Combined Management Report

» In short «

In 2021, the continuing operations generated revenue growth of

22.0 %

not least due to the continuing high demand in the semiconductor equipment industry and the first full-year contribution from TRIOPTICS.

The Information and Notes relating to Takeover Law
as well as the Corporate Governance Statement (see Corporate Governance chapter)
are part of the Combined Management Report.

General Group Information

Group Structure

Legal and organizational structure

As the corporate center and strategic holding company of the Group, JENOPTIK AG, based in Jena, performs top-level functions including strategic corporate development, innovation management, and key tasks in controlling, corporate development (strategy, mergers and acquisitions, innovation), corporate real estate management, finance, internal audit, investor relations and communications, human resources, accounting, legal and IP, compliance and risk management, taxes, and treasury. It further pools the central functions of IT and data security, purchasing, safety, occupational health and safety, and environmental protection.

Jenoptik's operating business is the responsibility of the divisions and largely focused on the growth market of photonics, which, according to a study conducted by Triton Market Research, is expected to see annual average growth of 8.0 percent in the years 2021 through 2028.

In 2021, the photonics business was organized into the three photonics divisions, Light & Optics (OEM business), Light & Production (industrial customer business), and Light & Safety (business with public sector contractors). The three divisions build on common core competencies in the field of photonics, including expertise in the fields of optics, sensors, imaging, robotics, and data analysis. Work based on mechatronic technologies is managed under the VINCORION brand.

The three photonics divisions represent the segments as defined in IFRS 8. G16

For VINCORION, which sells mechatronic products, in particular for the security and defense technology, aviation, and rail and transport industries, a sale agreement with a fund managed by STAR Capital Partnership LLP was signed in November 2021, with closing expected in 2022. VINCORION is shown as a discontinued operation in accordance with IFRS 5.

In the fall of 2021, Jenoptik boosted its global photonics business with the acquisition of BG Medical Applications GmbH (BG Medical, since January 13, 2022 JENOPTIK Medical GmbH) and the SwissOptic Group. Jenoptik acquired from Berliner Glas GmbH, a wholly-owned subsidiary of ASML Holding N.V., 100-percent stakes in

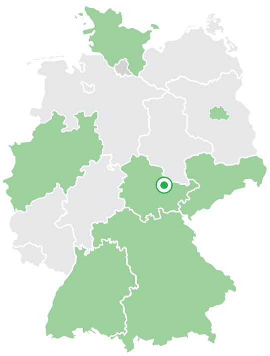
- BG Medical Applications GmbH, a supplier of high-precision components for the medical technology industry based in Berlin,
- SwissOptic AG, a specialist in the development and manufacture of optical components and assemblies, primarily for the medical technology, semiconductor, and metrology industries based in Heerbrugg/Switzerland, and
- Chinese company SwissOptic Co., Ltd., based in Wuhan/China incl. Berliner Glas Wuhan Trading Co., Ltd. (together with SwissOptic AG, SwissOptic Group).

G16 Organizational structure of the Jenoptik Group in 2021

Photonics			Mechatronics
Light & Optics OEM business	Light & Production B2B business	Light & Safety B2G business	VINCORION*
Optical products and key technologies for the markets of the digital world and healthcare	System solutions for more efficiency of products and production processes	Systems and services for safer roads and cities around the world	Mechatronic products and solutions for more security in the civil and military area

* A contract to sell was signed in November 2021

G17 Key locations of the Jenoptik Group



Germany
Altenstadt
Berlin
Dresden
Essen
Jena
Monheim am Rhein
Triptis
Villingen-Schwenningen
Wedel

Europe

France
Bayeux
Villeurbanne

Great Britain
Camberley

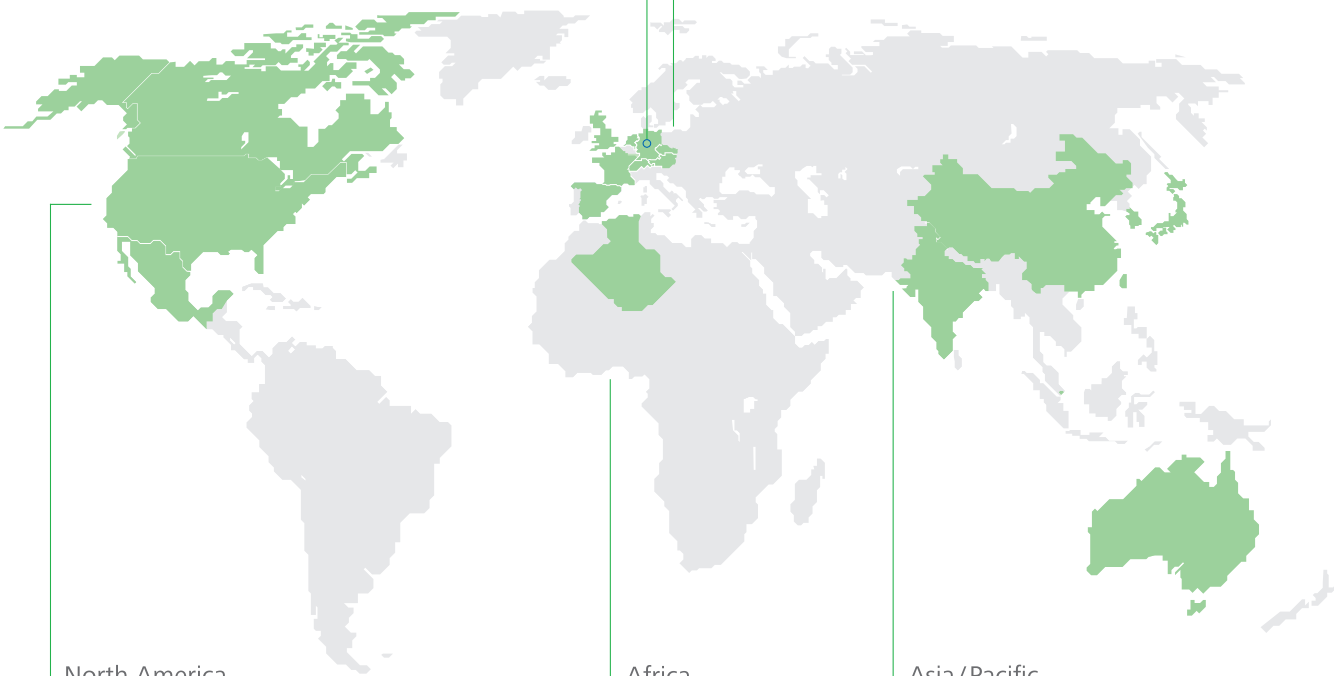
Netherlands
Riel

Austria
Vienna

Switzerland
Heerbrugg
Uster

Czech Republic
Teplice

Spain
Valladolid



North America

USA
El Paso (TX)
Fremont (CA)
Huntsville (AL)
Jupiter (FL)
Rancho Cucamonga (CA)
Rochester Hills (MI)

Mexico
Saltillo

Canada
Barrie
Toronto

Africa

Algeria
Algiers

Asia / Pacific

Australia
Sydney

China
Shanghai
Hong Kong
Wuhan
Beijing

India
Bangalore

Taiwan
Taiwan

Japan
Yokohama
Shizuoka-City

Singapore
Singapore

South Korea
Pyeongtaek
Suwon-si

Last updated: December 2021

The closing date was November 30, 2021. The acquired companies are being integrated into the Light & Optics division. In addition to accelerating growth and sharpening Jenoptik's focus on photonics, the acquisition will enable the Group to expand its global presence, especially in the semiconductor and medical technology industries, and boost its product and technology portfolio.

On the closing date of September 24, 2020, Jenoptik completed the acquisition of an initial 75-percent stake in Trioptics GmbH. Based on the existing control, the company was already consolidated at 100 percent of the shares, and a purchase price liability was recognized. Jenoptik acquired the remaining 25 percent from the owners now also legally on December 31, 2021. The TRIOPTICS business was integrated into the Light & Optics division.

For shareholdings of the Jenoptik Group, see page 245 / 246

As it continues to focus its business on photonic applications, Jenoptik concluded an agreement on the sale of its crystal growth business to Hellma Materials GmbH in early July 2021. The closing date was August 31, 2021.

Also in July 2021, Jenoptik reported the sale of its non-optical process measuring technology business for grinding machines to the Italian Marposs Group. The closing date was July 30, 2021.

In recent years, Jenoptik has continued to expand its international business and the structures associated with it. The US holding company at the Jupiter location in Florida is responsible for steering the overall strategy and coordinating financial activities for the American market. The administrative functions for Asia as a whole are managed from Shanghai, China. The operating business in Europe is coordinated at the main locations in Germany and Great Britain.

Key Locations

Jenoptik is represented in over 80 countries worldwide, with a direct presence in 19 of them, e.g., through its own companies, investments, or affiliated firms. The majority of the Group's products are manufactured in Germany, followed by the US and China. The Group's Jena headquarters is primarily home to the activities in the Light & Optics division. Other major German sites are at Wedel near Hamburg (Light & Optics and VINCORION), Monheim near Düsseldorf (Light & Safety), Villingen-Schwenningen (Light & Production), Berlin, Dresden, and Triptis (Light & Optics), and Essen and Altenstadt (VINCORION).

Outside Germany, Jenoptik maintains sites or is represented by subsidiaries or affiliated firms in the following countries: Algeria, Australia, Austria, Canada, China, the Czech Republic, France, Great Britain, India, Japan, Korea, Mexico, the Netherlands, Switzerland, Singapore, Spain, Taiwan, and the US. G17

Business Model and Markets

Jenoptik is a globally operating photonics group that provides the majority of its products and services to the photonics market. Photonics covers the basics and areas of use of optical methods and technologies that address the generation, transmission, shaping, and measurement of light. Controllable light sources such as LEDs and lasers, together with suitable optical devices and sensors, make it possible to transmit data, analyze materials, create micro-optical components, and perform non-contact precision measurements. Self-driving cars that have to find their way around independently are practically inconceivable without LiDAR (light detection and ranging) technology. Photonics is also critical to efficient data exchange. In the process, it uses the special physical properties of light quanta (photons) in place of electrons or also combines optics and electronics.

As a supplier of innovative capital goods for these markets, Jenoptik is primarily a technology partner to industrial companies. Its range of products comprises OEM or standard components, modules and subsystems through to complex systems and production lines for numerous sectors. The range also includes total solutions and full-service operator models. Alongside industry, key customers include public sector contractors, especially in the Light & Safety division and VINCORION.

Jenoptik competes with its product range with a wide range of internationally operating companies predominantly specializing in only one or a few of the product areas and markets listed above. Differing service ranges are only comparable to a limited extent, and thus make it difficult to provide definite market share estimates.

Research and development occupy a key position in Jenoptik's work, with the customer at the center of everything we do. Technology-intensive products and systems are often created in close collaboration with customers. Lasting and successful arrangements with key customers are therefore an important factor of Jenoptik's success. This demands a spirit of mutual trust together with knowledge of our partners' requirements, and is reflected, for example, in the costs for developments on behalf of customers, amounting to 20.3 million euros in the fiscal year 2021.

The Jenoptik Divisions

Light & Optics

The acquisition of BG Medical and the SwissOptic Group in late 2021 allows Jenoptik to significantly expand its semiconductor equipment and, in particular, its medical technology business. Both, BG Medical (medical technology) and the SwissOptic Group (medical technology/life science, semiconductors, measuring technology (OEM business, optical and optomechanical assemblies, primarily for geodesy)) are being integrated into Light & Optics.

The Light & Optics division is a global supplier of solutions and machinery based on photonic technologies. Within it, Jenoptik possesses engineering expertise in a wide range of technologies in the fields of optics, micro-optics, laser technology, digital imaging, optoelectronics, sensor technology, and optical test and measurement systems. The division's customers include leading machine and plant manufacturers in the semiconductor, laser material processing, medical technology and life science, industrial automation, automotive, and security industries. As a development and production partner, the division uses its expertise in key technologies to fulfill customers' demanding requirements. Its systems, modules, and components help customers meet their future challenges with the help of photonic technologies.

In the Semiconductor & Advanced Manufacturing area, the Light & Optics division develops and produces optical and micro-optical systems as well as precision components to the highest quality standards. This includes complete systems and modules, all the way to special optical components and custom solutions for wavelengths from the far infrared (FIR) to the extreme ultraviolet (EUV) region. These products are used, for example, in both lithography and inspections within the semiconductor equipment industry. The division cooperates with leading international manufacturers in this field. SwissOptic Group's semiconductor business further rounds off the division's product portfolio with a complementary range, enabling it to offer existing and new customers an even broader product spectrum.

With its innovative, in part software-assisted optical and micro-optical solutions, Jenoptik is also in a position to exploit further potential for growth in the field of digitization, for

Detailed information on the course of business in the divisions can be found in the Segment Report from page 130 on; see the Forecast Report from page 153 on for information on the development of the divisions

Information on our extensive product range can be found at www.jenoptik.com/products

For more information on the development of the photonics market, see the "Macro-economic and Sectoral Developments" chapter from page 110 on

Examples of innovative products can be found in the "Research and Development" chapter from page 103 on

example in the market for information and communication technology, and increasingly also in the laser material processing market. For information and communication technology, the company supplies in particular components and modules for use in optoelectronic transceiver modules and in systems for free-space optical data transmission, and optoelectronic probe cards for industrial testing of photonic integrated circuits. In the laser material processing market, customers including system integrators and manufacturers of laser production equipment are supplied with components, modules, and smart system solutions.

In the field of biophotonics, the division offers applications for bio-imaging and laser-based therapy. Based on its core expertise in laser and LED-based beam sources, optical components and modules, sensors, digital imaging, and system integration, the division develops OEM solutions and products for the medical technology / life science industry. OEM laser solutions are based on diode and disk laser technologies, and are used in ophthalmology, dermatology / aestetics, and in surgery. The division also develops and produces optical and optoelectronic modules and subsystems for digital imaging and microscope cameras for applications in the medical field. The JENOPTIK SYIONS miniaturized microscopy subsystem for digital imaging, which can be configured according to customer requirements, is integrated into laboratory equipment for diagnostics and analytics. The imaging unit allows manufacturers in the life science and healthcare sectors to integrate optical evaluation processes into their end devices, even without their own optics expertise, thereby expanding their product / feature portfolio.

Jenoptik acquired a complementary product portfolio in the areas of dentistry (e. g., intraoral scanners) and robot-assisted surgery (e. g., components for minimally invasive surgical devices) in 2021 through the acquisition of BG Medical. Through the activities of the SwissOptic Group, which was also newly acquired, the Group is strengthening its own business in the areas of ophthalmology and life science. The acquisition will enable Jenoptik to roughly double the size of its medical technology business.

Biophotonics customers include national and international medical technology companies, in particular OEMs in ophthalmology, dentistry, diagnostics suppliers, and companies involved in DNA sequencing.

For the field of industrial solutions, Jenoptik supplies high-power optoelectronic components and modules as well as integrated solutions that combine optics, laser technology, sensors, and digital imaging as required. In addition to complex components for head-up displays, lenses for driver assistance systems, and laser optical systems for particle sensors, the company also produces polymer optics for machine vision applications. Sensor products cover such things as infrared and thermographic camera systems, polymer and infrared optics, and laser rangefinders, where the company focuses on applications in the fields of industrial automation, mobility, security, and industrial applications.

The acquisition of Trioptics GmbH in 2020 allowed the Jenoptik Group to considerably expand its testing and measurement product range, gain access to new markets, e.g., for smartphones, and significantly expand its reach in Asia. TRIOPTICS supplies an extensive range of optical measurement, testing, and production technology for development, quality assurance, and production worldwide. Its expertise ranges from testing individual optical components to the assembly and testing of complex camera systems. These systems help to accelerate and improve the development, quality control, and production of lenses, objectives, and camera modules. Customers include smartphone and camera manufacturers, and their suppliers. We are also targeting other markets, such as those for new virtual and augmented reality applications in the industrial and consumer segments, the optical industry, or the automotive industry. Products and services are marketed worldwide through a network of subsidiaries and sales partners, with local service centers available in key markets.

