



Research report (Anno)

mynaric

“Financial year 2018 completed with significantly higher total output and full implementation of important strategic steps”

“Serial production of air terminals planned for the current FY making us the sole provider of a modularised system in the air sector”

“Growth market for laser-based communication networks offers enormous growth potential and whose form is just starting to crystallise”

Target price: €95.47

Rating: Buy

IMPORTANT INFORMATION:

Please note the disclaimer/risk notice as well as the disclosure of potential conflicts of interest according to Section 85 of the German Securities Trading Act (WpHG) and Art. 20 MAR, starting on page 26

Note on research as a “minor non-monetary benefit” in accordance with the MiFID II regulation”: This research meets the requirements for being classified as a “minor non-monetary benefit”. For more information, see the disclosure under “I. Research under MiFID II”

English version

Date and time of completion of the report: 17/07/2019 (6:14 pm)
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Validity of the price target: until max. 31/12/2020

German version

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Validity of the price target: until max. 31/12/2020

Mynaric AG^{*5a;5b;11}

Rating: Buy

Target price: EUR 95.47

Current price: 39.00

05/07/2019 / Xetra

(Closing price)

Currency: EUR

Key data:

ISIN: DE000A0JCY11

German securities identification number (WKN): A0JCY1

Ticker symbol: M0Y

Number of shares³: 2.90

Market cap³: 117.32

Enterprise value³: 102.08

³ in m/in mEUR

Freefloat (<5%): 32.0%

Transparency level:

Scale

Market segment:

Open Market (Freiverkehr)

Accounting:

HGB (German Commercial Code)

Financial year: 31/12/

Designated sponsor:

HAUCK & AUFHÄUSER

PRIVATBANKIERS AG

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* Catalogue of potential conflicts of interest on page 27

Corporate profile

Segment: Technology

Focus: Laser-based communications technology

Employees: 73 (ø FY 2018)

Founded: 2009

Registered office: Gilching (near Munich)

Executive Board: Dr Wolfram Peschko, Bulent Altan,

Hubertus von Janeczek



Mynaric was founded in 2009 by former employees of the German Aerospace Centre (DLR) research institute. The technology company is a manufacturer of laser communications technology, which is used to set up dynamic communications networks from flying objects (e.g. aircraft) and satellites in the air and in space. Its wireless data transmission products include ground stations and laser terminals, which enable large amounts of data to be transmitted at high speed over long distances and are highly efficient and secure at the same time. Mynaric's laser technology enables flying objects and satellites to communicate wirelessly with one another and with the ground. Mynaric has developed a wireless laser communications technology, which provides the structural basis for enabling access to the Internet "above the clouds" and in space. Globally, the demand for faster Internet availability anywhere and everywhere is growing dynamically. The laser specialist, Mynaric, is a pioneer in this growth market. Potential customers include international corporations, such as Google, Facebook, Amazon, SpaceX and Telesat.

P&L in m € \ FY-End	FY 2018	FY 2019e	FY 2020e	FY 2021e	FY 2022e	FY 2023e
Total output	7.38	14.79	42.99	89.93	202.76	323.88
EBITDA	-6.25	-5.13	3.01	16.57	43.97	77.12
EBIT	-6.66	-6.51	0.16	10.12	35.42	67.37
EAT	-6.66	-6.51	0.31	8.48	24.79	47.16
EPS	-2.46	-2.24	0.11	2.92	8.54	16.24

Key financials

EV/Sales	13.28	6.63	2.28	1.09	0.48	0.30
EV/EBITDA	neg.	neg.	32.56	5.92	2.23	1.27
EV/EBIT	neg.	neg.	612.60	9.69	2.77	1.45
KGv	neg.	neg.	365.34	13.36	4.57	2.40
KBV	4.86					

Financial dates

18/06/2019: European Sping Midcap Event

02/07/2019: General meeting

25/09 – 27/09/2019: Equity forum (EKF)

11/12/2019: MKK

**last research published by GBC:

Date: publication / price target in € / rating

21/03/2019: RS / 108.50 / Buy

20/12/2018: RS / 108.50 / Buy

17/05/2018: RS / 95.00 / Buy

11/12/2017: RS / 95.00 / Buy

** the research reports can be found on our website www.gbc-ag.de or can be requested at GBC AG, Halderstr. 27, D86150 Augsburg

EXECUTIVE SUMMARY

- Mynaric specialises in the development and production of laser-based products for use in laser-supported communications networks in the aerospace sector. The target market is still quite young, but this sector is starting to accelerate and its form is just starting to crystallise. Market experts expect a long-term market potential in the multi-billion US dollar range for this growth sector.
- Mynaric's previous financial year in 2018 was characterized primarily by the continuing development of the air terminal, development of the space terminal and the start of serial production of ground stations. From a financial standpoint, the technology company was able to more than double its total output in the past financial year by €4.41m to €7.38m year-on-year (previous year: €2.97m). A negative EBITDA and a net loss of €-6.25m and €-6.66m were achieved, respectively, due to the still relatively low total output and the high investments in the further development of the product range and expansion of the company.
- In the past, Mynaric has focused strongly on the development of laser-based communication solutions and has already developed initial market-ready products (ground stations). These were also moved into serial production. Now additional communication products, such as the air terminal, are to move gradually into serial production. The air terminal is currently undergoing further development, and is to go into serial production during the second half of 2019.
- Given this background, Mynaric currently finds itself in a transition phase from a technology-oriented prototype developer to a customer-oriented product supplier, to enable it to also meet the expected future demand for laser communication technology for the implementation of large-scale communication products. According to market experts, laser communication technology represents a key technology for the successful implementation of the planned major projects. To underpin this new, customer-oriented approach, Mynaric changed its management in early 2019. This means that Bulent Altan, who had previously managed the satellite development at SpaceX, and Hubertus von Janecek, who has extensive experience selling high-tech products, were appointed to the Mynaric Management Board.
- To support further stages of growth, Mynaric made a cash increase in capital of €11.0m (gross issue proceeds) in early 2019. The cash increase in capital was subscribed by one of the main shareholders in a Mynaric customer in the satellite business, who is planning to develop a major satellite network. Mynaric had already announced the signature of a memorandum of understanding (MoU) in relation to a planned satellite constellation with this potential major customer in October 2018. After a first demo mission, this satellite network will require probably more than 1,000 laser communication terminals.
- In the past, Mynaric created a good structural foundation and established a promising market position allowing it to profit significantly from the expected dynamic growth in the laser-based communications networks in the aerospace sector. For the current financial year of 2019, we are expecting total output for Mynaric of €14.79m and EBITDA of €-5.13m. By transferring additional product groups into serial production, the break-even threshold for operations should be reached in 2020 and, at this point total output is set to increase to €42.99 m. For the subsequent business years, we expect a strong rise in operating results (EBITDA) on the basis of a dynamic growth in total output and the arrival of economies of scale. As a result, double-digit EBITDA margins should be achievable in the long term.
- **It is on this basis that we have valued this technology company using our DCF model and arrived at a fair value of €95.47 (previously: €108.50). Our reduction in the target share price is the result of a downward correction to total output forecasts, which also led to an adjustment in our previous earnings forecasts. In additi-**

on, the current roll-over effect (target stock price is now based on the next financial year 2020) has counteracted a sharper target price reduction. Against the background of the current share price, this still results in a BUY rating. In the past, Mynaric has created a good launch pad, particularly with its further upgraded product range, the cooperation agreements in place, the signed declaration of intent for a satellite constellation, and the newly appointed management to be able to profit significantly from the expected dynamic growth in the laser-based communication networks sector.

