paragon

Refocused automotive growth strategy

Restoring estimates/outlook

Automobiles and parts

paragon has spent much of the pandemic refocusing on its core automotive activities and addressing the issue of bond refinancing. Both are now largely complete and management's revised growth strategy targets ambitious financial targets over the next few years, with a positive start already made. As much of its product portfolio is fuel type agnostic, paragon is well positioned to address the evolving connectivity, digitalisation and electrification requirements of electric vehicles (EVs). We believe the strong growth outlook merits a higher FY23e P/E rating than the current 3.6x, which we feel reflects concern over the refinancing of the outstanding CHF21m bond due in April 2023.

Year end	Revenue (€m)	PBT* (€m)	EPS* (€)	DPS (€)	P/E (x)	Yield (%)
12/20**	127.2	(6.0)	0.79	0.00	5.1	0.0
12/21**	146.9	1.2	0.27	0.00	14.8	0.0
12/22e	165.9	2.3	0.37	0.00	10.8	0.0
12/23e	182.8	6.9	1.11	0.00	3.6	0.0

Note: *PBT and EPS are normalised, excluding amortisation of acquired intangibles, exceptional items and share-based payments. **Restated following the disposal of Voltabox, excluded from FY20 and FY21 as discontinued.

Streamlined to focus on growing core automotive

The newly streamlined paragon looks set to continue to grow strongly despite ongoing supply chain problems in the automotive industry generally, which has disrupted output at most car manufacturers. The innovative solutions philosophy for the premium end of the market has insulated paragon from the worst disruption and new products have led to a burgeoning order book. With €630m of future revenues booked at 1 May 2022 and €109m of the backlog due for delivery in 2022, 99% of forecast FY22 sales are covered. Under its strategy, management is planning for CAGR revenue growth of 12–15% and an EBITDA margin of 20% by FY26 as new products are introduced on more platforms globally.

Deleveraging remains a priority

The recent five-year extension of the €50m Eurobond on amended terms has improved the financial flexibility of the group, the outstanding CHF21.0m (€21.4m) on the Swiss Franc (CHF) bond is due for redemption in 2023. While free cash flow could be sufficient to cover much of the outstanding cost, it seems likely that management may need to seek alternative sources of liquidity to complete the repayment, which could involve selective disposals. Once complete, the negative sentiment relating to the group's high debt levels should start to dissipate. Group capital allocation could then be applied to debt reduction and investment for growth and in the longer term, dividends.

Valuation: Securing the future

Concerns over the CHF bond appear to be weighing heavily on sentiment and the share price rating. A clear path to its redemption next year should help to alleviate the negativity. Our capped DCF valuation based on our reintroduced estimates for the core operations returns a value of €19.6 per share based on the current capital.

9 August 2022

Price	**€4.00**
Market cap	**€18m**

Adjusted net debt (€m) at 31 March 2022 (excludes lease liabilities €11.3m)	98.8
Shares in issue	4.5m
Free float	50.7%
Code	PGN
Primary exchange	Frankfurt Xetra
Secondary exchange	N/A

Share price performance

%	1m	3m	12m
Abs	(5.8)	(19.3)	(60.8)
Rel (local)	(10.4)	(19.4)	(54.9)
52-week high/low		€11.15	€3.65

Business description

Based in Delbrück, Germany, paragon designs and supplies automotive electronics and solutions, selling directly to OEMs, including sensors, interior, digital assistance, body kinematics and power. Production facilities are in Germany, Croatia and China.

Next events

H122 results	22 August 2022

Analyst

Andy Chambers +44 (0)20 3077 5700

industrials@edisongroup.com

Edison profile page

paragon is a research client of Edison Investment Research Limited

Investment summary

Refocused specialist automotive supplier

paragon has finally extracted itself from the distraction that was Voltabox with little direct impact, albeit with no overall financial benefit. The group returns to a much clearer focus on its automotive activities, which have navigated the pandemic well, although market disruptions have provided a negative operating environment. A bias towards the premium vehicle sector of global original equipment manufacturers (OEMs) with higher values but limited volumes has been a more robust area of the overall automotive industry and the relevance of paragon's products and solutions, including new product introductions, has also increased. While the macro outlook for automotive production remains challenged due to energy costs and inflationary constraints on consumers, new products being introduced over the next few years should support paragon's revenue growth, outperforming the automotive market volume.

Strategy for expansion and growth

paragon's overriding philosophy is to provide responses to global megatrends and proactively develop and offer proprietary solutions that once defined can be applied across customers and models. Operating through the five strategic business units (SBUs) of its two divisions, Electronics and Mechanics, management expects its strategy to grow revenues to c €300m in FY26 with a 20% EBITDA margin (FY21 €147m and 13.6% margin), which we estimate should increase free cash flow by c €40m. The plan has been validated by external parties and is predicated on more products being supplied for more platforms to more customers in Europe, China and the US, decreasing the historic dependence of the big five German OEMs.

Bond refinancing and redemptions remain a concern

Although proceeds from the sale of the final Voltabox stake were single-digit millions of euros, management has been dealing with the maturities of both its Eurobond and the CHF bond. While the Eurobond is now resolved through the five-year extension to July 2027, it comes at a cash flow cost in the form of higher interest rates and future early redemptions. The situation is compounded by the April 2023 maturity of the outstanding CHF21m capital of the CHF bond. While free cash flow has been improving and is expected to continue to increase (€12m guided for 2022), it may not be sufficient to cover repayments, so asset disposals and other sources may be needed to finalise the refinancing. Possible solutions include potentially extending the maturity of the existing bond, a new bond or a bond exchange; until it is resolved it is likely to weigh on paragon's equity rating.

Supply chain and macro constraints persist

Current prospects look promising after a positive Q122 trading performance with revenues up 6.3% to €41.7m and EBITDA of €5.9m at a margin of 14.2% despite continuing market constraints. FY22 guidance appears underpinned by booked business, which at the start of May was around €630m for delivery over 56 months, up 17% on the prior year. Of that, c €109m was due for delivery in 2022, which combined with already achieved revenues of €54.3m through April provides 99% cover of FY22 sales guidance of €165m. EBITDA margin in excess of 15% is expected to support free cash flow of €12m. Management guidance for FY23 sales growth is 10%.

Value reflects finance caution not future prospects

Were it not for the high level of debt, we feel the rating for the group based on the five-year growth plan with high margins and prospects, would command a premium to peers. However, the need to fund bond redemptions during the plan raises the prospect of an additional equity capital raise.