The Optical Test & Measurement area also has optical testing systems for product inspection and process optimization, as well as complex imaging systems for applications in the field of parts measurement, surface testing, and position detection. The main customers come primarily from the automotive, stamping, and glass industries, as well as from the machine and equipment construction sector.

Key sales regions of the Light & Optics division are in Europe and North America, as well as in Asia/Pacific. The core markets in which Jenoptik supplies specific market segments are the semiconductor equipment, medical technology/life science, information and communication technology, show and entertainment, metrology, automotive, virtual and augmented reality, industrial automation, and the security technology industries.

Light & Optics' competitive environment is in part heavily fragmented, with a limited number of larger suppliers with which the division competes. For some products, the division is the sole supplier. Competitors include MKS / Newport, Excelitas / Qioptiq, IDEX, OptoAlignment Technologies, and Optikos.

Light & Production

The Light & Production division is a global specialist in the optimization of manufacturing processes.

With many years of experience and expertise in industrial metrology and optical inspection, laser-based material processing, and highly flexible robot-based automation, the division develops manufacturing solutions for customers in the automotive, aerospace, and other manufacturing industries. Jenoptik supports industrial customers in making their production processes more effective and efficient through the use of optical and photonic technologies.

The product portfolio in the Light & Production division includes 2D and 3D laser machines (e. g., for airbag perforation) that are integrated into customers' production lines as part of process optimization and automation. They are used to machine plastics, metals, and leather at high speed and with accurate contours, and are thus both efficient and precise.

In the Automation & Integration area, automated production lines are planned and integrated into customers' production environments. Solutions, products, and services related to process engineering and implementation include plant layouts, simulation, machine control and software design, robot handling systems, and transport devices.

The metrology portfolio includes high-precision contact and non-contact production metrology with a resolution in the nanometer range for pneumatic, tactile, and optical inspection of roughness, contour, shape, and the determination of dimensions at every stage of the production process and in the inspection room. A wide range of services such as in-depth advice, training, service, and long-term maintenance agreements are also all provided.

The Light & Production division is active around the world and, in addition to Germany, also operates development and production facilities in the US, Canada, France, Spain, and China. It also has numerous sales and service offices located on three continents, and so Light & Production is present in the centers of the global automotive and automotive supplier industries in Europe, North America, and Asia. Companies such as Marposs, Mahr, and ViciVision compete with Jenoptik's metrology operations, Trumpf, Prima Power, and others with our laser machine business, and firms such as Centerline Automation in Canada and Serra in Spain with our automation business.

Light & Safety

In the field of smart mobility, the Light & Safety division operates in the following areas of business: traffic law enforcement / road safety, civil security, road user charging, emission control, and traffic management. Jenoptik develops, produces, and sells photonics-based components, systems, and services for customers in the public sector (local and central government, police and regulatory authorities, and both public and private organizations), which are used to monitor compliance with applicable road traffic regulations and thus make roads and cities safer worldwide.

With its range of sensor-based traffic cameras and automatic license plate recognition (ANPR / ALPR), the division focuses on technologies for traffic monitoring. The solutions offered by Light & Safety cover a wide range of stationary and mobile applications, which also make use of video analytics and artificial intelligence. Examples include vehicle monitoring and classification, speed and red light monitoring, illegal turning maneuvers, average speed determination, civil security, road user charging, and emission control.

As an end-to-end provider, Light & Safety also supports its customers with a combination of equipment business and services, known as Traffic Service Provision. Here, Jenoptik covers the entire supporting process chain – from system development, construction, installation, and maintenance of the monitoring structure, to capturing images of traffic violations and their automated back-office processing. The division is also increasingly offering its customers software-as-a-service (SaaS) business models, e. g., in the UK or Australia, in response to demands for greater flexibility and less upfront investment by customers.

The sales activities in the Light & Safety division are subdivided into five regional units: America, Middle East / Africa, Great Britain, Europe, APAC / Australia. The Light & Safety division's regional areas of focus are also primarily determined by customers. The division thus has a strong local presence in Germany, Great Britain, the Netherlands, Switzerland, Austria, North America, and Australia, and continues to expand its sales activities on the basis of the above structure.

In addition to international companies such as Verra Mobilty/Redflex, Sensys Gatso Group, Idemia, and Vitronic, the Light & Safety division also competes with a large number of locally operating companies.

Traffic safety systems in Germany are tested and certified by the Physikalisch-Technische Bundesanstalt (PTB) in Braunschweig, thereby obtaining proof of their measuring accuracy. Foreign deliveries are subject to controls by national institutes, although various countries also partially or fully recognize the German PTB test certificate or licenses from other leading European licensing authorities.

Further information on the development of the sectors and markets can be found in the Macroeconomic and sectoral developments section from page 110 on

VINCORION

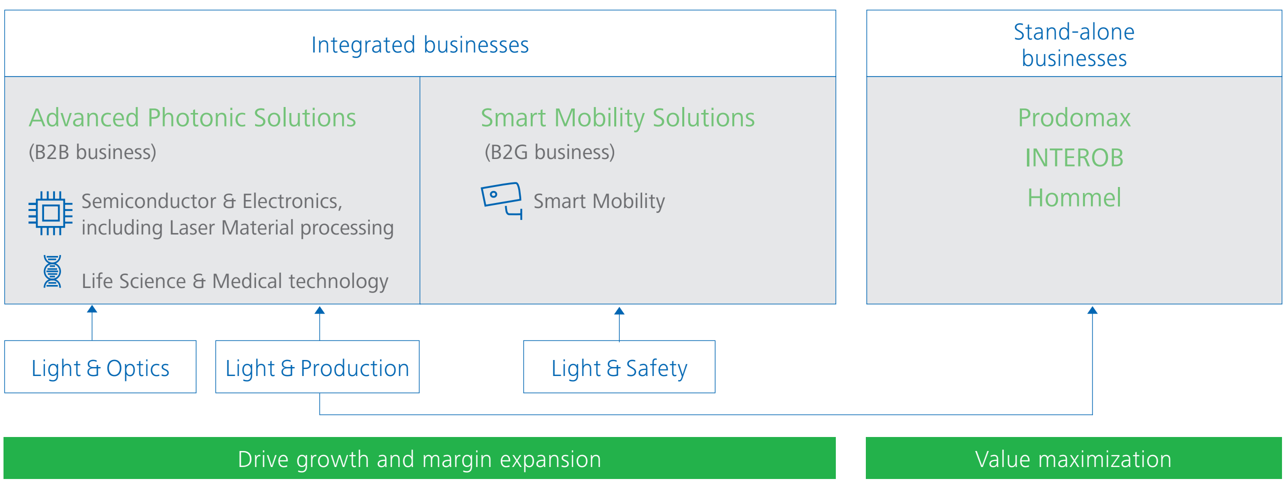
VINCORION develops, produces, and sells mechatronic products for civil and military markets, in particular for the security and defense technology, aviation, and the rail and transport industries. Its portfolio ranges from individual assemblies through to systems that customers integrate into their own systems. VINCORION does not manufacture components or systems for controversial or internationally outlawed weapons. The division specializes in energy systems, drive and stabilization systems, and aviation systems.

In November 2021, an agreement was signed with a fund managed by STAR Capital Partnership LLP to sell VINCORION, with closing expected in 2022. VINCORION is shown as a discontinued operation in accordance with IFRS 5.

New group structure in first quarter 2022

Jenoptik's new growth agenda, "More Value," is set to accelerate the company's transformation into a pure, globally leading photonics group. As part of its new organizational set-up, the Group is consolidating its core photonics business in two new divisions, Advanced Photonic Solutions (industrial customer business) and Smart Mobility Solutions (business with public sector contractors). The former Light & Optics and Light & Production divisions will be merged into the new Advanced Photonic Solutions division, while non-photonic activities, particularly for the automotive market, will be separated and operated as independent brands (incl. Hommel, Prodomax, and INTEROB) within the Jenoptik Group's Non-Photonic Portfolio Companies. The former Light & Safety division will become the Smart Mobility Solutions division. These two new divisions will focus on the three core markets of semiconductors and electronics, life science and medical technology, and smart mobility. The new structure will take effect in the first quarter of 2022. G18

G18 Organizational structure of the Jenoptik Group as of the first quarter 2022



Targets and Strategies

Strategic orientation of the group

As already noted in the chapter "Business Model and Markets", Jenoptik's range of services is predominantly based on optical methods and technologies. High-precision, flexible photonics methods and processes will continue to enjoy an increasing share in industrial value creation as so-called "enabler" technologies.

With a greater focus on photonics growth markets, we are on our way to becoming a pure and globally positioned photonics company.

With the Strategy 2022 announced in 2018, Jenoptik has focused on its core areas of expertise around optical and photonic technologies. In implementing this strategy, the Group has also concentrated on the building blocks of internationalization and innovation along with focusing on its core areas. The goal was to target markets where technological expertise justifies a price premium. Our solutions contribute to increased efficiency and precision of our customers' products and processes as well as to improved resource conservation and more sustainability.

With regard to the strategic goals defined in 2018 for 2022, we believe Jenoptik is already very well positioned at the end of 2021 both in quantitative terms – achieving the stated ambitions for growth, profitability, and financial strength – as well as in terms of qualitative goals. Activities that were key to the Strategy 2022 have been implemented:

- a focus on our core areas of expertise in photonics and optics,
- reorganization and simplification of our corporate structure,
- active portfolio management with a view to additional purchases as well as transformatory acquisitions and selective divestments,
- further internationalization in conjunction with greater vertical integration and customer proximity in our growth regions,
- driving innovation and becoming an innovation leader in our markets,
- contributing to greater sustainability and resource conservation with our photonic products and solutions, as well as helping to achieve global sustainability targets,
- expansion of our system and application expertise and development as a solution provider,
- promoting active cultural change within the company, and
- further strengthening our financial resources.

These strategic building blocks – further, consistent focus on high-growth target markets, expansion of international activities for more regional value creation and customer proximity, as well as strengthening the range of services by means of innovative solutions in the environment of photonic technologies – will also continue to play a fundamental role in achieving the strategic goals in the future.

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G19 Strategy of the Jenoptik Group until 2022

Group strategy 2022

Strategic building blocks	More Focus	More Innovation	More International
Strategic targets	Quantitative long-term targets: Growth | Profitability | R + D ratio Strengthening financial power		Qualitative long-term targets: Cultural change | Employee satisfaction | Headquarters of the divisions | International value creation

Agenda 2025 "More Value"

We intend to systematically continue focusing on photonic growth markets with our strategic Agenda 2025 "More Value". However, significantly changed conditions in some of the market segments targeted by Jenoptik, combined with achievement of the most important goals of the Strategy 2022, have prompted us to further sharpen Jenoptik's strategic ambitions.

With its Agenda 2025, Jenoptik is focusing on sustainable profitable growth in the market segments. The transformation into a globally leading, pure photonics group is to be continued and accelerated. We are focusing on three attractive core markets: semiconductor & electronics, life science & medical technology, and smart mobility. We expect substantial organic growth from this, to be complemented by acquisitions.

Information on the previous and new Group structure can be found in the "Business Model and Markets" chapter on page 89

In order to create more value for all our stakeholders with our Agenda 2025, we want to:

- accelerate the transformation of Jenoptik into a globally leading, pure photonics group,
- focus on attractive core markets,
- drive organic and inorganic growth,
- increase profitability and
- strengthen financial power for further acquisitions.

Accelerated transformation into a pure photonics group

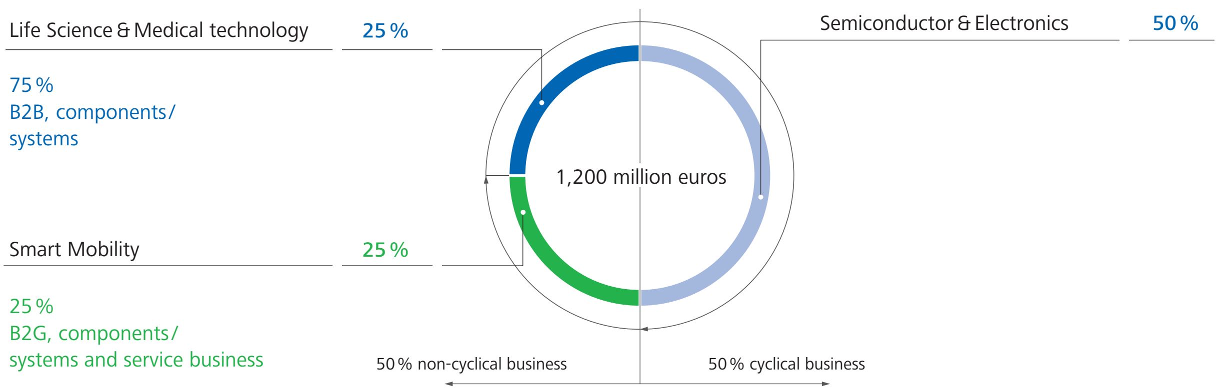
In recent years, Jenoptik has already aligned its product portfolio with the core photonics markets. This is evidenced by the acquisitions of TRIOPTICS, BG Medical and the SwissOptic Group, but also by the divestment of non-core activities (non-optical measurement technology for grinding machines and crystal growing). The signing of the contract for the sale of VINCORION is a significant milestone in the transformation towards a pure, globally leading photonics group. It is expected that this transaction will be completed in 2022.

In the future, Jenoptik will manage its core photonics business in the two new divisions, Advanced Photonic Solutions and Smart Mobility Solutions. Our focus in these areas will be on further profitable growth. Activities focused on the automotive market will in future be managed as separate brands within the Jenoptik Group (Hommel, Prodomax, INTEROB). Here we will focus our activities on maximizing value.

Focusing on three core markets

For us, the three core markets of semiconductors & electronics, life science & medical technology and smart mobility are markets that are not only characterized by growth, but also by technological differentiation potential. With our range of services, we help our customers to solve complex photonic challenges, and thus have a decisive influence on the perfor-

G20 2025 – Jenoptik focuses on 3 core markets



mance of their products. This enables us to achieve price premiums. In 2025, we want to generate around 50 percent of group revenue in the semiconductor & electronics market, with around 25 percent in each of the life science & medical technology and smart mobility markets.

At the same time, we want to position ourselves in such a way that our business remains resilient to market fluctuations. By 2025, we want to generate around 50 percent of our group revenue in markets that are less cyclical; this relates to our business in the life science & medical technology and smart mobility markets. The other 50 percent of revenue is expected to be generated from market segments that are significantly more cyclical, such as the semiconductor equipment industry.

Jenoptik benefits in particular from the global trends in digitalization, health and mobility, and is increasingly establishing itself as a strategic systems partner for international customers, with whom it works to design forward-looking solutions.

The planned profitable growth will be further supported by efficiency measures, the realization of economies of scale, and increasingly also by the further expansion of the service business.

2025 targets

We plan to increase revenue to around 1.2 billion euros, with an EBITDA margin of around 20 percent, by 2025. This includes further acquisitions and one or more divestments. In 2025, we want to generate three quarters of our revenue in the photonics business in our Advanced Photonic Solutions division, and the remaining 25 percent in the Smart Mobility Solutions division.

Through Jenoptik's focus on the three high-growth future markets mentioned, we expect substantial organic revenue growth, which is to be supplemented by further acquisitions. Taking into account divestments which have already been made or are still possible (including VINCORION) and acquisitions, we want to achieve average annual revenue growth of around 8 percent by 2025. An improved product mix with a gradual increase in the number of higher-margin products will help to achieve a further profitability boost.

As part of the new Agenda 2025 "More Value", we want to further strengthen our financial power over the coming years and see ourselves as very well positioned to achieve our scheduled profitable growth, which also includes potential acquisitions. In addition, we will focus more on the return on capital employed (ROCE). ROCE (excluding goodwill) is expected to increase to more than 20 percent by 2025.

