalization	• Global Operations (Procurement, Production, Logistics)	• Mergers & Acquisitions • Strategic Projects

CEO = Chief Executive Officer, CSO = Chief Sales Officier, CTO = Chief Technology Officer, CFO = Chief Financial Officier, COO = Chief Operations Officer

FUNCTIONS OF THE MANAGEMENT BOARD MEMBERS
(from July 1, 2019)

Dr. Eric Taberlet CEO, CSO & CTO	**Nathalie Benedikt** CFO	**Interim-Manager** COO
• Group Strategy • Global Sales & Service • Global R&D • Product Management • Digitalization	• Compliance • CSR • Finance & Controlling • Investor Relations • IT • Communication • HR	• Continuous Improvement • Production • Purchasing • Quality and EHS (Environment, Health and Safety) • Supply Chain

CEO = Chief Executive Officer, CSO = Chief Sales Officier, CTO = Chief Technology Officer, CFO = Chief Financial Officier, COO = Chief Operations Officer

The COO will be responsible for the performance, efficiency and flexibility of the global operational infrastructure and processes. The position of COO was filled by an external consultant on an interim basis until a permanent appointment is made.

Following the resignation of Dr. Matthias Wiemer and Dr. Ulrich von Hülsen, Dr. Eric Taberlet took on the function of CTO.

The four-eyes principle applies in exercising the duties and responsibilities of the Management Board. Major decisions are always made jointly. Personal expenditures, such as travel and entertainment expenses, require the approval of another Management Board member. In addition to close cooperation and reciprocal information on a daily basis, board meetings are held weekly. Additionally, the Management Board meets for a separate monthly meeting.

The Management Board works exclusively for Pfeiffer Vacuum. In this context, the Management Board members are also members of supervisory organs of various subsidiaries of the Company. They are not members of any regulatory bodies outside the Pfeiffer Vacuum Group.

With effect from January 1, 2020, Mr. Wolfgang Ehrk was appointed a member of the Management Board of Pfeiffer Vacuum Technology AG and assumed the function of COO within the Management Board. The responsibilities of this previously interim role now include the areas of Continuous Improvement, Production, Purchasing, Quality and EHS (Environment, Health and Safety), as well as Supply Chain.

Supervisory Board

Pursuant to the statutory requirements and the Articles of Association of Pfeiffer Vacuum Technology AG, the Supervisory Board consists of a total of six persons. Four persons represent the shareholders and two persons represent the employees of the Company.

The Supervisory Board members elected by the shareholders, Götz Timmerbeil und Filippo Th. Beck, were voted during the Annual General Meeting to a term of office of five years in May 2016. The term of office of the subsequently elected Supervisory Board members Ayla Busch and Henrik Newerla, who were appointed in May 2018, also ends on the day of the Annual General Meeting which resolves on the discharge for the financial year 2020.

Following the age-related retirement of Helmut Bernhardt on June 30, 2019, Matthias Mädler joined the Supervisory Board as an employee representative with effect from July 1, 2019.

Membership over the course of the year 2019 was as follows:

- Ayla Busch (Chairwoman), Co-CEO Busch SE, Maulburg
- Götz Timmerbeil (Vice Chairman), Auditor and Tax Consultant
- Filippo Th. Beck, Attorney at Law of Swiss Law
- Helmut Bernhardt (Employee Representative), until June 30, 2019, Development Engineer
- Manfred Gath (Employee Representative), until December 31, 2019, Chairman of the Employee Council
- Henrik Newerla, self employed management consultant
- Matthias Mädler (Employee Representative), from July 1, 2019, Development Engineer

For election as Supervisory Board Member, the Nominating Committee submits a nomination suggestion to the Supervisory Board. When selecting the candidates, care is taken to ensure that at all times there are members of the Supervisory Board who possess the requisite expertise, skills, and professional experience and are sufficiently independent. The international activities of the Group and potential conflicts of interest are also taken into account.

For its composition the Supervisory Board has determined the following specific objectives: internationality, avoidance of potential conflicts of interest, independence, temporal availability, age limit, term of membership, occupational diversity. These objectives have been taken into consideration in the past, and this is also intended for future nominations. No compensations or benefits for personal service rendered, especially consultation and brokerage services, were paid or granted to the members of the Supervisory Board during the period under review. No potential conflicts of interest requiring immediate disclosure to the Supervisory Board arose for Management and Supervisory Board members in fiscal 2019. Finally, the Rules of Procedure for the Management Board provide that the Supervisory Board must grant its approval for significant business transactions.

According to the recommendations of the German Corporate Governance Code, no more than two previous Management Board members hold seats on the Pfeiffer Vacuum Supervisory Board. Furthermore, the Supervisory Board reviews the independence of its members. It has established standards for assessing this independence, which are based on the Code, in particular. According to these principles, the majority of current Supervisory Board members is considered independent, thus assuring independent advice and monitoring of the Management Board.

The establishment of an Audit Committee is a longstanding practice at Pfeiffer Vacuum. As a certified public accountant, the Chairman of the Audit Committee, Götz Timmerbeil, is particularly qualified to bear responsibility for the activities of the Audit Committee, in particular in connection with questions relating to financial accounting, compliance, and the risk management system.

The task of the Nominating Committee is to suggest suitable candidates to the Supervisory Board who can then recommend them for nomination to the Annual General Meeting. Additionally, a Management Committee was formed. In the past, the Management Committee has deliberated the personnel matters of the board members in detail before – in accordance with the requirements of the German Corporate Governance Code – being resolved by the full Supervisory Board. The determination of Management Board compensation is thus subject to the provisions of the German Act on the Appropriateness of Management Board Compensation.

In addition, a committee was formed in the year under review to monitor transactions with related parties ("Related Party Transactions" or "RPT"). The formation of this RPT committee was in particular a consequence of the (expected) entry into force of the act implementing the Second Shareholder Rights Directive ("ARUG II") and the relevant tasks that fall to the Supervisory Board.

The committee memberships of the Supervisory Board members can be seen in the following overview:

PERSONNEL COMPOSITION OF THE SUPERVISORY BOARD COMMITTEES

	Nominating Committee	Audit Committee	Management Board Committee	RPT Committee
Ms. Ayla Busch	Chairwoman	Yes	Chairwoman	–
Götz Timmerbeil	Yes	Chairman	Yes	Chairman
Filippo Th. Beck	Yes	Yes	Yes	–
Helmut Bernhardt (until June 30, 2019)	–	–	–	–
Manfred Gath	–	–	–	–
Henrik Newerla	–	–	Yes	Yes
Matthias Mädler (from July 1, 2019)				Yes

The following members exercised further mandates. These are supervisory board mandates unless otherwise indicated:

- Ayla Busch
  – Busch Taiwan Corporation, New Taipei City, Taiwan, Supervisor, until January 17, 2019
  – Busch Vakuumteknik A/S, Ry, Denmark, Member of the Board of Directors, until January 16, 2019

- Götz Timmerbeil:
  – Richard Stein GmbH & Co. KG, Engelskirchen, (Chairman of the Advisory Board)
  – Arena Gummersbach GmbH & Co. KG, Gummersbach (Deputy Chairman)

- Filippo Th. Beck:
  – Candoria Group, Baar (Switzerland), Member of the Board of Directors of Candoria Holding AG, Chairman of the Board of Directors of Progresa Holding AG and Sendaya Holding SA (formerly: Candoria Luxembourg Holding SA), Luxembourg
  – Tenro Group, Bottmingen (Switzerland), Member of the Board of Directors of various companies in the Group (including Bellavista Services AG, which was separately listed in the previous year)
  – Biamathea AG, Basel (Switzerland), Member of the Board of Directors
  – Polyterra Liegenschaften AG in Liquidation, Küsnacht (Switzerland), Member of the Board of Directors and Liquidator, until July 10, 2019
  – Tainn-Immobilien AG, Berne (Switzerland), Member of the Board of Directors

The Company has taken out pecuniary loss liability insurance (so-called D&O insurance) for the members of the Management and Supervisory Boards.

Manfred Gath also retired from the Supervisory Board as an employee representative on December 31, 2019 for reasons of age. Stefan Röser replaced him on the Supervisory Board with effect from January 1, 2020.

Collaboration between the Management and Supervisory Boards

Close and trustful collaboration between the Management and Supervisory Boards is an essential prerequisite for good corporate governance and serves the good of the Company. Supervisory Board meetings are held at least twice a year in this context, for which the members of the Management Board report in detail on the course of business operations as well as on the implementation of the strategy agreed upon with the Supervisory Board. The number of Supervisory Board Meetings held exceeds this minimum.

If necessary, other executives also explain the current issues in their respective areas of responsibility. If needed, additional special meetings are held. The Management Board reports to the Supervisory Board on the general condition of the Company, including the risk situation and the strategic targets, through a monthly reporting system.

Shareholders and Annual General Meeting

The Annual General Meeting is the supreme body of the corporation. At the Annual General Meeting, shareholders may exercise their voting rights themselves, through a proxy of their choice, or a proxy nominated by the Corporation who is bound to act on their instructions. The shareholders make key decisions at the Annual General Meeting about the allocation of profits, amendments to the Articles of Association, or the approval of share repurchase programs. All information and documents essential for the Annual General Meeting will be provided to the shareholders in a timely manner. The agenda and an explanation of the conditions of participation in addition to the shareholders' rights will generally be announced according to the legal requirements duly before the Annual General Meeting date.

All documents and information for the Annual General Meeting are also available on our website. In addition, it is possible to electronically direct questions to the employees of our Investor Relations Department. Using our financial calendar, which is made public in the Annual Report, in the quarterly reports, and on our website, we inform shareholders and interested parties about key dates, publications, and events throughout the year. In addition, we maintain close ties with our shareholders through our active Investor Relations work. Moreover, it is also possible to contact the Company with questions at any time.

Compensation

The compensation for members of the Management and Supervisory Boards is detailed in a separate section "Compensation report".

Transparency

The claim to provide all target groups promptly with the same information at the same time is a high priority in our corporate communications. One of the ways that this is manifested is that all relevant information is published in German and in English. Shareholders and interested parties can directly obtain information on current developments within the Group on the Internet. All ad-hoc releases by the Pfeiffer Vacuum Technology AG shall be made available on the Company's website. The purchase and sale of Pfeiffer Vacuum shares by members of the Management and Supervisory Boards will be published immediately pursuant to Article 19 of European Regulation No. 596/2014 (Market Abuse Regulation), in Europe and on the Company's website at group.pfeiffer-vacuum.com.

Equality

In January 2018, pursuant to § 111 Sub-Para. 5 of the German Stock Corporation Act ("AktG"), the Supervisory Board determined a women's quota of 16.67 % for the Supervisory Board and 25 % for the Management Board and a deadline for reaching the targets by December 31, 2020. These quotas are already achieved at the present time.

The provision contained in § 76, Sub-Para. 4 of the German Stock Corporation Act ("AktG") refers to management levels at Pfeiffer Vacuum Technology AG only. Due to its function as a finance holding, this company only has very few employees and there are no further management levels below the Management Board, thus making it impossible to establish a target figure.

Compliance

Adherence to all internal rules and legal regulations applicable to Pfeiffer Vacuum Technology AG and its subsidiaries by management and employees (compliance) has long been a goal of the Company as well as an inherent part of our Company culture. This is especially expressed in our Code of Conduct, which applies for all employees. The Management Board is fundamentally committed to these tenets in addition to the "zero tolerance" principle. Our Code of Conduct defines, among other things, integrity and lawful conduct as basic standards and is the basis for the daily work of all employees in our Company. The Code of Conduct, which was updated and supplemented in 2018, is also available outside the Company via the Company's website in all languages that are relevant to the Group's employees. In it, options for employees to report possible violations of the law in the Corporate Group are described. These are also open to third parties outside of the Company.

Compliance with legal and internal Company regulations is a comprehensive task for which each area of the Company is fundamentally responsible. Committed employees educate themselves further when required and take part in training in order to recognize and address current developments in their respective areas of responsibility. All determined breaches of compliance will be sanctioned accordingly.

Accounting and auditing

Pursuant to statutory provisions, the Consolidated Financial Statements of Pfeiffer Vacuum and the Quarterly Financial Reports are prepared in accordance with the current International Financial Reporting Standards (IFRS) as applicable in the European Union.

The Annual Financial Statements of Pfeiffer Vacuum Technology AG as the parent corporation are prepared in accordance with the provisions of the German Commercial Code ("HGB"). These Consolidated Financial Statements were audited pursuant to the resolution of the Annual General Meeting on May 23, 2019 by PricewaterhouseCoopers GmbH, Wirtschaftsprüfungsgesellschaft, Frankfurt am Main, Germany. PricewaterhouseCoopers GmbH also audits the Annual Financial Statements of Pfeiffer Vacuum Technology AG as well as the report on relations with affiliated companies.

It was agreed with the auditors that the Chairman of the Audit Committee shall be immediately informed about any reasons for exclusion or prejudice arising during the audit, unless these are eliminated immediately. The auditor must also immediately report all findings and events of importance to the Supervisory Board that arise during the audit. In addition, the auditor must inform the Supervisory Board and note in the audit report if the auditor determines facts during the course of the audit that are not compatible with the Statement of Compliance submitted by the Management and Supervisory Boards pursuant to § 161 of the German Stock Corporation Act ("AktG").

COMPENSATION REPORT

In the following section, the compensation for members of the Management and Supervisory Boards is detailed.

Compensation for the Management Board

Each Management Board member receives an annual fixed salary and benefits in kind, in particular, in the form of company cars provided.

In 2019, the social security liability of Dr. Eric Taberlet's remuneration was established in France. The employer's contributions paid as a result are included in the fringe benefits.

BENEFITS GRANTED

Dr. Eric Taberlet, Chairman of the Management Board (Starting date: Nov. 27, 2017)	**2019**	**2019**		**2018**
		Minimum value	**Maximum value**	
	in K €	in K €	in K €	in K €
Fixed compensation	290	290	290	251
Fringe benefits	146	146	146	38
Total	**436**	**436**	**436**	**289**
One-year variable compensation	102	0	140	140
Multi-year variable compensation (from 2018)	34	0	53	53
Multi-year variable compensation (from 2019)	34	0	53	0
Total variable compensation	**170**	**0**	**246**	**193**
Other	0	0	0	0
Total	**606**	**436**	**682**	**482**
Pension benefits	0	0	0	0
Comprehensive compensation	**606**	**436**	**682**	**482**

BENEFITS GRANTED

Nathalie Benedikt, Chief Financial Officer (Starting date: Nov. 27, 2017)	2019	2019		2018
		Minimum value	Maximum value	
	in K €	in K €	in K €	in K €
Fixed compensation	211	211	211	220
Fringe benefits	32	32	32	20
Total	**243**	**243**	**243**	**240**
One-year variable compensation	102	0	140	140
Multi-year variable compensation (from 2018)	34	0	53	53
Multi-year variable compensation (from 2019)	34	0	53	0
Total variable compensation	**170**	**0**	**246**	**193**
Other	0	0	0	0
Total	**413**	**243**	**489**	**433**
Pension benefits	0	0	0	0
Comprehensive compensation	**413**	**243**	**489**	**433**

BENEFITS GRANTED

Dr. Ulrich von Hülsen, Member of the Management Board (Starting date: Aug. 1, 2017, leaving date: June 30, 2019)	2019	2019		2018
		Minimum value	Maximum value	
	in K €	in K €	in K €	in K €
Fixed compensation	111	111	111	220
Fringe benefits	5	5	5	8
Total	**116**	**116**	**116**	**228**
One-year variable compensation	0	0	0	140
Multi-year variable compensation (from 2018)	53	0	53	53
Multi-year variable compensation (from 2019)	0	0	0	0
Total variable compensation	**53**	**0**	**53**	**193**
Other	0	0	0	0
Total	**169**	**116**	**169**	**421**
Pension benefits	0	0	0	0
Comprehensive compensation	**169**	**116**	**169**	**421**

Each Management Board member continues to receive an annual bonus for the respective financial year depending on the achievement of pre-defined targets (short-term variable compensation). The bonus is K € 140 when fully achieved and is paid after the Annual General Meeting for the previous year. For 2018 and 2019, each Management Board member has been assigned some short-term goals corresponding to the respective area of responsibility.

In addition, each Management Board member receives long-term variable compensation depending on the achievement of defined goals during a three-year assessment period. Half of the long-term variable remuneration depends on the development of the company's EBITDA and the other half on the achievement of a further target set by the Supervisory Board (so-called Key Performance Indicators or KPIs) or, alternatively, several further KPIs pre-defined by the Supervisory Board during one three-year assessment period. The amount of the annual bonuses and the long-term variable compensation are based on the degree to which the targets have been achieved and amount to K € 160 when the targets have been fully met. The target fulfillment achieved so far was recognized as a provision as of December 31, 2019 and as of December 31, 2018.

However, the long-term variable remuneration does not become due until two years later, and only in full if the result in the year under review is at least as high as the result of the previous year. If it falls below, the long-term incentive is reduced accordingly. The starting point of the calculation in both cases is an annual target amount, which is allocated for the long-term remuneration for the following three-year period. The payment of the long-term variable remuneration granted in 2018 can therefore be made for the first time after the end of the 2020 fiscal year.

BENEFITS GRANTED

Dr. Matthias Wiemer, Member of the Management Board (Starting date: April 1, 2007, leaving date: June 30, 2019	2019	2019		2018
		Minimum value	Maximum value	
	in K €	in K €	in K €	in K €
Fixed compensation	350	350	350	350
Fringe benefits	14	14	14	14
Total	**364**	**364**	**364**	**364**
One-year variable compensation	70	0	70	140
Multi-year variable compensation (from 2018)	27	0	27	53
Multi-year variable compensation (from 2019)	26	0	26	0
Total variable compensation	**123**	**0**	**123**	**193**
Other	0	0	0	0
Total	**487**	**364**	**487**	**557**
Pension benefits	277	277	277	225
Comprehensive compensation	**764**	**641**	**764**	**782**

TOTAL BENEFITS GRANTED TO THE MANAGEMENT BOARD

	2019	2018
	in K €	in K €
Fixed compensation	962	1,041
Fringe benefits	197	80
Total	**1,159**	**1,121**
One-year variable compensation	274	560
Multi-year variable compensation (from 2018)	148	212
Multi-year variable compensation (from 2019)	94	0
Total variable compensation	**516**	**772**
Other	0	0
Total	**1,675**	**1,893**
Pension benefits	277	225
Comprehensive compensation	**1,952**	**2,118**

Accordingly, payment of the long-term variable remuneration granted in 2019 can be made for the first time after the end of the 2021 fiscal year.

The bonuses for the 2018 fiscal year were granted following a resolution of the Management Board Committee.

The aforementioned compensation is disclosed for the members of the Management Board active in 2018 and 2019.

There were no compensation elements granted or paid in 2018 and 2019 for Manfred Bender who was dismissed as a member of the Management Board on November 27, 2017.

Dr. Matthias Wiemer has received a pension commitment in the unchanged amount of 40% of the last fixed salary. In this context, net pension expenses pursuant to IFRS [International Financial Reporting Standards] amounting to K € 277 were recognized in the income statement in 2019 (previous year: K € 225).

In addition, there are pension commitments to former Management Board members. The net pension costs of the completed financial year attributable to this group of persons amount to K € 91 (previous year: K € 80).

After a repatriation of K € 53 in 2018, a total of K € 5 was paid into the Pfeiffer Vacuum Trust e.V. in 2019. The net pension obligation for former Management Board members totaled K € 8,346 (previous year: K € 6,869). Current pensions in 2019 remain unchanged at the amount of K € 371.