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COMPANY

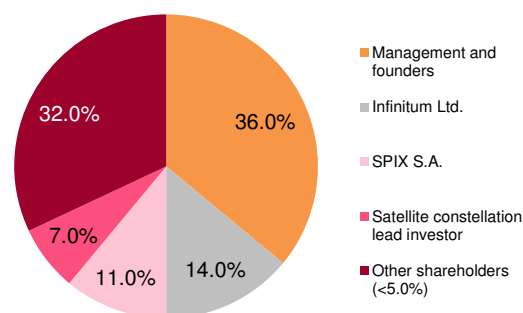
In 2009, Mynaric was founded by former employees of the Institute for Navigation and Communication of the DLR (German Aerospace Centre) in the form of Mynaric Lasercom GmbH (formerly trading under the name of ViaLight Communications GmbH), which was later merged into Mynaric AG. The founders had accumulated many years of experience in the field of wireless laser communications with the DLR before founding the company.

At present, the Mynaric Group is mainly active in the field of research and (further) development of laser communication technologies and the development and production of ground stations and laser terminals. These laser communication technologies can be used in the air (aircraft, unmanned drones, high-altitude platforms, such as stratospheric balloons or gliders) and in space (satellites) for setting up global data networks. The ground stations provide the link from the air or space to the ground. Mynaric's laser technology (known as the backbone technology) provides high-speed Internet "above the clouds", in space and anywhere in the world (via laser-supported satellite technology).

Shareholder structure

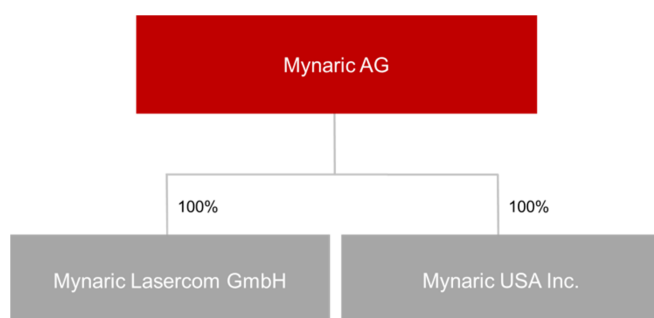
Shareholders in %	May 2019
Management and founders	36.0%
Infinitum Ltd.	14.0%
SPIX S.A.	11.0%
Satellite constellation lead investor	7.00%
Other shareholders (<5.0%)	32.0%

Sources: Mynaric AG; GBC AG



Corporate structure

Mynaric AG constitutes the strategic management and financial holding company of the Mynaric Group and performs key management functions, providing jointly used services in the fields of Finance, Administration, Human Resources, Investor Relations, IT, Strategy and Public Relations, Quality Management and Corporate Affairs for the Group. The parent company mainly focuses on Strategy, Public Relations, Management and Controlling of its shareholdings, as well as the development of the entire group of companies. The operating activities are mainly performed by the subsidiary, Mynaric Lasercom GmbH (registered office: Gilching).



Sources: Mynaric AG; GBC AG

Historical events and highlights of the FY 2018

COMPANY HISTORY AND MILESTONES	
2009	Mynaric is established by former scientists of the German Aerospace Center (DLR) with the goal of commercializing decades' worth of experience of wireless laser communication for aerospace applications.
2012	Mynaric starts working with customers on developing prototypes for air-to-ground and air-to-air demonstrations of laser communication solutions to advance know-how and showcase the maturity level of the technology. From there, Mynaric quickly establishes an international reputation for wireless laser communication for airborne applications and expands its market reach to include a wide variety of world-class customers and suppliers.
2016	Mynaric expands into North America by establishing an office there to serve customers in the USA and Canada, as well as work on establishing greater visibility for the company in this key market. Based in Huntsville, Alabama, Mynaric USA supports American customers on special projects and necessary product modifications.
2017	Mynaric continues on its growth path with a flotation on the German Stock Exchange to raise growth capital to enter serial production and push for product maturity. The brand Mynaric is established in September 2017 and supercedes the former brand Vialight.
2018	Mynaric formally moves into serial production of its two optical ground stations for air and space applications and opens an office in Shanghai, China to cater for the burgeoning aerospace networks market in Asia. A strategic partnership with CEA-Leti secures rights to an advanced photo-diode capable of delivering a decisive competitive advantage.
2019	Bulent Altan, a former SpaceX Vice-President, joins Mynaric's executive board to lead on the company's space business. Hubertus von Janecek joins Bulent Altan and Wolfram Peschko on the executive board to lead on Mynaric's product-push in the air and ground segment. The lead investor of a satellite constellation takes a strategic stake in the company.

Source: Mynaric AG

Highlights of this business year

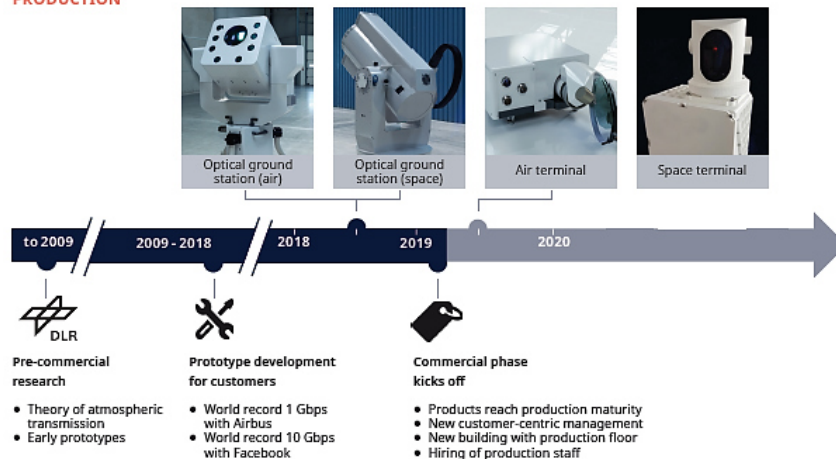
- Mynaric starts serial production of ground stations for air-to-ground and space-to-ground laser communication.
- Mynaric signs first memorandum of understanding (MoU) for a satellite constellation
- Mynaric wins Innovation Award at Deloitte's Technology Fast 50
- Mynaric establishes an additional location in China to address the booming Asian space market
- Mynaric receives an order for highly secure data transmission from space
- Bulent Altan, a well-known "space veteran", joins the Mynaric Management Board
- Mynaric raises €11.0m as part of a (post IPO) financing round from a major investor of a satellite constellation at €55.0 per share

Source: Mynaric AG

Milestones and current company status

Significant milestones in the company's history have so far comprised demo and test projects, which have demonstrated the efficiency and durability of Mynaric's technologies. Air-to-ground tests have been performed over 60 kilometres, ground-to-ground tests over a range of 145 kilometres and air-to-air tests over 80 kilometres. The technology company has also set several world records as part of these projects.