Innovation

As an innovative high-tech company, it will remain vital for Jenoptik to identify customer needs and trends early on, to align with them our strategic actions and business activities to derive appropriate technology and product developments and to help drive developments forward. That is why we are focusing even more on research and development – both our own innovative products and joint developments with our customers. This enables us to achieve competitive advantages which determine our performance and thus our economic success.

We will continue to expand our software expertise and our knowledge in the field of artificial intelligence in order to supply technological solutions for new requirements with interdisciplinary teams. In addition, we will push ahead with the expansion of our technology platforms at Smart Mobility Solutions in order to better utilize synergies.

With a medium and long-term time frame, we are dealing with market segments that are currently still relatively small, but where we see (1) enormous potential for market growth and (2) the major influence of high-performance optical technologies. This applies, among other things, to the topics of virtual and augmented reality as well as quantum technology.

As a system partner, Jenoptik is constantly looking for new solutions in conjunction with customers. Our customers are often already involved in the very early stages of the development processes. This enables us to strengthen our relationships and steadily boost value creation. At the same time, we also want to drive our own innovation forward independently of customer-related orders.

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Further information can be found in the "Research and Development" section, from page 103 on

Internationalization

Due to the continuing strengthening of domestic industrial production in connection with demographic development in the Americas and Asia/Pacific regions, we continue to see particularly great potential for future growth in these regions. The further expansion of on-site value creation should help to better address local customer needs, providing support through regional service.

The acquisition of BG Medical and the SwissOptic Group will enable us to further expand our global presence and the production network in strategically important markets with attractive locations. The acquisition significantly expands Jenoptik's global production network, including modern clean room capacities. The production facilities are located in two photonics centers in Europe (Berlin & Heerbrugg) and in China (Wuhan). With the more extensive production network, Jenoptik will be able to better manage utilization of the separate sites and thus generate additional growth potential. Furthermore, in addition to providing better access to Asian customers, the site in Wuhan will also facilitate the production of high-quality optical components for the global market.

In the future, Jenoptik will also continue to invest in the organization and expansion of new and existing sales and service structures. We rely both on our own direct distribution channels and on dealer structures.

Active portfolio management to support the group strategy

In implementing the Agenda 2025, we will focus on substantial organic growth and further acquisitions to optimize our portfolio. We also intend to further expand our market and customer reach through targeted acquisitions – not only in Europe, but also in America and Asia in particular. We intend to round off our portfolio through forward integration and additional systems expertise. According to the assessment of the Executive Board, the acquisition of TRIOPTICS was an important step in Jenoptik's strategic focus on being a leading company in the field of photonics. It will enable us to tap into technological growth markets such as virtual and augmented reality applications in the industrial and consumer segments, and expand the Group's presence in Asia. The strategic acquisition of BG Medical and the SwissOptic Group will boost our global and rapidly growing photonics business and, in addition to the strong semiconductor equipment business, also allow us to significantly expand the highly attractive medical technology business. In the future too, every acquisition must be a strategic fit for us and fulfill the criteria for increasing corporate value as well as integration. The renunciation of existing business activities or the sale of parts of companies is also continuously reviewed against the backdrop of the intended focus on a photonic core expertise.

Employees – our most important resource

In order to maintain lasting profitable growth, we must attract highly qualified and capable employees and ensure their long-term retention in the company. Structured HR planning is necessary to achieve this in an environment which is becoming increasingly demanding from a demographic viewpoint. Jenoptik wants to position itself as an attractive employer by utilizing targeted HR marketing activities. Personnel development measures, an interdisciplinary and intercultural work environment as well as an open and dialog-oriented corporate culture should help to strengthen employees' loyalty to the company. The basis for this are our values – open, driving, confident – which help to bring Jenoptik's employees closer together across different cultural and legal systems. As part of our personnel work, the anchoring of the values in everyday corporate life is therefore a further focal point in the realization of our strategic objectives. As we are convinced that more diversity in the company leads to greater innovation and creativity, we have set ourselves diversity targets and defined measures to implement them. The diversity ratio, which is calculated from the average proportion of managers with an international background and female managers, is to increase to 30 percent by 2022 and 33 percent by 2025. The top four management levels are significant here. In the past fiscal year 2021, the diversity rate already increased to 28.6 percent (prior year: 27.8 percent).

We want to continue the cultural change in the years to come. Since we have made good progress in establishing a more open corporate culture, our main focus through 2025 will be on the "driving" and "confident" values, embodied in our slogan "Driving Confident Performance". Our values "open, driving, confident" will continue to play a key role in helping us to achieve the Strategy 2025.

Further information on the subject of personnel and corporate culture can be found from page 62 on of the Non-financial Report

Sustainability is part of our corporate strategy

For us, our corporate activities are not only aimed at achieving economic goals but also meeting an obligation to the environment and society. Consequently, the subject of sustainability is firmly rooted throughout the entire Jenoptik organization. As a so-called "enabler" we want to make an important contribution with our innovative products and solutions to tackling societal and climate challenges and enable our customers worldwide to contribute more efficiently and sustainably to greater resource conservation and climate protection. We have also taken numerous measures to improve resource and energy efficiency, to broaden diversity, strengthen our social commitment, further improve corporate governance and increase transparency in our supply chain. We have set ourselves specific goals for this, which are set out on page 66 of the Non-financial Report. We are also breaking new ground when it comes to "green finance" and placed debenture bonds and a syndicated loan with a "green component" in 2021.

In order to anchor sustainability even more firmly in our group strategy and in all areas involved, such as in our supply chain and in product development, measures and initiatives were continued in 2021. In order to support the goal of international climate policy and to limit global warming, Jenoptik wants to make an active contribution to reducing CO_2 emissions and has set itself the goal of reducing CO_2 emissions by 30 percent by 2025 compared to the base year 2019. In 2021, Jenoptik joined the UN Global Compact, thereby committing itself to fully complying with the ten principles in the areas of human rights, labor standards, environmental protection, and anti-corruption. Some of the sustainability objectives that we have set ourselves are also reflected in remuneration for the Executive Board and group financing. Both the debenture bonds placed in March 2021 and the syndicated loan of 400 million euros that followed in December 2021 are aligned to the ESG targets – diversity rate, green electricity rate, and the Group's CSR rate.

Further information on sustainability can be found from page 62 on of the Non-financial Report

In line with the "More Value" strategy, we intend to address the following key areas in 2022:

- adaptation of the organizational structures to the new positioning of the Group,
- integration of Jenoptik Medical and the SwissOptic Group into the Jenoptik Group structure,
- expansion of our business in the Smart Mobility Solutions area,
- continuation of the integration of our "Optical Test & Measurement" businesses (including TRIOPTICS) and consistent addressing of the growth regions.

Priorities for strategy implementation 2021 and 2022

We had set ourselves two subjects as strategic priorities for 2021:

- strengthening innovation,
- and anchoring sustainability even more securely within the Group.

As already described, innovation is of key importance to Jenoptik as a technology group. In the past fiscal year, we therefore focused our attention even more strongly on our innovative strength. In the fall of 2021, the Innovation Workshop took place in cooperation with the local optics association Optonet e.V., the co-working space Kombinat01 and the Leipzig Graduate School of Management (HHL). Eight innovative concepts in the three subject areas of quantum technology, sustainability and digitization were developed by Jenoptik employees, scientific experts and high-potential students. In addition, we measure the success of innovation activities with the Vitality Index, which indicates the share of revenue generated by products and platforms developed in the last three years in relation to group revenue. In 2021, this figure increased to 19.1 percent compared with the prior year (prior year: 17.1 percent).

Future strategic orientation of the operating business

The Group's photonics divisions are interconnected in many ways to ensure the transfer of technology or expertise between the divisions. Infrastructures and cross-section functions are also increasingly used jointly, for example for global procurement or in the expansion of the international sales network. Common locations and the shared use of infrastructure facilitate market entry, enable the company to achieve critical mass more quickly in key regions around the world, and help to optimize the cost base through the leverage of synergies. Cost benefits are realized and currency risks minimized through global sourcing and production.

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The previous Light & Optics and Light & Production divisions will be merged into the Advanced Photonic Solutions division and the non-photonic activities, particularly those geared towards the automotive market, will be separated. In the future, the latter will be managed more independently under their respective brand names and within the Non-Photonic Portfolio Companies segment.

The business activities of the Advanced Photonic Solutions division will focus on the semiconductor & electronics and life science & medical technology markets. Here we use our expertise in photonics as a key technology and want to support our customers in improving their competitiveness and environmental sustainability (Jenoptik as an "enabler").

With the takeover of BG Medical and the SwissOptic Group in 2021, we have strengthened our global photonics business and, in addition to the semiconductor equipment business, are noticeably expanding the medical technology business in particular. The acquisition has significantly expanded the global production network, including modern clean room capacities. By expanding the production network with the locations in Berlin, Heerbrugg and Wuhan (China), the division will be able to better control the utilization of the individual locations in the future, realize additional growth potential and gain better access to Asian customers and suppliers.

We are continuing to consistently focus our optical and micro-optical systems business in the semiconductor & advanced manufacturing area on the "digitization" mega trend, which according to market assessments, such as those from SEMI, is set to intensify. On the basis of our optical and micro-optical solutions, we aim to target further markets in the digital world in addition to the semiconductor equipment sector. Jenoptik is already positioning itself in the market for optical information and communication technology, where we predict further growth. In order to also successfully target these high-tech markets in the future, innovation, technological development, and differentiation remain key issues. This will also require targeted investment, e.g. in a new electron beam lithography system. Due to the expected further increase in demand for chips and thus also for the equipment for their production, Jenoptik will, over the coming years, invest a total of around 70 million euros in a highly functional clean room factory, in which micro-optics and sensors for the semiconductor equipment will be manufactured. Production is scheduled to begin in early 2025.

Ongoing internationalization, including in Asia, expansion of the systems business, focus on key customers as well as the use of economies of scale should form the basis for sustainable profitable growth. The semiconductor business of the SwissOptic Group, acquired in 2021, further rounds off the product portfolio in the semiconductor equipment sector with a complementary range, allowing us to offer existing and new customers an even broader range of solutions. In the long term, we also want to position ourselves even more strongly as a system-relevant supplier to our customers.

In the Biophotonics sector, we are focusing on the "health" mega trend. Based on beam sources that use lasers and LEDs, optical precision components and digital imaging, we want to increasingly position ourselves as one of the leading and profitably growing partners for the development of modules and system solutions for diagnostics, analysis, screening, and therapy in the healthcare and life science industries. In doing so, we are focusing both on the development of customer-specific products and on unique selling points. With the complementary product portfolio of BG Medical in the areas of dentistry (intraoral scanners) and robot-assisted surgery, we will continue to expand the range and strengthen our own business in the areas of ophthalmology and life sciences through the activities of the SwissOptic Group.

However, we are also participating in the trend for more mobility and efficiency with innovative industrial applications. One focus of business activities is on expanding volume business with optoelectronic and polymer optical high-performance components and modules. In addition, we are continuing to pursue promising growth options with technologies for innovative applications centered on our core areas of expertise, such as driver assistance systems or technologies for autonomous driving (LiDAR). We also want to become an internationally operating supplier in these fields.

In the area of Optical Test & Measurement, we believe that combining the expertise in optics and industrial imaging will allow us to further expand a technologically leading position and to gain associated market shares. We see important potential here, for example, in the growing markets for new virtual and augmented reality applications in the industrial and consumer segments. With its strong presence and the established access to key TRIOPTICS customers in Asia, Jenoptik wants to expand its existing market share in strategically important markets such as China, Japan, and Korea. In addition, by expanding our range of services, we expect to further strengthen our position in North America, particularly with regard to local customers in the digital and communications sectors.

Another part of the Advanced Photonic Solutions division is the laser material processing area. In the context of smart manufacturing, we focus on the automated processing of plastics and metals. According to our assessment, our solutions can make a contribution to optimize production steps, thereby creating more efficiency for our customers.

In the Smart Mobility Solutions division (previously "Light & Safety"), we are pursuing two further future trends with the focus on mobility and public safety. In the field of traffic monitoring systems, we continue to support our customers – primarily public-sector customers (B2G) – in achieving their targets to improve traffic safety with complete solutions. Urbanization and digitization of smart cities lead to a moderate but sustainable growth in demand for traffic regulation and control. The pandemic and climate change have also intensified discussions about traffic management in inner cities, congestion charges and clean air zones.

In the coming years, the Smart Mobility Solutions division wants to continue to grow organically and inorganically, increasing revenue to around 300 million euros by 2025. The expansion of the value chain and customer relationships, especially in North America, should contribute to the organic growth. We also want to establish a product portfolio with a platform approach. We want to offer entry-level products for newly industrialized countries and high-end solutions for developed, homologated markets with more applications / functionalities and a higher information density per surveillance system. To do this, we want to expand our technology and software expertise and make greater use of ANPR. Possible acquisitions should help to expand the market share and share in the value chain, for example in North America and Europe, or to expand the technologies or the product range.

In the global traffic safety technology market, we are also observing a trend towards larger projects with a combination of equipment business and services, known as Traffic Service Provision. Therefore, we are focusing on strengthening this profitable service business. Alongside the traffic safety sector, the market for civil safety is also gaining in importance. Based on the existing systems and software applications, the division aims to develop into an integrated solution provider for civil security and future smart cities, while at the same time positioning itself for a future in which autonomous driving is part of everyday life. In the future, we want to continue to develop new technologies and solutions which are optimized for emerging sectors such as connected and autonomous vehicles. Both of the above-mentioned business models should help to increase the share of recurring revenue to around 50 percent of division revenue by 2025.

With the merger of the previous Light & Optics and Light & Production divisions, the non-photonic activities will be separated and managed under the Non-Photonic Portfolio Companies as independent companies under their own brands – Prodomax, INTEROB and Hommel – and can therefore operate more independently.

With the Non-Photonic Portfolio Companies, we are, as a supplier of products, automation solutions and services for industrial customers (B2B), primarily addressing the trend towards more flexibility and efficiency in production processes, particularly in the automotive industry.

In the Automation & Integration area, we want to be able to offer everything for efficient production environments from a single source, from in-house products and systems to automated system concepts and complete process solutions.

Jenoptik's use of inspection and production metrology allows to focus, above all, on the need to reduce fuel consumption and CO_2 emissions, particularly in combustion engines. However, the business is significantly influenced by the current trend in the automotive industry towards more and more e-mobility. Actions have already been taken to bring the business back on track for sustainable growth and to significantly increase profitability, with success already apparent in 2021 (see chapter Earnings Position). We will continue to focus on the development of applications outside the automotive industry, for example in production metrology for machining processes.

Further information on the segments can be found in the Segment Report from page 30 on and the "Business Model and Markets" chapter on page 89

Strategy development and processes

Jenoptik's Corporate Development department supports the Executive Board in implementing an optimum strategic market alignment of the Group with its units and foreign locations. The Corporate Strategy team supports the development and the implementation of the strategy. The department reports directly to the Chairman of the Executive Board.

Strategy development for the Group and the divisions – as most recently in 2021 with the further development from "More Light" to "More Value" – is followed by a phase of strategy implementation lasting several years. Corporate Development and the divisions work closely together on strategic planning and the implementation of measures. The focus is primarily on the key points for underpinning the Group's growth targets.

The Corporate Development department is also responsible for organizing the annual strategy reviews with the Executive Management Committee and the Supervisory Board. Here, on the one hand, the strategic orientation is validated on the basis of current market developments, with adjustments being made to the strategic road map in certain cases. On the other hand, current focal points are discussed and approved, which underpin the strategic goals and further advance active portfolio management. In addition to targeted investment in organic growth, this may also be supported by company acquisitions.

Control System

The company control system is geared toward the long-term corporate strategy and, in addition, is consistently aligned with the Group's short to medium-term objectives. The Executive Board is responsible for overall planning and thus for achieving the stated objectives as part of the strategic corporate development.