BENEFITS RECEIVED TO THE COMPENSATION OF THE MANAGEMENT BOARD

	Dr. Eric Taberlet Chairman of the Management Board		Nathalie Benedikt Chief Financial Officer		Dr. Ulrich von Hülsen Member of the Management Board		Dr. Matthias Wiemer Member of the Management Board		Total	
	Starting date: November 27, 2017		Starting date: November 27, 2017		Starting date: August 1, 2017 Leaving date: June 30, 2019		Starting date: April 1, 2007 Leaving date: June 30, 2019			
	2019	**2018**	**2019**	**2018**	**2019**	**2018**	**2019**	**2018**	**2019**	**2018**
	in K €	in K €	in K €	in K €	in K €	in K €	in K €	in K €	in K €	in K €
Fixed compensation	290	278	211	240	111	220	350	350	962	1,088
Fringe benefits	146	38	32	20	5	8	14	14	197	80
Total	**436**	**316**	**243**	**260**	**116**	**228**	**364**	**364**	**1,159**	**1,168**
One-year variable compensation	132	29	132	29	129	109	247	300	640	467
Multi-year variable compensation (from 2018)	0	0	0	0	0	0	0	0	0	0
Multi-year variable compensation (from 2019)	0	0	0	0	0	0	0	0	0	0
Total variable compensation	**132**	**29**	**132**	**29**	**129**	**109**	**247**	**300**	**640**	**467**
Other	0	0	0	0	0	0	0	0	0	0
Total	**568**	**345**	**375**	**289**	**245**	**337**	**611**	**664**	**1,799**	**1,635**
Pension benefits	0	0	0	0	0	0	0	0	0	0
Comprehensive compensation	**568**	**345**	**375**	**289**	**245**	**337**	**611**	**664**	**1,799**	**1,635**

Compensation for the Supervisory Board

The members of the Supervisory Board received a fixed compensation (exclusively) determined by the Annual General Meeting. On May 24, 2016, the Annual General Meeting approved an increase in the Supervisory Board's compensation from fiscal year 2016 onwards. If members of the Supervisory Board leave or are newly elected during the fiscal year, their remuneration will be paid on a pro rata temporis basis.

The composition of the remuneration for 2019 and 2018 is as follows:

FIXED COMPENSATION OF THE SUPERVISORY BOARD MEMBERS

	2019	2018
	in K €	in K €
Ayla Busch, Chairwoman of the Supervisory Board	105	105
Götz Timmerbeil, Deputy Chairman of the Supervisory Board	70	70
Filippo Th. Beck	35	35
Helmut Bernhardt (until June 30, 2019)	17.5	35
Manfred Gath	35	35
Henrik Newerla (from March 19, 2018)	35	28
Matthias Mädler (from July 1, 2019)	17.5	–
Total	**315**	**308**

Proven expenses incurred by the Supervisory Board, such as travel expenses, will be reimbursed.

Negative statement

No further benefits were paid to Management or Supervisory Board members over and above the listed compensation components. In particular, no stock options were granted, no loan entitlements were established, and no liability commitments were pronounced. In addition, no special agreements were made further on in connection with the termination of the activities for the Management or Supervisory Boards or in connection with claw-back claims.

3 CONSOLIDATED FINANCIAL STATEMENTS

CONSOLIDATED STATEMENTS OF INCOME PFEIFFER VACUUM TECHNOLOGY AG

	Note	2019	2018
		in K€	in K€
Net sales	7, 32	632,865	659,725
Cost of sales	8, 15	– 416,995	– 424,517
Gross profit		**215,870**	**235,208**
Selling and marketing expenses	8	– 71,669	– 68,371
General and administrative expenses	8	– 52,293	– 49,106
Research and development expenses	8	– 29,620	– 28,663
Other operating income	9	7,768	11,302
Other operating expenses	9	– 4,904	– 5,240
Operating profit	32	**65,152**	**95,130**
Financial expenses	10, 33	– 853	– 727
Financial income	10, 33	216	208
Earnings before taxes	24, 32	**64,515**	**94,611**
Income taxes	24	– 16,158	– 25,732
Net income		**48,357**	**68,879**
Earnings per share (in €)			
Basic	35	4.90	6.98
Diluted	35	4.90	6.98

CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME PFEIFFER VACUUM TECHNOLOGY AG

	Note	2019	2018
		in K€	in K€
Net income		**48,357**	**68,879**
Other comprehensive income			
Amounts to be reclassified to income statement in future periods (if applicable)			
Currency changes	21	2,615	4,904
Results from cash flow hedges	21, 33	43	– 13
Related deferred income tax effects	21	– 4	4
		2,654	**4,895**
Amounts not to be reclassified to income statement in future periods			
Valuation of defined benefit plans	21, 25	– 9,490	– 4,125
Related deferred income tax effect	21	2,395	1,374
		– 7,095	**– 2,751**
Other comprehensive income net of tax		**– 4,441**	**2,144**
Total comprehensive income net of tax		**43,916**	**71,023**

CONSOLIDATED BALANCE SHEETS PFEIFFER VACUUM TECHNOLOGY AG

ASSETS

	Note	Dec. 31, 2019	Dec. 31, 2018
		in K€	in K€
Intangible assets	11	112,244	109,460
Property, plant and equipment	3, 12	154,701	126,143
Investment properties	13	400	424
Other financial assets	14	4,031	4,282
Other assets	14	2,034	3,200
Deferred tax assets	24	27,377	24,895
Total non-current assets		**300,787**	**268,404**
Inventories	15	128,484	133,191
Trade accounts receivable	16, 33	87,867	92,164
Contract assets	16	2,860	298
Income tax receivables		9,962	3,726
Prepaid expenses		4,308	3,504
Other financial assets	14	3,161	609
Other accounts receivable	17	10,166	13,884
Cash and cash equivalents	18, 33	111,980	108,380
Total current assets		**358,788**	**355,756**
Total assets	32	**659,575**	**624,160**

CONSOLIDATED BALANCE SHEETS PFEIFFER VACUUM TECHNOLOGY AG

SHAREHOLDERS' EQUITY AND LIABILITIES

	Note	Dec. 31, 2019	Dec. 31, 2018
		in K€	in K€
Share capital	19	25,261	25,261
Additional paid-in capital	19	96,245	96,245
Retained earnings	20	304,552	278,891
Other equity components	21	– 32,613	– 28,172
Equity of Pfeiffer Vacuum Technology AG shareholders		**393,445**	**372,225**
Financial liabilities	3, 23, 33	69,729	60,182
Provisions for pensions	25	64,103	55,638
Deferred tax liabilities	24	5,041	4,638
Contract liabilities	27	584	630
Total non-current liabilities		**139,457**	**121,088**
Trade accounts payable	26, 33	41,137	38,054
Contract liabilities	27	12,259	18,271
Other accounts payable	28	23,406	25,740
Provisions	29	38,735	41,626
Income tax liabilities		7,248	7,061
Financial liabilities	3, 30, 33	3,888	95
Total current liabilities		**126,673**	**130,847**
Total shareholders' equity and liabilities		**659,575**	**624,160**

CONSOLIDATED STATEMENTS OF SHAREHOLDERS' EQUITY PFEIFFER VACUUM TECHNOLOGY AG

	Note	Share Capital	Additional Paid-in Capital	Retained Earnings	Other Equity Components	Equity of Pfeiffer Vacuum Technology AG Share-holders
		in K€	in K€	in K€	in K€	in K€
Balance as at January 1, 2018		**25,261**	**96,245**	**229,747**	**– 30,316**	**320,937**
Net income	21, 33	–	–	68,879	–	68,879
Earnings after taxes recorded directly in equity		–	–	–	2,144	2,144
Total comprehensive income	20	**–**	**–**	**68,879**	**2,144**	**71,023**
Dividend payment		–	–	– 19,735	–	– 19,735
Balance as at December 31, 2018		**25,261**	**96,245**	**278,891**	**– 28,172**	**372,225**
Net income		–	–	48,357	–	48,357
Earnings after taxes recorded directly in equity	21, 33	–	–	–	– 4,441	– 4,441
Total comprehensive income		**–**	**–**	**48,357**	**– 4,441**	**43,916**
Dividend payment	20	–	–	– 22,696	–	– 22,696
Balance as at December 31, 2019		**25,261**	**96,245**	**304,552**	**– 32,613**	**393,445**

CONSOLIDATED STATEMENTS OF CASH FLOWS PFEIFFER VACUUM TECHNOLOGY AG

CASH FLOW FROM OPERATING ACTIVITIES

	Note	2019	2018
		in K€	in K€
Cash flow from operating activities:			
Earnings before taxes	32	64,515	94,611
Adjustment for financial income/financial expenses		637	519
Financial income received		189	177
Financial expenses paid		– 818	– 900
Income taxes paid		– 18,717	– 22,703
Depreciation/amortization	3, 11, 12, 13, 32	24,226	18,591
Gain/loss from disposals of assets		341	– 1,532
Changes in allowances for doubtful accounts	16	350	590
Changes in inventory reserves	15	4,441	1,467
Other non-cash changes	3	– 1,859	6
Effects of changes in assets and liabilities:			
Inventories		904	– 20,035
Receivables and other assets		– 2,198	– 19,329
Provisions, including pensions, and income tax liabilities		– 1,159	– 425
Payables		– 5,472	11,510
Net cash provided by operating activities		**65,380**	**62,547**

CONSOLIDATED STATEMENTS OF CASH FLOWS PFEIFFER VACUUM TECHNOLOGY AG

CASH FLOW FROM INVESTING ACTIVITIES / CASH FLOW FROM FINANCING ACTIVITIES

	Note	2019	2018
		in K€	in K€
Cash flow from investing activities:			
Capital expenditures	11, 12, 13, 32	– 34,913	– 33,669
Proceeds from disposals of fixed assets		650	2,177
Net cash used in investing activities		**– 34,263**	**– 31,492**
Cash flow from financing activities:			
Proceeds from increase of financial liabilities	33	97	23
Dividend payments	20	– 22,696	– 19,735
Redemptions of leasing liabilities	3, 33	– 5,257	– 87
Net cash used in financing activities		**– 27,856**	**– 19,799**
Effects of foreign exchange rate changes on cash and cash equivalents		339	– 278
Net changes in cash and cash equivalents		**3,600**	**10,978**
Cash and cash equivalents at beginning of period		108,380	97,402
Cash and cash equivalents at end of period	18	**111,980**	**108,380**

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

REMARKS RELATING TO THE COMPANY AND ITS ACCOUNTING AND VALUATION METHODS

1. General remarks relating to the Company

The parent company within the Pfeiffer Vacuum Group ("the Company" or "Pfeiffer Vacuum") is Pfeiffer Vacuum Technology AG, domiciled at Berliner Strasse 43, 35614 Asslar, Germany. Pfeiffer Vacuum Technology AG is a stock corporation organized under German law and recorded in the Register of Companies at the Local Court of Wetzlar, Germany, under Number HRB 44. The Company is listed in the Prime Standard of Deutsche Börse Stock Exchange in Frankfurt am Main, Germany, where it is included in the TecDAX index.

Pfeiffer Vacuum is one of the leading full-line vacuum technology manufacturers, offering custom solutions for a wide range of needs in connection with the generation, control, and measurement of vacuum.

The products manufactured at the Company's production facilities in Asslar and Göttingen, Germany, as well as in Annecy, France, and Asan, Republic of Korea, Indianapolis and Yreka in the United States, as well as Ho Chi Minh City, Vietnam, and Wuxi, China, include turbopumps, a range of backing pumps, such as rotary vane, Roots and dry pumps, complete pumping stations, as well as custom vacuum systems, leak detectors and components.

Pfeiffer Vacuum markets and distributes its products through its own network of sales companies and independent marketing agents. Moreover, there are service support centers in all major industrial locations throughout the world. The Company's primary markets are located in Europe, the United States, and Asia.

2. Basis for preparing Consolidated Financial Statements

Statement of compliance with IFRS

The Consolidated Financial Statements of Pfeiffer Vacuum Technology AG for the fiscal year from January 1 to December 31, 2019, have been prepared in accordance with International Financial Reporting Standards (IFRS) and the interpretations of the IFRS Interpretations Committee (IFRS IC) as applicable in the European Union (EU). This includes the International Accounting Standards (IAS), which continue to retain their validity, the interpretations of the Standing Interpretations Committee (SIC) and the interpretations of the International Financial Reporting Interpretations Committee (IFRIC). Those standards that have been published but whose application is not yet mandatory have not been adopted at an earlier stage. The Notes to the Consolidated Financial Statements additionally include the information required by § 315e, Sub-Para. 1, of the German Commercial Code ("HGB").

Basic valuation principles

The Consolidated Financial Statements were prepared on the basis of historical acquisition and production costs. This does not include derivative financial instruments and plan assets in connection with defined benefit plans, which are measured at fair value. Pfeiffer Vacuum prepares its Consolidated Financial Statements in euros (€). Unless otherwise indicated, the presentation is in thousands of euros (K €).

For mathematical reasons, the numbers presented in the Consolidated Financial Statements may include rounding differences.

Consolidated companies and principles of consolidation

All companies which Pfeiffer Vacuum directly or indirectly controls are consolidated. The Company is considered to control an entity if it is exposed to variable returns from its involvement with the entity and has the ability to affect those returns through its power over the entity.

Inclusion in the Consolidated Financial Statements is made on the basis of individual financial statements prepared in accordance with consistent accounting and valuation principles. The balance sheet date of the individual financial statements of the included companies is the same as the balance sheet date of the Consolidated Financial Statements.

There were no investments in joint ventures or joint operations as of December 31, 2019, or in previous years. Nor were there any investments in unconsolidated structured entities.

Consolidation of investments is effected at the acquisition date in accordance with the acquisition method. In this connection, all assets (including, if applicable, intangible assets to be recognized additionally) and liabilities are first valued at their attributable fair values. The acquisition costs of the equity investment, i.e. the total compensation transferred, valued in accordance with attributable fair values, are then offset against the acquired, newly valued shareholders' equity. Any resulting positive difference is recognized as goodwill and written down in future periods only in the event of an impairment (impairment-only approach).

All intercompany receivables and liabilities, gains and losses, revenues and expenses are eliminated in connection with the consolidation process.

Foreign currency translation

The annual financial statements of subsidiaries domiciled outside the European Currency Union have been translated into euros (€) in accordance with IAS 21, "The Effects of Changes in Foreign Exchange Rates." Each company within the Corporate Group stipulates its own functional currency. The functional currency of the subsidiaries is the respective local currency. When translating financial statements presented in foreign functional currencies, year-end exchange rates are applied to assets and liabilities, while average annual exchange rates are applied to income statement accounts. The resulting translation adjustments are recorded in other equity components.

In the consolidated financial statements, foreign-currency transaction gains and losses from regular operations of consolidated companies are recorded as other operating income and expenses in the income statement.

3. Application of amended or new standards

The accounting and valuation principles used are essentially the same as those used the year before. In variance thereto, in 2019 the Company has applied the following new or amended IASB announcements that have been endorsed by the European Union (EU) for the first time, as their application was mandatory in fiscal 2019.

NEW ANNOUNCEMENTS

	Issued by IASB/IFRS IC	Applicability[1]
Amendments to IFRS 9: Prepayment Features with Negative Compensation	March 2018	January 1, 2019
Annual Improvements to IFRS Standards 2015–2017 Cycle	March 2019	January 1, 2019
IFRS 16 Leases	November 2017	January 1, 2019
Amendments to IAS 19: Plan Amendment, Curtailment or Settlement	March 2019	January 1, 2019
Amendments to IAS 28: Long-term interests in Associates and Joint Ventures	February 2019	January 1, 2019
IFRIC 23 Uncertainty over Income Tax Treatments	Oktober 2018	January 1, 2019

[1] Fiscal years beginning on or after the indicated date according to EU regulation

The following IASB announcements were endorsed by the EU as European law, but their application was not mandatory in fiscal 2019. Pfeiffer Vacuum will only start applying these pronouncements from fiscal years in which their application is mandatory within the EU.

NEW ANNOUNCEMENTS

	Issued by IASB/IFRS IC	Applicability[1]
Amendments to IFRS 3 Business Combinations	March 2019	January 1, 2020
Amendments to IFRS 9, IAS 39 and IFRS 7:Interest Rate Benchmark Reform	December 2019	January 1, 2020
Amendments to IAS 1 and IAS 8: Definition of Material	December 2019	January 1, 2020
Annual Improvements to IFRS Standards 2015–2017 Cycle (issued on December 12, 2017)	December 2019	January 1, 2020

[1] Fiscal years beginning on or after the indicated date according to EU regulation

“IFRIC Interpretation 23“, the “Amendments to IFRS 9“ and the “Amendments to IAS 28” are not relevant for Pfeiffer Vacuum.

The following announcements were issued by the IASB or the IFRS IC but not yet endorsed by the EU:

NEW ANNOUNCEMENTS

	Issued by IASB/IFRS IC	Applicability
IFRS 17 Insurance Contracts	May 2017	January 1, 2021
Amendment to IFRS 3: Definition of a Business	October 2018	January 1, 2020
Amendments to IAS 1 and IAS 8: Classification of Liabilities as Current or Non-current	January 2020	January 1, 2022

Pfeiffer Vacuum intends apply the announcements mentioned above as of the effective date of mandatory application within the EU. The impact on the Consolidated Financial Statements resulting from the application of these not yet endorsed pronouncements are currently being analyzed.

The first-time application of these IASB pronouncements had the following impacts on the presentation of Pfeiffer Vacuum’s Consolidated Financial Statements.

First-time application of IFRS 16

IFRS 16 changes the accounting requirements for leases and replaces the previous standard IAS 17 and the related interpretations. Pfeiffer Vacuum has decided to adopt IFRS 16 using the modified retrospective approach. The comparative information for the 2018 fiscal year will therefore not be adjusted in the 2019 fiscal year.

On transition to IFRS 16, the Group may choose whether to:

- apply the definition in IFRS 16 for a lease to all its contracts; or to
- make use of an exception and therefore not reassess whether the contract is, or contains, a lease, if this was already analyzed and classified according to IAS 17.

The Group will make use of the exemption to maintain the definition of a lease on transition. This means that the Group will apply IFRS 16 to all contracts entered into before January 1, 2019 and identified as leases in accordance with IAS 17 and IFRIC 4.

The main objective of IFRS 16 is to uniformly recognize all lease contracts and show them in the balance sheet. The previous classification into finance and operating leases does not apply for the lessee anymore. For all leases, a right-of-use asset and a lease liability have to be recognized in the balance sheet.

The lease liability is measured at the present value of the remaining lease payments discounted using the lessee's incremental borrowing rate, the right-of-use asset is generally measured at the amount of the lease liability plus initial direct costs. As the internal interest rate is often difficult to determine, the incremental borrowing rate may be used alternatively. During the lease term, the right-of-use asset is depreciated and the lease liability is recognized using the effective interest method and taking into account lease payments.

The lessor's accounting remains substantially unchanged. The lessor continues to classify leases as finance and operating leases based on the allocation of risks and rewards incidental to ownership of the leased asset.

According to the methodology described above, the lease liability is to be recognized at the present value of the remaining lease payments at the time of the adoption. The present value calculation is based on lessee's incremental borrowing rates as of January 1, 2019.

The right-of-use assets recognized in the balance sheet are shown under those balance sheet items in which the assets underlying the leasing agreement would have been shown if they had been owned by the Company. As of the balance sheet date the right-of-use assets are therefore reported as property, plant and equipment within the non-current assets.

As of the date of first time application the Company elected for the following practical makeshifts included in the standard:

- Lease contracts for which the value of the underlying asset is immaterial (< 5.000 USD) were recorded and accounted for according to IFRS 16

- Lease contracts with a remaining lease term of less than 12 months as of the date of first-time application were recorded as right-of-use assets

- As of the date of first-time application the initial direct costs were not reflected in the valuation of the right-of-use assets

- For the payment no differentiation between leasing and non-leasing components is made. The entire payment is treated as leasing component.

As of the date of the first-time application the Company recorded right-of-use assets and lease liabilities for those lease contracts that had formerly been classified as finance lease under IAS 17. The right-of-use assets and the lease liabilities were recorded with the amount of the IAS 17 lease liability as of December 31, 2018.

With regard to the Notes to the Consolidated Financial Statements significantly more disclosures are mandatory.

Due to the change to IFRS 16, the following effects resulted from the initial recognition of right-of-use assets and lease liabilities as of January 1, 2019:

- At the date of first-time application, right-of-use assets previously accounted for as operating leases were recognized in the amount of € 19.6 million under property, plant and equipment. Lease liabilities of € 17.6 million were recognized in the balance sheet. The difference between rights-of-use assets and lease liabilities resulted from lease contracts, for which prepayments were made at the beginning of the contract term. Lease liabilities are reported under current and non-current financial liabilities. The present value calculation of the lease liabilities is based on incremental borrowing rates as of January 1, 2019. The weighted average incremental borrowing rate as of January 1, 2019 amounted to 1.03 %.

- There were no effects in equity due to the first-time application.

- Due to the recognition of lease liabilities from operating leases, the equity ratio decreased by approx. 1.6 %.

- The increase of financial liabilities resulting from the change in accounting rules had a negative impact of approx. € 17.6 million on the net indebtedness of the Company.

In contrast to the previous approach, according to which expenses for operating leases were shown entirely within the operating profit, only the depreciation amounts for the right-of-use asset are shown within operating profit under IFRS 16.