MYNARIC IS ENTERING SERIAL PRODUCTION

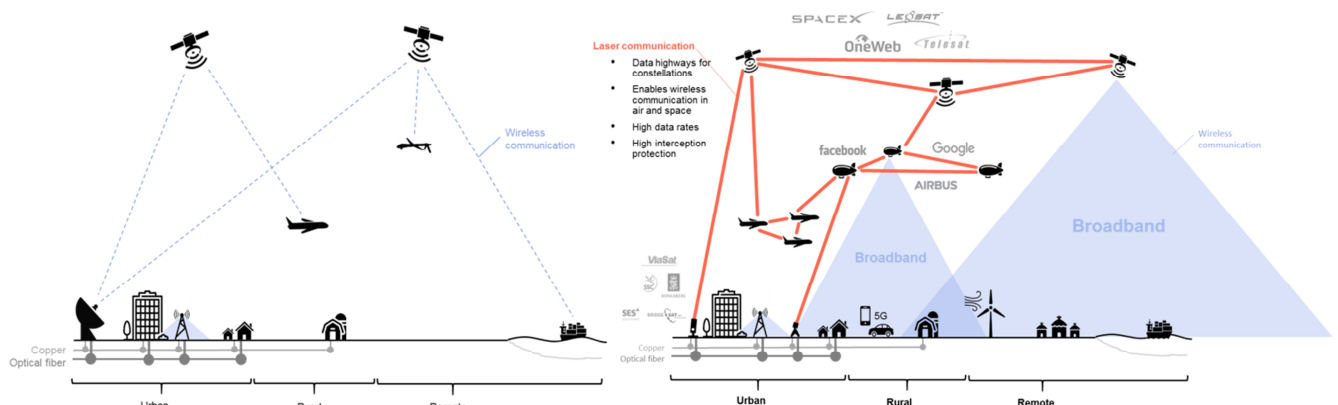


Source: Mynaric AG

Mynaric's laser technology and fields of application

Mynaric's laser technology sets up global communications networks in the air and in space and therefore an Internet "above the clouds". With this, data can be transferred wirelessly over great distances and at high speed between ground stations, aircraft, high-altitude balloons in the stratosphere or satellites in space. The hardware manufactured by the company uses laser technology in order to transfer large data volumes from one point to the next over a great distance at high speed. Therefore, this technology is suitable as a "data highway" for various communications networks (known as a backbone connection). In all, the company's technology can be regarded as a fibre-optics network without fibre-optics.

Current communication network structure & future communication network structure using laser technology



Source: Mynaric AG

Due to the global demand for faster Internet connections across the globe, especially in areas without an Internet connection (approx. 3 billion people worldwide), leading technology companies, such as Google, Amazon, SpaceX, Facebook and Telesat, are working on their own large communications networks in the air and in space. For this, they are using drones, satellites and high-altitude platforms, etc. and wireless laser communications procedures, in order to link these flying objects to one another (or to enable them to communicate).

Due to the long distances between these platforms and the high data rates required, in principle, only laser technology is suitable for this according to experts. For this reason, the above named companies, such as Google and Facebook, have already performed initial tests with laser communication technology.

Overall, this shows the high status which this technology already has. The companies referred to are also potential business partners for the company.

Selected communications network projects by leading technology companies

Company	Project
Google	<p>“Google-Loon” constellation: Thousands of stratospheric balloons at an elevation of 20 to 30 km will be used to set up regional dynamic communications networks.</p> <p>Aim: Making Internet access available to people in rural and remote regions. Worldwide, it is estimated that 3 billion people have no Internet access.</p>
Amazon	<p>“Amazon Kuiper” constellation: 3,236 satellites</p> <p>Aim: Providing a broadband Internet service to all regions worldwide that have no or inadequate service.</p>
SpaceX	<p>Two planned constellations:</p> <ul style="list-style-type: none"> - 4,425 satellites as part of the “LEO constellation” at an altitude of 1,100 to 1,325 km - 7,518 satellites as part of the “VLEO constellation” at an altitude of 336 to 346 km <p>Aim: Broadband Internet service for domestic, commercial, institutional and government and professional users worldwide.</p>
Telesat	<p>Two planned constellations:</p> <ul style="list-style-type: none"> - 117 satellites as part of the “Ka-band LEO constellation” at an altitude of 1,000 to 1,250 km - 117 satellites as part of the “V-band LEO constellation” at an altitude of 1,000 to 1250 km <p>Aim: A broadband Internet service for the regions of the world with insufficient Internet connections, which have few alternatives for communication.</p>
OneWeb	<p>Two planned constellations:</p> <ul style="list-style-type: none"> - 720 satellites as part of the “LEO constellation” at an altitude of 1,200 km - 1,280 satellites as part of the “MEO constellation” at an altitude of 8,500 km <p>Aim: Worldwide broadband Internet service for corporate customers and telecommunications customers, as well as for private customers. The start of operation is planned for 2020.</p>

Sources: Google; Amazon; SpaceX; Telesat; OneWeb

MARKET AND MARKET ENVIRONMENT

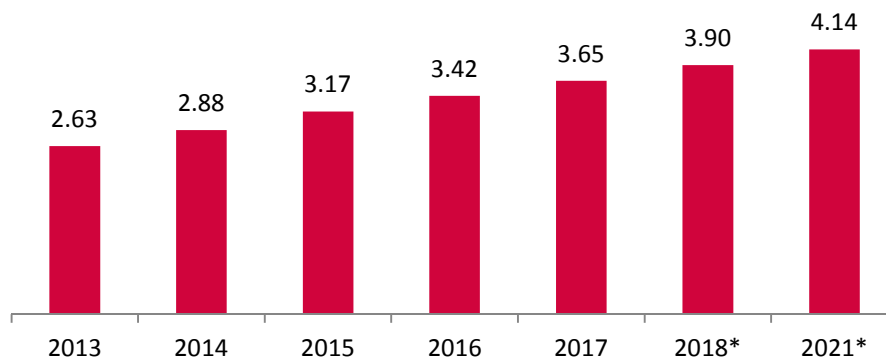
The laser-based products (laser terminals, ground stations) developed and manufactured by Mynaric are to be used in future by major customers for transmitting very high data volumes between aerospace objects (aircraft, stratosphere balloons, satellites, drones, etc.) and/or between such objects and the ground, as part of large communications networks.

In this context, potential future customers such as Amazon, Google, SpaceX, Telesat, OneWeb or Airbus are planning to set up an Internet “above the clouds” in the form of large networks of flying objects (known as constellations), which are linked to one another via laser technology. The laser-based networks carried by the satellites and aircraft (balloons, drones, etc.) can deliver high-speed Internet even in the most remote and inaccessible regions of the planet. They can thus supply the 3.0 billion people without Internet access or with inadequate Internet connections (as estimated by analysts from “Internet World Stats”) with high-speed Internet (broadband).

Moreover, laser-based satellite networks, can also, for example, provide aircraft with a broadband Internet connection and so deliver high-performance in-flight entertainment and a high-speed Internet connection to passengers. For the operators of these laser-based communication networks, this opens up an enormous growth market, in our view, which also promises high profitability. According to SpaceX CEO Elon Musk, the Internet satellite network (Starlink) planned by his company could, for example, generate more than \$30.0bn revenue in future.

Further demand for high-performance laser communication technology comes, for example, from the areas of automated agriculture (precision farming), self-driving vehicles, commercial shipping and the Internet of Things. Laser-based constellations promise to provide secure broadband connection to places where ground-based telecommunications networks have not so far penetrated or where they cannot be installed for logistic or economic reasons. The drone industry in particular is an additional area of application for high-performance laser technology, where laser technology could replace traditional communications technology and thereby contribute to higher performance of the deployed flying object. This could significantly increase the benefits from utilizing drones, e.g. in the areas of monitoring, reconnaissance or observation.

Number of global Internet users (in billion)



Sources: Statista; GBC AG

*Estimates

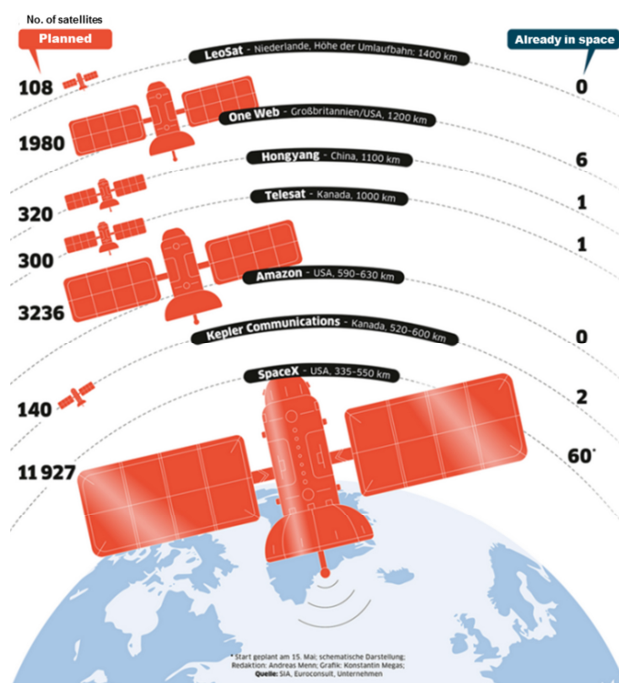
According to company information, wireless laser communications technology in the air and space segment is so far only used for data transmission purposes for pilot projects and technology demonstrations. The market for wireless laser communication using

laser terminals and ground stations is therefore still quite young, which is only currently starting to accelerate and whose form is just starting to crystallise.