Refocused on the digital transformation of automotive

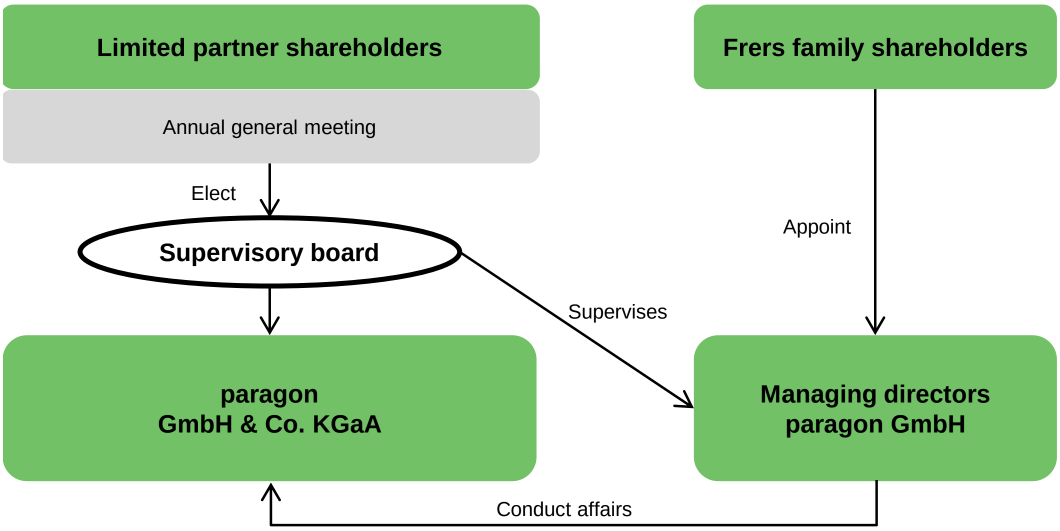
paragon was established by founder and major shareholder, Klaus Dieter Frers in March 1988, originally as an industrial electronics subcontract manufacturer, but subsequently focusing on automotive electronics and systems supply, as well as moving into adjacent markets. It has consistently used its engineering capabilities to identify global megatrends ahead of its automotive OEM customers and provide innovative solutions to address those requirements preferably before the customer has itself seen the need. It utilises the push principle of developing functioning protypes and securing patents before commencing specific marketing with customers, which also provides a first mover strategic advantage. The organic growth strategy in paragon Automotive has historically been supplemented by selective, strategic acquisitions, although there have been no significant transactions since the pandemic began. The last major transactions were the purchase of HS Genion in 2017 to strengthen Kinematics and the acquisitions of Semvox, LPG and ETON Soundsyteme in 2018. With the continued financial constraint, we expect the focus for the group to remain on organic growth over the next few years.

The company sold its stake in its listed Electromobility Division, Voltabox, in November 2021, while buying the rights to its new exclusive Flow Shape Design (FSD) technology licensed from Voltabox for automotive applications, which includes starter and traction batteries. Essentially, these two transactions offset each other in liquidity terms, but strategically the exit resolves a problematic issue for paragon and alleviates the negative sentiment associated with its shareholding.

paragon should now return to being an automotive focused group introducing innovative new technologies, solutions and products to its customer base of automotive manufacturers.

Corporate legal structure

Exhibit 1: KGaA structure

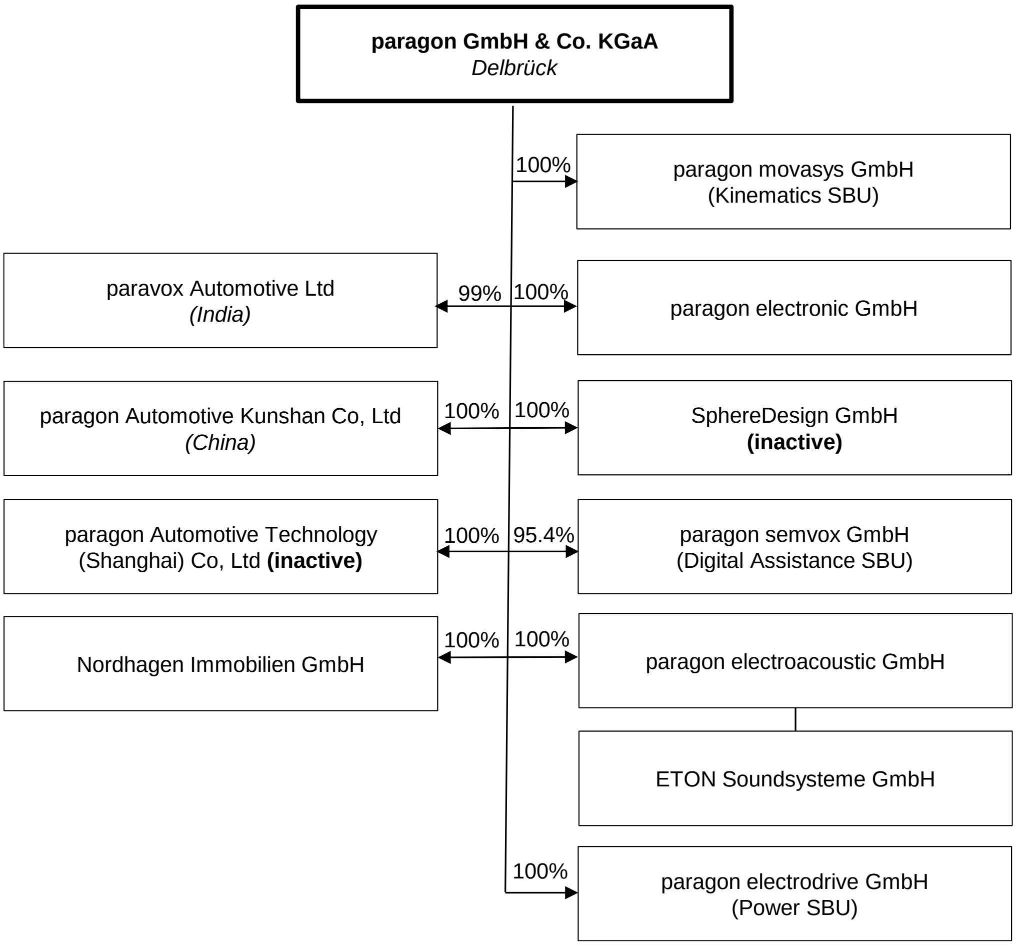


Source: paragon

In 2018 the company changed its legal structure to that of a Kommanditgesellschaft auf Aktien (KGaA), a partnership limited by shares. In this structure the company is composed of a general partner and limited liability shareholders. While the structure may appear somewhat convoluted in UK corporate governance terms, it is a fairly common in Germany. Hella and Fresenius are examples of listed entities operating under KGaA structures. The KGaA structure consists of a general partner to manage the business, paragon GmbH, 100% owned by the Frers family with managing directors appointed by them. The limited liability shareholders elect the supervisory board of the listed paragon GmbH & Co. KGaA at AGMs, which provides oversight of the managing directors of paragon GmbH. It is a popular corporate structure with family-controlled entities in Germany, like paragon, as it maintains effective control while providing access to capital markets. While the free float of the listed entity is 50.7%, the structure means that control of the group remains with the Frers family with over 50% of voting rights.

At the start of 2022 the group structure of the refocused paragon group was:

Exhibit 2: paragon GmbH & Co. KGaA group structure



Source: paragon

The group operates from nine sites: six in Germany and one each in China and Croatia. The company also established an R&D capability in Bangalore, India in 2021.

Consistent philosophy drives paragon's growth strategy

The philosophy of the group has remained consistent and the performance of the paragon Automotive operations has been significantly better than the wider automotive market since the pandemic began in 2020. The group has managed to avoid the worst of the production declines, assisted by its focus on premium models and expansion in China.

The global megatrends of climate change, digitalisation and urbanisation drive the mobility megatrends that paragon considers relevant to its strategy and inspire new product development. These trends, which have remained consistent are:

- **Urbanisation** – causing increased air pollution and the requirement for shared mobility. These drive requirements for air quality solutions including virus filters and comfort products such as infotainment systems in autonomous vehicles.