Interest expenses from the allocation of interest to lease liabilities are recorded within the financial results. To a marginal extent this increased Pfeiffer Vacuum Group's operating profit.

The changes in recognition of expenses from operating leases in the cash flow statement resulted in an improvement of cash flow from operating activities.

The difference between expected payments for operating leases of € 14.6 million as of December 31, 2018 and the lease liabilities of € 17.6 million as recorded in the opening balance is resulting mainly from discounting with the incremental borrowing rate (impact of € 2.0 million) and the re-evaluation of useful life due to a sufficiently secure extension option and non-lease components.

4. Accounting and valuation methods

Income recognition

Revenue is recorded when control over the distinct goods or services is transferred to the customer, i.e. when the customer has the ability to control the use of the transferred goods or services and substantially obtains all of the benefits that remain from them. The prerequisite for this is that a contract with enforceable rights and obligations exists and that, among other things, it is probable that the consideration will be received, taking into account the creditworthiness of the customer. Most contracts with customers are fixed-price agreements in which Pfeiffer Vacuum acts as principal. Sales revenues correspond to the transaction prices according to the contracts with customers to which the Group is expected to be entitled. In the case of individual contracts with variable consideration included in the transaction price, the amount of the variable consideration is determined either according to the expected value method or with the most probable amount and recorded as a reduction in sales revenue. Basically, transaction prices do not include any financing components, as the expected period between the transfer of the goods or services to the customer and the payment date does not exceed twelve months. If a contract includes several distinct performance obligations, the transaction price is allocated to the performance obligations on the basis of the relative individual selling prices. If individual selling prices are not directly observable, they are estimated on the basis of the "expected-cost-plus-a-margin" approach. Revenues within the meaning of IFRS 15 are recognized at Pfeiffer Vacuum either at a specific point in time or over a specific period of time, with revenue recognition based on the point in time prevailing.

Revenues from the sale of vacuum products are recognized at the time when control is transferred to the customer, generally upon delivery of the goods. Revenues from contracts with customer-specific vacuum solutions are recognized over a certain period of time based on the stage of completion, based on the ratio of costs already incurred at the balance sheet date to the estimated total costs (input-based method) and recorded as contract assets. In connection with the sale of vacuum products, Pfeiffer Vacuum in some cases offers extended warranty terms ("service & process-type warranties") that go beyond the statutory warranty obligations ("assurance-type warranties"). Performance obligations in connection with extended warranty terms, for which the customer has already paid a consideration, are recognized as contract liabilities and recognized over the period in which the services are rendered based on the time elapsed.

Revenues from the rendering of services are recognized after execution. They include invoiced working hours of service staff, spare parts and replacement parts. Interest income is realized when the interest has accrued. Rental income from investment property is recognized on a straight-line basis over the term of the contracts.

Cost of Sales

Cost of sales include the manufacturing costs for the products sold as well as the costs for the services rendered. This includes all directly attributable material and production costs as well as indirect costs including depreciation/amortization on production buildings and machines. In addition, freight costs, expenses for inventory valuation, and warranty expenses are included in here. Based on historical experience, warranty provisions for recognized revenues are recorded as of year-end.

Research and development expenses

Research and development costs are generally expensed as incurred. Development costs are capitalized, if the capitalization prerequisites in IAS 38, "Intangible Assets," are fully satisfied. In fiscal years 2019 and 2018, development costs were not capitalized.

Property, plant and equipment and intangible assets

Property, plant and equipment and intangible assets are stated at cost and depreciated/amortized on a straight-line basis over the customary useful lives of the assets. At the close of each fiscal year, the useful lives and depreciation/amortization methods, as well as the residual values in the case of property, plant and equipment, are reviewed and adjusted where necessary. The following useful lives are assumed:

ESTIMATED USEFUL LIFE

Production halls, production and administration buildings and similar facilities	20 – 40 years
Machinery and equipment (including IT equipment)	3 – 15 years
Intangible assets[1]	3 – 5 years

[1] With the exception of goodwill and a trademark recognized in connection with a purchase price allocation, there are no intangible assets with indefinite useful lives

Intangible assets recognized in connection with acquisitions, i.e. trademark rights or customer base, may have different, longer estimated useful lives of up to 20 years. Determination is made on an individual basis.

Scheduled depreciation and amortization are allocated to the expense lines in the income statement on the basis of the input involved. Repair and maintenance costs are expensed as incurred.

The Company reviews long-lived assets for impairment whenever events or changes in circumstances suggest that the carrying amount of an asset may not be recoverable. Should impairment indicators exist, the Company performs the analyses required under IAS 36, "Impairment of Assets," with the carrying amount of the asset being compared to the recoverable amount. The recoverable amount of an asset or a cash-generating unit is the greater of the fair value less its selling costs and value in use. The resulting amount must be determined for each individual asset, unless an asset generates cash flows that are dependent upon those from other assets or other asset groups. Should the carrying amount of an asset be higher than its recoverable amount, the asset is viewed as being impaired and is written down to its recoverable amount. To determine the value in use of an asset, the anticipated future cash flows are discounted to their cash value, taking into consideration a before-tax discount rate that reflects current market expectations with respect to the interest rate effect and the specific risks of the asset in question. An appropriate valuation model is employed to determine the fair value less selling costs. This model is based on valuation multiples and other available indicators for the fair value. Any required reversals of impairment losses are recorded in future-period income statements up to the amount of the impairment loss reversal limit. This limit is determined by the amount that would have resulted at the close of the respective fiscal year given scheduled depreciation of the asset.

At least once a year, the Company reviews goodwill for possible impairments. For the purpose of the impairment test, goodwill acquired within the context of a corporate merger is allocated at the acquisition date to those cash generating units of the Corporate Group that can be expected to be able to benefit from the corporate merger. This review is always made whenever events or changes in circumstances suggest that the carrying amount may not be recoverable. In this case, the above described process for impairments under IAS 36, “Impairment of Assets,” is applied. Any resulting impairment loss is recorded in the income statement. A reversal of goodwill impairment losses in future periods is not permissible.

A fixed or intangible asset is derecognized either at the time of disposal or at such time as no economic benefit can any longer be expected from the further utilization or sale of the asset. Gains and losses from disposals of assets are determined and recorded in the income statement on the basis of the difference between selling costs and carrying amount, less any directly attributable selling costs, where applicable

Investment properties

Real estate properties are allocated to the portfolio of investment properties if they are held for the purpose of generating rental income. They are stated at cost and depreciated on a straight-line basis over their estimated useful lives (cost model). Assessment of their residual values, useful lives and depreciation methods, as well as any impairment losses, is performed analogously to the procedure described in connection with property, plant and equipment. Investment properties are derecognized upon disposal or when they are no longer being permanently used and they are no longer expected to produce any further future economic benefit.

Financial instruments

A financial instrument is any contract that gives rise to a financial asset of one entity and a financial liability or an equity instrument of another entity. Accounting for financial instruments in the case of usual and customary purchase or sale is performed on the settlement date, i.e. the day on which the asset is delivered. According to IFRS 9, “Financial Instruments” financial instruments are allocated to the following categories upon initial recognition:

- "Fair value through profit or loss”
- “Fair value through other comprehensive income”
- “Amortized cost“

At the time of recognition accounts receivable, in particular trade accounts receivable and contract assets, are recorded with the amount of unconditional consideration and subsequently measured at amortized cost. Receivables generally do not contain any significant financing components. If they contain significant financing components, they must instead be recognized at fair value. A contract asset is the right to receive consideration in exchange for goods or services that have been transferred to the customer. Allowances on contract assets and receivables for credit risks are made on the basis of the expected loss model. Pfeiffer Vacuum applies a simplified approach to measure expected losses pursuant to IFRS 9, under which a provision for possible loan losses must be recognized in the amount of the expected losses over the remaining term of the asset. A reversal of an impairment loss is recognized in profit or loss up to a maximum of the amortized cost. Receivables are derecognized as soon as they become uncollectible.

The Company uses derivatives only to manage foreign currency exchange rate risks. Instead of applying the hedge accounting provisions of IFRS 9, Pfeiffer Vacuum is voluntarily exercising its option and continues to apply the corresponding provisions of IAS 39. Approximately 54 % of Group sales are invoiced in foreign currencies (non-euro, predominantly US dollars as well as KRW) (2018: 53 %). The Company enters into forward exchange and option transactions to hedge its future sales invoiced in foreign currencies against exchange rate fluctuations.

Derivative financial instruments are acquired exclusively for this purpose. Pfeiffer Vacuum does not engage in speculative hedging transactions. Derivative financial instruments employed for hedging purposes are recorded at their fair values both at the time they are first recorded as well as in subsequent periods. Derivative financial instruments are recorded as assets if their fair value is positive and as liabilities if their fair value is negative. Changes in the fair value of these derivatives are recorded in equity without any impact on the income statement if the hedging is classified as a cash flow hedge according to IAS 39 and is effective. The derivative is reclassified into other operating income and expenses as foreign exchange gains/losses at the time of realization of the underlying transaction that has been hedged. If derivatives were purchased for hedging purposes but do not formally qualify for hedging under IAS 39, they are recorded at fair value through profit and loss. The fair values of derivatives are determined on the balance sheet date using current reference quotations and taking into account forward premiums and discounts. Please refer to Note 33 for further information relating to financial instruments.

Trade accounts payable are financial liabilities and are measured at fair value at the time of first recognition and subsequently at amortized cost. Accordingly, they are recognized at the higher of nominal value or repayment amount, including any value-added tax, at the balance sheet date.

Bank loans are also categorized as financial liabilities and are measured at fair value upon first recognition and in future periods at amortized costs using the effective interest method. This takes into consideration all components of the effective interest rate. Interest income and expenses resulting from the application of the effective interest rate method are shown under financial results.

Cash and cash equivalents

Cash and cash equivalents consist of cash on hand, bank balances, and all highly liquid bank investments having original maturities of three months or less. Cash and cash equivalents are defined accordingly in the consolidated cash flow statements. Cash and cash equivalents are also subject to the expected loss model according to IFRS 9. Due to the short investment period, this line item is only subject to minor value fluctuations.

Inventories

Inventories are valued at the lower of net realizable value and acquisition or manufacturing costs. Net realizable value is the estimated selling price in the ordinary course of business less the estimated costs of completion and the estimated selling costs. Acquisition or manufacturing costs comprise all costs for acquisition or manufacturing as well as all costs incurred for bringing the inventories to their current place and to the current status. With regard to work in process and finished products, the manufacturing costs include besides directly attributable material and production costs also production related indirect costs. Removals from inventory are determined on a weighted average cost basis. Interests on borrowed capital are not considered as part of acquisition or manufacturing costs for inventories. Valuation adjustments on excess inventories are determined on the basis of internal procedures in accordance with the ratio between inventory turnover and future sales or usage. Excess inventories are stocks of individual inventory items that exceed anticipated sales or usage. Management utilizes its judgement in forecasting sales or usage.

Other accounts receivable and other assets

Other accounts receivable and other assets are recorded at amortized cost and less allowances, where applicable. Non-current receivables and assets are valued using the effective interest method.

Provisions

Provisions are formed when the Corporate Group presently has a legal or constructive outside obligation as a result of a past event and it is likely that settlement of the obligation will lead to an outflow of economic resources and the amount of the obligation can be reliably determined. The valuation is made on the basis of the best estimate of the extent of the obligation.

Pensions

Valuation of pension obligations under defined benefit plans is based upon the projected unit credit method in accordance with IAS 19 "Employee Benefits". Actuarial gains and losses from changes in the amount of either the defined benefit obligation (under pension plans), the actuarial present value of earned entitlements (under other plans) as well as those variances between actual returns and returns calculated with the discount rate or from changes in other actuarial assumptions are recorded directly in the other equity components. The pension provision thus shows the net benefit obligation resulting from the difference of the defined benefit obligation and the plan assets measured at fair value. Additionally, the return on plan assets is considered with the discount rate. The accounting for obligations under defined benefit plans is based upon actuarial reports calculated as per the close of the fiscal year. The existing pension plans are detailed in Note 25.

Expenses for defined contribution plans are recorded as expense in the income statement when the premium obligation is incurred. Provisions are formed only if the payment is not made in the year the premium was incurred.

Contract liabilities and other accounts payable

Contract liabilities and other liabilities are measured at fair value upon first time recognition. Subsequent measurement is at amortized cost. A contract liability is an obligation to transfer goods or services to a customer for which the customer has paid consideration. Thus, they are recorded at their notational value or at their higher redemption amount at the close of the fiscal year, including any value added tax.

Income taxes

Current income taxes are stated as a liability to the extent to which they have not yet been paid. General tax risks within the Group are additionally considered. Should the amounts already paid for income taxes exceed the amount owed, the difference is stated as an asset.

Calculation of the amount is based upon the tax rates and tax legislation applicable at the close of the fiscal year.

Under IAS 12, “Income Taxes,” deferred tax assets and liabilities are formed in the consolidated and taxation financial statements for temporary differences between the financial statement carrying amounts of existing assets and liabilities and their respective tax bases or for unused tax loss carry-forwards (liability method). In assessing the realizability of deferred tax assets, management considers whether it is more likely than not that some or all of the deferred tax assets will not be realized. The ultimate realization of deferred tax assets is dependent upon the generation of future taxable income during the periods in which those temporary differences become deductible. In making this assessment, management considers the scheduled reversal of temporary differences, projected future taxable income, and tax planning strategies. Valuation of deferred tax assets and liabilities is performed using the local tax rates expected to be in effect at the time of realization of the asset or satisfaction of the liability, with the tax rates applicable at the close of the fiscal year being employed. The effects of changes in tax laws are recognized in the results of operations in the period in which the new tax rates go into effect. Deferred taxes that relate to line items recorded directly under shareholders’ equity are recorded directly under equity and not in the income statement. An adjustment is recorded for deferred tax assets if it is unlikely that future tax advantages will be realized. Deferred tax assets and liabilities are offset if the entitlements and obligations relate to one and the same tax authority.

Leases

In accordance with IFRS 16 “Leases”, a right-of-use asset and a lease liability have to be recognized in the balance sheet for all leases. The lease liability is measured at the present value of the remaining lease payments discounted using the lessee’s incremental borrowing rate, while the right-of-use asset is generally measured at the amount of the lease liability plus initial direct costs. As the internal interest rate is often difficult to determine, the incremental borrowing rate may be used alternatively. During the lease term, the right-of-use asset is depreciated and the lease liability is recognized using the effective interest method and taking into account lease payments. The right-of-use assets recognized in the balance sheet are shown in the balance sheet items in which the assets underlying the leasing agreement would have been shown if they had been owned by the Company. As of the balance sheet date the right-of-use assets are therefore reported as property, plant and equipment within the non-current assets. Lease liabilities are reported under financial liabilities.

Government grants

Government grants which compensate the Group for expenses (expense subsidies) are recorded in the income statement in other operating income in the same period the underlying expenses are incurred.

Determination of fair value

IFRS 13 "Fair Value Measurement" includes uniform regulations for fair value measurement and rules the determination of fair value in cases where other standards allow or require measurement at fair value. Pfeiffer Vacuum Group did not apply any fair value measurement options.

Use of estimates

The process of preparing financial statements requires the use of estimates and assumptions on the part of the management. These estimates are based upon management's historical experience, are verified regularly, and adjusted if necessary. Certain of the Company's accounting policies are considered critical, as they can have a major impact on the profitability, financial position, and liquidity of the Corporate Group and necessitate significant or complex judgement on the part of management. These estimates and assumptions could differ from the actual results. As of December 31, 2019, based on current estimate, no judgement uncertainties existed that could lead to the significant risk of the need for a material adjustment of book values in the 2020 fiscal year.

Material forward-looking estimates and assumptions exist, among others, in estimating the cash flows in connection with the good-will impairment test, with regard to the formation of pension and warranty provisions, in forecasting the useful lives of fixed assets, in determining the fair values of assets identified and liabilities assumed in connection with acquisitions, in the determination of individual selling prices within the meaning of IFRS 15 that are not directly observable, in determining the lease term or the amount of leasing rates or in connection with deferred tax assets. The major assumptions are detailed in the Notes relating to the individual line items of the balance sheet or in the accounting principles. With regard to the assumptions the goodwill impairment test is based on, please refer to Note 11.

The parameters underlying the pension accounting are detailed in Note 25. Information concerning the estimated useful life of tangible and intangible assets is included in Note 4, section "Property, plant and equipment, and intangible assets". With regard to sales revenues please refer to Note 4, section "Income recognition" and with regard to the composition of sales revenues to Note 7. Further details for provisions are described in Note 29 and for deferred tax assets in Note 24.

NOTES TO THE SCOPE OF CONSOLIDATION

5. Composition of consolidated companies

As in the previous year, in addition to Pfeiffer Vacuum Technology AG, three German and 28 foreign subsidiaries are fully consolidated in the Company's Consolidated Financial Statements as at December 31, 2019.

6. Changes in consolidated companies

In 2019 and 2018 there have been no changes in consolidated companies.

THE PFEIFFER VACUUM CORPORATE GROUP AS OF DEC. 31, 2019	Headquarters	Holding (in %)
Pfeiffer Vacuum Technology AG	Germany	
Pfeiffer Vacuum GmbH	Germany	100.0
Pfeiffer Vacuum Austria GmbH	Austria	100.0
Pfeiffer Vacuum (Schweiz) AG	Switzerland	99.4
Pfeiffer Vacuum (Shanghai) Co., Ltd.	China	100.0
Pfeiffer Vacuum (India) Private Ltd.	India	27.0[1]
Pfeiffer Vacuum Ltd.	Great Britain	100.0
Pfeiffer Vacuum Scandinavia AB	Sweden	100.0
Pfeiffer Vacuum Singapore Pte. Ltd.	Singapore	100.0
Pfeiffer Vacuum Taiwan Corporation Ltd.	Taiwan	100.0
Pfeiffer Vacuum Benelux B. V.	The Netherlands	100.0
Pfeiffer Vacuum (Xi'an) Co., Ltd.	China	100.0
Pfeiffer Vacuum Malaysia SDN. BHD.	Malaysia	100.0
Pfeiffer Vacuum Inc.	USA	100.0
Advanced Test Concepts, LLC.	USA	100.0
Nor-Cal Products Holdings, Inc.	USA	100.0
Nor-Cal Products, Inc.	USA	100.0
Nor-Cal Products Viet Nam Co., Ltd.	Vietnam	100.0
Nor-Cal Products Europe Ltd.	Great Britain	100.0
Nor-Cal Products Korea Co., Ltd.	Republic of Korea	100.0
Nor-Cal Products Asia Pacific Pte. Ltd.	Singapore	100.0
Pfeiffer Vacuum California Realty Holdings, LLC.	USA	100.0
Pfeiffer Vacuum Indiana Realty Holdings, LLC.	USA	100.0
Pfeiffer Vacuum New Hampshire Realty Holdings, LLC.	USA	100.0
Pfeiffer Vacuum Holding B. V.	The Netherlands	100.0
Pfeiffer Vacuum Italia S. p. A.	Italy	100.0
Pfeiffer Vacuum (India) Private Ltd.	India	73.0[1]
Pfeiffer Vacuum Korea Ltd.	Republic of Korea	75.5[2]
Pfeiffer Vacuum Components & Solutions GmbH	Germany	100.0
Pfeiffer Vacuum SAS	France	100.0
Pfeiffer Vacuum Romania S. r. l.	Romania	100.0
Pfeiffer Vacuum Semi Korea, Ltd.	Republic of Korea	100.0
Pfeiffer Vacuum Korea Ltd.	Republic of Korea	24.5[2]
Dreebit GmbH	Germany	100.0

[1 and 2] Group shareholding in total 100.0 %

NOTES TO THE CONSOLIDATED STATEMENTS OF INCOME

7. Net sales

Pfeiffer Vacuum derives revenue from contracts with customers from the transfer of goods and services at a point in time and over time. The revenue, which is recognized at a point in time, is the major part of Pfeiffer Vacuum's net sales.

Presented below are the group sales with customers by products, regions and markets:

REVENUE BY PRODUCTS

	Turbopumps	Instruments and components	Backing pumps	Service	Systems	Total
	in K€	in K€	in K€	in K€	in K€	in K€
2019	**191,619**	**184,584**	**124,148**	**112,803**	**19,711**	**632,865**
2018	192,111	193,755	143,414	111,582	18,863	659,725

REVENUE BY REGIONS

	Europe	Asia	The Americas	Rest of world	Total
	in K€	in K€	in K€	in K€	in K€
2019	**232,043**	**231,050**	**169,664**	**108**	**632,865**
2018	246,971	246,624	165,942	188	659,725

REVENUE BY MARKETS

	Semi-conductors	Industry	Analytics	Coating	Research & Development	Total
	in K€	in K€	in K€	in K€	in K€	in K€
2019	**222,602**	**149,536**	**118,470**	**75,559**	**66,698**	**632,865**
2018	243,900	135,312	116,672	99,611	64,230	659,725

Unchanged compared to prior year there were no revenues with material customers (> 10 % of total revenue).