After the first companies, such as Google, Facebook, OneWeb and SpaceX announced their business plans to set up the above communications networks (for broadband Internet service), they are now working more intensively on implementing their plans in order to achieve their targeted project implementation dates and underlying business plans.

As part of this, the first technology and Internet companies, such as SpaceX and OneWeb, have already started to place the first satellites into earth orbit for demo purposes. Additional satellites will follow from these companies to achieve the planned scale of satellite networks and the related broadband Internet coverage. In addition, we are expecting additional satellite starts to follow from other companies who are also working on satellite constellations.

Planned satellite networks (selection)



Sources: Wirtschaftswoche; GBC AG

Furthermore, the general interest from companies and organisations in communications networks in the aerospace sector has continued to rise. New players are therefore also increasingly active in this sector. According to Mynaric, there are currently around 30 companies planning to provide satellite-based broadband Internet in the future, and are currently working on communication networks in low Earth orbit.

The above companies have therefore also intensified discussions with the partners they require to implement their plans. The individual companies' initial plans have now increasingly crystallised into taking more detailed steps towards the desired communications networks in the air or in space. According to Mynaric's estimates, laser communications technology is a key technology for building such comprehensive and high-performance (data) networks.

Consequently, selected companies or initiatives by several organisations who have been working on communications networks consisting of flying objects or satellites for the provision of broadband Internet should now be reaching significant milestones.

In 2018, the US regulatory authority, the Federal Communication Commission (FCC), gave its approval to several **SpaceX** applications for SpaceX's Starlink constellation (planned satellite network consisting of around 12,000 satellites). In May 2019, the company successfully sent 60 test satellites for the Starlink project into the low Earth orbit. Previously, SpaceX had already launched two prototype small satellites (Triton A and B). In addition, at the end of 2018, the company announced a successful financing round of \$0.5bn for its Starlink project. According to SpaceX, Google has become a major shareholder in SpaceX through a capital action in 2015 and is therefore also investing in the company's satellite Internet project.

Media reports claim that **Facebook** is planning its own satellite network (project Athena) in order to offer broadband Internet to rural regions that have no or only inadequate coverage. As part of this, the company plans to operate its first own Internet satellites as early as 2019. Moreover, it became public knowledge in early 2019 that Facebook and Airbus are jointly testing Internet drones (Airbus Zephyr drone) to provide Internet in remote regions. In addition, the company announced that it was working with partners on an Internet connection using high-altitude platform systems (HAPS). At the end of February 2019, Viasat announced its cooperation with Facebook to provide Internet access to people in remote regions. In June 2018, the Business Insider portal revealed a previously unknown collaboration between Facebook and Mynaric. At that time, the aim of this cooperation was to collaborate on implementing a 10-Gbps air-to-ground laser link in the United States.

Further, **Google's Project Loon** was converted into an independent company called **Loon** in July 2018. In our view, this marked the project's move from experimental status to the commercial phase. Loon has already announced that it has received an initial commercial order to supply parts of Kenya with Internet access using high-altitude balloons. Previously, Loon's high-altitude platform had already successfully proven itself in practice in Peru and Puerto Rico. The Loon technology company also announced a cooperation with Telesat in early 2019. As part of this, Loon's software service is to support the control of Telesat's new LEO satellite constellation. In addition, Loon also announced a collaboration with SoftBank's HAPSMobile in April 2019. The goal of this collaboration is to promote the use of high-altitude platforms such as balloons or drones (UAVs).

In the summer of 2018, **Telesat** also selected Airbus (Airbus Defence & Space) and a joint effort from two companies, Thales Alenia Space and Maxar Technologies, for a system and design study for its planned constellation comprising 117 satellites. In total, the Canadian communications company plans a satellite network comprising 292 satellites to be able to offer broadband Internet services. As the next step, both consortia will refine their system solutions and products, before Telesat awards a production order for an initial part of the constellation to one of the two teams in 2019. For both parties, this opens up an expected order volume of \$3.0bn.

LeoSat Enterprises, like SpaceX, also received approval from the US communications authority (FCC) for its planned satellite constellation in the low Earth orbit (LEO) in November 2018. According to information from the company, it is planning to launch the fastest, most secure and widest coverage data network in the world via a network of low Earth orbit satellites. The company also announced that it had reached an important milestone by securing commercial agreements valued at over \$1.0bn.

In September 2018, **Airbus** (Defence & Space division) reported two key developments in its high-altitude platform project. The company reported that stratospheric 4G/5G defence applications had been successfully tested in a high-altitude balloon demonstration. According to the company, the technology that was tested, the Airbus LTE AirNode, represents a key part of the Airbus Network for the Sky (NFTS) securely networked airborne military communications project. The company tested its communications solution in Canada with a stratospheric balloon flying at altitudes up to 21 km, creating a high-altitude airborne cell site above the ground. In its payload, the balloon carried an Airbus LTE AirNode, which provided a 30 km-wide footprint of coverage for protected and secure communications. The balloon was tracked by a test team over 200 km, while transmitting 4k videos between the different stations.

This update preceded the corporate message that the company's unmanned aerial vehicle (UAV) – Zephyr S – successfully completed its initial flight for a duration of over 25 days. This was the longest UAV or drone flight to date.

The US communications company **OneWeb**, founded by Internet pioneer Greg Wyler, is also planning a satellite network of up to 1,980 satellites to provide satellite-based broadband Internet. The company announced a successfully completed financing round for \$1.25bn in March 2019, when the Softbank technology group participated with a significant share of \$1.0bn. According to CNBC, the company has managed to raise a total of \$3.4bn from investors to finance its space project. In addition, the company sent six satellites into space at the beginning of 2019 allowing it to complete an important intermediate stage in the implementation of its satellite project.

In November 2018, Internet group **Amazon** announced that its cloud division (AWS) will provide a ground station service for satellites – AWS Ground Station. This new product from AWS is aimed particularly at satellite operators and enables satellite data to be downloaded, processed and analysed faster anywhere in the world. As part of this, it plans to establish 12 ground stations by 2019. The AWS service aims to provide an easier and cheaper way of analysing satellite data. Aside from this, Amazon confirmed in April 2019 that it planned a large-scale network of around 3,200 satellites (project Kuiper) which is to supply broadband Internet to practically any location in the world. According to media reports, the project is to be managed by Rajeev Bayal, a former high-ranking SpaceX employee (President of Satellites).

According to company reports, around 30 satellite networks (LEO constellations) are planned to establish broadband Internet links with various companies, with a majority requiring an Internet satellite connection. These include large technology companies, such as SpaceX and Amazon. In the air sector, mainly Google (Loon), Facebook and Airbus are busy working on communications networks using flying objects (high-altitude platforms).

In light of the growing interest in communication networks in aeronautics and in space, investments especially in satellite-based networks have increased considerably in the past few years. According to Northern Sky Research, cash funding of \$17.8bn was invested in 600 companies between 2000 and 2018, of which \$7.0bn has been raised in the past two years alone. Various market experts have rated the outlook for the space sector as positive. Morgan Stanley, for example, expects that the space economy will reach a value of more than \$1.0 trillion in 2040. The forecasters expect that SpaceX will double in value or even increase five-fold in value, with the valuation depending mainly on developments in the satellite broadband Internet sector. Bank of America Merrill Lynch analysts even estimate that the space industry market volume will multiply from \$339.0bn in 2016 to \$2.7 trillion in 2045.