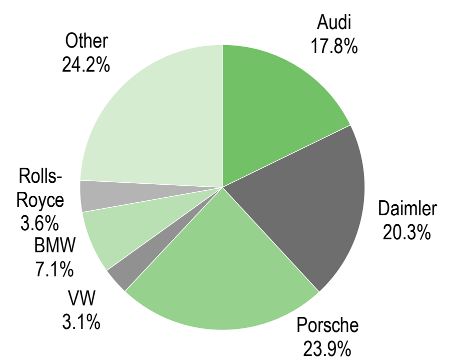
- **Digitalisation** – autonomous driving requires mandatory driver monitoring and contactless evaluation of vital data. Improved connectivity and control systems including wireless charging, and high performance in car communication and sound systems, are also important drivers.
- **Carbon reduction** – drives more efficient vehicles to improve and optimise fuel efficiency including reduced drag with adaptable components, as well as the move to increasing electrification of vehicle motive power sources and drivetrains.
- **Increasing comfort** – the provision of more convenient interaction with vehicles including instrument displays as well as gesture, touch and voice recognition control systems.

paragon remains well positioned as its customers in the automotive industry transition to EVs with a continuing increase in electronic content, digitalisation and electromobility. The electromobility megatrend remains a high priority for the group, notwithstanding the exit from Voltabox (mainly industrial markets). Products are powertrain agnostic and paragon has been involved in developing electronics since 1988 with artificial intelligence (AI) and machine learning capabilities since 2018.

Strategy to expand global footprint

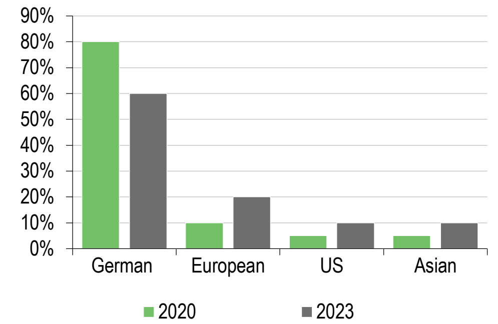
While the philosophy of the group remains effectively unchanged, paragon is pursuing an evolved strategy that will see it expand its sales internationally, notably to North America and China, with the latter still regarded as the automotive sector's primary growth driver. As it grows its business it expects to see 50% of sales derived from automotive production for Chinese markets by 2023 (FY20 40%), with 20% from the US (FY20 14%) and 30% from Europe (FY20 46%), which is still expected to grow especially as markets have been constrained by the pandemic and subsequent supply chain issues. We would expect the proportion of overseas sales to increase as new products are introduced and new customers, for both existing and further innovative new developments, are acquired. It is also expected to benefit from the flow down of innovative products from premium car segment to higher volume models.

Exhibit 3: Revenue split by customers FY21



Source: paragon reports

Exhibit 4: OEM revenue change to 2023



Source: paragon

As can be seen from Exhibit 3, German OEMS continue to dominate paragon's sales, albeit sales are often indirectly made to overseas markets via car exports from Europe, as well as directly to overseas manufacturers' production facilities. The ambition to grow overseas revenues is thus being supported by increased production in both China and other optimal cost countries while capacity in Germany is maintained. Current group capacity utilisation is around 85% so adding capacity and improving efficiency remain key elements in executing the growth strategy.

Transforming the operating structure

Following the exit from Voltabox and consistent with the evolved strategy, the company operates through five SBUs that operate under two reporting divisions, Electronics and Mechanics (Exhibit

5). The purchase of Voltabox's FSD technology licence for automotive applications forms the Power strategic business unit joining Sensors, Interior and Digital Assistance in the Electronics division, with Kinematics (supplying adjustable aerodynamic body components) forming the Mechanics division. Traditionally, each business unit had its own production, research and development (R&D) and sales with group headquarters providing operational and financial oversight. Increasingly contained within all the SBUs is an expanding AI and machine learning capability, which is reflected in the engineering capabilities of the group. Of c 855 employees, some 215 are engineers providing global R&D, and more than 60% of these are software engineers (133). As the electrification and digitalisation of vehicles gathers pace, embedding increasingly advanced technologies within components, management has been indicating a more product-focused structure. The existing structure is being adapted to increase the level of cross-SBU technology development including an overriding access to AI and machine learning capabilities, primarily for its proprietary automotive applications but also potentially for third-party solutions in other sectors.

In Exhibit 5 we show the existing business divisions, the five SBUs that they are comprised of, and the major products that they are involved in. All five SBUs are expected by management to drive growth over the next five years.

Exhibit 5: paragon operating structure

	Electronics (72.7%)				Mechanics (27.3%)
2021 revenues	€106.8m				€40.2m
SBU	SENSORS €45.4m	INTERIOR €35.7m	DIGITAL ASSISTANCE €11.5m	POWER €0.7m	KINEMATICS
Products	**Solutions for improving air quality within the vehicle cabin:** • Air Quality Sensor (AQS), Conditioner (AQC) and Improver (AQI) • Electrostatic filters • Vital data sensors • Child presence detection	**Innovative audio systems:** • Road noise cancellation • Internal/external microphones • Belt strap microphone • Speaker systems • Perfect speakers • Headrest speakers • External sound for EVs • Seat status sensors	**High performance instruments and operating controls** • Cockpit instruments • Operating controls • Digital assistance • EDWIN product category (voice assistant systems) • Eco systems for artificial intelligence	• Li-Ion battery systems • FSD technology • Starter batteries • Buffer batteries • Traction batteries	• Front & rear spoilers • Moving exterior parts • Wind screens and deflectors • Interior actuator technology

Source: paragon

Optimising costs and efficiency are key elements

As part of its philosophy, paragon has a focus on highly automated, centralised manufacturing of products designed for ease of production, which provides a competitive advantage over many of its peers. The competitive landscape is fragmented, with few competitors operating across more than a couple of paragon's product lines.

Management continuously seeks to optimise efficiency, as was successfully demonstrated during the pandemic through the mitigating actions it undertook. The measures enabled the automotive operations to remain profitable despite the market disruptions that affected global vehicle production levels.

The company continued to pursue efficiencies in FY21, which management believes should benefit profit by an aggregate €1.8m in FY22:

- It transferred loudspeaker production from Neu-Ulm to existing locations reducing fixed costs by €0.7m.
- It consolidated kinematics production in Landsberg am Lech and Oroslavje (Croatia) reducing fixed costs by €0.6m.

- Increasing automation to reduce unit costs, saving €0.3m.
- It established R&D capability in India in 2021 with 11 employees at the year end, saving over €0.2m in FY22.

The company also seeks to locate production in optimal locations as new products are introduced as well as for existing products. The new paragon movasys production facility in Croatia is a case in point. It was formed in 2021 and should be used increasingly for products where a higher level of manual input and costs are incurred. Yet to be consolidated, it had just 15 (FY20 five) employees at the start of FY22.

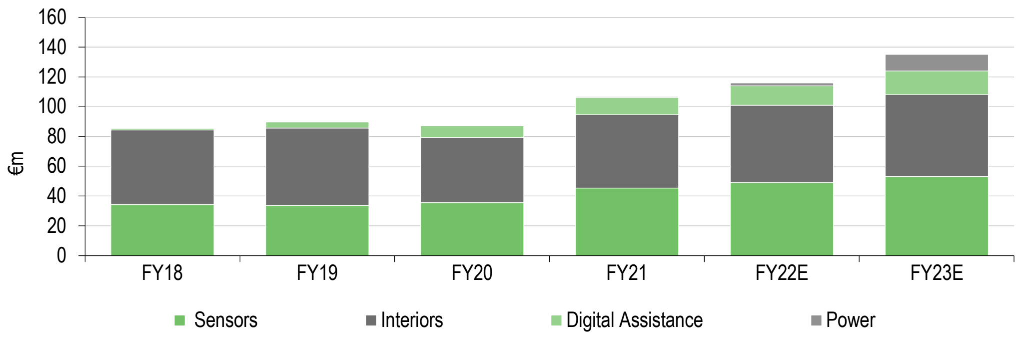
Operational overview

As stated, paragon's operations supply automotive manufacturers, especially the big five German auto manufacturers, Audi, BMW, Daimler, Porsche and Volkswagen. The group has a leading position in the market offering more than 300 electronic and electromechanical systems and products for over 220 vehicle models to more than 30 global OEMs as a Tier 1 supplier. The prospects for the five SBUs are summarised below, and as stated management expects all five to grow revenues through 2026.