For further analysis of revenues we refer to the segment reporting in Note 32.

The order backlog as of December 31, 2019 was € 110.7 million (2018: € 144.9 million) and represents the extent of performance obligations which have not been fulfilled yet or are partially unfulfilled.

8. Functional expenses

Cost of Sales

Cost of sales predominantly include the manufacturing costs for the products sold as well as the costs for the services rendered. This includes all directly attributable material and production costs as well as indirect production costs (including depreciation on production buildings and machines). In addition, freight costs, expenses for inventory valuation, and warranty expenses are included here.

Selling and marketing expenses

Selling and marketing expenses predominantly include wages and salaries, marketing and advertising costs, costs relating to trade shows and conventions, as well as other merchandising costs (such as catalogs, brochures, etc.).

General and administrative expenses

General and administrative expenses predominantly include wages and salaries, expenses related to allowances for doubtful accounts, audit and other general consulting fees, as well as all costs relating to the Company as a whole.

Research and development expenses

Research and development expenses include personnel and material expenses allocated to this functional section. Amortization expenses for developed technology recognized in connection with the purchase price allocations totaled € 1.0 million in 2019 (2018: € 1.0 million) and are also included in research and development expenses.

For further analysis of operating expenses, please refer to Note 15 (relating to cost of sales), to Note 24 (relating to income tax expenses), to Note 25 (relating to the development of pension expenses), to Note 38 (relating to development of personnel expenses) and to Note 11 and Note 12 (relating to development of depreciation and amortization).

9. Other operating income and other operating expenses

Other operating income and expenses are comprised as follows:

COMPOSITION OF OTHER OPERATING INCOME AND EXPENSES

	2019	2018
	in K€	in K€
Foreign exchange gains	4,126	5,454
Government grants	3,087	3,568
Gains from disposals of assets	62	1,744
Other	493	536
Other operating income	**7,768**	**11,302**
Foreign exchange losses	– 4,295	– 4,682
Others	– 609	– 558
Other operating expenses	**– 4,904**	**– 5,240**

In respect to government grants reported under other operating income, there are no unfulfilled conditions or other contingencies existing.

10. Financial expenses and financial income

Financial expenses and financial income as recorded in 2019 and the previous year comprises as follows:

COMPOSITION OF FINANCIAL INCOME AND FINANCIAL EXPENSES

	2019	2018
	in K€	in K€
Interest expenses and similar	- 853	- 727
Total financial expenses	**- 853**	**- 727**
Interest income	216	208
Total financial income	**216**	**208**
Financial result	**- 637**	**- 519**

NOTES TO THE CONSOLIDATED BALANCE SHEETS

11. Intangible assets

The intangible assets item mainly includes software purchased within the consolidated Group and intangible assets recognized in connection with acquisitions (amongst others developed technology, customer base, trademark right) as well as goodwill. The development of intangible assets in 2019 and 2018 was as follows:

DEVELOPMENT OF INTANGIBLE ASSETS IN 2019

	Software	Software before implemen-tation	Goodwill	Customer base	Other intangible assets	Total
	in K€	in K€	in K€	in K€	in K€	in K€
Acquisition cost						
Balance as at January 1, 2019	9,168	267	80,721	41,632	33,324	165,112
Currency changes	3	–	652	473	128	1,256
Additions	1,543	3,955	–	–	312	5,810
Disposals	- 55	–	–	–	- 24	- 79
Balance as at December 31, 2019	10,659	4,222	81,373	42,105	33,740	172,099
Amortization						
Balance as at January 1, 2019	6,278	–	–	23,538	25,836	55,652
Currency changes	2	–	–	119	62	183
Additions	1,174	–	–	1,729	1,173	4,076
Disposals	- 55	–	–	–	- 1	- 56
Balance as at December 31, 2019	7,399	–	–	25,386	27,070	59,855
Net book value as at December 31, 2019	**3,260**	**4,222**	**81,373**	**16,719**	**6,670**	**112,244**
Thereof with an unlimited useful life	–	–	81,373	–	3,293	84,666

DEVELOPMENT OF INTANGIBLE ASSETS IN 2018

	Software	Software before implementation	Goodwill	Customer base	Other intangible assets	Total
	in K€	in K€	in K€	in K€	in K€	in K€
Acquisition cost						
Balance as at January 1, 2018	8,410	186	79,299	40,495	32,922	161,312
Currency changes	6	–	1,422	1,137	308	2,873
Additions	801	81	–	–	291	1,173
Disposals	–49	–	–	–	–197	–246
Balance as at December 31, 2018	9,168	267	80,721	41,632	33,324	165,112
Amortization						
Balance as at January 1, 2018	5,193	–	–	21,604	23,701	50,498
Currency changes	4	–	–	294	124	422
Additions	1,130	–	–	1,640	2,208	4,978
Disposals	–49	–	–	–	–197	–246
Balance as at December 31, 2018	6,278	–	–	23,538	25,836	55,652
Net book value as at December 31, 2018	**2,890**	**267**	**80,721**	**18,094**	**7,488**	**109,460**
Thereof with an unlimited useful life	–	–	80,721	–	3,281	84,002

Impairment losses or respective reversals did not have to be recorded for intangible assets in fiscal 2019 and 2018.

For the purpose of testing the recoverability, goodwill and trademark rights with indefinite useful life recognized in connection with acquisitions, were tested on December 31, 2019 by means of an impairment test.

The determination of the cash generating units as a basis for the impairment test followed the segmentation according to IFRS 8 and was thus legal entity related. The recoverable amounts (values in use) for impairment testing of the goodwill were determined as at December 31, 2019 for those cash generating units goodwill was allocated to. Bases were cash flow forecasts for the years 2020 through 2022. These cash flow forecasts are developed from the distinguished yearly sales and cost planning for every year of the said period as approved by the Management and the corresponding operating results. In doing so, the current operating results as well as the expected market, economic, and competitor developments are considered and checked against the historical results. For the cash flow forecasts assumptions with regard to the development of working capital and the future capital expenditures are taken additionally. The cash flows expected after the detailed forecast were extrapolated using individual growth rates. Discounting of cash flows is carried out using weighted average cost of capital (WACC) that also reflect country specific risks.

For the goodwill recorded in connection with various acquisitions (€ 81.4 million; 2018: € 80.7 million) the recoverable amount (value in use) was determined as at December 31, 2019, based on cash generating units. The goodwill allocation to the cash generating units and the major assumptions used in calculating the recoverable amount are detailed in the following table.

ALLOCATION OF GOODWILL AND MAJOR VALUATION ASSUMPTIONS

	Dec. 31, 2019			Dec. 31, 2018		
	Goodwill	**Pre-tax discount rate**	**Long-term growth rate**	**Goodwill**	**Pre-tax discount rate**	**Long-term growth rate**
	in € millions	in %	in %	in € millions	in %	in %
Germany	13.1	12.0	1.0 – 1.5	13.1	11.7 – 12.4	1.0 – 1.5
Thereof Pfeiffer Vacuum Components & Solutions GmbH	8.2	12.0	1.5	8.2	12.1	1.5
France (Pfeiffer Vacuum SAS)	23.0	13.3	1.5	23.0	14.2	1.5
Rest of Europe	2.7	10.4 – 15.3	1.5	2.7	12.0 – 16.0	1.5
USA	32.0	10.6	1.5	31.2	11.0 – 11.1	1.5
Thereof Nor-Cal Products Inc.	20.7	10.6	1.5	20.3	11.0	1.5
Thereof Pfeiffer Vacuum Inc.	7.9	10.6	1.5	7.7	11.1	1.5
Republic of Korea (Pfeiffer Vacuum Semi Korea, Ltd.)	4.3	12.2	1.5	4.3	12.1	1.5
China	4.1	12.6	1.5	4.1	12.4	1.5
Rest of Asia	2.2	10.1 – 16.2	1.5	2.3	10.2 – 17.3	1.5
Total	**81.4**			**80.7**		

As of December 31, 2019, the valuation of the aforementioned goodwill did not result in any impairment losses because for each individual valuation the value in use of the cash generating unit exceeded its respective book value.

A trademark right recognized in connection with an acquisition (net book value € 3.3 million; 2018: € 3.3 million) is still actively used by Pfeiffer and thus still has an indefinite useful life. It was allocated to the business segments based on sales portions. Here, amongst others, € 0.8 million related to France, € 1.0 million to the Republic of Korea, and € 0.6 million to the USA. No impairment was determined under the impairment test conducted on December 31, 2019.

Basically no reasonably possible change in a key assumption would cause each unit's carrying amount to exceed its recoverable amount. In contrast, an increase in discount rate by 0.1 %-points to 15.4% with all other assumptions kept constant would cause the recoverable amount (value in use) of the goodwill allocated to the Italy region to match its net book value (2018: 0.3 %-points to 12.4%). The same situation would result from a 0.1 %-point to 5.4 % reduction of the sustainable EBIT margin used for the cash flow extrapolation or a 0.2 % point reduction in the sustainable sales growth rate or a reduction of the sustainable free cash flow by K€ 10 to K€ 729 used for the cash flow extrapolation (2018: 0.2 %-points to 5.3%, 0.3 %-points, and K€ 20 to K€ 622, respectively). In 2019 an increase in discount rate by 1.2 %-points to 14.4% with all other assumptions kept constant would cause the recoverable amount (value in use) of the goodwill allocated to France to match its net book value. The same situation would result from a 1.0 %-point to 7.0 % reduction of the sustainable EBIT margin used for the cash flow extrapolation or a 1.0 % point reduction in the sustainable sales growth rate or a reduction of the sustainable free cash flow by € 1.8 million to € 13.6 million used for the cash flow extrapolation. In 2018 an increase in discount rate by 1.3 %-points to 10.0 % with all other assumptions kept constant would have caused the recoverable amount (value in use) of the goodwill allocated to Dreebit GmbH to match its net book value. The same situation would have resulted in 2018 from a 1.2 %-point to 5.3 % reduction of the sustainable EBIT margin used for the cash flow extrapolation or a reduction of the sustainable free cash flow by K€ 100 to K€ 431 used for the cash flow extrapolation. As of December 31, 2019, the amount by which the value in use exceeded the respective unit's net book value for the said cash generating units in Italy totaled € 0.1 million (2018: Italy and Dreebit € 0.1 million, € 1.0 million).

12. Property, plant and equipment

DEVELOPMENT OF PROPERTY, PLANT AND EQUIPMENT IN 2019

	Land and Buildings	Technical Equipment and Machinery	Other Equipment, Factory and Office Equipment	Construction in Progress	Total
	in K€	in K€	in K€	in K€	in K€
Acquisition or manufacturing cost					
Balance as at December 31, 2018	99,445	106,892	35,356	12,444	254,137
IFRS 16 adjustment	16,541	430	2,669	–	19,640
Balance as at January 1, 2019, adjusted	115,986	107,322	38,025	12,444	273,777
Currency changes	230	– 26	88	11	303
Additions	3,269	14,937	6,163	5,485	29,854
Disposals	– 1,676	– 3,252	– 1,721	– 1	– 6,650
Reclassifications	7,853	1,623	218	– 9,694	–
Balance as at December 31, 2019	125,662	120,604	42,773	8,245	297,284
Depreciation					
Balance as at January 1, 2019	40,807	64,480	22,707	–	127,994
Currency changes	28	33	80	–	141
Additions	7,549	7,718	4,863	–	20,130
Disposals	– 1,526	– 2,908	– 1,248	–	– 5,682
Balance as at December 31, 2019	46,858	69,323	26,402	–	142,583
Net book value as at December 31, 2019	**78,805**	**51,281**	**16,371**	**8,245**	**154,701**

DEVELOPMENT OF PROPERTY, PLANT AND EQUIPMENT IN 2018

	Land and Buildings	Technical Equipment and Machinery	Other Equipment, Factory and Office Equipment	Construction in Progress	Total
	in K€	in K€	in K€	in K€	in K€
Acquisition or manufacturing cost					
Balance as at January 1, 2018	87,373	91,396	33,330	11,246	223,345
Currency changes	600	301	106	100	1,107
Additions	4,443	15,178	3,412	9,463	32,496
Disposals	– 378	– 811	– 1,622	–	– 2,811
Reclassifications	7,407	828	130	– 8,365	–
Balance as at December 31, 2018	99,445	106,892	35,356	12,444	254,137
Depreciation					
Balance as at January 1, 2018	37,268	58,514	20,614	–	116,396
Currency changes	– 3	101	77	–	175
Additions	3,739	6,418	3,432	–	13,589
Disposals	– 197	– 553	– 1,416	–	– 2,166
Balance as at December 31, 2018	40,807	64,480	22,707	–	127,994
Net book value as at December 31, 2018	**58,638**	**42,412**	**12,649**	**12,444**	**126,143**

In fiscals 2019 and 2018, no buildings and machinery were used as collateral to secure the Group's financial liabilities.

Neither in 2019 nor in the previous year there were any impairment losses or related reversals for property, plant, and equipment.

The group leases various land, buildings and cars (reported under "Other Equipment, Factory and Office Equipment") and other assets (copy machines, printers, coffee machines, water dispensers and machines). Rental/lease contracts are typically made for fixed periods of 1 to 4 years and can include extension options. Lease terms are negotiated on an individual contract basis and contain a wide range of different terms and conditions. The lease agreements do not include any covenants, but leased assets may not be used as security for borrowing purposes.

Extension and termination options are included in a number of property and equipment leases across the Group. These terms are used to maximize operational flexibility in terms of managing contracts. Except for rare case, the extension and termination options are exercisable only by the Group and not by the respective lessor.

In determining the lease term, management considers all facts and circumstances that create an economic incentive to exercise an extension option, or to not exercise a termination option. Extension options (or periods after termination options) are only included in the lease term if the lease is reasonably certain to be extended (or not terminated).

DEVELOPMENT OF RIGHT OF USE ASSETS IN 2019

	Land and Buildings	Technical Equipment and Machinery	Other Equipment, Factory and Office Equipment	Total
	in K€	in K€	in K€	in K€
Acquisition or manufacturing cost				
Balance as at January 1, 2019	16,541	430	2,669	19,640
Currency changes	43	1	– 1	43
Additions	23	219	509	751
Disposals	– 242	– 41	– 301	– 584
Reclassifications	–	–	–	–
Balance as at December 31, 2019	16,365	609	2,876	19,850
Depreciation				
Balance as at January 1, 2019	–	–	–	–
Currency changes	8	1	1	10
Additions	3,546	192	1,064	4,802
Disposals	– 223	– 26	– 99	– 348
Balance as at December 31, 2019	3,331	167	966	4,464
Net book value as at December 31, 2019	**13,034**	**442**	**1,910**	**15,386**

13. Investment properties

DEVELOPMENT OF INVESTMENT PROPERTIES

	2019	2018
	in K€	in K€
Acquisition or manufacturing cost		
Balance as at January 1	861	861
Additions	–	–
Disposals	–	–
Reclassifications	–	–
Balance as at December 31	861	861
Depreciation		
Balance as at January 1	437	413
Additions	24	24
Disposals	–	–
Reclassifications	–	–
Balance as at December 31	461	437
Net book value as at December 31	**400**	**424**

The real estate shown in this line item was rented out in fiscal 2019 and 2018. Rental revenues amounted to K€ 56 (2018: K€ 56) and direct operating expenses amounted to K€ 28 (2018: K€ 28). Impairment losses or related reversals did not have to be recorded in 2019 and 2018.

The fair value of investment properties amounts to € 0.4 million as per December 31, 2019 (2018:€ 0.5 million). Fair values were derived on the basis of the Company's own calculations by discounting expected net rental revenues during the estimated remaining life by an appropriate discount rate (level 3 of the fair value hierarchy according to IFRS 13).

14. Other financial assets and other assets

Other financial assets include mainly non-current cash items K€ 3,745 (2018: K€ 3,315) and deposits K€ 247, (2018: K€ 967). The short-term-part of cash items and deposits is reported under current financial assets.

The amount of other assets end of 2019 relates particularly to prepaid expenses in connection with a long-term use of factory and office properties.

15. Inventories

COMPOSITION OF INVENTORIES

	2019	2018
	in K€	in K€
Raw materials	42,256	36,420
Work in process	31,571	32,095
Finished products	54,657	64,676
Total inventories, net	**128,484**	**133,191**

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Materials consumption in fiscal 2019 amounted as in 2018 to € 256.6 million and is included in cost of sales.

In 2019, an amount of K€ 4,441 (2018: K€ 1,467) from the valuation of inventories at net realizable value was recorded as expense. This expense was shown under cost of sales.

16. Trade accounts receivable and contract assets

In connection with its normal course of business, the Company extends credit to a wide variety of business customers. The Company performs ongoing credit evaluations of its customers. Trade accounts receivable and contract assets do not bear any interest and have a remaining term of less than one year.

COMPOSITION OF TRADE ACCOUNTS RECEIVABLE AND CONTRACT ASSETS

	2019	2018
	in K€	in K€
Trade accounts receivable	89,105	93,331
Contract assets	2,860	298
Loss allowances	– 1,238	– 1,167
Trade accounts receivable and contract assets, net	**90,727**	**92,462**

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The closing loss allowances for trade accounts receivable and contract assets as at December 31 reconcile to the opening loss allowances as follows:

DEVELOPMENT OF LOSS ALLOWANCES

	2019	2018
	in K€	in K€
Loss allowances as at January 1	1,167	719
Currency changes	12	17
Additions	350	590
Utlization	– 291	– 159
Balance as at December 31	**1,238**	**1,167**

Contract assets of K€ 2,860 represent contractual rights to receive a consideration from customers, in such cases where Pfeiffer Vacuum fulfilled its obligations in according to IFRS 15 but the consideration did not become due. In this respect, Pfeiffer Vacuum recognizes revenue based on the group's progress to satisfy the performance obligation. The amount of contract assets was netted with customer's considerations which were already paid (K€ 1,732).

Pfeiffer Vacuum applies the IFRS 9 simplified approach to measuring expected credit losses which uses a lifetime expected loss allowance for all trade receivables and contract assets.

To measure the expected credit losses, trade receivables and contract assets have been grouped based on shared credit risk characteristics and the days past due. The contract assets relate to unbilled work in progress and have substantially the same risk characteristics as the trade receivables for the same types of contracts. The group has therefore concluded that the expected loss rates for trade receivables are a reasonable approximation of the loss rates for the contract assets.

The expected loss rates are based on the payment profiles of sales over a period of 60 months before December 31, 2019 or January 1, 2019 respectively and the corresponding historical credit losses experienced within this period. The historical loss rates are adjusted to reflect current and forward-looking information on macroeconomic factors affecting the ability of the customers to settle the receivables. The group has identified the GDP (Gross Domestic Product) of the countries in which it sells its goods to be the most relevant factor, and accordingly adjusts the historical loss rates based on expected changes in this factor.

On that basis, the loss allowance was determined as follows for both trade receivables and contract assets:

COMPOSITION OF LOSS ALLOWANCES

	Not overdue	Less than 30 days past due	More than 30 days past due	More than 60 days past due	More than 90 days past due	Total
	in K€	in K€	in K€	in K€	in K€	in K€
December 31, 2019						
Expected loss rate	0.1 %	0.0 %	3.9 %	2.9 %	22.7 %	
Gross carrying amount – trade accounts receivable	66,320	13,336	3,698	1,225	4,526	**89,105**
Gross carrying amount – contract assets	2,860	–	–	–	–	**2,860**
Loss allowance	31	–	144	35	1,028	**1,238**
December 31, 2018						
Expected loss rate	0.0 %	0.2 %	2.1 %	7.7 %	19.6 %	
Gross carrying amount – trade accounts receivable	66,918	14,756	5,155	2,057	4,445	**93,331**
Gross carrying amount – contract assets	298	–	–	–	–	**298**
Loss allowance	–	29	108	159	871	**1,167**

Further loss allowances on financial assets were not registered in current reporting period and in prior year.

17. Other accounts receivable

This line item totaled K€ 10,166 as at December 31, 2019 (December 31, 2018: K€ 13,884). As in the year before, this position was characterized by expense subsidies of K€ 2,774 (December 31, 2018: K€ 5,230) and VAT claims of K€ 5,137 (December 31, 2018: K€ 5,197).