The experts expect equally positive developments in the aeronautics sector. Juniper Research, for example, estimates that the number of airplanes connected to the Internet will increase by 118% to 34,000 between 2018 and 2023. In light of this, the London School of Economics estimates that broadband Internet in airplanes could open up a worldwide market potential of \$130bn by 2035. For airlines, this would bring additional revenue potential of \$30.0bn by 2035.

All in all, we are assuming that the future market for the development of laser-based aerospace communication networks could achieve a similar volume as the present market for ground-based optical communications networks using fibre optics technology. According to the analysts at "Markets and Markets", the market for optical communications networks reached an estimated volume of \$17.0bn in 2017 and further market growth of 10.5% per year is expected in future.

The technology giants, such as SpaceX, Amazon and Facebook and other technology/Internet companies, are pressing ahead at high speed with their large-scale communication projects in the air and space sector to secure an early market share in this promising growth area.

We see Mynaric well positioned as a laser communications specialist in this growing and dynamic sector to become one of the key technology suppliers for the companies that are working on large-scale communication networks above the clouds.

COMPANY PERFORMANCE & FORECAST

2018 business performance

Mynaric AG's 2018 financial year was characterized mainly by the further development of the air terminal, development of the space terminal and the start of ground-station serial production.

In 2018, for example, Mynaric announced the development of a new generation of avalanche photo diodes as part of an exclusive partnership with the well-known CEA-Leti research institute. Using this new technology, the performance and application scope of the company's laser communication terminals will be significantly increased, thereby expanding the market position. The serial production of the air terminal which was planned for 2018 was moved to the second half of the current financial year.

According to company reports, the development of the space terminal that is already under way will be completed in early 2020 and, shortly afterwards, the first space terminals will be delivered for demo projects.

In the third quarter of the past financial year, the technology company officially started with the serial production of the ground station product group. By embarking on the serial production of ground stations for laser communication applications in the aerospace sector, Mynaric has reached an important milestone.

It also means that the company has started to expand its product portfolio. The company announced in June 2018, for example, that it had started developing special laser terminals for use in precision agriculture. Specifically, it intends to develop a new lightweight laser terminal that can be used in compact drones (UAVs). This will open up further market potential in the agricultural sector and other industries (drone industry).

In October 2018, Mynaric also announced the signing of an initial memorandum of understanding (MOU) with a satellite constellation to deliver key laser-based components (space terminals) for a demo mission, which is the precursor to the planned development of an extensive satellite network. According to the company, the planned satellite network could require more than 1,000 laser terminals from Mynaric in the future. An initial deployment of satellites using Mynaric's laser technology is planned as a demo mission in 2020. If this test phase is completed successfully, we can assume that Mynaric has positioned itself successfully with this company with its key technology, and could benefit from very substantial follow-on orders. According to company information, this satellite network will likely require more than 1,000 laser terminals after an initial demo mission.

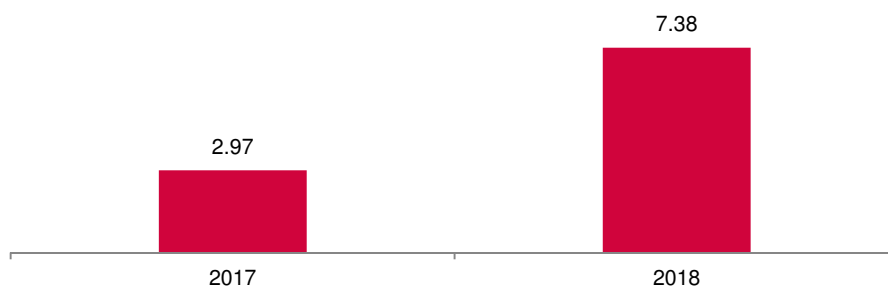
Mynaric also announced in November 2018 that it had received an order from UK company ArQit to carry out a study to develop a global high-security communication system. Laser communication is a decisive component of this study in terms of guaranteeing the highest possible IT security (cyber security). After successfully completing the study, the company could become the exclusive supplier of laser technology for this project.

In November 2018, the company also announced the establishment of an additional location in Shanghai, China. This is to service the great interest in Mynaric's products and to position the company early in the high-growth Asian aerospace communication market.

In terms of sales, in financial year 2018, Mynaric was able to increase its total output by around 148% to €7.38m year-on-year (€2.97m), thus setting a new record. In this financial year, total output was driven in particular by generated revenue (€1.59m), by inven-

tory changes in finished goods and work in progress (€1.71m) and by own work capitalised (€3.91m).

Development of total output (in € million)



Sources: Mynaric AG; GBC AG

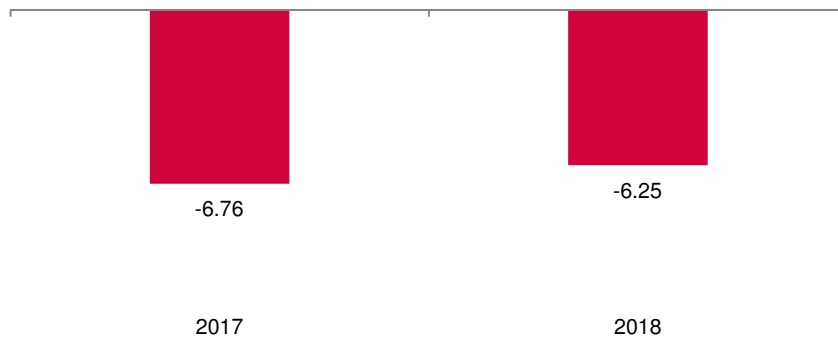
The generated revenue resulted mainly from the delivery of ground stations to existing and new customers, with the changes in inventory also caused primarily by partially-completed or just started ground stations. The large amount of own work capitalised is mainly based on the new development of the space terminal (€2.92m) and the further work on the air terminal (€0.71m).

In addition, Mynaric announced, during the publication of the financial statements for 2018, that the company had moved into a large new building (4,500sqm) in the heart of the aerospace community in Gilching on the outskirts of Munich. This is to provide the basis for the intended further growth of the company, and also a more modern corporate structure. Among other things, the new building has state-of-the-art fittings, including labs and new equipment and production spaces.

As a consequence of Mynaric's management's deliberate decision to upgrade the air terminal to a higher performance level and a broader range of applications before moving it into serial production, the company was not able to reach its financial corporate targets, despite a significant increase in total output. In light of this, and combined with a lower number of delivered ground stations than expected, our revenue forecasts were not met.

The operating result (EBITDA) is moving in the opposite direction to the revenue trend. This is mainly due to high up-front outlays arising in connection with the start of serial production, and R&D costs for development of the space terminal and the upgrade of the air terminal. The overall increase in the workforce also had a negative effect on net earnings. In view of the still low total output, there was another negative operating result (EBITDA) of €-6.25m year-on-year (previous year: €-6.76m). Based on the total output being below our forecast, our EBITDA forecast was also not met.

Development of operating result (EBITDA in € million)



Sources: Mynaric AG; GBC AG

Overall, Mynaric was able to implement further important steps in the right direction by starting the serial production of the ground stations, and by agreeing technology cooperation with CEA-Leti and the memorandum of understanding (MoU) for a satellite constellation, toward becoming the leading laser technology supplier for communications networks in the air and space sector in future.