With the support of the Executive Management Committee (EMC), the Executive Board uses a strategy process to steer the development of the business units. It monitors the implementation of defined measures at quarterly business reviews. On the basis of global trends, growth paths are defined, opportunities and risks are evaluated, portfolio decisions are made, and the focuses of in-house research and development are determined using technology roadmaps at annual strategy meetings. Strategy and planning meetings provide a planning basis for the following year and in medium-term group planning.

A planning forecast for the coming year and a five-year period is made annually on the basis of the long-term corporate strategy, and is guided by the market-driven strategic planning of the key indicators. Planning is carried out using the "counter flow method" (bottom up – top down). In the course of a fiscal year, the planning for that year is updated in several forecast cycles.

Monthly results are discussed at the EMC meetings, and are used for operational control. At these meetings, the division heads/regional managers report to the Executive Board on the economic situation, the development of customer relationships, the competitive situation, and any special business transactions. Their reports employ standardized reporting methods and ad hoc analyses largely involving performance indicators, information parameters, and qualitative assessments, which are then used to define further operating and strategic measures to achieve the objectives in case of planning deviations. The internal reports for the monthly Executive Board meetings provide aggregated financial and non-financial information on the divisions and the Corporate Center, which is essential to managing the Group on a global level, allocating resources in a targeted manner, and passing resolutions by the Executive Board.

A business intelligence environment enables and supports continuous improvement in business development analysis, reporting, and planning processes.

G21 Performance indicators for corporate management

	Financial indicators		Non-financial indicators	
Key performance indicators	Growth	Revenue, order intake, capital expenditure		
	Liquidity	Cash conversion rate		
	Return	EBITDA margin		
Information parameters	Growth	Order backlog, frame contracts	Environment	Green electricity ratio, CO_2 reduction
	Return	ROCE	Employees	Diversity ratio, engagement score
		EBIT margin	Suppliers	CSR rate (sustainable supply chain)
	Liquidity	Net debt, working capital	Innovation	Vitality index

The indicator system used in internal reports and to manage the business units in 2021 comprises the "key performance indicators" (high-priority performance indicators). It also covers other financial and non-financial information parameters. All the indicators focus on shareholder value, the interests of our stakeholders, the requirements of the capital market, and the corporate strategy. The key indicators are shown in the chart G21.

For the development of key performance indicators see Forecast Report from page 153 on

Information parameters such as order backlog, number of employees, or non-financial indicators are used for management purposes at business unit level. The most important non-financial information parameters (sustainability indicators) are taken into account in Executive Board remuneration and group financing and are assigned to the categories (Environment, Employees, Suppliers, and Innovation) in the summary. Alongside quarterly forecasts, a rolling three-month forecast for revenue and order intake updated monthly is used to manage the company's development.

For more information on the non-financial information parameters, see the Non-Financial Report from page 62 on

Explanation of the indicator base

EBITDA means earnings before interest, taxes, depreciation, and amortization, including impairment losses and reversals. The EBITDA margin is the ratio measuring EBITDA to revenue.

EBIT means earnings before interest and taxes. The EBIT margin is the ratio measuring EBIT to revenue.

The free cash flow is calculated from the cash flows from operating activities before tax payments, less capital expenditure and receipts from the sale of intangible assets and property, plant, and equipment.

The ROCE (return on capital employed) is calculated by dividing EBIT by the average tied operating capital. The average tied operating capital comprises non-current non-interest-bearing assets (e. g., intangible assets including goodwill, property, plant, and equipment, and investment property) and current non-interest-bearing assets (essentially made up of inventories, receivables from the operating business, and other current receivables), less non-interest bearing borrowings (e.g., provisions – excluding pensions and taxes –, liabilities from the operating business, and other current liabilities). The calculation of averages uses the twelve month-end balances in the period under review and the opening balance at the start of the year.

The cash conversion rate is the ratio measuring free cash flow to EBITDA.

Research and Development

As a technology group, research and development (R+D) is of key importance to Jenoptik. Our products and services give us competitive advantages which determine our performance and thus our economic success. One of our key strategic aims is therefore to expand our innovative capabilities in the photonics growth markets and to be a driver of innovations. We also develop products and platforms in line with market requirements and with unique selling points, protecting them where possible by means of industrial property rights. With our products and solutions, we do not only want to improve our customers' performance and profitability, but also contribute to greater energy efficiency and the responsible use of resources. In doing so, Jenoptik acts as a so-called "enabler".

Innovation management is an important tool used by Jenoptik to systematically identify and implement promising ideas. With networked processes, its primary intention is to generate capital from knowledge by objectively uniting market and company viewpoints. Our innovation management has a uniform group-wide process landscape, which is adapted within the divisions to meet the requirements of the respective industry. These framework conditions help to drive developments forward in order to make positive value contributions for the entire Group. Innovation management at Jenoptik lies within the remit of the Chairman of the Executive Board. In innovation management, the focus on photonics is further being strengthened by the instruments of continuous improvement (kaizen) as well as procedural anchoring. The innovation team therefore works closely with various areas of the company, such as controlling and investment management, and is intensively involved in the rolling strategy and planning processes.

Innovation process

Innovation, development and operational excellence in bringing conceptualized new products to market are one of the pillars of the Strategy 2025. The first stage of the Jenoptik innovation process involves identifying growth potential based on a strategic analysis of global trends and the requirements of our customers. Innovation projects are then created in line with our core areas of expertise and often with the direct cooperation of key customers. Strategic development projects are planned in roadmaps on the basis of corresponding milestones. This applies to product, technology and process innovations. An accelerated implementation of innovation projects is now already noticeable in the early stages of development, allowing innovative solutions to reach the market earlier.

For strategic comparison, project portfolio meetings are held twice a year to report on the status of the most important development projects. With the introduction of the JBS, a standardized product planning group will be established at the operational level on a multi-year basis in addition to the strategic portfolio meeting. This will make it even easier to prioritize projects in a targeted manner, adapt products to market needs, and continuously fill the product pipeline.

In addition, the success of innovation activities is measured with the aid of the "Vitality Index", which indicates the share of revenue generated by products and platforms developed in the last three years in relation to total revenue. In the past fiscal year, this figure increased to 19.1 percent for the Group including VINCORION in comparison with the prior year (prior year: 17.1 percent). In order to be viable on the market and to target new markets, we must rely both on our own developments and on those with external cooperation partners in order to produce more agile innovations. By 2025, the Vitality Index should increase to 22 percent.

Innovation culture

In addition to the creation of an optimal process-based innovation landscape, strengthening the innovation culture also plays an important role in exploiting the full potential of our company. Communication, networking and the transfer of knowledge are the key means of doing this. Examples include best practice communities, creative co-working and employee podcasts for technology and innovation.

One such highlight in the fall of 2021 saw the Innovation Workshop take place in cooperation with Optonet e.V., the local optics trade association, the Kombinat01 co-working space and the Leipzig Graduate School of Management (HHL). With international participation, eight innovative concepts in the three topics of quantum technology, sustainability and digitization were developed by Jenoptik employees, scientific experts and high-potential students from Leipzig Graduate School of Management and Ernst-Abbe-Hochschule Jena. The results were presented and judged in the form of an investor pitch to a panel of internal and external experts. The overall winner of the Innovation Workshop 2021 was a team of students from HHL, who were able to convince the jury with a cloud-based after-sales service for the EVIDIR infrared camera. In addition to the winning idea, other promising ideas are to be validated and followed up if necessary. As well as generating new innovative ideas, the Innovation Workshop helped to identify intrapreneurs (i.e. entrepreneurs within the company) as well as future talents for Jenoptik. Our fields of technology were also further analyzed this year. The emerging technology field of quantum technology, in which photonic components play an essential role, deserves special mention. With areas of application such as quantum computing, quantum communication and quantum sensing & imaging, numerous disruptive applications are expected to emerge here in the future. With its photonic expertise, Jenoptik is already supplying components to companies and the scientific community at this early stage. To generate further stimulus, innovation management allocates additional innovation budget for promising but also more risky projects with cooperation partners. There are plans to fund further projects in 2022.

Employees in research and development

The experience and expertise of our employees are essential to the success of our research and development work, and the qualification standards we expect of them are correspondingly high. Their knowledge is used both for specific tasks and across all divisions in corresponding development projects. In 2021, a total of 599 employees worked in research and development in the continuing operations (prior year: 582 employees). In the Group, including VINCORION, 704 employees worked in R+D (prior year: 692 employees). T27

T27 Employees in R+D

	2021	2020
Number of employees in R+D	599*	582*
Percentage of overall workforce (%)	14.2	15.7

* Methodology differs from that used in the 2020 Annual Report as it does not include inactive employment relationships

Memberships in associations

Jenoptik procures additional external expertise with the help of targeted cooperation arrangements. Through research cooperations, projects can be realized in a market-driven manner, development times can be reduced and specialist expertise can be successfully built up. Jenoptik works with both universities and non-university research institutions as well as with industrial partners and key customers.

Jenoptik is also active in numerous industry and technology-oriented associations. Examples include the Optonet Photonics Network at regional level, SPECTARIS at national level and the European Photonics Industry Consortium (EPIC) at European level. Here, the Group is committed to creating an innovation-friendly environment and promoting the image of photonic technologies. Examples of this are the activities on the Management Board of the Photonics division at SPECTARIS and within Optonet. In addition to active membership, the future aim is to interact more closely with the above networks in order to exploit the range and cooperation potential for disruptive innovations.

Development output

The information provided in this section relates to Jenoptik's continuing operations. The prior year's figures for 2020 have also been adjusted for VINCORION.

At 63.6 million euros, the R+D output including developments on behalf of customers was up on the prior year (prior year: 56.9 million euros). At 38.9 million euros, the R+D costs were around the same as those of the prior year (prior year: 39.4 million euros). The costs for developments on behalf of customers increased to 20.3 million euros, primarily due to the contribution of the Light & Optics division in the field of biophotonics, and are apportioned to the cost of sales (prior year: 13.5 million euros). Development services including patents were capitalized in 2021 in the amount of 4.4 million euros (prior year: 4.0 million euros). The capitalization rate, i.e. capitalized development costs divided by total R+D costs, increased to 11.3 percent in 2021 (prior year: 10.1 percent). Information on the amortization of internally generated intangible assets can be found on page 197 of the Notes.

As shown in table T28, R+D output is distributed among the divisions.

R+D output in the Light & Optics division includes expenses arising from developments on behalf of customers in the amount of 17.2 million euros (prior year: 9.3 million euros), which were significantly above the previous year's value, especially in the biophotonics area. The R+D expenses in 2021 amounted to 18.2 million euros (prior year: 19.7 million euros).

The R+D output of the Light & Production division included developments on behalf of customers of 2.6 million euros (prior year: 3.6 million euros). The R+D expenses came to 6.3 million euros (prior year: 6.7 million euros).

In the Light & Safety division, the R+D output in 2021 was 15.0 million euros (prior year: 13.8 million euros). Of this, 0.6 million euros were developments on behalf of customers (prior year: 0.6 million euros).

Patents

Our R+D capital expenditure is protected via central IP management in close cooperation with the operating areas. We are increasingly focusing on high-quality applications and internationalizing these in important dynamic growth markets such as China and the US. In 2021, a total of 25 new first-time patent applications were filed by Jenoptik subsidiaries in the continuing operations (prior year: 35 patents) and a further 35 international subsequent applications were made. The focus of these continued to be in the area of Optical Components and Optical Modules. The number of patents does not include registered designs, utility models or brand registrations. For competition reasons, Jenoptik does not publish information on the receipt and issue of licenses.

Key projects and results

Our aim is to offer our customers the very best solutions. We do this by combining our comprehensive expertise with a broad wealth of experience in managing innovation in photonic technologies to the benefit of our customers. The following solutions are some of those developed and placed on the market by Jenoptik in 2021:

In the semiconductor equipment area, the focus of development activities was on expanding the customer-specific portfolio of products for use in semiconductor lithography and inspection machines.

In addition to the development and introduction of the next generations of products, new customer-specific products from new product categories, such as highly integrated light sources, were added to the portfolio. Accelerated by the enormous market growth in semiconductor equipment, it was possible to further increase the production capacity due to specific product and technology optimization as well as an increase in the performance of assembly and measurement technologies.

T28 R+D output by segment (in million euros)

	2021	2020	Change in %
Continuing operations	63.6	56.9	11.8
Light & Optics	39.7	32.8	21.2
Light & Production	8.9	10.3	−13.6
Light & Safety	15.0	13.8	8.6

T29 R+D output (in million euros)

	2021	2020	2019	2018	2017
R+D expenses	38.9	39.4	44.1	47.4	43.1
Capitalized development costs including patents	4.4	4.0	4.0	1.5	1.4
Developments on behalf of customers	20.3	13.5	20.4	20.2	22.2
R+D output	63.6	56.9	68.4	69.2	66.6
R+D ratio 1 (R+D output/revenue) in %	8.5	9.2	8.0	8.3	8.9
R+D ratio 2 (R+D expenses/revenue) in %	5.2	6.4	5.2	5.7	5.8

[1] Figures for the years 2017 to 2019 are data for the Group including VINCORION

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In order to keep pace with the constantly increasing demands on quality and performance of high-precision micro-optical products for use in lithography machines in the DUV and especially EUV wavelength range, significant investment was made in the further development of existing production technologies and process modules, including coating and micro-structuring. In this context, cooperation with research institutes and technology partners was also further expanded.

For the characterization of complex optical systems, innovative test optics were developed that combine conventional optical concepts with freeform and diffractive optical concepts. The solution enables greater accuracy of characterization with simultaneously increased compactness of the test optics compared to common approaches. Thanks to its powerful portfolio of optical and micro-optical manufacturing technologies, Jenoptik will increasingly use such hybrid optical concepts in the future.

In the information and communications technology area, the performance parameters and modularity of the UFO Probe TM Ultra-Fast Opto-electronic Probecard for parallel testing of photonic integrated circuits (PIC) at wafer level have been significantly increased, so that this product platform can now cover a wide range of industrial applications. Particular mention should be made of the repeatability of the optical measurement achieved when using the probecard within an existing test environment for conventional integrated circuits (IC), which was demonstrated in high-volume tests on series products.

With the development of a powerful combination of new design approaches and expanded options for creating photolithographic structures, optically functional nanostructures on quartz glass can now be fabricated at a very high quality even in medium to high volumes. Nanostructures produced in this way are already being used, for example, in diffractive optical elements (DOE) for beam shaping in laser material processing and, in the future, they will also be used as optical meta-structures, for example, in meta-lenses or hybrid optical systems.

In the field of ophthalmology, we continued to implement our forward integration strategy and acquired new business for laser-based retinal treatments based on our OEM laser systems. In the area of electron beam microscopy, we succeeded in expanding our business by improving the performance of our detectors and cameras. Using our expertise in the development and production of detectors, a new resolution record was achieved in the imaging of atoms.

A pioneering trend in the cell phone market is the zoom capability of cameras. With the ImageMaster® PRO ST, TRIOPTICS relies on ultra precise measurement of the smallest fields of view (FOV) using innovative single telescope measurement technology. With this MTF (Modulation Transfer Function) tester for the zoom lenses in smartphones we have a production system on the market that offers a particularly narrow field of view (FOV) with an extremely high density of measuring points. In the growth market of extended reality, waveguides are an important optical component of augmented reality near-eye displays. The ImageMaster® PRO AR with wafer handler enables a fully automated workflow for the optical testing of waveguides in production. Maximum performance is ensured by robot handling of the wafers, a software-controlled automated measuring process and the support for various wafer carriers.

Camera technology in miniature format represents a particular challenge to suppliers in this field when it comes to aligning camera modules. With the ProCam® Lab, Jenoptik masters the challenge of active alignment and enables the assembly of ultra-precise camera modules in small quantities. This makes it much easier to start camera production and the prototypes can be optimized for the later series production. In addition to the entry-level model ProCam® Basic for active alignment, TRIOPTICS also offers a complete package for setting up a full assembly line.