18. Cash and cash equivalents

The cash and cash equivalents item consists of cash at banks and cash on hand. Additionally, the Company records all bank deposits having an original maturity of three months or less as cash equivalents. The fair value of cash and cash equivalents corresponds to their net book value.

19. Share capital and additional paid-in capital

Unchanged compared to the previous year end, the share capital of Pfeiffer Vacuum Technology AG (parent company) consisted of 9,867,659 issued and outstanding no-par ordinary shares.

The Annual Shareholders Meeting on May 23, 2018, authorized the Management Board to increase the Company's share capital by K€ 12,631, or 4,933,829 shares, in consideration for contributions in cash and/or kind once or in partial amounts (authorized capital). This authorization is valid through May 23, 2023, and is subject to the consent of the Supervisory Board.

According to the resolution of the Annual Shareholders Meeting on May 23, 2019, the Management Board is authorized to issue fractional bonds with option or conversion rights or option or conversion obligations, profit participation rights or participating bonds (or combinations of these instruments) with an aggregate nominal value of up to € 200,000,000.00 and to grant the holders conversion rights for up to 2,466,914 no-par bearer shares of the Company having a pro-rata amount of up to € 6,315,299.84 of the share capital. This authorization is valid until May 21, 2024, and requires the consent of the Supervisory Board.

There were no changes of the additional paid-in capital in 2019 or 2018.

20. Paid and proposed dividends

The Annual General Meeting on May 23, 2019, resolved to pay a dividend of € 2.30 per share (Annual Shareholders Meeting on May 23, 2018: 2.00 per share). The dividend payment carried out thereunder amounted to K€ 22,696 in 2019 (2018: K€ 19,735).

The Management Board proposes to let shareholders participate in the Company's success via a dividend in the amount of € 1.25 per share. This proposal is subject to the approval of the Supervisory Board and the Annual General Meeting. Because the proposal must be approved by the Annual General Meeting, the resulting payment of K€ 12,335 has not been recorded as a liability in the balance sheet for the fiscal year ended December 31, 2019.

21. Other equity components

Other equity components comprise unrealized gains/losses on hedges and actuarial gains/losses resulting from valuation of defined benefit obligations and plan assets at fair value. Furthermore this position comprises foreign currency translation adjustments.

Due to the fact that the terms of all cash flow hedges are less than one year, the reported year-end balances as at December 31 of the respective years will be reclassified to the income statement the next year. The new year-end amounts result form changes during the respective year and thus not from prior years.

DEVELOPMENT OF OTHER EQUITY COMPONENTS

	Valuation of Defined Benefit Plans	Results from Cash Flow Hedges	Currency Changes	Total
	in K€	in K€	in K€	in K€
Balance as at January 1, 2018	**-30,290**	**–**	**-26**	**-30,316**
Changes in actuarial gains/losses (net of tax)	-2,751	–	–	-2,751
Changes in fair value of cash flow hedges (net of tax)	–	-9	–	-9
Changes in foreign currency translation	–	–	4,904	4,904
Balance as at December 31, 2018	**-33,041**	**-9**	**4,878**	**-28,172**
Changes in actuarial gains/losses (net of tax)	-7,095	–	–	-7,095
Changes in fair value of cash flow hedges (net of tax)	–	39	–	39
Changes in foreign currency translation	–	–	2,615	2,615
Balance as at December 31, 2019	**-40,136**	**30**	**7,493**	**-32,613**

TAX EFFECT ON OTHER COMPREHENSIVE INCOME

	2019			2018		
	Gross Amount	Tax Effect	Net Amount	Gross Amount	Tax Effect	Net Amount
	in K€	in K€	in K€	in K€	in K€	in K€
Valuation of Defined Benefit Plans	-9,490	2,395	-7,095	-4,125	1,374	-2,751
Results from cash flow hedges	43	-4	39	-13	4	-9
Currency changes	2,615	–	2,615	4,904	–	4,904
Total other comprehensive income	**-6,832**	**2,391**	**-4,441**	**766**	**1,378**	**2,144**

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22. Treasury shares

At the Annual Shareholders Meeting on May 21, 2015, the shareholders authorized the Management Board to acquire treasury shares pursuant to § 71, Sub-Para. 1, No. 8, German Stock Corporation Act ("AktG"). This authorization allows the Company to acquire treasury shares representing up to € 2,526,120.70 of the capital stock (986,766 shares equal to 10 % of capital stock at the time of the resolution), requires the consent of the Supervisory Board for execution, and is valid through May 20, 2020.

23. Long-term financial liabilities

Long-term financial liabilities are comprised as follows:

LONG-TERM FINANCIAL LIABILITIES

	2019	2018[1]
	in K€	in K€
Liabilities to banks	60,000	60,000
Leasing liabilities	9,729	182
Total	**69,729**	**60,182**

[1] 2018 leasing liabilities relates to Finance lease according to IAS 17

Liabilities to banks

In connection with the acquisition of Nor-Cal Products Holdings Inc. and its subsidiaries, long-term financial liabilities having a net cash inflow of € 70.0 million were taken out in the course of 2017. With it, an existing credit line was amended. These liabilities have a Euribor-based variable interest rate including an arm's-length margin. Interest clearing is made quarterly. There were no changes in the financial liabilities drawn during the course of 2019, the balance still totals € 60.0 million as of December 31, 2019. In fiscal year 2019, interest expenses again totaling € 0.5 million were recorded. Under the loan agreement, the Group has committed to comply with a determined financial ratio. The Company has clearly complied with this ratio in 2019 and 2018.

Pfeiffer Vacuum and its subsidiaries have various lines of credit available to them for operating purposes, totaling approximately € 13.7 million (December 31, 2018: € 13.9 million).

Financial obligations as shown under short and long-term financial liabilities may result in cash flows from financing activities in future reporting periods.

Leasing Liabilities

Due to the new accounting rules for leases implemented as of January 1, 2019 this position increased considerably (please also refer to Note 30 regarding the short-term leasing liabilities)

Leasing liabilities recorded in 2019 and were as follows in the previous year:

LEASING LIABILITIES

	2019	2018[1]
	in K€	in K€
Short-term	3,766	72
Long-term	9,729	182
Total	**13,495**	**254**

[1] 2018 leasing liabilities relates to Finance lease according to IAS 17.

In 2019 interest expenses relating to leasing liabilities were totaled € 0.1 million.

In addition, provision for dismantling obligations resulting from leases in the amount of € 0.1 million were recorded (please refer to Note 29).

Potential future cash outflows of K€ 1,191 have not been included in the lease liability because it is not reasonably certain that the leases will be extended (or not terminated). The assessment is reviewed if a significant event or a significant change in circumstances occurs which affects this assessment and which is within under the Group's control. During the current financial year, the financial effect of revising lease terms to reflect the effect of exercising extension and termination options was an increase in recognized lease liabilities and right-of-use assets of K€ 856.

The amount of K€ – 5,257 shown in the Consolidated Statements of Cash Flows under redemptions of leasing liabilities represents the total cash outflow from leases in fiscal 2019.

24. Income taxes

Under current German corporate tax law, taxes on the income of German companies comprise corporate taxes, trade taxes, and an additional surtax.

INCOME BEFORE TAX WAS TAXABLE IN THE FOLLOWING JURISDICTIONS

	2019	2018
	in K€	in K€
Germany	30,228	44,648
Outside Germany	34,287	49,963
Total	**64,515**	**94,611**

COMPOSITION OF INCOME TAX EXPENSE

	2019	2018
	in K€	in K€
Current taxes		
Germany	– 8,716	– 14,357
Outside Germany	– 7,295	– 11,297
	– 16,011	**– 25,654**
Deferred taxes		
Germany	– 164	1,369
Outside Germany	17	– 1,447
	– 147	**– 78**
Income tax expense	**– 16,158**	**– 25,732**

K€ 16,138 of current tax expense related to earnings in 2019 (2018: K€ 26,476). This line item additionally contained tax income for prior years amounting to K€ 127 (2018: K€ 822).

RECONCILIATION FROM EXPECTED TO ACTUAL INCOME TAX EXPENSE

	2019	2018
	in K€	in K€
Earnings before taxes	64,515	94,611
Expected tax expense using the tax rate of the parent company (28.95 %; 2018: 28.95 %)	– 18,677	– 27,390
Non-deductible expenses	– 476	– 1,285
Effects due to dividend payments	– 119	– 324
Difference foreign tax rates	2,315	854
Non-taxable income	902	1,598
Tax credits/debits due to tax filings in prior years	127	822
Other	– 230	– 7
Income tax expense	**– 16,158**	**– 25,732**

As opposed to 27.2 % the year before, the tax ratio for the Pfeiffer Vacuum Group amounted to 25.0 % in 2019.

DEFERRED TAXES RELATE TO THE FOLLOWING BALANCE SHEET ITEMS

	2019	2018
	in K€	in K€
Deferred tax assets		
Pensions	20,482	19,026
Inventories	6,335	6,507
Provisions and contract liabilities	3,642	3,920
Financial liabilities	3,940	–
Tax credits	1,044	1,297
Tax loss carry forwards	805	1,000
Property, plant and equipment	281	299
Receivables	320	313
Intangible assets	259	247
Derivatives	25	14
Other	64	68
Total deferred tax assets	**37,197**	**32,691**
Thereof long-term deferred tax assets	22,871	21,869
Thereof short-term deferred tax assets	14,326	10,822
Deferred tax liabilities		
Intangible assets	– 6,627	– 6,652
Property, plant and equipment	– 7,648	– 5,556
Receivables (including contract assets)	– 579	– 140
Inventories	–	– 82
Other	– 7	– 4
Total deferred tax liabilities	**– 14,861**	**– 12,434**
Thereof long-term deferred tax liabilities	– 14,275	– 12,208
Thereof short-term deferred tax liabilities	– 586	– 226
Total deferred taxes, net	**22,336**	**20,257**

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AMOUNTS RECORDED IN THE BALANCE SHEET

	2019	2018
	in K€	in K€
Deferred tax assets	27,377	24,895
Deferred tax liabilities	– 5,041	– 4,638
Total deferred taxes, net	**22,336**	**20,257**

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DEFERRED TAXES RECORDED IN THE INCOME STATEMENT

	2019	2018
	in K€	in K€
Property, plant and equipment	1,880	– 929
Intangible assets	138	446
Derivatives	4	3
Pensions	– 763	746
Provisions and contract liabilities	– 476	– 214
Receivables (including contract assets)	– 343	– 112
Tax credit	– 279	– 928
Tax loss carry forwards	– 210	– 308
Inventories	– 101	1,216
Other	3	2
Total deferred taxes	**– 147**	**– 78**

As at December 31, 2019, the total deferred tax assets included income taxes recorded directly in equity in the amount of K€ 15,559 (December 31, 2018: K€ 13,162). The total deferred tax liabilities included no income taxes recorded directly in equity. The amount recorded directly in equity in 2019 as in 2018 related to actuarial gains/losses and derivatives/hedging.

For taxable losses totaling K€ 1,981 (thereof K€ 132 deductible until 2020, K€ 707 deductible until 2021, K€ 219 deductible until 2022), no deferred tax assets have been recorded as these losses will presumably not be offset against taxable gains until the expiration.

Provisions have not been established for additional taxes on the undistributed earnings of non-German subsidiaries. These earnings are considered to be permanently reinvested and could become subject to additional tax if remitted or deemed remitted as dividends. Under current German law, dividends from non-German and German subsidiaries are 95 % tax-exempt, i.e. 5 % of dividend income is not deductible from income for corporate tax purposes. The management estimates that the effects of this rule in Germany will be negligible.

25. Pensions and similar obligations

Defined benefit pension plans

COMPOSITION OF THE NET LIABILITY RECORDED IN THE BALANCE SHEET

	2019	2018
	in K€	in K€
Present value of funded defined benefit obligation	117,449	104,474
Present value of unfunded defined benefit obligation	11,350	10,313
Total present value of defined benefit obligation	128,799	114,787
Fair value of plan assets	– 64,696	– 59,149
Net defined benefit liability	**64,103**	**55,638**

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REGIONAL SPLIT OF THE NET LIABILITY RECORDED IN THE BALANCE SHEET

	2019	2018
	in K€	in K€
Germany	48,648	41,007
Europe (excluding Germany)	10,062	9,143
Rest of world	5,393	5,488
Net defined benefit liability	**64,103**	**55,638**

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For Pfeiffer Vacuum GmbH, there are plans in place consisting of old-age, invalidity, and surviving dependents benefits. These obligations are based upon plans reflecting period of service and final salary. However, these plans are closed for new employees since many years. For new employees, there is a retirement arrangement in place since December 31, 2007 which has been implemented as a direct commitment on a period of service and funded basis. Accordingly for all employees of Pfeiffer Vacuum GmbH an employer funded pension scheme is in place which is partially funded via the Pfeiffer Vacuum Trust e.V. There are no legally binding minimum funding requirements for these plans.

For former members of the Pfeiffer Vacuum Technology AG Management Board there are individually agreed plans in place, consisting of old-age, invalidity, and surviving dependents benefits. These obligations are based on period of service as well as final salary commitments and are also largely funded via the Pfeiffer Vacuum Trust e.V. Again, there are no legally binding minimum funding requirements. These benefit obligations are detailed in the compensation report (an element of MD&A).

For Pfeiffer Vacuum Inc., USA, there is a plan in place consisting of old-age, invalidity, and surviving dependents benefits with the obligations being based upon period of service and final salary. These benefits are partially funded via a trust arrangement. There are no legally binding minimum funding requirements.

For Pfeiffer Vacuum SAS, France, and for Pfeiffer Vacuum Semi Korea, Ltd., Republic of Korea, there are plans in place with the obligations being based upon period of service and final salary to be paid as a one-time installment due at the beginning of the retirement. The plan of Pfeiffer Vacuum Semi Korea, Ltd. is partially funded. There are no legally binding minimum funding requirements in France or the Republic of Korea.

COMPOSITION OF THE NET PENSION EXPENSES

	2019	2018
	in K€	in K€
Current service cost	3,520	3,527
Net interest expense	807	1,111
Net pension expenses	**4,327**	**4,638**

Net pension expenses were allocated to the functional expenses according to the input involved.

DEVELOPMENT OF THE DEFINED BENEFIT OBLIGATION

	2019	2018
	in K€	in K€
Present value of defined benefit obligation as at January 1	114,787	111,536
Current service cost	3,520	3,527
Interest cost on the defined benefit obligation	2,016	2,335
Actuarial gains/losses from changes in demographic assumptions	166	796
Actuarial gains/losses from changes in financial assumptions	12,080	– 731
Actuarial experience gains/losses	331	593
Benefits paid	– 4,212	– 3,725
Currency changes	111	456
Present value of defined benefit obligation as at December 31	**128,799**	**114,787**
Thereof attributable to:		
Active employees	64,014	61,180
Deferred employees	15,360	9,716
Pensioners	49,425	43,891

DEVELOPMENT OF PLAN ASSETS

	2019	2018
	in K€	in K€
Fair value of plan assets as at January 1	59,149	61,502
Interest income	1,209	1,224
Experience gains/losses	3,091	– 3,412
Company contributions	5,362	3,243
Benefit payments	– 4,212	– 3,725
Currency changes	97	317
Fair value of plan assets as at December 31	**64,696**	**59,149**

ACTUARIAL ASSUMPTIONS

	2019	2018
	in %	in %
Germany		
Discount rate	1.00	1.75
Wage and salary trend	3.00	3.00
Pension trend	2.00	2.00
Mortality tables	Heubeck 2018 G	Heubeck 2018 G
United States		
Discount rate	3.6	4.45
Wage and salary trend	2.00	2.00
Mortality tables	PRI-2012	RP 2014
France, Republic of Korea		
Discount rate (weighted average)	1.66	1.89
Wage and salary trend (weighted average)	3.48	3.48
Mortality tables France	Insee M/F 2007–2060	Insee M/F 2007–2060
Mortality tables Republic of Korea	Insurance Development Institute of Korea	Insurance Development Institute of Korea

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The actuarial assumptions with regard to the mortality tables in the USA changed in 2019. This resulted in an actuarial gain of K€ 50. The impact on future periods presently cannot be conclusively determined.

COMPOSITION OF PLAN ASSETS

	2019		2018	
	in K€	in %	in K€	in %
Equity securities	18,320	28.3	14,635	24.7
Debt securities	42,551	65.8	40,246	68.0
Cash and cash equivalents	772	1.2	1,512	2.6
Other	3,053	4.7	2,756	4.7
Total	**64,696**	**100.0**	**59,149**	**100.0**

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With the exemption of plan assets in the category “Other” totaling K€ 1,946 (December 31, 2018: K€ 1,604), all plan assets are traded on an active market.

Plan assets do not contain financial instruments issued by the Company or other assets owned by the Company.

Accounting for 84 % the vast majority of plan assets related to the funding of the German benefit plans. To invest these funded amounts fiducially and insolvency protected, Pfeiffer Vacuum Trust e.V. was founded. Pfeiffer Vacuum Trust e.V. issued a mutual fund with a pursued target equity allocation of up to 30 % as well as a pursued fixed-income securities and cash allocation of at least 70 %. The fund is managed by an unrelated third-party asset management company with the major conditions regarding the asset allocation being given and adjusted when necessary. Funds are invested conservatively using also a value safeguarding approach. Underlying risks in connection with the investment of plan assets, for example fair value and default risks, are minimized accordingly.

The risks relating to the defined benefit plans within Pfeiffer Vacuum Group predominantly relate to the determination of discount rates. Changes to this parameter impact disproportionately the present value with the current relatively low interest rate level leading to a comparably high benefit obligation. In addition, benefit obligation is impacted by the other actuarial assumptions (for example life expectancy, wage and salary trend, pension trend). Depending on the elements of the pension plan life expectancy or pension trend are of subordinate importance.

The following table shows the respective impact of an isolated adjustment of individual assumptions with all other parameters including the basic methodology kept constant compared to the original calculation.

SENSITIVITY ANALYSIS 2019

	Change in actuarial assumption	Impact on defined benefit obligation	
		in K€	in %
Present value of defined benefit obligation as at December 31, 2019		128,799	
Discount rate	1.0 %-point increase	– 16,754	– 13.0
	1.0 %-point decrease	24,679	19.2
Pension trend	0.25 %-point increase	3,130	2.4
	0.25 %-point decrease	– 2,986	– 2.3
Wage and salary trend	0.5 %-point increase	1,826	1.4
	0.5 %-point decrease	– 1,741	– 1.4
Life expectancy	increase by 1 year	5,514	4.3
	decrease by 1 year	– 5,490	– 4.3

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SENSITIVITY ANALYSIS 2018

	Change in actuarial assumption	Impact on defined benefit obligation	
		in K€	in %
Present value of defined benefit obligation as at December 31, 2018		114,787	
Discount rate	1.0 %-point increase	– 14,545	– 12.7
	1.0 %-point decrease	18,423	16.0
Pension trend	0.25 %-point increase	2,657	2.3
	0.25 %-point decrease	– 2,538	– 2.2
Wage and salary trend	0.5 %-point increase	1,788	1.6
	0.5 %-point decrease	– 1,693	– 1.5
Life expectancy	increase by 1 year	4,524	3.9
	decrease by 1 year	– 4,555	– 4.0

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EXPECTED MATURITY OF UNDISCOUNTED PENSION PAYMENTS

	2019	2018
	in K€	in K€
Less than 1 year	3,949	3,649
Between 1 and 2 years	4,092	3,881
Between 2 and 3 years	4,502	4,117
Between 3 and 4 years	5,021	4,535
Between 4 and 5 years	5,480	4,657
More than 5 until 10 years	27,950	27,437

Dec. 31

The weighted average duration of the defined benefit obligation at December 31, 2019 amounted to 16.2 years (December 31, 2018: 15.9 years). The expected contributions for defined benefit plans in 2020 will be approximately € 3.0 million.

Defined contribution plans

Employees of the Company in certain countries are covered by defined contribution plans. Generally, contributions are based upon a percentage of the employee’s wages or salaries. The costs of these plans charged to operations amounted to K€ 13,648 in 2019 (2018: K€ 12,721).

26. Trade accounts payable

Trade accounts payable do not bear any interest and, as in the year before, have maturities of less than one year.

27. Contract liabilities

Contract liabilities as of December 31, 2019 include obligations to transfer vacuum products or render services to Pfeiffer Vacuum's customers from whom payments have already been received. Presumably K€ 584 of the contract liabilities will be realized or fulfilled after more than 12 months.