Electronics division benefits from new product introductions

Electronics grew external revenues by 22% to €106.8m in FY21 (FY20 €87.2m), generating EBITDA of €19.1m (FY20 €13.5m) up 42%. The result was close to pre-pandemic FY18 levels as the market recovered from the pandemic production disruptions and new product applications benefited from increasing take up rates by OEMs. The FY21 EBITDA margin was 17.9% (FY20 15.5%) and in Q122 was 13.1% on revenues that grew 9% to €29.6m (Q121 €27.5m).

Exhibit 6: Electronics division revenue development by SBU



Source: Company reports. Edison Investment Research estimates

Sensors provide innovative air quality management

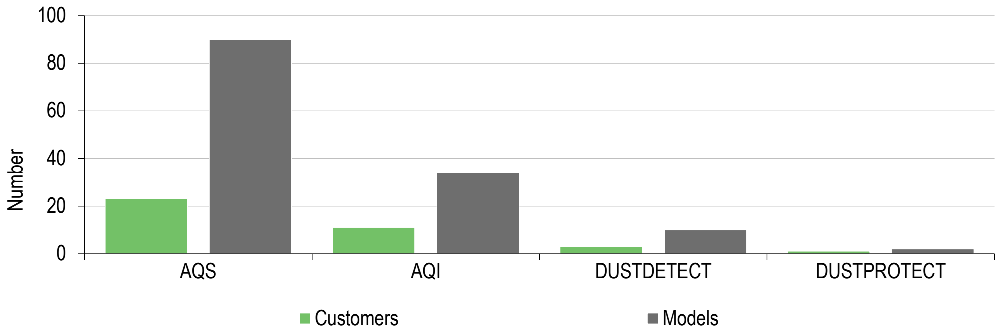
The Sensors SBU sales increased by 27.5% in FY21 to €45.4m, which is typical of paragon's strategy for innovative product development with its sensors leading the way in the industry. Its first Air Quality Sensors (AQS) were introduced in Germany in 1993 and production commenced in China in 2016. Its Air Quality Improver (AQI) was added to the portfolio in 2012 and has been produced in China since 2020. Production of its DUSTDETECT particulate matter sensor commenced in Q319 in Germany and Q221 in China, and the DUSTPROTECT electrostatic particle and virus filters should start production in FY23.

The SBU has developed vital data sensors since 2018 that help to monitor the health and presence of vehicle occupants. These sensors will be important on the development of autonomous driving.

The progressive adoption of sensor technology is evidenced by considering the following. The number of customers and models the sensors are applied to increases with time as the proposition is progressively accepted by customers. Given the virus protection nature of the DUSTPROTECT sensor and the COVID-19 pandemic, we would expect adoption to be more rapid than for its predecessors.

AQSs are now being used by 23 customers worldwide on 90 models with AQIs applied to 234 models for 11 customers. DUSTDETECT has so far garnered three customers for 10 models and DUSTPROTECT's initial customer intends to use it on two models.

Exhibit 7: Sensors product adoption by customers and models (oldest to newest)



Source: paragon

Management expects Sensors' revenues to grow by 50% by 2026 as the SBU benefits from the ramp up of DUSTPROTECT from 2023. Supply contracts are already secured, with a record €45m contract announced in Q122 from one major global OEM for a number of platforms from 2025, potentially including supply to a vehicle produced in China. The new generation of AQSs being developed are to incorporate increasing levels of AI, a feature that is likely to be increasingly relevant as the market transitions to EVs and autonomous driving.

Interior supplying high-end audio systems and display instruments

The Interior SBU is paragon's largest with FY21 revenues of €49.2m, up 13% on FY20.

The SBU includes the range of high-quality analogue and digital cockpit instruments and operating controls activity categorised. The range includes charging trays and media interfaces. FY21 saw the production start of several new display instruments and further expansion of the product line is expected; these factors remain the main source of revenue growth. An example of the continuing new product development is the Wireless Charging Next Gen, which should be launched by several OEM customers in 2023.

Since the acquisition of LPG (renamed paragon electroacoustic) and ETON Soundsysteme in 2018, Interior is regarded as a core growth area as electrification increases in the automotive market. Its range of high-quality audio systems are finding an increasing number of applications for its speakers and microphones in the automotive field, but it also serves the home hi-fi sector. Newer applications include headrest speakers, seatbelt microphones, road noise cancellation and speakers to generate external sound for EVs (Acoustic Vehicle Alerting System). All are designed with sound quality, passenger experience and safety in mind, as well as enhancing the OEM's offering. For example, the newest development is the 'perfect speaker', which is half the weight and size of traditional speakers without compromising quality. Management expects an 80% increase in audio systems revenues by 2026 from c €5m in FY21 adding growth to other acoustics revenues, which we estimate at c €20m.

Digital Assistance

The Digital Assistance SBU was established following the acquisition of paragon semvox in 2018. Its solutions are already adopted in the mass market and it continues to grow rapidly, with revenues increasing by 43% to €11.3m in FY21. Digital Assistance provides a range of software-based solutions for voice control, human machine interface and intelligent assistant systems as a continuing development of already well-established technology. The geni:OS platform is now being introduced to further incorporate additional layers of AI and machine learning into the range of intelligent voice assistant systems, including the EDWIN range of digital companions (think in-car SIRI). These systems continuously develop capabilities and power and should be increasingly integral as communication between a vehicle and its occupants increases. By embedding AI and machine learning in the system to identify users, preferences and typical decision-making to make traditional systems 'intelligent' and empathetic, predicting user requirements before they have initiated a query.

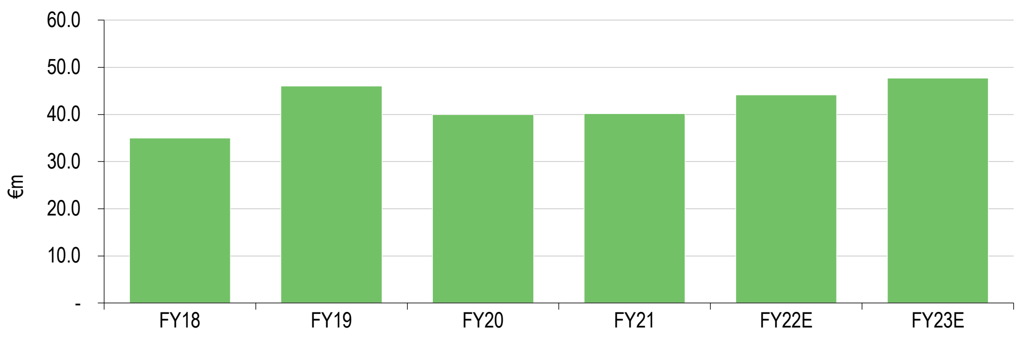
In January 2022 it received an order for €40m for another AI-based voice assistant adaptive infotainment system for a leading OEM. At the time it was a record order for paragon although it was quickly surpassed by the DUSTPROTECT order (in the Sensors SBU). Revenues commence this year and management expects to add more platforms from global OEM customers.