In the laser material processing market, the JENvelt (JENOPTIK Vision-enhanced Laser Tool) system platform with integrated image processing and intelligent software was transferred to pilot systems for specific applications in close cooperation with the first customers. The automatic position recognition and on-axis image capture of the component to be processed enables the customer to directly increase the production yield and, at the same time, to reduce waste and save considerable time when setting up the process for laser microprocessing. In parallel with this, industrialization of the system platform continued, with the goal of being able to cover the widest possible range of applications by means of only individual, ideally software-based adaptations to the existing system platform, while at the same time maintaining a high level of maintainability and system availability.

In the automotive industry, a new sensor is being used which extends the Visionline portfolio for drill inspection equipment up to 70 mm, and was developed in cooperation with a truck manufacturer. The development was completed within a narrow window of time with the help of an existing platform technology and has been available in a first in-line testing facility since 2021. The development of the three-dimensional tactile sensor in the Opticline product line proved to be a particularly important step. Major manufacturers in the field of electric motor production received automated measuring machines equipped with this additional sensor technology, which, together with two additional axes, is ideally suited for measuring keyways in shaft-shaped components.

For contour and roughness measurement technology, which is combined under the Waveline product line, the focus of R+D activities was on expanding the modular system for automated solutions. For example, additional axes are now available for automatic loading and optimal presentation of the workpiece. The Evovis software has been further developed to meet the requirements of the new DIN EN ISO 21920 standard, which is currently being adopted.

Last but not least, the pneumatic measuring technology can rely on a new TPE 100 transducer that has been optimized with respect to cost, flexibility and performance.

In the Traffic Solutions area, a new functional research and development department was established as part of a successful restructuring, allowing for a transparent and efficient form of cooperation in development. This resulted in immediate successes for the Deep Learning ANPR engine – better reading performance for low-height number plates, faster object tracking (“plate tracking”) and, overall, greater detection performance.

In the smart camera product line – the foundation of our traffic control systems – the switch to modern CMOS sensors (complementary metal-oxide-semiconductor) has increased performance and processing capability parameters. The first major orders of smart cameras have already been delivered for the North American market. For traffic monitoring in the Middle East, TraffiPole was developed and delivered as an award-winning design and environmentally friendly solution for traffic monitoring with improved ergonomic construction and reduced power consumption. In addition to the modern optical design, the product impresses with improved heat dissipation, possible self-sufficient operation via batteries or solar panels, optimized construction costs and a housing made entirely from recyclable materials.

The new GardoVia and NexoVia products have been developed for the global low and medium-entry markets for traffic control, civil security and road user charging. These new small, dynamically designed, sophisticated and feature-rich devices, including the powerful hardware platform and a choice of optics, are scheduled to be presented to first customers at the prestigious Intertraffic event in March 2022.

In addition to product development, a successful proof of concept for cell phone and seat belt detection was demonstrated in the UK. The proven ability to detect and identify drivers using a mobile device or not wearing a seatbelt while driving is a novelty in the field of road safety.

In the field of connected and autonomous vehicles (CAV), development could be accelerated for 2021. The Light & Safety team successfully developed a first Vehicle-to-Infrastructure (“V2X”) protocol that enables communication to/from autonomous vehicles for critical incident reporting between vehicle and infrastructure. Further tests continue with industry and universities, including SMLL (“Smart Mobility Living Labs”), a London-based research consortium specializing in autonomous vehicle safety. In 2022, LiDAR technology will be introduced to support CAV development with better situational awareness and object tracking.

Employees

Development of employee numbers

The information provided in this section relates to the continuing operations. In the interests of comparability, the previous year's figures are stated as if VINCORION had already been classified as a discontinued operation in the prior year.

As of December 31, 2021, with 4,205 employees (incl. trainees), Jenoptik recorded growth in its workforce of 13.7 percent (31/12/2020: 3,697 employees). Including VINCORION, the Group as a whole had 4,905 employees as of December 31 (prior year: 4,472 employees). The number of Jenoptik employees abroad rose by 38.0 percent to 1,525 employees (31/12/2020: 1,105 employees). At 36.3 percent, the proportion of employees working abroad thus increased slightly compared to the prior year (31/12/2020: 29.9 percent).

Temporary workers were also employed in the past fiscal year to cover production peaks and short-term order intakes as well as for major projects. They were employed mainly in the operating areas, and the number fluctuated during the year. On the reporting date of December 31, 2021, 130 temporary workers were employed by Jenoptik (31/12/2020: 39).

At 274.4 million euros, personnel expenses in 2021 (wages, salaries, social security contributions, costs for retirement provision) were up 18.6 percent compared with the prior year's figure of 231.4 million euros. The increase resulted primarily from the growth in employment, especially in the Light & Optics division, as well as the first-time inclusion of TRIOPTICS in the full year 2021.

T30 Employees by region (incl. trainees)

	31/12/2021	31/12/2020	Change in %	Absolute change
Germany	2,680	2,592	3.4	88
Germany in %	63.7	70.1		−6
Abroad	1,525	1,105	38.0	420
Abroad in %	36.3	29.9		6
Europe (excl. Germany)	544	280	94.3	264
Americas	569	554	2.7	15
Asia / Pacific	412	271	52.0	141

Revenue per employee (including temporary employees) measured in full time equivalent rose by 20.4 percent to 199.2 thousand euros in the fiscal year 2021 (prior year: 165.4 thousand euros).

The employee age distribution, as can be seen in table T32, is balanced. The figures are largely unchanged compared with the prior year.

The proportion of women in the Group (in Germany and abroad) was 28.4 percent on December 31, 2021, a slight increase in comparison with the prior year (31/12/2020: 27.3 percent).

At 4.6 percent, the absenteeism rate among Jenoptik employees in Germany in 2021 was down on the level of the prior year despite the ongoing pandemic (prior year: 5.0 percent). The fluctuation rate increased to 5.9 percent compared to the prior year (prior year: 3.4 percent). The fluctuation rate is calculated by dividing the number of employees leaving the company in the fiscal year by the number of employees as of the reporting date of the prior year plus those who joined the company in the fiscal year. Temporary workers are not included in the calculation.

T31 Revenue per employee (in thousand euros)

	2021	2020	Change in %
Revenue per employee (including temporary employees)	199.2	165.4	20.4

T32 Age distribution (in percent)

	31/12/2021	31/12/2020
Under 30 years	14.7	14.9
30–39 years	28.0	28.7
40–49 years	24.1	23.9
50–59 years	23.3	23.4
60–65 years	7.8	7.7
Over 65 years	2.2	1.4

Training and HR development

As of December 31, 2021, 152 trainees and students of the Cooperative State Universities were employed in the continuing operations (31/12/2020: 138). Of these, 36 were new hires. At the same time, 25 trainees and students of the Cooperative State Universities successfully completed their training in the reporting year.

At the Villingen-Schwenningen, Jena, and Triptis sites, the new trainees receive job-specific training for optical, precision engineering, electronic, and commercial occupations in training centers. Jenaer Bildungszentrum gGmbH – Schott, Zeiss, Jenoptik – in which Jenoptik is a partner, has now established itself as a training center for optics and photonics at a national level.

In 2021, Jenoptik invested around 1.9 million euros in the professional development of its employees in the continuing operations (prior year: 1.7 million euros). Including the VINCORION division, which is held for sale, the qualification expenses of the entire Group amounted to 2.6 million euros (prior year: 2.2 million euros). These costs include both the expenses for trainees and students at the Cooperative State Universities and the costs for further training of our employees. The overall development needs in the Group are assessed in regular staff appraisals. Suitable qualification measures are then derived from these and implemented.

Further information on this can be found in the Non-financial Report from page 62 on

Economic Report

Macro-economic and Sectoral Developments

The global economy in 2021 did not recover to the extent initially forecast by the International Monetary Fund. In spite of a number of positive signs in global trade and industrial production toward the end of the year the dramatic slump in the prior year could not be made up for. According to the IMF, the global economy was primarily affected by the continuing spread of Covid-19 (variants), with resulting travel and shopping restrictions, high inflation, rising energy prices, and problems in global supply chains. Of particular note, China's coronavirus containment strategy, which resulted in production stoppages and the closure of entire factories and ports, placed significant burdens on both the Chinese and the global economy.

From a low prior-year figure, the Chinese economy grew 8.1 percent in 2021, according to the National Bureau of Statistics of China. Following record growth of 18.3 percent in the first quarter, gross domestic product (GDP) decreased over the course of the year. The economy was bolstered by strong exports, which saw a sharp increase of around 30 percent, according to the Chinese customs authorities. Demand from abroad, especially for electronic products, grew in 2021, but global demand for home office equipment was also largely met by China.

T33 Change in gross domestic product (in percent)

	2021*	2020
World	5.9	−3.1
US	5.6	−3.4
Eurozone	5.2	−6.4
Germany	2.7	−4.6
China	8.1	2.3
India	9.0	−7.3
Emerging countries	6.5	−2.0

Source: International Monetary Fund, World Economic Outlook (Update), January 2022
* Estimate

After a slump in the first year of the pandemic, GDP in the US rose a significant 5.7 percent in 2021, according to initial estimates, the strongest growth recorded in almost 40 years. According to the US Department of Commerce, this growth was driven by higher consumer spending, capital spending, exports, and investment in inventories.

In the eurozone, too, economic recovery was slowed by supply chain problems, high prices, and, in the final quarter, the spread of the Omicron variant. The economy did grow at the end of the year compared to the prior quarter, but this growth was weaker than expected by experts and uneven across the member states, according to the Eurostat statistics authority. Overall, GDP in the eurozone rose in 2021 by 5.2 percent, following the major slump in the prior year.

In Germany, GDP in the final quarter fell 0.7 percent, according to the Federal Statistical Office. Hopes of economic recovery were dashed by a renewed high level of infections, falling consumer spending, supply and material bottlenecks, and inflation. Thanks to good performance in prior quarters, economic output rose 2.8 percent for the full year, not enough to compensate for the slump in the prior year. Foreign trade, by contrast, saw good growth: In 2021, exports were only just down on the level of the pre-crisis year 2019. The end of the year saw an upswing in order intakes in industry.

Photonics, a key enabling technology for many growth markets, weathered the coronavirus pandemic better than many other industries. Many photonics applications have made a significant contribution to containing the pandemic, for example in the field of diagnostics with genome sequencing of the virus and vaccines, with light-based disinfectants or sterilization of medical and protective equipment. Beyond this, they are also playing a key role in the digital transformation. Industry experts see detrimental impacts arising from the pandemic in travel restrictions, disruptions to global supply chains, and the closure of factories. In its initial assessment, the Spectaris industry association has calculated annual revenue for the German photonics industry in 2021 as coming to 45.8 billion euros (prior year: 40.1 billion euros).

Laser technology is a central segment in the photonics industry. Market researchers at Laser Focus World calculated global industry revenue of 18.5 billion US dollars in 2021, 15 percent higher than in the prior year. Once again, material processing and semiconductor lithography was the largest segment, with a value of 6.9 billion US dollars, while the lasers for analytics, metrology, and sensors segment saw the highest growth rate.

Even though medical technology is considered an essential industry, the sector still felt the economic effects of the coronavirus pandemic, as summarized by Spectaris in its 2021/2022 Yearbook. Manufacturers of products related to coronavirus recorded growth, while other companies saw losses due to restricted access to hospitals, postponed surgical procedures, and travel restrictions. Globally, the market volume in 2021 was 446 billion US dollars, according to Frost & Sullivan, which on the basis of their conservative assessment was a 4.2-percent increase on the prior year.

According to VDMA Machine Vision, the machine vision industry in Europe achieved strong order intakes in 2021. Despite this, supply and material bottlenecks, especially for electrotechnical and electronic components, meant that manufacturers had difficulty adhering to production schedules. Consequently, the German Mechanical Engineering Industry Association (VDMA) is projecting 7-percent revenue growth in the European machine vision industry for 2021, following a pandemic-related revenue drop of 4 percent in 2020. Away from the factory floor, the industry tapped into further sales markets and application areas in medical technology, security, agriculture, retail, and intelligent traffic systems.

Immense global demand for semiconductors in many industries continued into 2021. According to market researcher IC Insight, global revenue in the semiconductor industry increased by 25 percent. The Semiconductor Industry Association (SIA) reported revenue 26.2 percent up on the prior year (440.4 billion US dollars) and thus a new record revenue figure of 555.9 billion US dollars. Significant growth was seen in all major markets and product categories. However, as reported by the German Electrical and Electronic Manufacturers' Association (ZVEI), demand for semiconductors outstrips available production: Factories are running at full capacity, and customers must contend with long delivery times. Measures introduced during the pandemic such as working from home, e-learning, and remote medical care worked to boost demand in the semiconductor industry, e.g., for server space and PC equipment. Compared to strong demand in the consumer electronics sector, car manufacturers reduced their semiconductors requirements in the first year of the pandemic due to production stoppages. Demand, however, picked up again faster than expected, resulting in a shortage of some semiconductors, in particular for the automotive industry, which chip manufacturers, especially in Asia, were slow to respond to by ramping up their production capacities. Overall, semiconductor equipment manufacturers achieved global revenue of 103 billion US dollars in 2021, according to the year-end forecast of the Semiconductor Equipment and Materials International (SEMI) industry association. This was 44.7 percent higher than the prior year (71 billion US dollars) and thus a new record figure above the 100-billion-dollar mark. China, Taiwan, and South Korea were again the regions with the highest level of investment.

The German electrical and digital industry set a new record in 2021 with revenue of 199.5 billion euros, 9.7 percent more than in 2020, according to the ZVEI industry association. Order intakes were 23.9 percent up on the prior year, while production was 8.8 percent up, compensating for losses in 2020.

Following a pandemic-related decline in 2020, order books were well-filled in the German mechanical and plant engineering industry in 2021, according to information provided by the VDMA industry association in early February. Order intakes were 32 percent up on the prior year, with domestic orders growing 18 percent, foreign orders 39 percent. Although this gave the industry a record order backlog for almost 11 months, supply bottlenecks mean it will not be able to process these orders quickly. According to the VDMA, the business climate in China deteriorated in the second half of the year, with shortages of raw and other materials more strongly noticeable than in the first six months. Other factors slowing growth in the key Chinese market included power supply shortages, the effects of the coronavirus pandemic (albeit less severe than previously), and personnel shortages, given that the number of foreign employees declined following travel restrictions. For the German machine tool industry, the German Machine Tool Builders' Association (VDW) reported a good order situation, but here, too, supply bottlenecks, particularly for electronic components, and rising raw material prices hampered economic recovery because orders could not be translated into deliveries and revenues to the desired extent. In particular, the automotive industry, a key customer, reduced its investment due to the chip shortage.

The order situation and investment climate in the German robotics and automation industry improved in 2021, with the VDMA Robotics and Automation sector group expecting 11-percent revenue growth on the prior year. As reported by the Association for Advancing Automation (A3) in early February 2022, robot sales in North America saw a year-on-year increase of 28 percent in 2021. This growth was primarily the result of rising demand in robotics, including from non-automotive industries such as life sciences or food and consumer goods that are increasingly employing automation to boost productivity and compensate for ongoing labor and skilled worker shortages.

According to the German Association of the Automotive Industry (VDA), the German car market contracted 10 percent in 2021, with 2.6 million new vehicles. The figures particularly dipped in the second half of the year. By contrast, growth rates at the beginning of 2021 were still good compared to the weak prior-year period that was marked by lockdowns and weak sales. Domestic production of 3.1 million units was at its lowest level since 1975; German exports were clearly down. The international markets, too, after some recovery in the first half of 2021, were increasingly burdened by the lack of semiconductors and other intermediate products and raw materials, together with rising energy and logistics prices. Of the three biggest sales regions, only Europe posted a decline, while sales increased marginally in the US and China. According to the ifo Institute, the situation in the supply chain had improved slightly by the beginning of 2022, but the industry was still constrained by bottlenecks. There were also differences between car manufacturers and automotive suppliers, as the latter were largely unable to pass on price increases to customers.