Short-term contract liabilities recorded as at December 31, 2018 have been mainly realized as revenues in the fiscal year 2019.

28. Other payables

Other payables (K€ 23,406 as at December 31, 2019, and K€ 25,740 as at December 31, 2018) mainly consist of payroll taxes and VAT, as well as payables from social security contributions and legally binding participation programs. They do not bear any interest and, as in the year before, have maturities of less than one year.

29. Provisions

COMPOSITION OF PROVISIONS

	2019	2018
	in K€	in K€
Personnel provisions	21,511	23,574
Warranty provisions	15,343	15,939
Other provisions	1,881	2,113
Total	**38,735**	**41,626**

Dec. 31

Provisions for employee-related expenses primarily include provisions for profit-sharing obligations and bonuses.

Warranty provisions include the amounts expected due to claims in connection with product warranties. They are recorded as per the close of the fiscal year for realized revenues based on management's estimates and experience.

Other provisions include € 0.1 million provision for dismantling obligations resulting from leases.

30. Short-term financial liabilities

As in the year before short-term financial liabilities included bank liabilities in the amount of € 0.1 million maturing within one year.

Due to the new leasing accounting standard applied as at January 1, 2019, short-term Leasing liabilities amounting to K€ 3,766 are also included in this position (please refer to Note 23).

DEVELOPMENT OF PROVISIONS

	Personnel	Warranty	Other	Total
	in K€	in K€	in K€	in K€
Balance as at January 1, 2019	**23,574**	**15,939**	**2,113**	**41,626**
Currency changes	108	9	4	121
Additions	10,738	10,655	2,039	23,432
Utilization	– 11,359	– 11,136	– 2,255	– 24,750
Releases	– 1,550	– 124	– 20	– 1,694
Balance as at December 31, 2019	**21,511**	**15,343**	**1,881**	**38,735**

31. Commitments and other financial obligations

The Company has entered into leases and maintenance agreements which expire on various dates, some of which are renewable. The tables below present the maximum amount of the contractual commitments as at year end, classified by the periods in which the contingent liabilities or commitments will expire.

Purchase obligations include long-term arrangements for future supplies of materials. Rental expenses amounted to € 0.1 million (2018: € 5.4 million). This reduction results from the mandatory application of the new accounting rules for leases. Accordingly, the remaining terms of lease contracts within the scope of IFRS 16 are recorded under financial liabilities (please refer to Note 23 and Note 30). Only leases which do not meet the criteria of IFRS 16 are reported in the above table.

CONTRACTUAL OBLIGATIONS AS AT DECEMBER 31, 2019

		Payments Due by Period			
	Total	< 1 year	1 – 3 years	3 – 5 years	> 5 years
	in K€	in K€	in K€	in K€	in K€
Operating leases (not IFRS 16)	39	25	11	3	–
Purchase obligations	49,277	44,715	4,562	–	–
Repair and maintenance	2,705	2,178	291	58	178
Total	**52,021**	**46,918**	**4,864**	**61**	**178**

CONTRACTUAL OBLIGATIONS AS AT DECEMBER 31, 2018

		Payments Due by Period			
	Total	< 1 year	1 – 3 years	3 – 5 years	> 5 years
	in K€	in K€	in K€	in K€	in K€
Operating leases	14,615	4,427	5,267	2,285	2,636
Purchase obligations	35,325	34,070	1,255	–	–
Repair and maintenance	5,087	2,834	310	179	1,764
Total	**55,027**	**41,331**	**6,832**	**2,464**	**4,400**

32. Segment reporting

The Company's business operations include the development, manufacture, sale and service of vacuum pumps, vacuum components and instruments, as well as vacuum systems. The subsidiaries in the individual countries are independent legal entities with their own management, which distribute products and provide services. Some entities within the Group additionally execute production functions. The entire product portfolio is offered by all sales subsidiaries.

Controlling of business development by corporate management is carried out on the level of the legal entities. Accordingly, the Company identifies its primary operating segments by legal entity. Due to the similarity of their economic environment, the same product portfolio sold, same sales markets, same cost structures and same sales channels, the Company basically aggregates its European and Asian subsidiaries into one reporting segment, "Europe (excluding Germany and France)" and "Rest of Asia". In contrast, the production companies in Germany, France and the Republic of Korea were presented separately each as an individual segment. This was caused by the different functions of these entities, predominantly resulting from the existing production function. For this reason the prerequisites for an aggregation with the other segments are not given. The purely sales-oriented entity in the US is thus also presented separately. All operating segments that individually or as a group do not have to be reported separately are included in the segment "All others." Accordingly this segment mainly includes the entities producing instruments and components. Unchanged compared to previous year, all information is based upon the geographic location of the Group Company in question.

Transactions between segments are based upon the arm's length principle. The internal reporting on which the disclosures are based is IFRS. Segment sales and segment results in the primary reporting format initially include the effects of inter-segment transactions. These effects are eliminated in connection with the consolidation process.

SEGMENT REPORTING AS AT DECEMBER 31, 2019

	Germany	France	Rest of Europe	USA	USA (Production)	Republic of Korea	Rest of Asia	All Others	Consolidation	Group
	in K€	in K€	in K€	in K€	in K€	in K€	in K€	in K€	in K€	in K€
Net sales	230,191	201,339	108,066	124,424	41,613	73,589	111,702	53,428	– 311,487	632,865
Third party	107,041	53,969	107,976	123,786	37,481	69,316	102,991	30,305	–	632,865
Intercompany	123,150	147,370	90	638	4,132	4,273	8,711	23,123	– 311,487	–
Operating profit	28,073	8,461	7,815	6,490	– 60	6,279	9,650	– 1,556	–	65,152
Financial income	14	– 205	– 15	938	– 802	15	– 209	– 373	–	– 637
Earnings before taxes	28,087	8,256	7,800	7,428	– 862	6,294	9,441	– 1,929	–	64,515
Segment assets	154,120	134,831	49,791	62,103	70,670	55,292	78,804	53,964	–	659,575
Thereof: Assets according to IFRS 8.33 (b)[1]	52,841	71,670	6,685	21,822	45,147	17,574	25,266	32,403	–	273,408
Segment liabilities	129,714	69,064	17,959	11,033	5,482	13,714	13,076	6,088	–	266,130
Capital expenditures:										
Property, plant and equipment[2]	5,135	10,108	551	533	166	2,518	3,774	6,319	–	29,104
Intangible assets	4,675	792	4	–	–	–	78	260	–	5,809
Depreciation:										
Property, plant and equipment[3]	4,987	4,831	1,144	1,680	764	1,464	2,856	2,424	–	20,150
Intangible assets	719	849	5	4	1,708	6	23	762	–	4,076

[1] Non-current assets other than financial instruments, deferred tax assets and prepaid pension cost
[2] Including investment properties excluding addition of right-of-use-assets
[3] Including right-of-use-assets and investment properties

SEGMENT REPORTING AS AT DECEMBER 31, 2018

	Germany	France	Rest of Europe	USA	USA (production)	Republic of Korea	Rest of Asia	All Others	Consolidation	Group
	in K€	in K€	in K€	in K€	in K€	in K€	in K€	in K€	in K€	in K€
Net sales	244,616	224,226	113,217	112,405	48,683	84,154	111,488	53,648	– 332,712	659,725
Third party	116,012	57,042	112,807	112,237	44,495	81,618	101,153	34,361	–	659,725
Intercompany	128,604	167,184	410	168	4,188	2,536	10,335	19,287	– 332,712	–
Operating profit	44,726	15,863	9,265	5,842	– 626	6,021	11,504	2,535	–	95,130
Financial income	– 237	– 179	4	1,318	– 1,269	42	13	– 211	–	– 519
Earnings before taxes	44,489	15,684	9,269	7,160	– 1,895	6,063	11,517	2,324	–	94,611
Segment assets	150,673	123,824	48,544	64,075	69,344	45,561	72,597	49,542	–	624,160
Thereof: Assets according to IFRS 8.33 (b)[1]	48,415	61,376	3,808	20,656	45,838	16,736	19,740	26,940	–	243,509
Segment liabilities	121,876	65,314	17,577	11,066	6,732	11,110	13,667	4,593	–	251,935
Capital expenditures:										
Property, plant and equipment[2]	6,838	7,633	477	5,030	306	1,745	2,806	7,661	–	32,496
Intangible assets	482	373	–	7	–	95	1	215	–	1,173
Depreciation:										
Property, plant and equipment[2]	4,646	3,964	431	577	754	702	1,225	1,314	–	13,613
Intangible assets	620	845	4	2	2,704	82	16	705	–	4,978

[1] Non-current assets other than financial instruments, deferred tax assets and prepaid pension cost
[2] Including investment properties

33. Financial instruments

Fair value

The net book value of financial instruments (e.g. cash and cash equivalents, trade accounts receivable and trade accounts payable, other accounts receivable and payable) essentially equals their fair value.

Interest rate risks

The interest-bearing portion of cash and cash equivalents involves interest rate risks. All investment forms have variable interest rates and are invested on a short-term basis. There are no further investment forms that result in interest rate risks within the Pfeiffer Vacuum Group.

Due to the short investment period for cash and cash equivalents, the agreed interest rate equals the market rate. Even if the market rate should change significantly, there will be no material impact on the fair value of cash and cash equivalents because the interest rate can be adjusted after only a short period of time.

As at December 31, 2019, as in the year before, there were no more interest-sensitive financial assets. As a result of cash and cash equivalents as at December 31, 2019, an increase (decrease) in interest rate by 50 basis points would increase (decrease) earnings by K€ 560 (December 31, 2018: increase/decrease by K€ 542). As a result of financial liabilities shown as at December 31, 2019, an increase (decrease) in interest rate by 50 basis points would decrease (increase) earnings by K€ 300 (December 31, 2018: increase (decrease) by K€ 300 .

Credit risks

Due to the Company's vastly heterogeneous customer structure, there are no material credit risk concentrations within the Group. Credit risks are additionally minimized through rigorous accounts receivable management and by monitoring our customers' payment patterns. Furthermore, deliveries to new customers are essentially made only after credit assessment, against payment in advance or credit limit. As a result, Pfeiffer Vacuum is able to keep the level of its allowance for doubtful accounts low, even in difficult economic times. The maximum theoretical credit risk equates the gross book value less already recognized allowance. For further details in respect to risk provision for trade accounts receivables please refer to Note 16.

Liquidity risks

Due to the above-average level of cash and cash equivalents, no liquidity risks can be identified.

Foreign exchange rate risks

Approximately 54 % (2018: 53 %) of the Company's net sales are denominated in currencies other than the euro, primarily in U.S. dollars. The Company enters into foreign currency forward contracts and options to hedge the exposure of its forecasted sales against currency fluctuations. All derivative financial instruments are entered into only within this scope.

The derivatives that qualify for cash flow hedges under IFRS 9 /IAS 39 are recognized either as assets or liabilities at their fair values. Changes in the values of these cash flow hedges are recorded in equity under other equity components, net of applicable taxes. These amounts are subsequently reclassified as earnings (foreign exchange gains/losses) in the same period as the underlying transactions affect operating income. For the fiscal years ended December 31, 2019, and 2018, there were no amounts that were recognized in earnings due to hedge ineffectiveness. For the same periods, no gains or losses had to be reclassified to earnings from other equity components as a result of the discontinuance of cash flow hedges.

If derivatives are kept, These derivatives are marked to market at period end using quoted forward rates. The negative fair values of the cash flow hedges recorded under other accounts payable for the period ended December 31, 2019, totaled K€ 43. Because the changes in fair value for cash flow hedges are recorded directly in equity, other equity components increased by K€ 39, net of taxes of K€ 4, as at December 31, 2019. As at December 31, 2018, there were no contracts to be classified as cash flow hedges. The derivatives classified as fair value hedges totaled K€ 26 as at December 31, 2019, were recorded through the income statement, and shown with an amount of K€ 26 under other accounts receivables and with an amount of K€ 29 under other payables (December 31, 2018: K€ – 15). The Company does not engage in speculative hedging for investment purposes. As at December 31, 2019, and at December 31, 2018, no contracts held by the Company had a maturity date greater than one year.

As at December 31, 2019, the Company has entered into foreign currency forward contracts (U.S dollar) totaling € 7.7 million (December 31, 2018: US dollar and Korean Won, € 9.7 million) with a remaining term of less than one year. Pfeiffer Vacuum performs ongoing credit evaluations of the parties to these contracts and enters into contracts only with well-established financial institutions. Currency risks as defined by IFRS 7 arise as a result of financial instruments being denominated in a currency that is not the functional currency and being of a monetary nature; differences resulting from the translation of financial statements into the Group's presentation currency are not taken into consideration. Relevant risk variables are generally all non-functional currencies in which Pfeiffer Vacuum has entered into financial instruments. The vast majority of non-derivative monetary financial instruments within the Pfeiffer Vacuum Group are directly denominated in functional currency. In variance thereto, exchange rate risks arise from the securities available-for-sale, from a portion of trade accounts receivable, and from derivative financial instruments. If derivative financial instruments classify as cash flow hedges, changes in the exchange rate do not impact the income statement but are recorded directly in equity. Exchange rate-based changes in securities available-for-sale are also recorded directly in equity.

Had the euro, as at December 31, 2019, depreciated 10 %, net income would have been higher by K€ 6,318 and the total equity higher by K€ 6,035. A 10 % appreciation in the euro as at that balance sheet date would have decreased net income by K€ 5,078 and the total equity by K€ 4,591. Had the euro, as at December 31, 2018, appreciated 10 %, net income would have been higher by K€ 2,334. A 10 % depreciation in the euro as at December 31, 2018, would have decreased net income by K€ 2,600. In all cases, net income and equity were affected mostly by the sensitivity of the U.S. dollar which is predominantly material for the Consolidated Financial Statements.

Composition of financial instruments

The following tables show the composition of financial instruments by balance sheet line item and valuation category and fair value as well as net results by valuation category.

COMPOSITION OF FINANCIAL INSTRUMENTS AS AT DECEMBER 31, 2019

			Amounts Recognized According to IFRS 9			
	Category According to IFRS 9	Net Book Value	Amortized Cost	Fair Value Recognized in Equity	Fair Value Through Profit and Loss	Fair Value
		in K€	in K€	in K€	in K€	in K€
Assets						
Cash and cash equivalents	AC	111,980	111,980	–	–	111,980
Trade accounts receivable and contract assets	AC	90,727	90,727	–	–	90,727
Other financial assets	AC	7,192	7,192	–	–	7,192
Derivative financial instruments (incl.hedges)	FVOCI	43	–	43	–	43
Derivative financial instruments (excl. hedges)	FVPL	26	–	–	26	26
Liabilities						
Trade accounts payable	AC	41,137	41,137	–	–	41,137
Financial liabilities (excl. leasing)	AC	60,122	60,122	–	–	60,122
Derivative financial instruments (incl. hedges)	FVOCI	–	–	–	–	–
Derivative financial instruments (excl. hedges)	FVPL	–	–	–	–	–
Totals by valuation categories:						
Amortized Costs (AC)[1]		108,640	108,640	–	–	108,640
Fair Value through Profit or Loss (FVPL)[2]		26	–	–	26	26
Fair Value through other Comprehensive Income (FVOCI)[3]		43	–	43	–	43

[1] AC = Amortized Costs
[2] FVPL = Fair Value through Profit or Loss
[3] FVOCI = Fair Value through other Comprehensive Income

COMPOSITION OF FINANCIAL INSTRUMENTS AS AT DECEMBER 31, 2018

			Amounts Recognized According to IFRS 9			
	Category according to IFRS 9	Net Book Value	Amortized Cost	Fair Value Recognized in Equity	Fair Value Through Profit and Loss	Fair Value
		in K€	in K€	in K€	in K€	in K€
Assets						
Cash and cash equivalents	AC	108,380	108,380	–	–	108,380
Trade accounts receivable and contract assets	AC	92,462	92,462	–	–	92,462
Other financial assets	AC	4,891	4,891	–	–	4,891
Derivative financial instruments (excl.hedges)	FVPL	14	–	–	14	14
Liabilities						
Trade accounts payable	AC	38,054	38,054	–	–	38,054
Financial liabilities	AC	60,277	60,277	–	–	60,277
Derivative financial instruments (incl. hedges)	FVOCI	13	–	13	–	13
Derivative financial instruments (excl. hedges)	FVPL	29	–	–	29	29
Totals by valuation categories:						
Amortized Costs (AC)[1]		107,402	107,402	–	–	107,402
Fair Value through other Comprehensive Income (FVOCI)[2]		– 13	–	– 13	–	– 13
Fair Value through Profit or Loss (FVPL)[3]		– 15	–	–	– 15	– 15

[1] AC = Amortized Costs
[2] FVOCI = Fair Value through other Comprehensive Income
[3] FVPL = Fair Value through Profit or Loss

NET RESULTS BY VALUATION CATEGORY 2019

		From Subsequent Valuation				Net Result
	From Interest/ Dividends	At Fair Value	Currency Translation	Impairment/ Reversal of Impairment	From Derecognition	2019
	in K€	in K€	in K€	in K€	in K€	in K€
Financial Instruments (AC)[1]	- 638	–	- 169	- 350	291	- 866
Derivative Financial Instrumente incl. hedges (FVOCI)[2]	–	43	–	–	–	43
Derivative Financial Instrumente excl. hedges (FVPL)[3]	–	26	–	–	–	26

[1] AC = Amortized Costs)
[2] FVOCI = Fair Value through other Comprehensive Income
[3] FVPL = Fair Value through Profit or Loss

NET RESULTS BY VALUATION CATEGORY 2018

		From Subsequent Valuation				Net Result
	From Interest/ Dividends	At Fair Value	Currency Translation	Impairment/ Reversal of Impairment	From Derecognition	2018
	in K€	in K€	in K€	in K€	in K€	in K€
Financial Instruments (AC)[1]	- 517	–	772	- 590	159	- 176
Derivative Financial Instrumente incl. hedges (FVOCI)[2]	–	- 13	–	–	–	- 13
Derivative Financial Instrumente excl. hedges (FVPL)[3]	–	- 15	–	–	–	- 15

[1] AC = Amortized Costs)
[2] FVOCI = Fair Value through other Comprehensive Income
[3] FVPL = Fair Value through Profit or Loss

Determination of fair values of financial instruments

Determination of the fair value of derivative financial instruments (K€ 69 as at December 31, 2019; K€ –28 as at December 31, 2018) was done according to level 2 of the fair value hierarchy as set out in IFRS 13 "Fair Value Measurement" using accepted valuation principles and directly obtainable and up-to-date market parameters. A significant default risk is not given for these financial instruments.

In respect to the determination of fair value of financial liabilities the agreed variable interest rates are equal to the current rates customary in the market. Accordingly, the net book values correspond to their fair values.

Due to the underlying short terms fair values of trade accounts receivable and payable, other accounts receivable and payable and cash and cash equivalents equal their respective net book values.

Maturity of financial instruments

The following table shows the maturity of finance liabilities according to expiry date classes based on the maturity as of the balance sheet date. This analysis only relates to financial instruments and finance lease liabilities and includes undiscounted cash-flows. Reconciliation to the amounts in the balance sheet is thus basically not possible.

MATURITIES AS OF DECEMBER 31, 2019

	up to 1 year	1 year up to 5 years	> 5 years	Total
	in K€	in K€	in K€	in K€
Financial liabilities	122	60,000	–	60,122
Finance lease liabilities	4,157	7,040	2,544	13,741
Trade accounts payable	41,137	–	–	41,137

MATURITIES AS OF DECEMBER 31, 2018

	up to 1 year	1 year up to 5 years	> 5 years	Total
	in K€	in K€	in K€	in K€
Financial liabilities	23	60,000	–	60,023
Finance lease liabilities	72	182	–	254
Trade accounts payable	38,054	–	–	38,054

The following table shows the changes in financial liabilities that were deemed as financing activities in the Consolidated Statements of Cash-flows.