Power SBU expected to grow rapidly

The new Power SBU was created following the exit from Voltabox in late 2021. paragon acquired an exclusive licence for FSD technology for battery packs for automotive applications. Power develops, produces and supplies cutting-edge battery systems using lithium-ion cell technologies, which incorporate in-house battery management systems. FSD is especially useful in the case of challenging installation space or weight limitations allowing new applications to be secured. FSD enables lighter, more flexible design of battery packs providing OEMs with weight advantages, full use of usable installation space and significant cost savings. Power has a standard range of starter, buffer and traction battery products using conventional designs that can benefit from the application of FSD technology. Although Power only made a modest €0.7m revenue contribution in FY21, management expects revenues from the 'Drive & Electrify' product field to grow to €80m by 2026, by increasing FSD applications.

Mechanics broadening product and customer base

Exhibit 8: Mechanics division revenue development



Source: Company reports, Edison Investment Research estimates

The Mechanics division consists of the Kinematics SBU. It has been part of the group since the acquisition of Kartec in 2012 and was transformed by the acquisition of HS Genion in 2017 based in Landsberg am Lech in Germany. The company was paragon's largest competitor in adaptive vehicle aerodynamic systems at that time and the combination created paragon movasys in

Germany. The division has grown rapidly, although the pandemic and supply chain effects on customers' production has constrained performance since 2019. We anticipate a return to growth in FY22, together with a volume-driven improvement in profitability.

In FY21 Mechanics' external revenues fell by 2% to €40.2m (FY20 €41.0m), generating a modest improvement in EBITDA of €0.9m (FY20 €0.5m). The result was close to pre-pandemic FY18 levels as the market recovered from the pandemic production disruptions and new product applications benefited from increasing take-up rates by OEMs. The EBITDA margin was 1.7% (FY20 1.2%). The Kinematics SBU, which forms Mechanics and is comprised of paragon movasys, is highly vertically integrated producing much of its own manufacturing equipment. It designs, develops, manufactures and supplies adjustable aerodynamic body components such as adaptively extended spoilers, products for convertible car roof deployment and interior systems such as seat cushion adjusters. Lightweight movable body parts help to reduce weight and the drag coefficient of vehicles, in turn lowering fuel consumption and thus CO_2 emissions. The relevance of weight and drag reduction will remain as OEM vehicle ranges transition from combustion engines to electric cars. Growth for the segment is stimulated by the environmental megatrend, as applications for adjustable body components driven by motorised controls extend from high performance sports cars to other vehicle types. paragon movasys's leading customers are Audi, Bentley, Mercedes Benz and Porsche.

Operational management team strengthened

In recent months paragon has been strengthening its executive team with promotions and new appointments to enable the company to execute its reinvigorated growth strategy. Klaus Dieter Frers, the founder and principal shareholder of paragon (51% shareholding) retains his position as executive chairman and CEO. He has been the key driver of paragon's strategy and management philosophy since the group's creation in 1988, whereby product development is guided through analysis of customers' future requirements.

On 1 April 2022 Dr Martin Esser was promoted to the newly created position of chief financial officer (CFO) and appointed to the executive board. He has played a key role in paragon's ongoing development in recent years having previously been responsible for finance, purchasing, IT and HR during a very challenging period for the company as the pandemic disruptions, Voltabox exit and group refinancing requirements all challenged the business. He was previously the CFO and managing director of an automotive supplier for more than nine years.

In addition, Carsten Block was also appointed to the executive board in May 2022 as chief sales officer (CSO) having joined paragon from Hella (an automotive lighting supplier) in March 2022.

As indicated by the CEO, we expect further executives to be added to the management team, notably on the operational side and technology development following the departure of the managing director of Automotive on expiry of his contract in H122.

Bond refinancing

Debt reduction remains a key issue

One of the key issues for paragon during the pandemic as the Voltabox position was resolved has been the requirement to refinance its two significant bond issues. Since the start of FY20 management successfully reduced bank and bond gross debt by €29.1m to €98.8m at Q122 following the exit from Voltabox and the €7.8m payment to licence the FSD technology. Cash flow benefited from paragon Automotive's ability to grow its revenue and profitability despite the generally weaker automotive market, reflecting the positive portfolio positioning of its products in premium segments. As a result, net debt to EBITDA fell from 13.9x at FY19 to 5.4x at FY21 and

5.2x at Q122. While that level of debt gearing is still higher than is optimal, management has committed to further deleveraging.

The success of deferring the redemption of the €50m Eurobond issued in July 2017 avoided the requirement of selling assets in unfavourable market conditions caused by the pandemic, which given the looming maturity would probably have failed to achieve full value. Specifically, management had developed a plan with a group of several investors to sell a subsidiary in H221, but that was deferred and remains an ongoing project.

Instead, management is implementing a plan to progressively further reduce debt step by step, with an extension to the Eurobond maturity a key element of that process.

Eurobond extended maturity agreed in March

On 10 March 2022 99.9% of bondholders voted to extend the maturity of the bond by five years to July 2027 at improved terms as follows.

- Interest was increased to 6.75% payable semi-annually (previously annually), which will reduce progressively in steps to 5.0% if net debt to EBITDA reduces to less than 2.5x.
- A PIK element of 2.5% is also payable, or a 3% convertible bond.
- An early redemption schedule of half the outstanding bonds in three tranches is planned: €5m in 2023, €10m in 2025 and a further €10m in 2026 or upon completion of the potential M&A project.
- No dividend is payable until the bonds are fully redeemed.

CHF bond redemption alternatives being considered

To support the continued development of the automotive operations, paragon issued a CHF35m bond in April 2017 with a five-year maturity and carrying a coupon of 4.0%. In 2021 the maturity was reduced to four years and an early redemption of CHF5.25m on 23 April 2021 and CHF8.75m on 23 April 2022 was arranged and both have been completed. The outstanding CHF21m of capital is due for redemption on 23 April 2023. With 40% already repaid and aware of the Eurobond redemption schedule, management is exploring refinancing alternatives including (possibly in combination):

- Extending maturity by five years
- Voluntary swap into a new bond, or a new bond issue (both likely to involve increased coupons)
- Use of asset sales proceeds
- Use of free cash flow.

Debt challenges remain in the near term

While management is committed to improving the financial flexibility of the group, helped by improving trading cash flows, until the CHF bond's redemption is resolved an element of uncertainty remains.

If management can successfully execute the refinancing, we would expect the group to be carrying around €50m of gross debt by FY26, although this will be contingent on disposals.

Financials

Having delivered a resilient trading performance during the pandemic paragon is positioned to grow strongly, although market conditions have remained challenging so far in 2022. In FY21 revenues grew 15.5% to €146.9m with EBITDA up 44.8% at €20.0m (FY20 €13.8m) despite a €3.9m reduction in capitalised development costs. The EBITDA margin of 13.6% (10.8%) was slightly better than guidance. A small positive EBIT of €0.8m (FY20 loss €10.7m) was a significant improvement although after net interest and tax the net loss was reduced by just €2.1m to €5.5m (FY20 €7.6m). Net debt (including leases) was reduced significantly to €114.4m (FY20 €129.6m) largely due to the disposal of fixed assets, with the disposal proceeds from Voltabox broadly matched by the licence purchase for FSD technology.