In the traffic safety sector, the German Federal Statistical Office's preliminary accident statistics for 2021 indicated that the number of road deaths in Germany was 6 percent lower than last year and 16 percent lower than in 2019. According to Destatis, accidents were impacted by the Corona pandemic, as initial estimates indicate that traffic volumes were significantly lower as a result of lockdowns, home office and homeschooling. The European Transport Safety Council (ETSC) reported similar data for European roads. In the US, the number of road deaths rose sharply since 2019, according to the National Highway Traffic Safety Administration (NHTSA); the highest figures since 2006 were recorded at the end of the first half-year, attributed by the NHTSA to high speeds and other inconsiderate driving behavior. Among manufacturers of traffic safety technology, the US company Verra Mobility merged with the Australian supplier Redflex in May 2021. The UNECE, the economic commission for Europe, and partners such as the World Health Organization (WHO) announced the next Decade of Action for Road Safety in the fall of 2021. This "Decade of Action for Road Safety 2021–2030" aims to largely prevent road traffic deaths and injuries.

Following a major slump in the first year of the pandemic, the aviation industry saw only a slight recovery, albeit enough to boost demand for new aircraft. Aircraft manufacturer Boeing also benefited from the lifting of grounding restrictions for the 737 Max model, but could not deliver its Dreamliner model due to production shortages. In total, Boeing received 535 net orders, more than the 507 received by European manufacturer Airbus. By contrast, Airbus was again ahead in terms of deliveries, including the last A380 aircraft. The impacts of the pandemic continued to be felt in air traffic: Passenger air travel in 2021 was around 58.4 percent down on the pre-crisis level in 2019 (prior year: minus 65.8 percent).

In the German security and defense technology industry, the new German government extended the ban on armaments exports to Saudi Arabia with the so-called "Yemen clause" in December 2021. It is presently unclear which other countries may be affected by this clause and whether the exemptions on supplies for joint projects with NATO partners will continue to be made. The ban, which has been in effect since 2018, has already been extended several times and aims to prevent deliveries to all countries directly involved in the war in Yemen, specifically Saudi Arabia. According to the German Federal Ministry for Economic Affairs and Energy, armaments exports worth just under 9.4 billion euros were approved in 2021, based on preliminary figures. This new record figure was higher than the previous record in 2019 and considerably up on the prior-year figure of 5.8 billion euros. A large share of these armaments exports approvals were for the maritime sector and air defense systems for Egypt. In December 2021, the Swedish International Peace Research Institute (Sipri) reported that the global armaments industry suffered few, if any, setbacks during the pandemic. In 2020, for example, the 100 largest producers sold armaments worth 531 billion dollars, at 1.3 percent the smallest year-on-year increase in three years, but the sixth year of increases in a row.

Legal Framework Conditions

The legal framework conditions governing business operations essentially remained constant in 2021 and therefore had no significant impact on the business development of the Jenoptik Group.

Earnings, Financial, and Asset Position

Comparison of actual and forecast course of business

All information in this chapter refers to the Jenoptik Group as a whole, i.e., the sum of its continuing and discontinued operations. Following signing of the contract to sell VINCORION, the division is shown as a discontinued operation in accordance with IFRS 5.

On release of the preliminary results in February 2021, the Jenoptik management forecast further growth for fiscal year 2021 on the basis of good order intake growth in the fourth quarter of 2020, the present order backlog, a well-filled project pipeline, and ongoing promising developments in the semiconductor equipment business. On publication of the final figures on March 25, 2021, the Executive Board confirmed this guidance. For 2021, the Executive Board expected the Group, including TRIOPTICS, to see revenue growth in the low double-digit percentage range. It anticipated strong growth in EBITDA (earnings before interest, taxes, depreciation, and amortization, including impairment losses and reversals) and an EBITDA margin of between 16.0 and 17.0 percent. Due to the uncertainty generated by the Covid-19 lockdown at the beginning of the year and the risk of a third wave of the pandemic, the Executive Board felt that a more precise forecast was not possible at the time. It did, however, endeavor to give a more precise forecast as the year progressed. This outlook was confirmed on publication of the first-quarter earnings 2021.

In the second quarter of 2021, the Jenoptik Group posted very high figures in order intake, revenue, and EBITDA. On the basis of this very good operating performance, the Executive Board assumed in mid-July it would be able to exceed the prior forecast in terms of group revenue and EBITDA margin. At this point, the Executive Board expected group revenue for the fiscal year 2021 of between 880 and 900 million euros, and a group EBITDA margin of between 19.0 and 19.5 percent including a one-off effect of around 16 million euros in connection with the variable purchase price components arising from the acquisition of TRIOPTICS. This forecast was confirmed both on publication of the results for the first half-year 2021 and the nine-month results.

In late November 2021, Jenoptik signed an agreement to sell the VINCORION division. As a result of this, this division is shown as a discontinued operation. Overall, this would not change the 2021 guidance for the continuing and discontinued operations (together the Group).

In the year covered by the report, the Jenoptik Group (incl. VINCORION) generated revenue of 895.7 million euros, which was at the upper end of the expected range.

The EBITDA margin of the Group (incl. VINCORION) rose to 19.8 percent, including the above-mentioned one-off effects (prior year: 14.6 percent), thus exceeding the forecast range of 19.0 to 19.5 percent.

Revenue and EBITDA of the divisions and their forecast development are shown in the following table.

At the beginning of 2021, the Executive Board expected to see order intake growth in the low double-digit percentage range. At the end of the year, the order intake was 45.2 percent up on the prior year's figure.

In the March forecast, a group cash conversion rate of over 50 percent was assumed, but the actual cash conversion rate achieved by the end of 2021 was 35.4 percent (prior year: 55.8 percent), and thus lower than the forecast 50-percent figure.

It was expected that capital expenditure in fiscal year 2021 would be above the level in the prior year. Capital expenditure amounted to 61.3 million euros and was thus up on the 2020 figure. T34

Earnings Position

The tables in the Management Report, which show a breakdown of the key indicators by segment, include the Corporate Center, real estate, and consolidation effects under "Other".

Unless otherwise specified, the following text shows the figures for continuing operations (the Light & Optics, Light & Production, and Light & Safety divisions). VINCORION is included in the disclosures for the Group as a whole.

Sale of the VINCORION division

In November 2021, JENOPTIK AG signed an agreement to sell the VINCORION division to a fund managed by STAR Capital Partnership LLP. Closing of the purchase agreement is still subject to approval by the competent authorities and other standard conditions of closing. Closing is expected in 2022. As a result of this agreement, the division is shown as a discontinued operation in accordance with IFRS 5, and is therefore no longer included in the revenue, EBITDA, order intake, or order backlog disclosures for continuing operations.

T34 Actual and forecast course of business for the Jenoptik Group (in million euros / or as specified)

Indicator[5]	Year-end 2020	2021 forecast[6]		Year-end 2021	Change in %
Group revenue	767.2	February: March: July:	Further growth Growth in the low double-digit percentage range (including TRIOPTICS) 880–900 million euros	895.7	16.8
Light & Optics	321.4	March:	Growth in the clear double-digit percentage range[1]	460.7	43.4
Light & Production	175.5	March:	Growth in the high single-digit percentage range[2]	176.2	0.4
Light & Safety	114.0	March:	Growth in the mid to upper single-digit percentage range	110.1	−3.4
VINCORION	151.7	March:	Stable development (dependent on developments in the aviation industry resulting from the pandemic)	145.0	−4.4
Group EBITDA / EBITDA margin	111.6 / 14.6%	March: July:	Significant EBITDA growth / margin between 16.0 and 17.0 percent[4] 19.0 and 19.5 percent (incl. one-off effect)	177.2 / 19.8%	58.7
Light & Optics	68.3	March:	Growth significantly stronger than in revenue[1]	136.6	100.1
Light & Production	8.2	March:	Growth stronger than in revenue[2]	13.2	60.9
Light & Safety	22.3	March:	Slight rise	19.2	−14.1
VINCORION	16.6	March:	Stable development (dependent on developments in the aviation industry resulting from the pandemic)	21.4	28.9
Group order intake	739.4	March:	Growth in the low double-digit percentage range	1,073.6	45.2
Group cash conversion rate	55.8%	March:	Over 50 percent[1]	35.4%	
Group capital expenditure[3]	47.3	March:	Above prior year	61.3	29.6

[1] incl. OTTO
[2] excl. OTTO
[3] excl. capital expenditure on financial assets
[4] Due to the uncertainty caused by the Covid-19 lockdown at the beginning of the year and the risk of a third wave of the pandemic, a more accurate forecast is not possible at this time. The aim, however, is to clarify the forecast during the course of the year
[5] Group refers to the sum of continuing and discontinued operations
[6] March forecast is the forecast published in the Annual Report 2020

Changes to the group structure in fiscal year 2021 and impacts of structural and portfolio measures in 2020

In fiscal year 2020, Jenoptik reported figures adjusted for structural and portfolio measures (merger costs, consolidation or closure of sites, restructuring, cost-cutting programs, and in connection with M+A activities). These adjustments were no longer made in fiscal year 2021. Prior-year figures are also non-adjusted. OTTO Vision Technology GmbH (OTTO) was reclassified into the Light & Optics division (before Light & Production) as of January 1, 2021; the prior-year figures were adjusted accordingly. In addition, the crystal growth business (Light & Optics division, revenue of approx. 6 million euros in 2020) and the non-optical process measuring technology business for grinding machines (Light & Production division, revenue of approx. 7 million euros in 2020) were both sold in the summer of 2021. The acquisition of BG Medical and the SwissOptic Group was successfully completed as of the closing date of November 30, 2021; the companies have since been included in the Consolidated Financial Statements.

Earnings position

Even given the challenges of the ongoing Covid-19 pandemic and supply bottlenecks, Jenoptik still has, in part, a crisis-resistant business model and is in a good financial and balance sheet position, according to the assessment of the Executive Board.

Over the fiscal year 2021, Covid-19 also impacted on the operating activities of the Jenoptik businesses and thus on the Group's earnings, financial, and asset positions (see text below). The impacts arising from delivery delays due to the pandemic were largely offset.

In the fiscal year 2021, continuing operations generated revenue of 750.7 million euros, 22.0 percent, more than in the prior year (prior year: 615.5 million euros). TRIOPTICS' contribution to revenue came to 99.5 million euros (prior year: 27.8 million euros), while the companies acquired in 2021 contributed a total of 9.6 million euros. Including the discontinued operation, group revenue amounted to 895.7 million euros (prior year: 767.2 million euros).

The quarter with the highest revenue both in the 2021 fiscal year and the prior year was the fourth, with 231.3 million euros (prior year: 201.5 million euros). Growth in 2021 came primarily from the Light & Optics division, facilitated by sustained high demand in semiconductor equipment business and good growth in biophotonics. TRIOPTICS also contributed through its inclusion over the full-year period and good operating performance. In the Light & Production division, revenue was largely unchanged on the prior year. Despite a strong fourth quarter, the Light & Safety division posted a minor fall in revenue, primarily attributable to the strongly project-based nature of its business, delays in the placement of orders, and pandemic-related delays in deliveries of electronic components, particularly in the first half-year.

More information on the development of revenue in the divisions can be found in the Segment Report

On a regional level, revenue increased across the board. TRIOPTICS was the main contributor to the significant increase in revenue of 64.8 percent in the Asia / Pacific region. Revenue in Europe (excl. Germany) increased by 11.1 percent due to stronger demand in the Light & Optics division. In the Americas, revenue grew by a total of 28.0 percent compared to the prior year in all three divisions, with in particular the Light & Optics and Light & Production divisions increasing their revenues. At 611.3 million euros, continuing operations generated 81.4 percent of revenue abroad in the past fiscal year (prior year: 473.4 million euros / 76.9 percent).

T35 Revenue by segment (in million euros)

	2021	2020	Change in %
Continuing operations	750.7	615.5	22.0
Light & Optics	460.7	321.4	43.4
Light & Production	176.2	175.5	0.4
Light & Safety	110.1	114.0	−3.4
Other	3.7	4.5	−17.8

Once again, in 2021 the continuing operations generated their largest share of revenue of 34.9 percent in the automotive and mechanical engineering market, although this figure was still down on the prior year (prior year: 37.0 percent). Although revenue with the semiconductor equipment industry rose in absolute terms, its share reduced to 26.0 percent (prior year: 27.2 percent). Following the pandemic-related decline in 2020, the medical technology market picked up significantly in 2021. The share of revenue generated with medical technology rose to 9.5 percent (prior year: 6.2 percent). As TRIOPTICS was first included for a full year in 2021, the share of revenue in the "Electronics manufacturing" market segment increased to 6.3 percent, compared to 3.6 percent in the prior year.

More detailed information on research and development can be found from page 103 on

In the fiscal year 2021, our top three customers accounted for 21.4 percent of revenue in continuing operations (prior year: 22.6 percent).

The cost of sales rose by 26.4 percent to 493.8 million euros (prior year: 390.7 million euros) and thus at a higher rate than revenue, primarily due to increased material and personnel costs. This item also includes expenses arising from developments on behalf of customers, totaling 20.3 million euros (prior year: 13.5 million euros), which were offset by corresponding revenues.

Gross profit was up on the prior-year figure of 224.7 million euros and came to 256.9 million euros. With a higher cost of sales, the gross margin of 34.2 percent was down on the prior-year figure of 36.5 percent.

In 2021, research and development expenses amounted to 38.9 million euros (prior year: 39.4 million euros). The share of R+D expenses as a proportion of revenue thus decreased to 5.2 percent (prior year: 6.4 percent). At 63.6 million euros, the R+D output, including developments on behalf of customers, was sharply up on the prior-year figure (prior year: 56.9 million euros).

Partly as a result of the inclusion of TRIOPTICS for the full fiscal year and higher amortization in connection with PPA effects, in particular on customer relationships, selling expenses increased by 16.3 percent, to 89.7 million euros, in 2021 (prior

T36 Revenue by region (in million euros)

	2021	2020	Change in %
Continuing operations	750.7	615.5	22.0
Germany	139.4	142.0	−1.9
Europe	208.4	187.5	11.1
America	205.7	160.6	28.0
Asia/Pacific	172.9	104.9	64.8
Middle East/Africa	24.3	20.4	19.4

T37 Revenue by target market (in million euros and as % of total revenue of continuing operations)

	2021		2020	
Automotive & mechanical engineering	261.7	34.9%	227.8	37.0%
Semiconductor equipment industry	194.9	26.0%	167.6	27.2%
Aviation & traffic	130.3	17.4%	114.1	18.5%
Medical technology	71.3	9.5%	38.1	6.2%
Electronics manufacturing	47.2	6.3%	22.2	3.6%
Security & defense technology	12.2	1.6%	24.7	4.0%
Other	33.1	4.4%	21.0	3.4%
Total	**750.7**	**100.0%**	**615.5**	**100.0%**

year: 77.1 million euros). At 11.9 percent, the selling expenses ratio was slightly down on the prior-year level (prior year: 12.5 percent).

General administrative expenses of 53.5 million euros were unchanged on the prior year (prior year: 53.9 million euros) despite the inclusion of TRIOPTICS for the entire reporting period. This was in part achieved by lower personnel expenses in already existing units, some of them arising from efficiency measures. The administrative expenses ratio fell to 7.1 percent (prior year: 8.8 percent).

Impairment gains and losses in connection with the valuation of trade receivables and contract assets amounted to minus 1.2 million euros (prior year: 4.1 million euros). This was essentially due to an increased focus on receivables management in the prior year, which resulted in a sharp reduction in overdue receivables and thus also a reduction in general bad debt allowances.