Balance sheet/financial situation of Mynaric AG

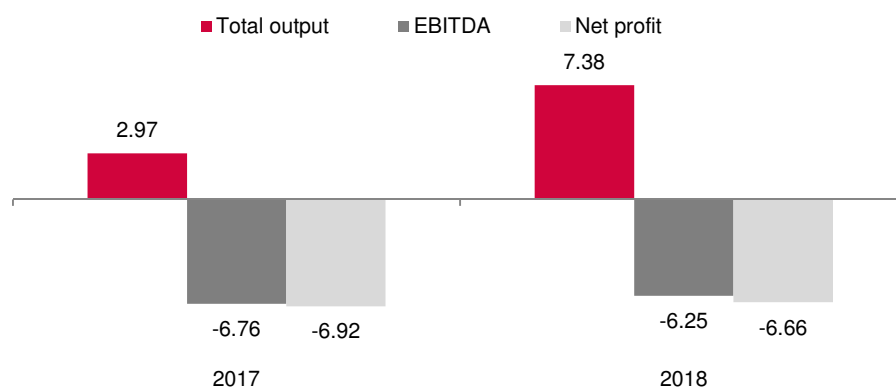
Selected position of the IFRS consolidated balance sheet (in m €)	31/12/2017	31/12/2018
Equity	30.02	23.32
Equity ratio (in %)	94.8%	89.5%
Cash and cash equivalents	28.45	15.24
Intangible assets	1.30	5.13
Operating fixed assets	0.81	2.45
Net working capital	0.26	1.88

Source: Mynaric AG

The previous corporate development, still strongly characterized by R&D activities, and the previous business development have also had an impact on Mynaric's consolidated balance sheet. The increase in R&D activities (space terminal development, etc.) led to a significant increase in intangible assets year-on-year by €3.83m to €5.13m (previous year: €1.30m).

Due to the start of serial production in Q3 2018 and received prepayments, fixed assets increased year-on-year by €1.64m to €2.45m (previous year: €0.81m).

In light of the high investments in the product portfolio and the expansion of the company (serial production, etc.), as well as the still relatively low total output, a net loss was generated in this financial year. This resulted in a reduction in equity as at 31/12/2018 to €23.32m (previous year: €30.02m) and the equity ratio of 89.5% (previous year: 94.8%). Despite this reduction, the equity ratio remains at a very high level. In the past, Mynaric was exclusively financed through equity.



Source: Mynaric AG

Following the successful (post-IPO) cash capital increase of €11.0m (gross issue proceeds) at the beginning of 2019 by the company, we assume that Mynaric currently has cash and cash equivalents of around €20.0m. In our view, this funding should adequately cover the next growth steps.

At €1.88m, net working capital as at 31 December 2018 was above the previous year's level (previous year: €0.26m).

SWOT analysis

Strengths	Weaknesses
<ul style="list-style-type: none"> Experienced, competent management with expertise in company management and high technical expertise, particularly in space technology Close R&D cooperation with the German Aerospace Centre (DLR), one of the largest German research organisations, and the CEA-Leti research institute in France Excellent networking of the company within the aerospace sector and with related sectors, such as the Internet industry or telecommunications industry Strong market position due to technology leadership in the commercial use of wireless laser technology ("first-mover advantage") Management holds a significant number of shares in the company 	<ul style="list-style-type: none"> Dependency on individual key persons, particularly in the management and technology division Generally small company size and, as a result, naturally low financial strength as well as continuing high dependency on external financing sources Business is very dependent on project acquisitions and major customers High dependency on the suppliers of hardware components (sub-systems for the company's own final assembly) Currently still high dependency on US business
Opportunities	Risks
<ul style="list-style-type: none"> Growth market for setting up laser-based communications networks in air and space; high growth potential is expected in this new market; over the long term, market experts forecast a multi-billion market Lucrative servicing maintenance and service revenues High technical complexity creates considerable barriers to market entry for new competitors. A market volume, which grows in parallel with this, results in significant growth potential Expansion of the service range towards a system supplier for communications solutions may open up additional growth potential and simultaneously increase the degree of differentiation further Possible acquisition target for leading international Internet and technology companies 	<ul style="list-style-type: none"> The market for setting up laser-based communications networks may develop differently than expected. The technologies developed by Mynaric may not be accepted by customers and therefore reduce sales potential High dependency on the willingness of potential customers to invest. This, in turn, is dependent on global economic activity and the development of the market for communications networks. Strong dependency on the US business, as the majority of previous test customers and cooperation partners originate from this region.

Forecasts and model assumptions

P&L (in € m)	FY 2019e (new)	FY 2019e (old)	FY 2020e (new)	FY 2020e (old)	FY 2021e (new)	FY 2021e (old)	FY 2022e (new)	FY 2022e (old)	FY 2023e (new)
Total output	14.79	22.60	42.99	70.30	89.93	258.16	202.76	406.21	323.88
EBITDA	-5.13	-2.37	3.01	8.23	16.57	59.57	43.97	109.47	77.12
EBIT	-6.51	-3.09	0.16	5.85	10.12	50.27	35.42	98.74	67.37
Net result	-6.51	-3.09	0.31	4.97	8.48	35.19	24.79	69.19	47.16
EPS	-2.24	-1.06	0.11	1.71	2.92	12.12	8.54	23.83	16.24

Source: GBC AG

Sales forecasts

In the past, Mynaric has focused strongly on the development of laser-based communications solutions and has already developed initial market-ready products (ground stations). These were also moved into serial production. Now, gradually, additional communications products, such as the air terminal, are to be transferred to serial production. The air terminal is currently being further developed (product upgrade) and is to go into serial production in the second half of 2019.

With this, the company is anticipating the development of the market for laser-based communication networks in the air and space sectors, which is only just picking up speed and whose form is just starting to crystallise. As part of the continuing market development, the technology and Internet companies working on major projects are increasingly looking for partners, such as technology vendors, to be able to successfully implement their planned communication projects.

Given this background, Mynaric currently finds itself in a transition phase from a technology-oriented prototype developer to a customer-oriented product supplier, to enable it to also meet the expected future demand for laser communication technology for the implementation of large-scale communication projects. According to market experts, laser communication technology represents a key technology for the successful implementation of the planned major projects.

To underpin this new, customer-oriented approach, Mynaric changed its management in early 2019. This means that Bulent Altan, who had previously managed the SpaceX space business, and Hubertus von Janeczek, who has extensive experience selling high-tech products, were appointed to the Mynaric Management Board. The two former Management Board members remain working within the company and are managing key operational areas within the company.

In its new Management Board member Bulent Altan, Mynaric now has a "space veteran" on board, who has extensive network contacts in the space industry and will provide the company with better customer access going forward. During his 12 years at SpaceX, he also gained extensive knowledge about which features successful laser communication products for the space industry must offer to be able to develop maximum sales potential. This specialist expertise should significantly increase the future sales opportunities in the company's space division.

To support further stages of growth, Mynaric made a cash increase in capital of €11.0m (gross issue proceeds) in early 2019. The cash increase in capital was subscribed by one of the main shareholders in a Mynaric customer in the satellite business, who is

planning to develop a major satellite network. Mynaric had already announced the signing of a memorandum of understanding (MoU) in relation to a planned satellite constellation with this potential major customer in October 2018. After a first demo mission, this satellite network will probably require more than 1,000 laser communication terminals.

In the past, Mynaric has mainly conducted successful demo and test projects (prototype projects) with US customers. The company now directs its efforts increasingly towards selling its market-ready products and the final testing of its laser products in its customers' product systems (functionality evaluation within a complete system).

In the past few years, the company has mainly focused its business development activities on the aviation sector and already has a market-ready product in this segment (ground station for aviation applications), and with the upgraded air terminal it will have a further product in this sector, likely in the second half of 2019. According to our research, as of the second half of 2019, Mynaric would be the only communications technology provider that has a laser-based product portfolio in this application area.

Given this, Mynaric is planning on marketing this product portfolio more strongly in the second half of this financial year, and simultaneously moving to serial production of the air terminal, to be able to supply the quantities required for evaluation tests by potential customers, and also to cover the expected major follow-up orders.