Trading performance in Q122

Both divisions grew revenues in Q122 despite the continued global shortage of semiconductors and increased automotive supply chain disruption caused by the war in Ukraine. The war continued to constrain car production, which was lower than it was in Q121. paragon's operations outperformed the market but would have been stronger without the disruption to its customers. The key highlights of the Q122 results are:

- Revenues grew 6.3% to €41.7m (Q121 €39.2m).
- EBITDA fell 18.3% to €5.0m (Q121 €6.1m) after one-off costs totalling €0.9m (€0.5m booked loss on disposal of the Aachen site and €0.4m non cash exchange losses relating to the CHF bond).
- EBITDA margin was 14.1% (Q121 15.5%) before the one-off costs and 11.9% after them.
- The continuing activities reported a small net loss of €0.6m for Q122 (Q121 net income €0.6m).
- The free cash inflow improved to €3.4m (Q121 €0.5m) and the company also sold €5.3m of fixed assets including €4.75m from the former Voltabox production facility at Delbruck.
- Net debt (including leases) fell by 6.9% during the quarter to €106.5m (FY21 €114.4m), with cash and cash equivalents increasing to €3.1m. Adjusted net debt (excluding leases) was €98.8m.
- Two record group orders were received in quick succession of €40m at semvox in Digital Assistance and €45m for DUSTPROTECT in Sensors. Booked business at the end of April was €630m, up 17% on a year earlier.

In Q122 the Electronics division's third-party revenues grew by 5.6% to €29.6m (Q121 €27.5m), which accounted for 71% of group sales. The increase reflected flat Sensors' revenues of €12.6m, with a 10.2% increase in Interior to €14.0m (Q121 €12.7m) and16.0% in Digital Assistance to €2.7m (Q121 €2.3m). The new Power SBU made an initial first quarter revenue contribution of €0.4m. The divisional EBITDA contribution fell to €3.9m (Q121 €4.9m), a margin of 13.1% (Q121 17.3%) including one-off costs, and c 16.3% excluding them.

The Mechanics division increased sales by 3.9% to €12.2m (Q121 €11.6m) with a slight reduction in EBITDA contribution to €1.0m (Q121 €1.1m).

Outlook: FY22 guidance supported by booked business

Management guidance appears to be well supported by the continued growth in booked business during 2021 and 2022. At 1 May 2022 booked business had grown 17% to €630m compared to a year earlier when it was €540m deliverable over a 56-month period (c €109m is due for delivery in 2023). Together with year-to-date revenues at that point of €54.3m (prior year €51.1m), FY22 revenue expectations were 99% covered, underpinning revenue growth in excess of 12%.

Management guidance for FY22 is for:

- Revenues of €165m
- EBITDA margins in excess of 15% (company definition)

- Free cashflow of €12m

Management has replaced the historic investment financial key performance indicator with a free cash flow metric.

Our FY22 estimate is marginally above the guided level. The strength of the free cash flow has facilitated the latest CHF8.75m tranche of early redemption of the CHF bond, reducing the outstanding nominal capital to CHF21m (€1.05/CHF).

The increase in Eurobond interest payments following its extension, which are now paid semi-annually, will lead to an overall increase in interest payments of around €2m despite the early redemption of 40% of the CHF bond capital.

For FY23 management expects revenue growth of around 10% with FY23 booked business cover for sales of 80%.

Five-year revenue plan 'plausible and achievable'

As part of the bond refinancing management sought the affirmation of an external independent consultancy group, Dr Wieselhuber & Partner, for its five-year plan to 2026. The key findings of its report were:

- All five SBUs should be able to increase revenues significantly in the next five years underpinned and 'locked in' by nominations as single source supplier from various OEMs for the lifetime of a car platform.
- Sales are expected to grow to between €250–300m from FY21 to FY26, a CAGR of between 11% and 15%, which, with recent awards, management now indicates should be at the upper end of that range.
- EBITDA should increase from 13.7% in 2021 to 20% in 2026. By implication, if the plan is achieved EBITDA in FY26 should be in the range of €50–€60m.
- Based on higher revenues and improved profitability paragon should be able to reduce its debt and improve the equity ratio.

The consultancy firm described the sales growth five-year plan as plausible and achievable based on booked business in the near term and defined new product introductions in the longer term that broaden the customer base, with more platforms being supplied with increased content. It also took the same view of the balance sheet and cash flow.

Deleveraging a priority

As noted in the discussion on the bonds, deleveraging is a priority for the group, with the gearing ratio at Q122 still high at 5.2x, although much improved since FY19. Net debt at end Q122 was €98.8m and should reduce significantly as the strategy delivers higher growth and free cash flow.

In terms of capital allocation priorities investing for growth remains important with a reduction in debt from what is assumed to be the growing cash flow crucial. Bond redemptions and repurchases will likely consume most free cash flow and asset disposal proceeds for the next several years, with dividend payments restricted until the Eurobonds are fully redeemed.

Sensitivities

As a supplier into the automotive and related markets, paragon's development is linked to an extent to global economic growth and automotive market drivers. The group is also influenced by evolving corporate development, as it grows to address adjacent markets:

- **Financial risk:** in addition to the normal financial risks of contract controls, exchange rate fluctuations, interest rates, inflation etc, debt burden should also be noted, While much improved over the last two years, a net debt to EBITDA level of 5.2x at Q122 is still far from comfortable. Management is working hard to alleviate the risk and grow free cash flow.
- **Decoupling from direct end-market fortunes**: while paragon is affected by global economic growth and drivers in the automotive market, there are a number of factors that support above-market growth potential for the group. These include c 70% exposure to the German premium manufacturers, penetration of international markets especially China, as well as the increasing revenue per car being won in new systems. These factors provide a non-linear relationship to underlying automotive volumes.
- **Transition to EVs:** the importance of the German premium OEMs in 2021 is again important in this regard. Should the manufacturers lag in the race to electrification and lose their collective global market shares, and paragon fails to significantly diversify its clientele, it is likely to adversely impact the company. While direct exposure to the fully electric BEV (battery electric vehicle) market has been limited to date, the power electronics products now being introduced to the market should help to increase presence in the segment and further improve customer diversity. All paragon products can be applied to any vehicle regardless of the powertrain.
- **Automotive cost pressures:** traditional automotive cost pressures and competition exist for the group. It mitigates this through a design for manufacture approach and a high degree of automation, as well as its positioning as a design leader providing value-creating propositions to manufacturers. It also consistently seeks to optimise costs and production locations.
- **Technology issues:** while paragon continues to invest in the development of new products (eg biosensors for driver monitoring), there is no guarantee that the new portfolio of products/services will gain significant traction with OEM customers. In addition, new disruptive technologies could appear over the next decade that could transform technologies, for example in batteries. We would expect paragon to remain abreast of these developments and adopt these technologies where economically appropriate and available.
- **Key person issues:** given the high degree of management ownership and reliance on CEO Klaus Dieter Frers, the group is exposed to a high reliance on a small number of key personnel. The appointments of Dr Martin Esser as group CFO and Carsten Block as CSO mitigates the risk somewhat. We expect paragon to hire a chief operating officer and a chief technology officer in the near future, increasing the capability to pursue new product development and market opportunities to grow the group globally. The supervisory board provides a supervisory governance structure of the management partner board under the new KGaA entity.

Valuation

Historically, paragon's valuation has been adversely affected by the problems at Voltabox as well as the high level of debt that has been used to support both organic and M&A growth. Now free of the electromobility business and its problems, the continuing group appears set for a period of positive development to earnings and cash flows. The current rating remains depressed with an element of concern relating to prospects for the automotive sector generally due to current macroeconomic pressures including rising energy costs, inflation and interest rates. In addition, the requirement to complete the refinancing of its CHF bond also adds a stock-specific risk to the rating.