NET DEBT RECONCILIATION

	Loans	Lease liabilities	Other liabilities	Total
	in K€	in K€	in K€	in K€
Net book value as at January 1, 2018	**60,005**	**324**	**–**	**60,329**
Proceeds from financial liabilities	–	–	23	23
Repayment of financial liabilities	-5	-82	–	-87
Thereof cash flow-relevant	**-5**	**-82**	**23**	**-64**
Foreign exchange differences	–	12	–	12
Net book value as at December 31, 2018	**60,000**	**254**	**23**	**60,277**
IFRS 16 adjustment		17,645		17,645
Proceeds from financial liabilities	–	751	99	850
Repayment of financial liabilities	–	-5,257	–	-5,257
Thereof cash flow-relevant	**–**	**-5,257**	**–**	**-5,257**
Foreign exchange differences	–	102	–	102
Net book value as at December 31, 2019	**60,000**	**13,495**	**122**	**73,617**

34. Management of financial risks

With an equity ratio of 59.6 % as at December 31, 2019, even after the increase of the financial liabilities due to the first time application of IFRS 16, Pfeiffer Vacuum still has an equity base that is high. Additionally, cash and cash equivalents totaled € 112.0 million as at December 31, 2019. Despite the financial liabilities taken out totaling € 73.6 million as of December 31, 2019 (December 31, 2018: € 60.3 million) the Group shows no indebtedness on a net basis. Again, the required liquidity range to successfully develop Pfeiffer Vacuum does exist.

Liquid assets are invested on a short-term conservative basis. Due to its high equity ratio and its good liquidity, even after the acquisition, Pfeiffer Vacuum will not depend upon interest-bearing liabilities to fund its capital expenditures for replacement and expansion or the dividend payment. Moreover, there are sufficient liquidity reserves to respond to changes in the economic situation.

35. Earnings per share

COMPUTATION OF EARNINGS PER SHARE

	2019	2018
Net income (in K€)	48,357	68,879
Weighted average number of shares	9,867,659	9,867,659
Number of conversion rights	–	–
Adjusted weighted average number of shares	9,867,659	9,867,659
Earnings per share in € (basic/diluted)	4.90	6.98

There were no transactions with ordinary shares or ordinary shares issued during the period between the balance sheet date of December 31, 2019, and the preparation of the Consolidated Financial Statements.

ADDITIONAL NOTES AND SUPPLEMENTAL INFORMATION

36. Related party disclosures

Related party transactions predominantly consist of all transactions with those companies included in the Consolidated Financial Statements. The amounts of these transactions are detailed in the segment reporting in Note 32, which also includes intercompany sales. All transactions are carried out at conditions that are usual and customary in the market and are entirely eliminated during the consolidation process. Therefore, there is no impact on financial position or results. Pfeiffer Vacuum does not have holdings in any jointly controlled entities. Furthermore, no control exists with respect to special purpose entities.

Please refer to Note 40 and Note 41 regarding the compensation paid to the members of the Management and Supervisory Board, as well as regarding potential transactions with members of these corporate bodies. Aside from their activities on the Supervisory Board, the members of the Supervisory Board do not provide individual services for the Group or any of its companies. In contrast thereto, the employee representatives on the Supervisory Board receive salaries under the rules of the respective employment contracts for their work at the Company.

In 2019, the reimbursements from Pfeiffer Vacuum Trust e. V. amounted to € 2.6 million (2018: € 2.5 million). Contributions to Pfeiffer Vacuum Trust e. V. totaled € 2.7 million in 2019 (2018: € 2.7 million).

As of December 31, 2019, Dr. Karl Busch, Ms. Ayhan Busch, Ms. Ayla Busch, Mr. Sami Busch, and Mr. Kaya Busch, all Germany, together had 60.22 % of the voting rights of the Company according to the data available (December 31, 2018: 50.02 %). The shares are indirectly held through Pangea GmbH, Maulburg, Germany, and further independent legal entities belonging to the family-run Busch group. Based on unchanged arm's length conditions, goods in an aggregated purchasing value of a very low single digit million Euro amount were received from an operating company of the Busch group in the fiscal years 2019 and 2018. Busch SE, Maulburg, is the parent company of the Busch Group and thus also the parent company of Pfeiffer Vacuum.

Members of the Management and Supervisory Boards held an aggregate total of 5,942,585 shares of the Company as at December 31, 2019 (2018: 4,937,639). The change resulted from the shareholdings of Busch group which are also attributable to the Chairwoman of the Supervisory Board Ayla Busch.

37. Events after the balance sheet date

Since the beginning of the 2020 fiscal year, there have not been any significant changes in the company situation or the industry environment.

38. Personnel expenses

PERSONNEL EXPENSES

	2019	2018[1]
	in K€	in K€
Wages and salaries	– 171,276	– 161,289
Social security, pension and other benefit cost	– 39,732	– 37,596
Thereof for pensions	– 17,975	– 17,359
Total	**– 211,008**	**– 198,885**

[1] In connection with a revised scope within the personnel area the 2018 amounts were adjusted

39. Number of employees

The number of employees was as follows as at December 31, 2019, and 2018:

NUMBER OF EMPLOYEES

	2019	2018
Annual average		
Male	2,675	2,559
Female	578	542
Total	**3,253**	**3,101**
Balance sheet date		
Male	2,677	2,646
Female	599	558
Total	**3,276**	**3,204**

The number of employees includes apprentices (December 31, 2019: 92, December 31, 2018: 96).

40. Management Board

Since July 1, 2019, the Management Board had consisted of Dr. Eric Taberlet, Diplom-Ingenieur, (Chairman of the Management Board and CEO) and Nathalie Benedikt, Diplom-Betriebswirtin (Chief Financial Officer). Diplom-Ingenieur Dr. Matthias Wiemer (Board Member) and Diplom-Physiker Dr. Ulrich von Hülsen (CTO) resigned as Board Members as of June 30, 2019.

Total compensation recorded in the income statement for the aforesaid members of the Management Board for fiscal 2019 totaled € 1.7 million (2018: € 1.9 million). € 1.2 million thereof related to short-term fixed compensation (2018: € 1.1 million) and € 0.3 million to short-term variable benefits (2018: 0.6 million) and € 0.1 million to long-term variable benefits (2018: € 0.2 million). Short-term variable benefits recorded in the income statement in 2018 were paid out in 2019. Open balances with the Board Members as of December 31, 2019, only related to the provisions for the variable compensation and totaled € 0.7 million (2018: € 0.8million). Total pensions expenses in 2019 totaled € 0.3 million (2018: € 0.2million). For active members of the Board of Management in 2018, a net pension obligation of € 1.6 million was recorded as of December 31, 2018.

As of December 31, 2019, there were no pension commitments granted to active Board members and therefore no pension obligations have been recorded. Pursuant to § 289a, Sub-Para. 2, Sentence 2, German Commercial Code ("HGB") or § 315a, Sub-Para. 2, Sentence 2, German Commercial Code ("HGB"), the compensation paid to the members of the Management Board is detailed in the compensation report (an element of the Group Management Report see page 086). Additionally, the distribution of responsibilities within the Management Board is shown in the Group Management Report see page 082.

Benefits to former members of the Management Board (pensions) again amounted to € 0.4 million. As of December 31, 2019, the net benefit obligation recorded for this group totaled € 8.3 million (2018: € 5.3 million).

With effect from January 1, 2020, Mr. Wolfgang Ehrk was appointed a member of the Management Board of Pfeiffer Vacuum Technology AG and assumed the function of COO within the Management Board.

41. Supervisory Board

Pursuant to § 96, Sub-Para. 1, § 101, Sub-Para. 1, German Stock Corporation Act ("AktG"), § 4, German One-Third Participation Act ("DrittelbG") of 2004, and § 9, Sub-Para. 1, Articles of Association and Bylaws, the Supervisory Board comprises four members elected by the Annual Shareholders Meeting and two members elected by the Company's employees.

The Supervisory Board members elected by the shareholders, Götz Timmerbeil und Filippo Th. Beck, were voted during the Annual General Meeting to a term of office of five years in May 2016. The term of office of the subsequently elected Supervisory Board members Ayla Busch and Henrik Newerla, who were appointed in May 2018, also ends on the day of the Annual General Meeting which resolves on the discharge for the financial year 2020.

Following the age-related retirement of Helmut Bernhardt on June 30, 2019, Matthias Mädler joined the Supervisory Board as an employee representative with effect from July 1, 2019.

Membership during the course of the year 2019 was therefore as follows:

- Ayla Busch (Chairwoman)
  Co-CEO of Busch SE, Maulburg
- Götz Timmerbeil (Vice Chairman)
  Certified Public Accountant and Tax Advisor
- Filippo Th. Beck
  Attorney of Swiss law
- Helmut Bernhardt (Employee Representative),
  until June 30,2019, Development Engineer
- Manfred Gath (Employee Representative),
  Chairman of the Employee Council
- Henrik Newerla, self-employed management consultant
- Matthias Mädler (Employee Representative),
  from July 1, 2019, Development Engineer

The following members exercised further mandates. These are supervisory board mandates unless otherwise indicated:

- Ayla Busch:
  - Busch Taiwan Corporation, New Taipei City, Taiwan, Supervisor, until January 17, 2019
  - Busch Vakuumteknik A/S, Ry, Denmark, Member of the supervisory organ, until January 16, 2019

- Götz Timmerbeil:
  - Richard Stein GmbH & Co. KG, Engelskirchen, (Chairman of the Advisory Board)
  - Arena Gummersbach GmbH & Co. KG, Gummersbach (Deputy Chairman)

- Filippo Th. Beck:
  - Candoria Group, Baar (Switzerland), member of the supervisory organ of Candoria Holding AG, president of the supervisory organ of Progresa Holding AG and Sendaya Holding SA (formerly: Candoria Luxembourg Holding SA), Luxembourg;
  - Tenro Group, Bottmingen (Switzerland), member of the supervisory organ of various companies in the group (including Bellavista Services AG, that was separately listed in the previous year),
  - Biamathea AG, Basel (Switzerland), member of the supervisory organ,
  - Polyterra Liegenschaften AG in liquidation, Küsnacht (Switzerland), member of the supervisory organ and liquidator, until July 10, 2019,
  - Tainn-Immobilien AG, Berne (Switzerland), member of the supervisory organ,

The members of the Supervisory Board received a fixed short-term remuneration of K€ 315 (2018: K€ 308) in the period under review. There were no open balances with the Supervisory Board Members as of December 31, 2019 (2018: € 0.1 million). Pursuant to § 289a, Sub-Para. 2, Sentence 2, German Commercial Code ("HGB") or § 315a, Sub-Para. 2, Sentence 2, German Commercial Code ("HGB"), the compensation paid to the members of the Supervisory Board is detailed in the compensation report (an element of MD & A see page 090).

Manfred Gath also retired from the Supervisory Board as an employee representative on December 31, 2019 for reasons of age. Stefan Röser replaced him on the Supervisory Board with effect from January 1, 2020.

42. Exempting provision under § 264 Sub-Para. 3, German Commercial Code ("HGB")

Pfeiffer Vacuum GmbH, Asslar, Germany, is included in the Consolidated Financial Statements of Pfeiffer Vacuum Technology AG. Accordingly, this company has made use of the exempting provision under § 264, Sub-Para. 3, German Commercial Code.

43. Audit fees for independent auditors

The expenses for services rendered by the auditor of the Consolidated Financial Statements recorded in the statements of income were as follows for fiscal 2019 and 2018:

AUDIT FEES FOR THE AUDITOR OF THE CONSOLIDATED FINANCIAL STATEMENTS

	2019	2018
	in K€	in K€
Fees resulting from:		
Audit services	-882	-836
Other certification and consulting services	-71	–
Tax advisory services	-11	-26
Other services	-346	-299
Total	**-1,310**	**-1,161**

The total for the year 2019 comprised also fees to PricewaterhouseCoopers GmbH, Wirtschaftsprüfungsgesellschaft, Frankfurt am Main in the amount of K€ 482 for audit services, K€ 6 for tax advisory services, K€ 71 for other certification services and K€ 340 for other services (2018: K€ 439 for audit services, K€ 21 for tax advisory services, K€ 268 for other services). The audit of the Consolidated Financial Statements as of December 31, 2019, was carried out by PricewaterhouseCoopers GmbH, Wirtschaftsprüfungsgesellschaft, Frankfurt/Main. Significant other services rendered by the auditor for Pfeiffer Vacuum Technology AG related to advisory in connection with the application of new laws and with the enhancement of the compliance management system. Other certification services related to the audit of the Group's non-financial declaration.

44. German Corporate Governance Code/ Declaration pursuant to § 161, German Stock Corporation Act ("AktG")

On November 4, 2019, the Management and Supervisory Boards of Pfeiffer Vacuum Technology AG submitted the Statement of Compliance for the year 2019 required pursuant to § 161 of the Germany Stock Corporation Act ("AktG"). It was made permanently accessible to shareholders on the Corporation's website (↗ Pfeiffer Vacuum).

Since the submission of the last statement of compliance on December 5, 2018, Pfeiffer Vacuum Technology AG complies with all recommendations of the German Corporate Governance Code, as amended in February 2017, with the following two exceptions:

- The German Corporate Governance Code recommends a deductible for the Supervisory Board's D&O insurance (Paragraph 3.8). The Supervisory Board's actual D&O insurance does not contain a deductible. A deductible would not improve the Supervisory Board's overall motivation and sense of responsibility as the members work for the benefit of the Group.

- The German Corporate Governance Code recommends that a term limit is established for the period on the Supervisory Board (Paragraph 5.4.1). In the financial year 2018, the Supervisory Board has set a specified limit of 15 years for the period of membership on the Supervisory Board. All members of the Supervisory Board fulfil this requirement, with the exception of Mr. Götz Timmerbeil; the Supervisory Board made an exception for him, since he possesses a high level of expertise and many years of knowledge of the Company, which the Supervisory Board would not like to forgo at this point in time and after the resolved changes to the Supervisory Board in the past three years.

45. Authorization for issuance of Consolidated Financial Statements

Through a resolution by the Management Board on February 28, 2020, the Consolidated Financial Statements were authorized for issuance.

Asslar, February 28, 2020

The Management Board

Dr. Eric Taberlet
Dr. Eric Taberlet

Nathalie Benedikt
Nathalie Benedikt

Wolfgang Ehrk
Wolfgang Ehrk

CERTIFICATION OF LEGAL REPRESENTATIVES

To the best of our knowledge, and in accordance with the applicable reporting principles, the Consolidated Financial Statements give a true and fair view of the assets, liabilities, financial position and profit or loss of the Group, and the Group management report includes a fair review of the development and performance of the business and the position of the Group, together with a description of the principal opportunities and risks associated with the expected development of the Group.

Asslar, February 28, 2020

The Management Board

Dr. Eric Taberlet	Nathalie Benedikt	Wolfgang Ehrk
Dr. Eric Taberlet	Nathalie Benedikt	Wolfgang Ehrk

INDEPENDENT AUDITOR'S REPORT

To Pfeiffer Vacuum Technology AG, Asslar

REPORT ON THE AUDIT OF THE CONSOLIDATED FINANCIAL STATEMENTS AND OF THE GROUP MANAGEMENT REPORT

Audit Opinions

We have audited the consolidated financial statements of Pfeiffer Vacuum Technology AG, Asslar, and its subsidiaries (the Group), which comprise the consolidated statement of financial position as at December 31, 2019, and the consolidated statement of comprehensive income, consolidated statement of income, consolidated statement of changes in equity and consolidated statement of cash flows for the financial year from January 1, 2019 to December 31, 2019, and notes to the consolidated financial statements, including a summary of significant accounting policies.

In addition, we have audited the group management report of Pfeiffer Vacuum Technology AG for the financial year from January 1, 2019 to December 31, 2019. In accordance with the German legal requirements, we have not audited the content of those parts of the group management report listed in the "Other Information" section of our auditor's report.

In our opinion, on the basis of the knowledge obtained in the audit,

- the accompanying consolidated financial statements comply, in all material respects, with the IFRSs as adopted by the EU, and the additional requirements of German commercial law pursuant to § 315e Sub-Para. 1 HGB ["Handelsgesetzbuch": German Commercial Code] and full IFRSs and, in compliance with these requirements, give a true and fair view of the assets, liabilities, and financial position of the Group as at December 31, 2019, and of its financial performance for the short financial year from January 1, 2019 to December 31, 2019,

  and

- the accompanying group management report as a whole provides an appropriate view of the Group's position. In all material respects, this group management report is consistent with the consolidated financial statements, complies with German legal requirements and appropriately presents the opportunities and risks of future development. Our audit opinion on the group management report does not cover the content of those parts of the group management report listed in the "Other Information" section of our auditor's report.

Pursuant to § 322 Sub-Para. 3, sentence 1 HGB, we declare that our audit has not led to any reservations relating to the legal compliance of the consolidated financial statements and of the group man-agement report.

Basis for the Audit Opinions

We conducted our audit of the consolidated financial statements and of the group management report in accordance with § 317 HGB and the EU Audit Regulation (No. 537/2014, referred to subsequently as "EU Audit Regulation") in compliance with German Generally Accepted Standards for Financial Statement Audits promulgated by the Institut der Wirtschaftsprüfer [Institute of Public Auditors in Germany] (IDW). Our responsibilities under those requirements and principles are further described in the "Auditor's Responsibilities for the Audit of the Consolidated Financial Statements and of the Group Management Report" section of our auditor's report. We are independent of the group entities in accordance with the requirements of European law and German commercial and professional law, and we have fulfilled our other German professional responsibilities in accordance with these requirements. In addition, in accordance with Article 10 Sub-Para. 2 point (f) of the EU Audit Regulation, we declare that we have not provided non-audit services prohibited under Article 5 Sub-Para. 1 of the EU Audit Regulation. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinions on the consolidated financial statements and on the group management report.

Key Audit Matters in the Audit of the Consolidated Financial Statements

Key audit matters are those matters that, in our professional judgment, were of most significance in our audit of the consolidated financial statements for the short financial year from January 1, 2019 to December 31, 2019. These matters were addressed in the context of our audit of the consolidated financial statements as a whole, and in forming our audit opinion thereon; we do not provide a separate audit opinion on these matters.

In our view, the matters of most significance in our audit were as follows:

1. Recoverability of goodwill

2. Impact of the initial application of IFRS 16 on lease accounting

Our presentation of these key audit matters has been structured in each case as follows:

1. Matter and issue
2. Audit approach and findings
3. Reference to further information

Hereinafter we present the key audit matters:

1. Recoverability of goodwill

1. In the Company's consolidated financial statements goodwill amounting in total to € 81.4 million (12.3 % of total assets) is reported under the Intangible assets balance sheet item. Goodwill is tested for impairment by the Company once a year or when there are indications of impairment to determine any possible need for write-downs. The impairment test is carried out at the level of the groups of cash-generating units to which the relevant goodwill is allocated. The carrying amount of the relevant cash-generating units, including goodwill, is compared with the corresponding recoverable amount in the context of the impairment test. The recoverable amount is generally determined using the value in use. The present value of the future cash flows from the respective group of cash-generating units normally serves as the basis of valuation. Present values are calculated using discounted cash flow models. For this purpose, the adopted medium-term business plan of the Group forms the starting point which is extrapolated based on assumptions about long-term rates of growth. Expectations relating to future market developments and assumptions about the development of macroeconomic factors are also taken into account. The discount rate used is the weighted average cost of capital for the respective group of cash-generating units. The impairment test determined that no impairments were necessary.

   The outcome of this valuation is dependent to a large extent on the estimates made by the members of the management board with respect to the future cash inflows from the respective group of cash-generating units, the discount rate used, the rate of growth and other assumptions, and is therefore subject to considerable uncertainty. Against this background and due to the complex nature of the valuation, this matter was of particular significance in the context of our audit.

2. As part of our audit, we assessed the methodology used for the purposes of performing the impairment test, among other things. After matching the future cash inflows used for the calculation against the adopted medium-term business plan of the Group, we assessed the appropriateness of the calculation, in particular by reconciling it with general and sector-specific market expectations. In addition, we assessed the appropriate consideration of the costs of Group functions. In the knowledge that even relatively small changes in the discount rate applied can have a material impact on the value of the entity calculated in this way, we focused our testing in particular on the parameters used to determine the discount rate applied, and assessed the calculation model. In order to reflect the uncertainty inherent in the projections, we evaluated the sensitivity analyses performed by the Company. We verified that the necessary disclosures were made in the notes to the consolidated financial statements relating to groups of cash-generating units for which a reasonably possible change in an assumption would result in the recoverable amount falling below the carrying amount of the cash-generating units including the allocated goodwill.

   Overall, the valuation parameters and assumptions used by the members of the management board are in line with our expectations and are also within the ranges considered by us to be reasonable.

3. The Company's disclosures on the balance sheet item Intangible assets are contained in section 11 of the notes to the consolidated financial statements.