With its laser-based products in the aviation sector, Mynaric is targeting a broad potential circle of customers. These include, for example, Internet companies working on constellation projects in the aviation sector or technology companies producing drones for various applications. We expect the company to be able to develop a broad customer base over the medium and long term and, as a result, gradually increase its revenues in this business sector.

For the space sector, we anticipate that, after the planned conclusion of the space terminal development (for a space-to-space link) in early 2020, a first demo mission will take place using Mynaric's laser terminals towards the end of that financial year. We expect in this case that this demo mission will be carried out by the satellite constellation provider that signed a declaration of intent with Mynaric at the end of 2018. As part of this mission, initial satellites will be equipped with Mynaric's space terminals and launched into (low) earth orbit.

We also expect that the anticipated demo mission will be completed successfully and that subsequently a very large number of space terminals will be delivered as follow-on orders to reach the anticipated final constellation size. In general, large numbers of satellites are required for the satellite constellations planned by many companies. This is the only way to achieve the business goals pursued with this project.

Based on the high number of laser terminals required, we expect particularly high revenues in the space segment over the long term. We also expect that Mynaric will win at least two major customers in the space segment over the long term from the around 30 planned satellite constellation projects globally, according to company reports. Apart from the expected space terminal deliveries, we also anticipate that the company will, at the same time, be supplying ground stations for the space applications. This type of ground station is required to be able to establish a laser-based space-to-ground communication link. This product is now market-ready and has already been delivered to customers.

With its first-mover advantage, which is particularly based on its innovative laser communication technology, we expect that Mynaric will manage over the next few years to

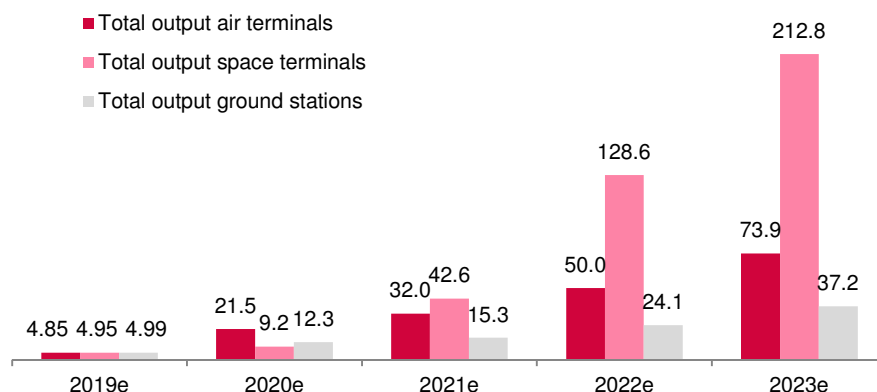
achieve significant market shares in the growth market of laser-based air and space communication networks (in the aerospace sector). In light of the above, we expect that this technology company will achieve very dynamic revenue growth.

Mynaric serves a total of three customer groups or customer types (air terminals, space terminals and ground stations). As a result, the total Group output can be divided into the air, space and ground segments/divisions.

We expect that the air segment will grow significantly in the near future and contribute considerably to the Group output. This is particularly due to the fact, compared with the space segment, Mynaric has already developed the necessary hardware for customers and will even be able to offer a product portfolio for air applications towards the end of the current financial year.

Based on the planned increase in marketing of laser-based customer solutions in the air segment and start of air terminal serial production, we expect high total output or high revenues as from FY 2020, which should considerably increase over subsequent years based on follow-on and new orders.

Expected development of total output by segments (in € million)



Source: GBC AG

In the space segment, we expect first significant revenues as of financial year 2020 due to the expected demo mission. In connection with the forecast milestone payments (for development work), we expect total output in the high single digit millions for this period. For the following financial years, we expect that business development in this segment will be very dynamic and should record the highest growth rates due to the expected follow-on orders and an expansion of the customer base. Over the long term, we expect that this business segment will significantly contribute to total output and will provide a major share of the consolidated total output from 2022.

Equally positive business development is expected in future in the ground station segment, which has already gone into serial production with two types of ground stations (for air and space applications) and already has an established customer base. We expect follow-on orders from the existing customer base in the future and believe that this segment will also benefit considerably from the expected business growth in the air and space segments as these customers will also need ground stations for their entire systems. For this segment, we therefore are also expecting dynamic business growth in the next few years.

Given the delay to the air terminal's serial production and the longer than expected development of the space terminal, we have adjusted our total output forecasts downwards for the current financial year and the subsequent financial years. In addition, we have included an additional estimate period (FY 2023) in our evaluation model. Based on the adjusted total output forecasts, we have also corrected our earnings forecast.

In the light of the strong market position (technology leadership with laser communication technologies, first-mover advantage) as well as the expansion and further development of the product portfolio and the newly appointed management, Mynaric should succeed in gaining a significant market share in the communication networks growth market in the air and space sector. The successful product tests so far and cooperation relationships and the signing of a declaration of intent for a satellite constellation show that Mynaric is excellently positioned to play a major role in this growth market.

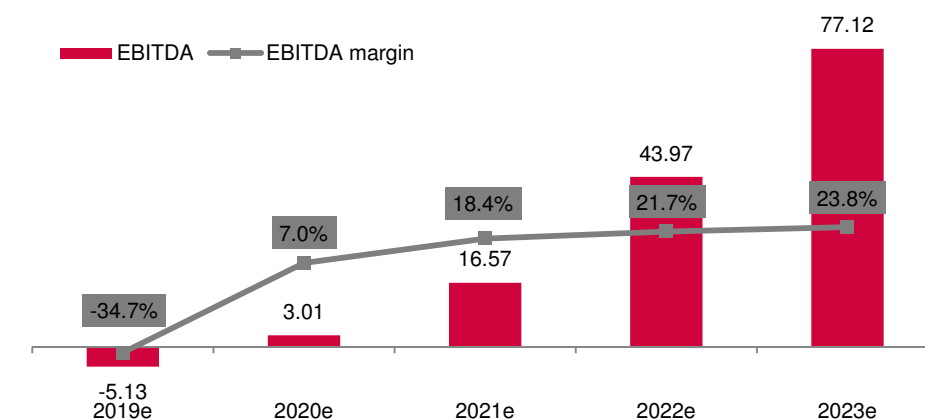
Profit forecasts

The dynamic total output development, which we expect, is also reflected in our results forecasts. For the current financial year, we expect that a relatively low total output will be generated, due particularly to the late start of serial production of the air terminal (planned for the HY2 2019). At the same time, we expect high investments, including in the personnel area, to achieve the next growth steps. A significant portion of the investments should also go into the expansion of the serial production and service products. In view of the considerable investments required, we expect a negative EBITDA for the current financial year.

From 2020, the operational break-even should be reached, as a result of the expected significant increase in total output. The considerable forecast growth in the air segment is also likely to make a strong contribution to this. In subsequent years, we expect that the operating result will grow further and reach around €77.12m in 2023 due to the expected highly dynamic business performance. In parallel, we expect that our forecast EBITDA margin of 7.0% in 2020 will grow in leaps and bounds to 23.8% in 2023.

This more than proportional increase in earnings will likely be achieved thanks to the economies of scale, learning curve effects and increased buying power that we anticipate. Due to the expected high revenue growth, the fixed costs incurred in the form of e.g. administration costs or depreciation should be spread across a higher business volume (total output) and, as a result, lead to an improvement in the fixed cost ratio (fixed cost reduction).

Expected development of the EBITDA and the EBITDA margin



Source: GBC AG

In general, Mynaric's business model is not very personnel or capital-intensive. The focus of the company is mainly on design, engineering the hardware, and developing the software for its product range. In addition, the modular product structure enables rapid final assembly of the modules supplied by selected vendors, which accordingly enables high volume product turnover. In its production, Mynaric only performs the final assembly of the modules into an end-product system.