Peer group valuations reflect automotive sector travails

As can be seen in Exhibit 9 below, paragon group trades at a substantial discount to its nearest listed peers in the automotive electronics & interior sector. For FY23 the peers are trading on

EV/sales of 0.76x, EV/EBITDA of 6.0x and EV/EBIT of 11.3x. The strong growth metrics of paragon's strategy relative to its peers in our view warrant a premium to the sector but clearly the refinancing issues continues to weigh heavily on comparisons.

Exhibit 9: Peer group comparisons

Company name	Market cap	P/E (x)		EV/sales (x)		EV/EBITDA (x)		EV/EBIT (x)		EBIT margin	EBITDA margin
		2022e	2023e	2022e	2023e	2022e	2023e	2022e	2023e	2022e	2022e
Continental	€13.7bn	11.6	7.2	0.48	0.45	4.5	3.5	10.0	6.6	4.8%	10.8%
Denso	¥6000.2bn	14.2	11.8	1.00	0.93	7.1	6.3	N/A	N/A	N/A	14.0%
Valeo	€4.8bn	19.2	8.7	0.46	0.41	3.9	3.3	14.7	9.1	3.2%	11.9%
Hella	€7.5bn	33.7	22.8	1.23	1.09	11.3	8.8	27.1	17.4	4.5%	10.9%
Visteon	€3.4bn	24.0	15.6	1.07	0.92	11.3	8.1	20.4	11.9	5.2%	9.5%
Average		**20.5**	**13.2**	**0.85**	**0.76**	**7.6**	**6.0**	**18.1**	**11.3**	**4.4%**	**11.4%**
paragon	€18.2m	15.5	5.4	0.68	0.60	4.5	3.6	11.1	7.0	5.7%	15.2%

Source: Edison Investment Research, Refintiv. Note: Priced at 8 August 2022.

Capped DCF indicates potential if refinancing is successful

We continue to use a capped DCF methodology to value the cash flow of paragon in its streamlined form. We use a six-year forecast period and cap growth in the terminal value at 0%. To reflect that terminal state, we set working capital to zero and normalise capex to depreciation. For a growth company such as paragon we feel this is a more conservative approach as it curtails longer-term growth expectations in the tail cash flows. We use a calculated WACC of 7.8%, which reflects an increased cost of equity of 15% (historically 12%) as well as the higher cost of debt from the recent refinancing and the assumption that a 200bp coupon increase may be likely when the CHF bond is refinanced in 2023. The capped DCF returns a value of €19.6 per share.

In terms of sensitivity to terminal growth rates and WACC, the following table displays a range of value outcomes compared to our assumed parameters. We have highlighted the closest assumptions to our own. The implication of the current share price is that the assumed cost of equity should be closer to 20%, which we feel primarily reflects the continued risk from the refinancing process. Conversely, if that risk can be avoided and the growth strategy can be executed to plan there could be significant upside potential to the equity value. We note our long-term estimates are more conservative than management's five-year plan.

Exhibit 10: paragon capped DCF sensitivity to WACC and terminal growth rate (€ per share)

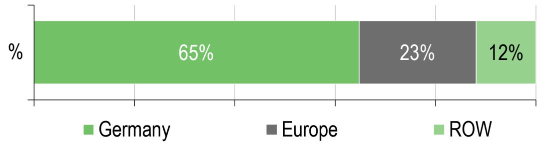
WACC	7.0%	7.5%	7.8%	8.0%	8.5%	9.0%	9.5%	10.0%
Terminal growth rate								
0%	25.3	21.5	**19.6**	18.1	15.2	12.6	10.3	8.2
1%	25.7	21.8	20.0	18.5	15.5	12.9	10.6	8.5
2%	26.1	22.2	20.3	18.8	15.8	13.2	10.8	8.7
3%	26.5	22.6	20.7	19.2	16.1	13.5	11.1	9.0

Source: Edison Investment Research

Exhibit 11: Financial summary

€m	2020	2021	2022e	2023e
Year end December	IFRS	IFRS	IFRS	IFRS
PROFIT & LOSS				
Revenue	127.2	146.9	165.9	182.8
Cost of Sales	(69.2)	(72.6)	(78.0)	(84.1)
Gross Profit	58.0	74.4	87.9	98.7
EBITDA	13.8	20.0	25.2	30.6
Operating Profit (before amort. and except).	6.6	13.3	16.5	21.7
Intangible Amortisation	(6.0)	(6.0)	(6.4)	(7.4)
Exceptionals	(11.2)	(6.5)	(4.0)	(4.0)
Other	(37.1)	(5.9)	0.0	0.0
Operating Profit	(47.7)	(5.1)	6.2	10.2
Net Interest	(6.5)	(6.1)	(7.9)	(7.4)
Profit Before Tax (norm)	(6.0)	1.2	2.3	6.9
Profit Before Tax (FRS 3)	(54.2)	(11.3)	(1.7)	2.9
Tax	9.6	(0.2)	0.5	(0.8)
Profit After Tax (norm)	3.6	1.2	1.7	5.0
Profit After Tax (FRS 3)	(44.7)	(11.4)	(1.3)	2.1
Average Number of Shares Outstanding (m)	4.5	4.5	4.5	4.5
EPS - normalised (€)	0.79	0.27	0.37	1.11
EPS - normalised fully diluted (€)	0.79	0.27	0.37	1.11
EPS - (IFRS) (€)	(9.87)	(2.52)	(0.28)	0.46
Dividend per share (€)	0.00	0.00	0.00	0.00
Gross Margin (%)	45.6	50.6	53.0	54.0
EBITDA Margin (%)	10.8	13.6	15.2	16.8
Operating Margin (before GW and except.) (%)	5.2	9.1	10.0	11.9
BALANCE SHEET				
Fixed Assets	143.1	115.0	107.5	109.6
Intangible Assets	81.5	76.4	78.5	80.2
Tangible Assets	47.0	36.2	26.6	27.0
Right of use asset	13.1	1.8	1.8	1.8
Investments	1.5	0.6	0.6	0.6
Current Assets	57.4	44.7	45.1	46.1
Stocks	27.3	24.0	24.1	25.2
Debtors	11.6	10.9	10.8	10.8
Cash	5.7	1.5	1.5	1.5
Other	12.7	8.4	8.8	8.7
Current Liabilities	(90.6)	(125.5)	(36.4)	(39.5)
Creditors	(41.3)	(31.9)	(36.4)	(39.5)
Short term borrowings	(49.3)	(93.6)	0.0	0.0
Long Term Liabilities	(96.6)	(30.9)	(114.1)	(112.0)
Long term borrowings	(67.6)	(10.2)	(93.4)	(91.3)
Lease liabilities	(18.7)	(12.1)	(12.1)	(12.1)
Other long term liabilities	(10.4)	(8.6)	(8.6)	(8.6)
Net Assets	13.2	3.3	2.0	4.1
CASH FLOW				
Operating Cash Flow	11.6	19.8	28.5	31.7
Net Interest	(6.5)	(6.1)	(7.9)	(7.4)
Tax	9.6	0.0	(0.6)	(1.9)
Capex	(7.7)	(17.5)	(19.5)	(20.5)
Acquisitions/disposals	0.0	8.4	0.0	0.0
Financing	1.9	6.5	10.0	0.0
Dividends	0.0	0.0	0.0	0.0
Net Cash Flow	8.9	11.1	10.4	2.0
Opening net debt/(cash)	117.4	111.2	102.3	91.9
HP finance leases initiated	0.0	0.0	0.0	0.0
Other	(2.7)	(2.2)	0.0	0.0
Closing net debt/(cash) (excluding leases)	111.2	102.3	91.9	89.9
Total financial liabilities	130.0	114.4	104.0	102.0

Source: Company reports, Edison Investment Research estimates. Note: *Restated following the disposal of Voltabox, excluded from FY20 and FY21 as discontinued.