2. Impact of the initial application of IFRS 16 on lease accounting

1. In the Company's consolidated financial statements right-of-use assets of € 15.4 million and lease liabilities of € 13.5 million are reported as of the balance sheet date. The initial application of the new accounting standard on leases (IFRS 16) had material effects on the carrying amounts in the opening balance sheet and subsequent measurement in the financial year. The Company transitioned to IFRS 16 using the modified retrospective approach. The comparative information for prior-year periods was not restated. The initial application of IFRS 16 also necessitated the implementation of a centralized IT system to report leases. The new IFRS 16 requires that the executive directors make estimates and judgments for certain areas, which were assessed for appropriateness in the context of our audit. This applies in particular to estimates regarding the exercise of options impacting the term of the lease.

   Against this background and due to the complexity of the new requirements of IFRS 16, lease accounting was of particular significance in the context of our audit.

2. As part of our audit and with the assistance of our internal specialists, we assessed, among other things, the appropriateness of the processes established by the Group to record leases. This also applies to the implementation of the centralized IT system to report leases and to the required modifications of existing systems in order to process the transactions.

   In addition, as part of our audit and with the assistance of our internal specialists we assessed the impact of the initial application of IFRS 16. Together we assessed the implementation work and evaluated the design of the processes set up to report the transactions in accordance with IFRS 16 and of the IT systems in place to support the implementation of the new requirements. We inspected the lease agreements on a test basis, verified the identification of lease components and assessed whether these were fully and accurately recorded in the centralized system newly implemented to report leases. In particular, we interviewed Company employees and inspected the appropriate evidence to assess the estimates regarding the exercise of options impacting the lease term.

   We were able to satisfy ourselves that the systems and processes put in place and adapted to IFRS 16 are appropriate. Furthermore, we verified that the estimates and assumptions made by the executive directors are sufficiently documented and substantiated to ensure that leases are properly accounted for in accordance with IFRS 16 as applied for the first time.

3. The Company's disclosures on lease accounting as well as the impact of the initial application of IFRS 16 are contained in section 3 of the notes to the consolidated financial statements.

Other Information

The members of the management board are responsible for the other information. The other information comprises the following non-audited parts of the group management report:

- the group statement on corporate governance pursuant to § 315d HGB included in section "Corporate Governance Report and Declaration on the Corporate Governance" of the group management report
- the corporate governance report pursuant to No. 3.10 of the German Corporate Governance Code
- the non-financial group report pursuant to § 315b Abs. 1 HGB included in section "Non-Financial Consolidated Statement 2019" of the group management report

The publication "Annual Report 2019" is expected to be made available to us after the date of the audit opinion.

Our audit opinions on the consolidated financial statements and on the group management report do not cover the other information, and consequently we do not express an audit opinion or any other form of assurance conclusion thereon.

In connection with our audit, our responsibility is to read the other information and, in so doing, to consider whether the other information

- is materially inconsistent with the consolidated financial statements, with the group management report or our knowledge obtained in the audit, or
- otherwise appears to be materially misstated.

Responsibilities of the Members of the Management Board and the Supervisory Board for the Consolidated Financial Statements and the Group Management Report

The members of the management board are responsible for the preparation of the consolidated financial statements that comply, in all material respects, with IFRSs as adopted by the EU and the additional requirements of German commercial law pursuant to § 315e Sub-Para. 1 HGB and full IFRSs and that the consolidated financial statements, in compliance with these requirements, give a true and fair view of the assets, liabilities, financial position, and financial performance of the Group. In addition the members of the management board are responsible for such internal control as they have determined necessary to enable the preparation of consolidated financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the consolidated financial statements, the members of the management board are responsible for assessing the Group's ability to continue as a going concern. They also have the responsibility for disclosing, as applicable, matters related to going concern. In addition, they are responsible for financial reporting based on the going concern basis of accounting unless there is an intention to liquidate the Group or to cease operations, or there is no realistic alternative but to do so.

Furthermore, the members of the management board are responsible for the preparation of the group management report that, as a whole, provides an appropriate view of the Group's position and is, in all material respects, consistent with the consolidated financial statements, complies with German legal requirements, and appropriately presents the opportunities and risks of future development. In addition, the members of the management board are responsible for such arrangements and measures (systems) as they have considered necessary to enable the preparation of a group management report that is in accordance with the applicable German legal requirements, and to be able to provide sufficient appropriate evidence for the assertions in the group management report.

The supervisory board is responsible for overseeing the Group's financial reporting process for the preparation of the consolidated financial statements and of the group management report.

Auditor's Responsibilities for the Audit of the Consolidated Financial Statements and of the Group Management Report

Our objectives are to obtain reasonable assurance about whether the consolidated financial statements as a whole are free from material misstatement, whether due to fraud or error, and whether the group management report as a whole provides an appropriate view of the Group's position and, in all material respects, is consistent with the consolidated financial statements and the knowledge obtained in the audit, complies with the German legal requirements and appropriately presents the opportunities and risks of future development, as well as to issue an auditor's report that includes our audit opinions on the consolidated financial statements and on the group management report.

Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with § 317 HGB and the EU Audit Regulation and in compliance with German Generally Accepted Standards for Financial Statement Audits promulgated by the Institut der Wirtschaftsprüfer (IDW) will always detect a material misstatement. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these consolidated fi-nancial statements and this group management report.

We exercise professional judgment and maintain professional skepticism throughout the audit. We also:

- Identify and assess the risks of material misstatement of the consolidated financial statements and of the group management report, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our audit opinions. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.

- Obtain an understanding of internal control relevant to the audit of the consolidated financial statements and of arrangements and measures (systems) relevant to the audit of the group management report in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an audit opinion on the effectiveness of these systems.

- Evaluate the appropriateness of accounting policies used by the members of the management board and the reasonableness of estimates made by the members of the management board and related disclosures.

- Conclude on the appropriateness of the members' of the management board use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Group's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in the auditor's report to the related disclosures in the consolidated financial statements and in the group management report or, if such disclosures are inadequate, to modify our respective audit opinions. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the Group to cease to be able to continue as a going concern.

- Evaluate the overall presentation, structure and content of the consolidated financial statements, including the disclosures, and whether the consolidated financial statements present the underlying transactions and events in a manner that the consolidated financial statements give a true and fair view of the assets, liabilities, financial position and financial performance of the Group in compliance with IFRSs as adopted by the EU and the additional requirements of German commercial law pursuant to § 315e Sub-Para. 1 HGB and full IFRSs.

- Obtain sufficient appropriate audit evidence regarding the financial information of the entities or business activities within the Group to express audit opinions on the consolidated financial statements and on the group management report. We are responsible for the direction, supervision and performance of the group audit. We remain solely responsible for our audit opinions.

- Evaluate the consistency of the group management report with the consolidated financial statements, its conformity with German law, and the view of the Group's position it provides.

- Perform audit procedures on the prospective information presented by the members of the management board in the group management report. On the basis of sufficient appropriate audit evidence we evaluate, in particular, the significant assumptions used by the members of the management board as a basis for the prospective information, and evaluate the proper derivation of the prospective information from these assumptions. We do not express a separate audit opinion on the prospective information and on the assumptions used as a basis. There is a substantial unavoidable risk that future events will differ materially from the prospective information.

We communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

We also provide those charged with governance with a statement that we have complied with the relevant independence requirements, and communicate with them all relationships and other matters that may reasonably be thought to bear on our independence, and where applicable, the related safeguards.

From the matters communicated with those charged with governance, we determine those matters that were of most significance in the audit of the consolidated financial statements of the current period and are therefore the key audit matters. We describe these matters in our auditor's report unless law or regulation precludes public disclosure about the matter.

OTHER LEGAL AND REGULATORY REQUIREMENTS

Further Information pursuant to Article 10 of the EU Audit Regulation

We were elected as group auditor by the annual general meeting on May 23, 2019. We were engaged by the supervisory board on January 30, 2020. We have been the group auditor of the Pfeiffer Vacuum Technology AG, Asslar, without interruption since the financial year 2018.

We declare that the audit opinions expressed in this auditor's report are consistent with the additional report to the audit committee pursuant to Article 11 of the EU Audit Regulation (long-form audit report).

GERMAN PUBLIC AUDITOR RESPONSIBLE FOR THE ENGAGEMENT

The German Public Auditor responsible for the engagement is Christian Kwasni.

Frankfurt am Main, February 28, 2020

PricewaterhouseCoopers GmbH
Wirtschaftsprüfungsgesellschaft

Christian Kwasni Wirtschaftsprüfer [German Public Auditor]	ppa. Daniel Spengemann Wirtschaftsprüfer [German Public Auditor]

INDEPENDENT PRACTITIONER'S REPORT ON A LIMITED ASSURANCE ENGAGEMENT ON NON-FINANCIAL REPORTING[1]

To Pfeiffer Technology AG, Aßlar,

We have performed a limited assurance engagement on the consolidated Non-financial Statement pursuant to § (Article) 315b Abs. 1 HGB ("Handelsgesetzbuch": "German Commercial Code") of Pfeiffer Vacuum Technology AG (hereinafter the "Company") for the period from 1 January 2019 to 31 December 2019 (hereinafter the "Non-financial Report").

Responsibilities of the Executive Directors

The executive directors of the Company are responsible for the preparation of the Non-financial Statement in accordance with §§ 315c in conjunction with 289c to 289e HGB.

This responsibility of Company's executive directors includes the selection and application of appropriate methods of non-financial reporting as well as making assumptions and estimates related to individual non-financial disclosures which are reasonable in the circumstances. Furthermore, the executive directors are responsible for such internal controls as they have considered necessary to enable the preparation of a Non-financial Statement that is free from material misstatement whether due to fraud or error.

Independence and Quality Control of the Audit Firm

We have complied with the German professional provisions regarding independence as well as other ethical requirements.

Our audit firm applies the national legal requirements and professional standards – in particular the Professional Code for German Public Auditors and German Chartered Auditors ("Berufssatzung für Wirtschaftsprüfer und vereidigte Buchprüfer": "BS WP/vBP") as well as the Standard on Quality Control 1 published by the Institut der Wirtschaftsprüfer (Institute of Public Auditors in Germany; IDW): Requirements to quality control for audit firms (IDW Qualitätssicherungsstandard 1: Anforderungen an die Qualitätssicherung in der Wirtschaftsprüferpraxis - IDW QS 1) – and accordingly maintains a comprehensive system of quality control including documented policies and procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements.

Practitioner's Responsibility

Our responsibility is to express a limited assurance conclusion on the Non-financial Statement based on the assurance engagement we have performed.

Within the scope of our engagement, we did not perform an audit on external sources of in-formation or expert opinions, referred to in the Non-financial Statement.

1 PricewaterhouseCoopers GmbH has performed a limited assurance engagement on the German version of the combined separate non-financial report and issued an independent assurance report in German language, which is authoritative. The following text is a translation of the independent assurance report.

We conducted our assurance engagement in accordance with the International Standard on Assurance Engagements (ISAE) 3000 (Revised): Assurance Engagements other than Audits or Reviews of Historical Financial Information, issued by the IAASB. This Standard requires that we plan and perform the assurance engagement to allow us to conclude with limited assurance that nothing has come to our attention that causes us to believe that the Company's Non-financial Statement for the period from 1 January 2019 to 31 December 2019 has not been prepared, in all material aspects, in accordance with § 315c in conjunction with 289c to 289e HGB.

In a limited assurance engagement the assurance procedures are less in extent than for a reasonable assurance engagement, and therefore a substantially lower level of assurance is obtained. The assurance procedures selected depend on the practitioner's judgment.

Within the scope of our assurance engagement, we performed amongst others the following assurance procedures and further activities:

- Obtaining an understanding of the structure of the sustainability organization and of the conduction of the materiality analysis
- Inquiries of relevant personnel involved in the preparation of the Non-financial Statement regarding the preparation process, the internal control system relating to this process and disclosures in the Non-financial Statement
- Identification of the likely risks of material misstatement of the Non-financial Statement
- Analytical evaluation of disclosures in the Non-financial Statement
- Comparison of disclosures with corresponding data in the annual and consolidated financial statements and in the group management report which is combined with the Company's management report
- Evaluation of the presentation of the information

Assurance Conclusion

Based on the assurance procedures performed and assurance evidence obtained, nothing has come to our attention that causes us to believe that the Company's Non-financial Statement for the period from 1 January 2019 to 31 December 2019 has not been prepared, in all material aspects, in accordance with § 315c in conjunction with 289c to 289e HGB.

Intended Use of the Assurance Report

We issue this report on the basis of the engagement agreed with the Company. The assurance engagement has been performed for purposes of the Company and the report is solely intended to inform the Company about the results of the limited assurance engagement.

The report is not intended for any third parties to base any (financial) decision thereon. Our responsibility lies only with the Company. We do not assume any responsibility towards third parties.

Frankfurt, February 28, 2020

PricewaterhouseCoopers GmbH
Wirtschaftsprüfungsgesellschaft

Nicolette Behncke
Wirtschaftsprüfer
[German public auditor]

ppa. Urata Biqkaj
Wirtschaftsprüferin
[German public auditor]

CONSOLIDATED STATEMENTS OF INCOME

6-YEAR-OVERVIEW

	2019	2018	2017	2016	2015	2014
	in T€	in T€	in T€	in T€	in T€	in T€
Net sales	**632,865**	**659,725**	**586,962**	**474,244**	**451,521**	**406,642**
Cost of sales	– 416,995	– 424,517	– 376,945	– 293,769	– 276,010	– 263,259
Gross profit	**215,870**	**235,208**	**210,017**	**180,475**	**175,511**	**143,383**
Selling and marketing expenses	– 71,669	– 68,371	– 63,313	– 55,330	– 59,850	– 52,789
General and administrative expenses	– 52,293	– 49,106	– 48,976	– 35,733	– 35,838	– 29,853
Research and development expenses	– 29,620	– 28,663	– 27,763	– 26,282	– 25,479	– 23,936
Other operating income	7,768	11,302	10,345	10,818	13,297	10,176
Other operating expenses	– 4,904	– 5,240	– 8,924	– 5,972	– 6,882	– 2,237
Operating profit	**65,152**	**95,130**	**71,386**	**67,976**	**60,759**	**44,744**
Financial expenses	– 853	– 727	– 693	– 662	– 691	– 978
Financial income	216	208	347	301	383	507
Earnings before taxes	**64,515**	**94,611**	**71,040**	**67,615**	**60,451**	**44,273**
Income taxes	– 16,158	– 25,732	– 17,192	– 20,583	– 18,535	– 11,854
Net income	**48,357**	**68,879**	**53,848**	**47,032**	**41,916**	**32,419**
Earnings per share (in €)	**4.90**	**6.98**	**5.46**	**4.77**	**4.25**	**3.29**
Number of shares (weighted average	9,867,659	9,867,659	9,867,659	9,867,659	9,867,659	9,867,659

CONSOLIDATED STATEMENTS OF INCOME

6-YEAR-OVERVIEW

	2019	2018	2017	2016	2015	2014
	in T€	in T€	in T€	in T€	in T€	in T€
Profitability figures						
Gross margin	34.1 %	35.7%	35.8 %	38.1 %	38.9 %	35.3 %
Operation profit margin	10.3 %	14.4%	12.2 %	14.3 %	13.5 %	11.0 %
After-tax return on sales	7.6 %	10.4%	9.2 %	9.9 %	9.3 %	8.0 %
Sales by region						
Europe	232,043	246,971	222,547	188,860	187,003	183,181
Asia	231,050	246,624	220,304	174,604	151,511	130,323
The Americas	169,664	165,942	143,808	110,542	112,412	92,636
Rest of world	108	188	303	238	595	502
Sales by product						
Instruments and components	191,619	193,755	160,621	105,520	98,777	96,899
Turbopumps	184,584	192,111	173,419	144,518	144,777	124,693
Backing pumps	124,148	143,414	132,767	114,989	102,381	89,419
Service	112,803	111,582	107,800	99,698	96,730	84,967
Systems	19,711	18,863	12,355	9,519	8,856	10,664

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FURTHER INFORMATION

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GLOSSARY

Cash and cash equivalents
Indicates the cash and cash equivalents provided by the various capital flows and is the result of the cash flow accounting.

Cash flow from financing activities
Indicates the balance of cash and cash equivalents provided to or used by a company in connection with transactions involving shareholders' equity or outside capital.

Cash flow from investment activities
Indicates the balance of cash and cash equivalents that a company has invested or received in connection with the acquisition or sale of financial and tangible assets.

Cash flow from operating activities
Indicates the change in cash and cash equivalents resulting from operative business during the period under review.

CMRT
The Conflict Minerals Reporting Template is a standardized template from the Reporting Minerals Initiative that facilitates the exchange of information on conflict minerals in the supply chain

CO_2e
The CO_2 equivalent displays the extent of the greenhouse potential of various greenhouse gases. The largest portion of the greenhouse effect from companies that produce such gases, such as Pfeiffer Vacuum, is attributable to carbon dioxide (CO_2)

Corporate governance
The organizational structure and content of the way companies are managed and controlled.

CSR
Corporate Social Responsibility describes the economy's voluntary contribution to sustainable development, beyond what is legally required

Dividend yield
Indicates the ratio between a dividend and a defined share trading price – typically the year-end trading price. The dividend yield expresses the magnitude of the effective yield of the capital invested in shares.
Calculation:
Dividend ÷ Trading Price x 100

Equity ratio
Describes the relationship between shareholders' equity and total capital. The more shareholders' equity that is available to a company, the better its credit rating will typically be.
Calculation:
Shareholders' Equity
÷ Balance Sheet Total x 100

FAR
Fatal Accident Rate: Number of fatal accidents at work per 100 million working hours

Free float
The free float includes all shares that are not held by major shareholders; i. e. shares that can be acquired and traded by the general public. Under Deutsche Börse's definition, shares totaling over 5 percent of total equity or over 25 percent held by investment funds are not considered to be part of the free float.

Gross margin
Indicates the ratio between gross profit and net sales, enabling conclusions to be drawn regarding a company's production efficiency.
Calculation:
Gross Profit
÷ Net Sales x 100

Greenhouse Gas Protocol
Comprehensive global standardized framework to measure and manage greenhouse gas emissions (GHG) from private and public sector operations, value chains and mitigation actions.

GRI
Independent, non-profit organization. Leading international standard setter for sustainability performance providing a Global comparable reporting and accounting framework.

Gross profit
The result of net sales less cost of sales.
Calculation:
Net Sales – Cost of Sales

ICS
Internal Control System

ISO 14001
a standard for environmental management systems that is used and accepted worldwide

ISO 50001
a globally valid standard of the International Organization for Standardization (ISO), which is intended to support organizations and companies in the development of systematic energy management

LPG
liquefied petroleum gas, also known as liquid gas

LTI
Lost Time Injuries: accident requiring at least one day of absence

LTIFR
Lost Time Injuries Frequency Rate: number of accidents per one million working hours

Market capitalization
Indicates the current market value of a company's shareholders' equity on the stock exchange.
Calculation:
Number of Shares Outstanding
x Trading Price

OHSAS 18001
is used in many countries as a certification basis for management systems for occupational health and safety (OSH)

Operating profit (EBIT)
Operating profit (earnings) before interest and taxes.
Calculation:
Net Income ± Financial Income / Expenses ± Income Taxes ± Gain / Loss from Investment

Operating profit margin (EBIT margin)
The ratio between operating profit and net sales – the higher the ratio, the higher the profitability of operating activities.
Calculation:
Operating Profit (EBIT)
÷ Net Sales x 100

PV
Pfeiffer Vacuum

Research and development expense ratio
Is an expression of the relationship between the volume of research and development expenses and the volume of net income generated. Is thus considered to be an indicator of a company's willingness to invest in its own innovation activities.
Calculation:
R & D Expenses
÷ Net Income x 100

Return on capital employed (ROCE)
Ratio between operating profit and the total capital employed during a period.
Calculation:
EBIT ÷ (Net) Assets
+ Working Capital x 100

Return on equity
Provides information about the yield on the equity provided by shareholders.
Calculation:
Net Income
÷ Shareholders' Equity x 100

Whistleblowing system
Option to report potential violations of compliance guidelines

Working capital
A liquidity parameter that indicates the surplus of a company's assets that are capable of being liquidated short term (within one year) over its short-term liabilities.
Absolute calculation:
Current Assets
– Short-Term Borrowed Capital;
Relative calculation:
Current Assets
÷ Short-Term Borrowed Capital x 100

FINANCIAL CALENDAR 2020

↗ Investor Relations

WEDNESDAY,
MAY 20
Annual General Meeting 2020

TUESDAY,
MAY 5
Q1 2020 Financial Results

TUESDAY,
AUG. 4
H1 2020 Financial Results

TUESDAY,
NOV. 3
Q3 2020 Financial Results

January | February | March | April | May | June | July | August | September | October | November | December

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PFEIFFER VACUUM

↗ Pfeiffer Vaccum