Mynaric has developed a good starting basis in the past, particularly with its upgraded product offering and concluded cooperation agreements as well as newly appointed management, in order to profit significantly from the expected dynamic growth in the laser-based communications networks sector. The operational profit threshold should be achieved in the next financial year 2020, as a result of the anticipated gradual serial production expansion. In the following financial years, EBITDA should grow faster as a result of the anticipated dynamic business development.

VALUATION

Model assumptions

We valued Mynaric AG using a three-stage DCF model. We started with the detailed estimates for the years 2019 to 2023 in phase 1 and for the years 2024 to 2026 in phase 2. We have included tax rate of 30.0% in phase 2. Additionally, at the end of the forecast horizon, a residual value is determined in the third phase using a perpetual annuity along with a long-term tax rate of 30.0%. As the final value, we assume a growth rate of 2.0%.

Determining the capital costs

The weighted average cost of capital (WACC) for Mynaric AG is calculated from the cost of equity and the cost of debt. The fair market premium, the company-specific beta and the risk-free interest rate have to be determined in order to calculate the cost of equity.

The risk-free interest rate is derived from the current structured interest rate curves for risk-free bonds in accordance with the recommendations of the German Special Committee for Business Valuation and Business Management (Fachausschuss für Unternehmensbewertungen und Betriebswirtschaft, FAUB) of the Institute of Public Auditors in Germany (Institut der Wirtschaftsprüfer in Deutschland e.V.). The basis used for the zero bond interest rate is calculated using the Svensson Method and published by the German Bundesbank. In order to compensate for short-term market fluctuations, average returns for the previous three months are used and earnings are rounded up to the nearest 0.25 basis points. **The value currently used for the risk-free interest rate is 1.00%.**

We set the historical market premium of 5.50% as a reasonable expectation of the market premium. This is supported by historical analyses of stock market returns. The market premium reflects how many percent more return can be expected from stock markets compared to low-risk government bonds.

According to GBC estimation methods, a beta of 2.36 currently applies. This relatively high value takes account of the high risk. To date, Mynaric has only achieved a total output or revenues based on customer tests and demonstrations. The high total output and earnings expectations incorporate uncertainty.

A cost of equity of 13.96% (beta multiplied by the risk premium plus risk-free interest rate) was calculated using the assumptions made. Since we are assuming a sustainable weighting of the cost of equity of 90.0%, the resulting weighted average cost of capital (WACC) amounts to 13.06%.

Valuation result

Discounting of future cash flows is based on the entity approach. We have calculated the corresponding weighted average cost of capital (WACC) to be 13.06%. The resulting fair value per share at the end of the 2020 financial year corresponds to the stock price target of €95.47 (previously: €108.50). The target stock price reduction results from the reduced total output forecasts which, in turn, led to an adjustment of our previous earnings forecasts. On the other hand, the roll-over effect (target stock price basis for the subsequent financial year 2020) has reduced any stronger target price reduction.

DCF model

Mynaric AG - Discounted Cashflow (DCF) model scenario

Value driver of the DCF - model after estimate phase:

consistency - phase		final - phase	
Revenue growth	7.5%	Eternal growth rate	2.0%
EBITDA margin	24.0%	Eternal EBITA margin	20.5%
Depreciation to fixed assets	15.0%	Effective tax rate in final phase	30.0%
Working Capital to revenue	27.0%		

Three phase DCF - model:

phase	estimate					consistency			final
in mEUR	FY 19e	FY 20e	FY 21e	FY 22e	FY 23e	FY 24e	FY 25e	FY 26e	final value
Revenue	14.79	42.99	89.93	202.76	323.88	348.17	374.28	402.35	
Revenue change	100.3%	190.7%	109.2%	125.5%	59.7%	7.5%	7.5%	7.5%	2.0%
Revenue to fixed assets	1.61	2.26	2.09	3.56	4.98	5.20	5.42	5.59	
EBITDA	-5.13	3.01	16.57	43.97	77.12	83.56	89.83	96.56	
EBITDA margin	-34.7%	7.0%	18.4%	21.7%	23.8%	24.0%	24.0%	24.0%	
EBITA	-6.51	0.16	10.12	35.42	67.37	73.51	79.48	81.86	
EBITA margin	-44.0%	0.4%	11.3%	17.5%	20.8%	21.1%	21.2%	20.3%	20.5%
Taxes on EBITA	0.00	-0.02	-1.64	-10.63	-20.21	-22.05	-23.84	-24.56	
Taxes to EBITA	0.0%	15.0%	16.2%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%
EBI (NOPLAT)	-6.51	0.13	8.48	24.79	47.16	51.46	55.63	57.31	
Return on capital	-68.8%	1.0%	28.5%	37.9%	43.8%	35.3%	34.6%	33.7%	32.6%
Working Capital (WC)	3.70	10.75	22.48	50.69	80.97	94.01	101.06	108.64	
WC to revenue	25.0%	25.0%	25.0%	25.0%	25.0%	27.0%	27.0%	27.0%	
Investment in WC	-1.82	-7.05	-11.73	-28.21	-30.28	-13.04	-7.05	-7.58	
Operating fixed assets (OAV)	9.20	19.00	43.00	57.00	65.00	67.00	69.00	72.00	
Depreciation on OAV	-1.38	-2.85	-6.45	-8.55	-9.75	-10.05	-10.35	-14.70	
Depreciation to OAV	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	20.4%	
Investment in OAV	-3.00	-12.65	-30.45	-22.55	-17.75	-12.05	-12.35	-17.70	
Capital employment	12.90	29.75	65.48	107.69	145.97	161.01	170.06	180.64	
EBITDA	-5.13	3.01	16.57	43.97	77.12	83.56	89.83	96.56	
Taxes on EBITA	0.00	-0.02	-1.64	-10.63	-20.21	-22.05	-23.84	-24.56	
Total investment	-4.82	-19.70	-42.18	-50.76	-48.03	-25.09	-19.40	-25.28	
Investment in OAV	-3.00	-12.65	-30.45	-22.55	-17.75	-12.05	-12.35	-17.70	
Investment in WC	-1.82	-7.05	-11.73	-28.21	-30.28	-13.04	-7.05	-7.58	
Investment in Goodwill	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Free cashflows	-9.95	-16.72	-27.25	-17.41	8.88	36.42	46.58	46.73	499.89

Value operating business (due date)	230.86	277.71
Net present value explicit free cashflows	19.10	38.31
Net present value of terminal value	211.76	239.40
Net debt	-16.29	0.43
Value of equity	247.14	277.28
Minority interests	0.00	0.00
Value of share capital	247.14	277.28
Outstanding shares in m	2.90	2.90
Fair value per share in €	85.10	95.47

Cost of capital:

Risk free rate	1.0%
Market risk premium	5.5%
Beta	2.36
Cost of equity	14.0%
Target weight	90.0%
Cost of debt	6.5%
Target weight	10.0%
Taxshield	25.0%
WACC	13.1%

Return on Capital	WACC					
	12.5%	12.8%	13.1%	13.4%	13.7%	
	32.1%	101.56	97.73	94.13	90.74	87.55
	32.3%	102.30	98.43	94.80	91.38	88.17
	32.6%	103.03	99.13	95.47	92.03	88.79
	32.8%	103.77	99.84	96.15	92.67	89.40
	33.1%	104.50	100.54	96.82	93.32	90.02

ANNEX

I.

Research under MiFID II

1. There is a contract between the research company GBC AG and the issuer regarding the independent preparation and publication of this research report on the issuer. GBC AG is remunerated for this by the issuer.
2. The research report is simultaneously made available to all interested investment services companies.

II.

Section 1 Disclaimer and exclusion of liability

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