Contact details	Revenue by geography
paragon AG Schwalbenweg 29 33129 Delbrück Germany +49 (0) 52 50 - 97 62-0 www.paragon.ag	

Management team

CEO and founder: Klaus Dieter Frers	CFO: Dr Martin Esser
Klaus Dieter Frers got his degree in mechanical engineering at the University of Stuttgart, Germany. He started his career at AEG-Telefunken and joined Nixdorf Computer in Paderborn, Germany in 1983, where he led electronics production. Five years later he founded his own business, paragon, as a manufacturer of electronics. In the mid-1990s he managed paragon's access to the automotive market. Since November 2000, paragon has been a listed company on the Prime Standard of the German Stock Exchange in Frankfurt. Mr Frers also founded German sports car company Artega.	Dr Martin Esser was promoted to the newly created position of Chief Financial Officer (CFO) on 1 April 2022 and appointed to the Executive Board. He has played a key role in paragon's ongoing development in recent years having previously been responsible for finance, purchasing, IT and HR as the pandemic disruptions, Voltabox exit and group refinancing requirements all challenged the business. He had previously been the CFO and managing director of an automotive supplier for more than nine years.
Chair of the supervisory board: Prof. Dr.-Ing. Iris Gräßler	
Her current role as Professor for product development at the Faculty of Mechanical Engineering of the Heinz Nixdorf Institute at the University of Paderborn commenced in 2013, Prior to this Professor Gräßler held several roles at Robert Bosch dating back to 2002, the most recent of which from 2011 to 2013 was director of central development coordination and methodology at Bosch Product Engineering System in Stuttgart-Feuerbach. That followed three years as project director for 'lean production' supplier development projects in central purchasing at Robert Bosch in Stuttgart-Schillerhöhe.	

Principal shareholders	(%)
Klaus Dieter Frers	49.3%

General disclaimer and copyright

This report has been commissioned by paragon and prepared and issued by Edison, in consideration of a fee payable by paragon. Edison Investment Research standard fees are £60,000 pa for the production and broad dissemination of a detailed note (Outlook) following by regular (typically quarterly) update notes. Fees are paid upfront in cash without recourse. Edison may seek additional fees for the provision of roadshows and related IR services for the client but does not get remunerated for any investment banking services. We never take payment in stock, options or warrants for any of our services.

Accuracy of content: All information used in the publication of this report has been compiled from publicly available sources that are believed to be reliable, however we do not guarantee the accuracy or completeness of this report and have not sought for this information to be independently verified. Opinions contained in this report represent those of the research department of Edison at the time of publication. Forward-looking information or statements in this report contain information that is based on assumptions, forecasts of future results, estimates of amounts not yet determinable, and therefore involve known and unknown risks, uncertainties and other factors which may cause the actual results, performance or achievements of their subject matter to be materially different from current expectations.

Exclusion of Liability: To the fullest extent allowed by law, Edison shall not be liable for any direct, indirect or consequential losses, loss of profits, damages, costs or expenses incurred or suffered by you arising out or in connection with the access to, use of or reliance on any information contained on this note.

No personalised advice: The information that we provide should not be construed in any manner whatsoever as, personalised advice. Also, the information provided by us should not be construed by any subscriber or prospective subscriber as Edison's solicitation to effect, or attempt to effect, any transaction in a security. The securities described in the report may not be eligible for sale in all jurisdictions or to certain categories of investors.

Investment in securities mentioned: Edison has a restrictive policy relating to personal dealing and conflicts of interest. Edison Group does not conduct any investment business and, accordingly, does not itself hold any positions in the securities mentioned in this report. However, the respective directors, officers, employees and contractors of Edison may have a position in any or related securities mentioned in this report, subject to Edison's policies on personal dealing and conflicts of interest.

Copyright: Copyright 2022 Edison Investment Research Limited (Edison).

Australia

Edison Investment Research Pty Ltd (Edison AU) is the Australian subsidiary of Edison. Edison AU is a Corporate Authorised Representative (1252501) of Crown Wealth Group Pty Ltd who holds an Australian Financial Services Licence (Number: 494274). This research is issued in Australia by Edison AU and any access to it, is intended only for "wholesale clients" within the meaning of the Corporations Act 2001 of Australia. Any advice given by Edison AU is general advice only and does not take into account your personal circumstances, needs or objectives. You should, before acting on this advice, consider the appropriateness of the advice, having regard to your objectives, financial situation and needs. If our advice relates to the acquisition, or possible acquisition, of a particular financial product you should read any relevant Product Disclosure Statement or like instrument.

New Zealand

The research in this document is intended for New Zealand resident professional financial advisers or brokers (for use in their roles as financial advisers or brokers) and habitual investors who are "wholesale clients" for the purpose of the Financial Advisers Act 2008 (FAA) (as described in sections 5(c) (1)(a), (b) and (c) of the FAA). This is not a solicitation or inducement to buy, sell, subscribe, or underwrite any securities mentioned or in the topic of this document. For the purpose of the FAA, the content of this report is of a general nature, is intended as a source of general information only and is not intended to constitute a recommendation or opinion in relation to acquiring or disposing (including refraining from acquiring or disposing) of securities. The distribution of this document is not a "personalised service" and, to the extent that it contains any financial advice, is intended only as a "class service" provided by Edison within the meaning of the FAA (i.e. without taking into account the particular financial situation or goals of any person). As such, it should not be relied upon in making an investment decision.

United Kingdom

This document is prepared and provided by Edison for information purposes only and should not be construed as an offer or solicitation for investment in any securities mentioned or in the topic of this document. A marketing communication under FCA Rules, this document has not been prepared in accordance with the legal requirements designed to promote the independence of investment research and is not subject to any prohibition on dealing ahead of the dissemination of investment research.

This Communication is being distributed in the United Kingdom and is directed only at (i) persons having professional experience in matters relating to investments, i.e. investment professionals within the meaning of Article 19(5) of the Financial Services and Markets Act 2000 (Financial Promotion) Order 2005, as amended (the "FPO") (ii) high net-worth companies, unincorporated associations or other bodies within the meaning of Article 49 of the FPO and (iii) persons to whom it is otherwise lawful to distribute it. The investment or investment activity to which this document relates is available only to such persons. It is not intended that this document be distributed or passed on, directly or indirectly, to any other class of persons and in any event and under no circumstances should persons of any other description rely on or act upon the contents of this document.

This Communication is being supplied to you solely for your information and may not be reproduced by, further distributed to or published in whole or in part by, any other person.

United States

Edison relies upon the "publishers' exclusion" from the definition of investment adviser under Section 202(a)(11) of the Investment Advisers Act of 1940 and corresponding state securities laws. This report is a bona fide publication of general and regular circulation offering impersonal investment-related advice, not tailored to a specific investment portfolio or the needs of current and/or prospective subscribers. As such, Edison does not offer or provide personal advice and the research provided is for informational purposes only. No mention of a particular security in this report constitutes a recommendation to buy, sell or hold that or any security, or that any particular security, portfolio of securities, transaction or investment strategy is suitable for any specific person.