Other operating income came to 50.7 million euros, clearly up on the prior year's figure of 16.5 million euros. This item includes a one-off effect worth around 30.5 million euros in connection with the valuation of conditional purchase price components arising from the acquisitions of TRIOPTICS and INTEROB. Due to delays in the completion of individual major customer-specific projects at TRIOPTICS, the expected revenue under commercial law relevant for the purchase price components in 2021 and consequently also the expected EBITDA under commercial law could not be achieved, with the result that the bonus and earn-out liabilities were reversed through profit or loss. At the same time, a malus receivable was capitalized through profit or loss. In 2021, TRIOPTICS generated revenue of around 100 million euros according to IRFS, including revenue recognized over time, with an EBITDA margin above the group average. In addition, higher currency exchange gains of 8.6 million euros (prior year: 5.6 million euros) and gains on the sale of consolidated entities of 3.9 million euros also contributed to the rise of other operating income.

Other operating expenses fell to 16.3 million euros (prior year: 27.6 million euros), mainly due to the reversal of provisions. In addition, in 2021 the item also included transaction costs, especially in connection with the acquisition of BG Medical and the SwissOptic Group. In 2020, the item included expenses for group projects, structural and portfolio measures, costs in connection with corporate transactions, and impairment losses on fixed assets. At 8.6 million euros, currency losses exceeded the prior-year figure of 7.3 million euros.

Overall, other operating income and expenses came to 34.4 million euros (prior year: minus 11.1 million euros).

Detailed information on the composition of other operating income and expenses can be found on page 188 of the Notes and in the Consolidated Statement of Comprehensive Income on page 162

The profitability of continuing operations improved significantly in fiscal year 2021. In addition to a significant rise in revenue, this also reflected the positive impacts arising from the restructuring measures implemented in 2020. In addition, the EBITDA item also includes the above-mentioned positive one-off effects of around 30.5 million euros in connection with the acquisitions of TRIOPTICS and INTEROB in 2020 (prior year: costs from structural and portfolio measures of 19.1 million euros). Earnings before interest, taxes, depreciation, and amortization, including impairment losses and reversals (EBITDA) increased to 155.7 million euros (incl. PPA impacts of minus 2.1 million euros (prior year: minus 4.6 million euros), and were thus 67.9 percent up on the comparable prior-year figure of 92.8 million euros. Excluding the one-off effects, EBITDA amounted to 125.2 million euros. The impacts of structural and portfolio measures included in 2020 came to minus 19.1 million euros. In terms of EBITDA, the fourth quarter was again the strongest, with 46.1 million euros (prior year: 34.8 million euros). The EBITDA margin for continuing operations rose to 20.7 percent (prior year: 15.1 percent), or 16.7 percent excluding the one-off effects. Group EBITDA, i.e., including VINCORION, increased to 177.2 million euros (prior year: 111.6 million euros), the EBITDA margin to 19.8 percent (prior year: 14.6 percent). Excluding the abovementioned one-off effects, the group EBITDA margin was 16.4 percent.

T38 Key items in the Statement of Comprehensive Income (in million euros)

	2021	2020	Change in %
Cost of sales	493.8	390.7	26.4
R+D expenses	38.9	39.4	−1.4
Selling expenses	89.7	77.1	16.3
Administrative expenses	53.5	53.9	−0.7
Impairment gains and losses	−1.2	4.1	n. a.
Other operating income	50.7	16.5	207.5
Other operating expenses	16.3	27.6	−40.9

Income from operations (EBIT) of the continuing operations of 108.1 million euros was also a strong 128.2 percent up on the prior-year figure of 47.4 million euros. The EBIT margin accordingly improved to 14.4 percent (prior year: 7.7 percent). In addition to the above-mentioned one-off effects, the EBIT item also includes impacts arising from the purchase price allocations of minus 16.4 million euros as a result of acquisitions in 2021 and prior years (prior year: minus 14.9 million euros), effects from structural and portfolio measures were included in the prior year. Group EBIT incl. VINCORION came to 100.7 million euros, with an EBIT margin of 11.2 percent.

Information on the segment EBITDA and EBIT can be found in the Segment Report from page 130 on

Due in particular to the higher EBIT, the ROCE (Return on Capital Employed) for continuing operations also improved to 13.4 percent by December 31, 2021 (prior year: 8.2 percent (Group)). Jenoptik shows this indicator inclusive of goodwill and before taxes. The calculation of the ROCE is explained in the Control System chapter from page 101 on and shown in the following table. The calculation of averages uses the twelve month-end balances in the period under review and the opening balance at the start of the year.

Financial income and financial expenses were roughly at the same level as the prior-year figures. Positive currency effects, in particular, were offset by higher interest rates for financing. The financial result decreased to a total of minus 5.6 million euros (prior year: minus 5.1 million euros).

Significantly higher EBIT was also reflected in the earnings before tax, which at a total of 102.5 million euros were 142.7 percent up on the prior year (prior year: 42.3 million euros).

The current income taxes for continuing operations of 14.0 million euros were also above the level of the prior year (prior year: 8.3 million euros). Of these, 8.6 million euros (prior year: 5.0 million euros) are attributable to Germany and 5.4 million euros (prior year: 3.3 million euros) to other countries. The increase in Germany is due to a significant rise in earnings in the period covered by the report.

The Jenoptik Group's cash effective tax rate, the relationship between the current income taxes and earnings before tax, fell due to the increased domestic share of taxable income to 13.6 percent (prior year: 19.6 percent), but in view of the domestic earnings and deductible tax loss carryforwards was at a comparatively low level for a German company.

Non-cash deferred tax expense came to 4.3 million euros in the past fiscal year (prior year: 0.0 million euros). The increase resulted mainly from increased timing differences and additional recognition of deferred tax assets on tax loss carryforwards,

T40 EBITDA (in million euros)

	2021	2020	Change in %
Continuing operations	155.7	92.8	67.9
Light & Optics	136.6	68.3	100.1
Light & Production	13.2	8.2	60.9
Light & Safety	19.2	22.3	−14.1
Other	−13.3	−6.1	−119.3

T39 ROCE for continuing operations (in million euros)

	2021	2020
Long-term non-interest bearing assets	724.7	510.5
Short-term non-interest bearing assets	347.0	271.8
Non-interest bearing borrowings	−264.0	−201.5
Average tied capital	807.7	580.9
EBIT	108.1	47.4
ROCE (in percent)	13.4	8.2

T41 EBIT (in million euros)

	2021	2020	Change in %
Continuing operations	108.1	47.4	128.2
Light & Optics	110.8	51.5	115.3
Light & Production	2.3	−4.1	n. a.
Light & Safety	14.1	15.2	−7.4
Other	−19.0	−15.1	−25.9

as well as from the impacts of purchase price allocations of company acquisitions. This was offset by the utilization of the domestic tax loss carryforward. The group tax rate thus amounted to 9.4 percent (prior year: 19.5 percent); income taxes totaled minus 9.7 million euros (prior year: minus 8.2 million euros).

In 2021, Jenoptik generated earnings after tax of 84.3 million euros, a significant improvement of 97.4 percent (prior year: 42.7 million euros). At 82.0 million euros, earnings attributable to shareholders were above the prior-year figure of 41.8 million euros. Earnings per share of 1.43 were also well up on the prior-year figure of 0.73 euros per share.

Discontinued operation

In 2021, revenue of the discontinued operation decreased to 145.0 million euros (prior year: 151.7 million euros). This resulted from lower revenue in the project business in the area of ground-based air defense. As a result of the measures also taken at VINCORION, the division's EBITDA improved to 21.4 million euros (prior year: 16.6 million euros) or, taking into account the elimination of intragroup transactions and the allocation of disposal costs in accordance with IFRS 5, to 21.5 million euros (prior year: 18.8 million euros).

Earnings after tax in the discontinued operation (VINCORION) amounted to minus 8.5 million euros (prior year: 8.7 million euros). This item includes both the current earnings and the impairment loss arising from the fair value measurement following the agreement to sell the division (see the Notes, page 194).

See page 193 of the Notes for detailed information on the subject of taxes

Strong demand in the first nine months continued into the fourth quarter. The order intake of the continuing operations in 2021 rose to a total of 936.7 million euros (prior year: 594.2 million euros), an increase of 57.6 percent. Including VINCORION's order intake, the group order intake exceeded the one-billion-euro mark and was worth 1,073.6 million euros (prior year: 739.4 million euros). Of this figure, 120.9 million euros came from TRIOPTICS, 9.9 million euros from BG Medical and the SwissOptic Group.

The growth in the order intake was also higher than the revenue generated in the fiscal year. The book-to-bill ratio therefore increased appreciably to 1.25 (prior year: 0.97).

Within the Light & Optics division, all units, incl. TRIOPTICS, contributed to this rise. The order intake in the Light & Production division also grew considerably, as it did in the Light &

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T42 Order intake (in million euros)

	2021	2020	Change in %
Continuing operations	936.7	594.2	57.6
Light & Optics	631.1	343.4	83.8
Light & Production	185.3	154.0	20.4
Light & Safety	116.5	92.3	26.2
Other	3.7	4.5	−17.8

T43 Order backlog (in million euros)

	2021	2020	Change in %
Continuing operations	543.5	299.8	81.3
Light & Optics	408.5	179.1	128.1
Light & Production	80.7	74.7	8.0
Light & Safety	54.3	46.0	18.0

T44 Frame contracts (in million euros)

	2021	2020	Change in %
Continuing operations	135.1	21.5	527.6
Light & Optics	107.4	12.6	750.0
Light & Safety	27.7	8.9	211.8

T45 Book-to-bill ratio

	2021	2020
Continuing operations	1.25	0.97
Light & Optics	1.37	1.07
Light & Production	1.05	0.88
Light & Safety	1.06	0.81

Safety division, which posted significantly more orders, particularly in North America. In the latter division, the order intake is strongly influenced by projects and thus subject to fluctuations.

See page 130 of the Segment Report for detailed information on the order intake in the divisions

The order backlog of the continuing operations increased to a value of 543.5 million euros at the end of 2021 (31/12/2020: 299.8 million euros). Of this order backlog, 85.9 percent will be converted to revenue in 2022, less than in the prior year (prior year: 89.2 percent). Together with encouraging order intake growth in the fourth quarter of 2021, the well-filled project pipeline, and continued good performance in areas such as the semiconductor equipment business, this represents a solid basis for further growth in fiscal year 2022, to which organic growth and both BG Medical and the SwissOptic Group, which will be consolidated for the full year for the first time, will make a contribution.

At the end of 2021, there were frame contracts worth an expected 135.1 million euros (31/12/2020: 21.5 million euros), the increase resulting in particular from the acquisition of BG Medical. Frame contracts are contracts or framework agreements with customers where the exact extent and time of occurrence cannot yet be specified precisely.

Financial Position

Over the fiscal year 2021, Covid-19 again impacted on the operating activities of the Jenoptik businesses and thus on the Consolidated Statement of Financial Position and the Consolidated Statement of Cash Flows. In the opinion of the Executive Board, the Group continues to ensure healthy balance sheet ratios and an ample supply of liquidity, and is thus in a very good financial position.

Financial management principles

The central Treasury department plans for requirements and controls the provision of liquid resources within the Group. The Group's financial flexibility and solvency is guaranteed at all times on the basis of multi-year financial planning and quarterly forecasts. A cash pooling system also ensures the liquidity supply to all the major companies in Europe and North America. Companies not integrated in the cash pooling system are usually supplied with liquidity through internal group loans or, in exceptional cases, lines of credit from local banks.

See page 209 of the Notes for more information on factoring

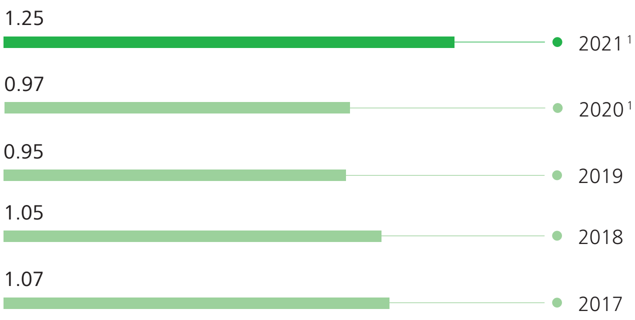
Since 2019, Jenoptik has also been utilizing a program to sell trade receivables (factoring), which gives the Group a further instrument to manage its liquidity and working capital. The volume of this instrument is limited to 25 million euros.

Primarily using currency forward transactions, Jenoptik hedges orders and group-internal loan receivables in foreign currencies, thereby reducing the impacts of exchange rate fluctuations on earnings and cash flow. Derivative financial instruments are used exclusively to hedge the operational business as well as financial transactions required for operational purposes.

See page 228 of the Notes for more information

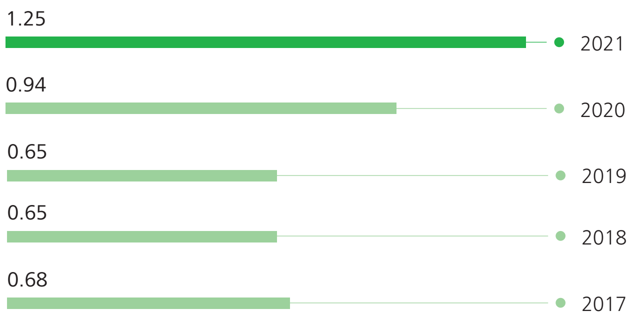
As a result of the above measures, the existing financing instruments – essentially the syndicated loan and debenture bonds –, and the available cash and cash equivalents, the liquidity of all the group companies in the past fiscal year was sufficiently secured at all times.

G22 Development of the book-to-bill ratio



[1] Figures refer to continuing operations

G23 Debt-to-equity ratio [1]



[1] Figures for the years 2017 to 2020 are data for the Group including VINCORION

Capital structure and financing analysis

With an equity ratio of 44.4 percent as of December 31, 2021 and net debt of 541.4 million euros, the Group still enjoys a solid and viable financing structure, as well as healthy balance sheet ratios, according to the assessment of the Executive Board. This gives Jenoptik the flexibility and financial latitude to finance future organic growth and potential acquisitions, thus implementing its "Agenda 2025".

In March 2021, Jenoptik placed sustainability-linked debenture bonds worth 400 million euros on the capital market on attractive terms. Of this sum, around 130 million euros were already disbursed in March, the remaining 270 million euros in September 2021. The debenture bonds were significantly oversubscribed and comprised several tranches with terms of five, seven, and ten years, which were issued not only in euros but also, to a lesser extent, in US dollars (59 million US dollars). Investors from Germany and abroad were offered both fixed and variable interest rate options.

In December 2021, Jenoptik also refinanced the revolving syndicated loan and increased it from 230 to 400 million euros. The loan, which is provided by seven banks, has a term of five years and, with the approval of the lenders, can be extended twice by one year (5+1+1), as required; its volume can be increased to 600 million euros. This financing instrument, too, for the first time included sustainability components.

Funds from the debenture bonds and the syndicated loan were already used to finance the purchase price payments to acquire the remaining 25 percent in TRIOPTICS in late 2021 and both BG Medical and the SwissOptic Group. They also give the Group room for maneuver for investments in its core business of photonics and further acquisitions.

In addition to cash and cash equivalents of 54.8 million euros and current financial investments of 1.6 million euros, the Group also has unused lines of credit totaling 325 million euros to fall back on. Around 75 million euros had been utilized as of December 31, 2021. This means that, as of the end of 2021, Jenoptik had over 380 million euros available for corporate development projects.

The following information on the financial position in fiscal year 2021 relates to continuing operations in the Jenoptik Group. Following signing of the contract to sell VINCORION, this division is now shown as a discontinued operation for the past fiscal year.

The individual items on the prior-year balance sheet have not been adjusted and include the assets and liabilities of VINCORION. Adjusted figures for the prior year are indicated as "excluding VINCORION"; the figure is stated as if assets and liabilities of VINCORION had already been classified as held for sale in the prior 2020 year.

In 2021, non-current financial debt increased sharply to 448.7 million euros (31/12/2020: 138.4 million euros/117.9 million euros excluding VINCORION), in particular due to the issue of the debenture bonds and the first-time consolidation of BG Medical and the SwissOptic Group. This item included financial debt to banks in the amount of 421.2 million euros (31/12/2020: 90.7 million euros/90.7 million euros excluding VINCORION) and lease liabilities of 27.5 million euros (31/12/2020: 47.7 million euros/27.2 million euros excluding VINCORION).

Current financial debt increased to 149.0 million euros (31/12/2020: 130.9 million euros/127.8 million euros excluding VINCORION). At the end of 2021, non-current

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T46 Net and gross debt (in million euros)[1]

	2021	2020	2019	2018	2017
Non-current financial debt	448.7	138.4	122.6	111.4	108.6
Current financial debt	149.0	130.9	37.0	10.1	19.3
Gross debt	**597.7**	**269.3**	**159.6**	**121.5**	**127.9**
minus current financial investments	1.6	4.9	69.7	59.5	64.6
minus cash and cash equivalents	54.8	63.4	99.0	89.3	132.3
Net debt	**541.4**	**201.0**	**−9.1**	**−27.2**	**−69.0**

[1] Figures for 2017 through 2020 refer to the Group, incl. VINCORION

financial debt accounted for around 75 percent of Jenoptik's financial debt (31/12/2020: 51 percent/48.0 percent excluding VINCORION).

The debt-to-equity ratio was 1.25 at the end of 2021 (31/12/2020: 0.94), due to a significant increase in borrowings in connection with the acquisition of BG Medical and the SwissOptic Group, and the acquisition of the second 25-percent stake in TRIOPTICS. The debt-to-equity ratio is defined as the ratio between borrowings (976.4 million euros) and equity (780.7 million euros).

At year-end 2021, the net cash position, defined as the total cash, cash equivalents, and current financial investments minus current financial debt, amounted to minus 92.6 million euros (31/12/2020: minus 62.6 million euros/minus 59.5 million euros excluding VINCORION). The value of cash, cash equivalents, and current financial investments decreased to 56.4 million euros (31/12/2020: 68.3 million euros/68.3 million euros excluding VINCORION); current financial debt rose to 149.0 million euros (31/12/2020: 130.9 million euros/127.8 million euros excluding VINCORION).

As of December 31, 2021, cash, cash equivalents, and current financial investments were down in value. The sharp rise in financial debt following the acquisition and the purchase of shares resulted in net debt increasing significantly to 541.4 million euros as of December 31, 2021 (31/12/2020: 201.0 million euros/177.4 million euros excluding VINCORION).

Analysis of capital expenditure

The focus of capital expenditure is derived from the Group strategy and is in line with the planned growth targets and the asset structure of the Group. To ensure this, the individual investments are systematically reviewed with respect to sustainability or their value contribution on the basis of performance and financial indicators, and all risks and opportunities are thoroughly analyzed.

In 2021, continuing operations invested 49.9 million euros in intangible assets and property, plant, and equipment (prior year: 38.1 million euros). The Group invested 61.3 million euros (prior year: 47.3 million euros). Capital expenditure was primarily deployed to create the conditions for growth and new customer orders.

T47 Capital expenditure and depreciation/amortization in continuing operations (in million euros)

	2021	2020	Change in %
Capital expenditure	49.9	38.1	31.1
Intangible assets	10.1	11.6	−13.0
Property, plant, and equipment	39.9	26.5	50.4
Investment properties	0	0	n. a.
Depreciation/amortization/impairment losses and reversals	47.6	45.4	4.9
Intangible assets	18.7	15.6	19.8
Property, plant, and equipment	28.4	29.7	−4.5
Investment properties	0.5	0.1	506.5

T48 Capital expenditure by segment – Intangible assets and property, plant, and equipment as well as investment properties (in million euros)

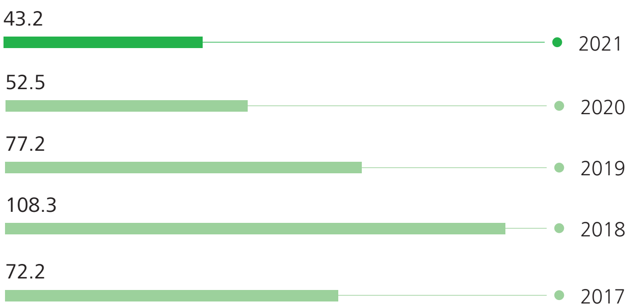
	2021	2020	Change in %
Continuing operations	49.9	38.1	31.1
Light & Optics	28.9	18.7	55.1
Light & Production	3.4	4.8	−29.8
Light & Safety	8.1	4.6	75.2
Other	9.5	10.0	−4.7

At 39.9 million euros, the largest share of capital expenditure was once again on property, plant, and equipment (prior year: 26.5 million euros). These funds were used to increase manufacturing capacity and acquire new technical equipment.

Capital expenditure for intangible assets (excluding additions to the group of consolidated entities) decreased on a comparable basis to 10.1 million euros (prior year: 11.6 million euros). Investment was mainly attributable to costs in connection with setting up and launching an SAP S/4 HANA system and the development costs from internal projects to be capitalized, which in the reporting period amounted to 4.2 million euros (prior year: 3.6 million euros).

Scheduled depreciation and amortization in continuing operations increased to 47.6 million euros (prior year: 43.9 million euros). This increase was mainly due to impacts arising from the purchase price allocation for the companies acquired in 2020.

G24 Free cash flow in million euros [1]



[1] Figures for 2017 through 2019 refer to the Group, incl. VINCORION

Scheduled depreciation on property, plant, and equipment came to 28.8 million euros (prior year: 28.4 million euros) and was thus below the figure for capital expenditure on property, plant, and equipment.

Scheduled amortization on intangible assets amounted to 18.7 million euros (prior year: 15.4 million euros), and, as in the prior year, primarily included amortization of software as well as intangible assets identified in the course of company acquisitions.

More information on capital expenditure can be found in the Segment Report from page 30 on; on future investment projects in the Forecast Report from page 153 on

Analysis of cash flows

The Group's cash flows from operating activities improved to 98.0 million euros in the reporting year (prior year: 89.7 million euros). Earnings before tax were significantly up on the prior year, but included considerable non-cash income. This, together with the build-up of working capital, resulted in cash flows from operating activities rising by just 8.3 million euros.

In 2021, the Group's cash flows from investing activities amounted to minus 413.6 million euros (prior year: minus 188.4 million euros). Over the reporting period, they were largely influenced by payments amounting to 380.0 million euros, primarily for the acquisition of BG Medical and the SwissOptic Group, as well as the remaining 25-percent stake in TRIOPTICS. Over the course of 2021, this item was also influenced by operating investment activities (capital expenditure for and proceeds from the sale of intangible assets and property, plant, and equipment) and receipts from the sale of the crystal growth business and the non-optical measuring technology business for grinding machines. In the prior year, the largest impact had arisen from the payments to acquire TRIOPTICS and INTEROB, as well as from the net cash inflow from short-term investments.

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T49 Cash flow Group (incl. VINCORION) (in million euros)

	2021	2020	2019	2018	2017
Cash flows from operating activities	98.0	89.7	108.9	135.5	96.3
Cash flows from investment activities	–413.6	–188.4	–54.4	–117.5	–42.2
Cash flows from financing activities	304.2	63.7	–46.1	–60.9	–12.9
Cash-effective change in cash and cash equivalents	–11.4	–35.0	8.4	–42.9	41.3
Non-cash-effective change in cash and cash equivalents	2.8	–0.6	1.4	–0.1	–0.9
Change in cash and cash equivalents	**–8.6**	**–35.6**	**9.8**	**–43.1**	**40.3**
Cash and cash equivalents at end of fiscal year	**54.8**	**63.4**	**99.0**	**89.3**	**132.3**

Despite the higher cash flows from operating activities before taxes and interest, the free cash flow of 62.8 million euros at group level was slightly up on the prior-year figure of 62.3 million euros. The free cash flow is calculated as the group cash flows from operating activities before payments for income tax of the Group in the amount of 108.3 million euros (prior year: 102.3 million euros) and cash flows from operating investment activities, i.e., the balance of receipts and payments of funds for intangible assets and property, plant, and equipment, amounting to minus 45.5 million euros (prior year: minus 40.0 million euros). At 43.2 million euros, the free cash flow in continuing operations was lower than in the prior year (prior year: 52.5 million euros).

The cash conversion rate for continuing operations was 27.7 percent in fiscal year 2021 (prior year: 56.6 percent); for the Group, the figure was 35.4 percent (prior year: 55.8 percent), reflecting the significant increase in EBITDA, which was, however, influenced by non-cash income.

The cash flows from financing activities amounted to 304.2 million euros in the period covered by the report (prior year: 63.7 million euros), and were particularly influenced by the proceeds from the issue of the debenture bonds (tranches with value dates in March and September 2021). Dividends worth a total of 16.1 million euros were also paid out to shareholders of the parent company and minority shareholders in 2021 (prior year: 8.4 million euros), of which 14.3 million euros were paid to JENOPTIK AG shareholders and 1.7 million euros to TRIOPTICS minority shareholders.

Asset Position

In fiscal year 2021, first-time consolidation of BG Medical and the SwissOptic Group, as well as classification of the VINCORION division as held for sale following signing of the agreement to sell VINCORION, led to considerable changes in the Consolidated Statement of Financial Position.

More information on the intangible assets and property, plant, and equipment can be found in the Notes, from pages 197 and 201 on

The following information on the asset position relates to continuing operations in the Jenoptik Group. VINCORION's assets and liabilities are shown as separate items in respect of assets and liabilities – "assets held for sale" and "liabilities related to assets held for sale". The individual items on the prior-year statement of financial position include the assets and liabilities of VINCORION. Adjusted figures of the prior year are indicated as "excluding VINCORION"; for the sake of comparability adjusted prior-year figures are stated as if VINCORION had already been classified as held for sale in the prior year 2020.

Despite the challenges posed by the coronavirus pandemic and a higher level of debt arising from the acquisitions, the Executive Board is of the opinion that the Group continued to ensure healthy balance sheet ratios.

Compared to the end of 2020, the Jenoptik Group's total assets grew in value to 1,757.0 million euros as of December 31, 2021 (31/12/2020: 1,338.8 million euros), a rise of 418.2 million euros). There were significant changes to individual items, in particular due to first-time consolidation of BG Medical and the SwissOptic Group, and the classification of VINCORION as held for sale.

On the assets side, the acquisition primarily had the effect of boosting non-current assets to 1,110.8 million euros (31/12/2020: 848.9 million euros/779.4 million euros excluding VINCORION). Intangible assets saw a particularly strong increase compared to year-end 2020, rising from 487.1 million euros (31/12/2020: 472.0 million euros excluding VINCORION) to 753.2 million euros, largely due to the goodwill recognized and the acquired companies' intangible assets identified during the purchase price allocation. The "Goodwill" item increased to 573.0 million euros (31/12/2020: 390.2 million euros/384.0 million euros excluding VINCORION) and thus remained the largest item in intangible assets. The increase in intangible assets was also the result of an increase in the acquired patents, trademarks, software, and customer relationships item, as well as the capitalization of customer relationships at BG Medical and the SwissOptic Group. Property, plant, and equipment increased from 263.5 million euros at the end of 2020 (31/12/2020: 218.1 million euros excluding VINCORION) to 266.7 million euros as of December 31, 2021, in part due to the real estate, technical equipment, and machinery acquired in the course of the acquisitions and to advances/assets under construction. There were only minor changes in the remaining items under non-current assets.

Over the past fiscal year, current assets rose to a value of 646.3 million euros (31/12/2020: 489.9 million euros/559.5 million euros including VINCORION as per IFRS 5). The main reason for this was the classification of VINCORION's assets as held for sale in this item. The rise in inventories to 200.2 million euros was mainly due to the acquisition and services made in advance for future revenue (31/12/2020: 191.4 million euros/134.5 million euros excluding VINCORION). In addition to the acquisition, the increase in trade receivables was a result of high revenue in the fourth quarter. Contract assets, particularly in the Light & Production division, grew in value to 81.4 million euros (31/12/2020: 74.7 million euros/63.4 million euros excluding

VINCORION). Higher receivables from company acquisitions in connection with the acquisitions of TRIOPTICS, BG Medical and the SwissOptic Group contributed to the increase in other current financial assets. Cash and cash equivalents fell to 54.8 million euros (31/12/2020: 63.4 million euros / 63.4 million euros excluding VINCORION).

VINCORION's assets are shown as held for sale, and as of December 31, 2021 came to 156.8 million euros (31/12/2020: 0 million euros).

On a comparable basis, the continuing operations' working capital rose as of December 31, 2021, in part due to the acquisition, to 260.6 million euros (31/12/2020: 268.1 million euros / 185.2 million euros excluding VINCORION). On the assets side, inventories, trade receivables, and contract assets increased considerably more strongly than trade accounts payable and contract liabilities on the liabilities side. The working capital ratio, that of working capital to revenue based on the last twelve months, increased on a comparable basis to 34.7 percent at year-end 2021 (31/12/2020: 34.9 percent / 30.1 percent excluding VINCORION). Reasons for this include the first-time consolidation; BG Medical and the SwissOptic Group are included here on a pro rata basis with regard to revenue but in full in the balance sheet items and thus in working capital.

As of December 31, 2021, equity of 780.7 million euros was above the level as at year-end 2020 (31/12/2020: 689.4 million euros). In addition to the increase in net profit for the period, currency differences and actuarial effects also had a positive impact here. By contrast, the dividend for the shareholders of JENOPTIK AG and the minority shareholders of TRIOPTICS, a total of 16.0 million euros, had an equity-reducing effect. In the light of significantly higher financial debt, the equity ratio, that of equity to total assets, fell to 44.4 percent (31/12/2020: 51.5 percent).

T50 Reconciliation of key asset items (in million euros)

	2021 Continuing operations	2020 Continuing operations (simulation)	2020 Group [1]
Intangible assets	753.2	472.0	487.1
Property, plant, and equipment	266.7	218.1	263.5
Inventories	200.2	134.5	191.4
Current trade receivables	120.5	94.7	138.0
Contract assets	81.4	63.4	74.7
Cash and cash equivalents	54.8	63.4	63.4

[1] Group covers continuing operations and discontinued operation (VINCORION)

T51 Reconciliation of key liability items (in million euros)

	2021 Continuing operations	2020 Continuing operations (simulation)	2020 Group [1]
Non-current financial debt	448.7	117.9	138.4
Pension provions	9.4	9.7	35.2
Current financial debt	149.0	127.8	130.9
Trade accounts payable	94.2	71.0	89.7
Contract liabilities	47.3	36.4	46.3
Other current provions	39.9	35.3	52.5

[1] Group covers continuing operations and discontinued operation (VINCORION)

Non-current liabilities increased to 503.1 million euros (31/12/2020: 233.0 million euros/183.2 million euros excluding VINCORION), in 2021 mainly influenced by the issue of the debenture bonds in March. Five debenture bonds, worth around 130 million euros, were value-dated on March 31, 2021, six more worth around 270 million euros in September. The debenture bonds are included in the non-current financial debt item, which therefore increased to 448.7 million euros (31/12/2020: 138.4 million euros/117.9 million euros excluding VINCORION). Pension provisions fell due to the classification of VINCORION's pension provisions to the item "Liabilities related to assets held for sale", but also due to higher interest rates and a positive development of plan assets (see the Notes, "Provisions for Pensions and Similar Obligations," from page 186 on). The release of the contingent purchase price liabilities from the acquisitions made in 2020 and the reclassification of purchase price components to current liabilities led to a reduction in other non-current liabilities.

Current liabilities rose to a value of 473.3 million euros (31/12/2020: 416.4 million euros/466.2 million euros including VINCORION as per IFRS 5), largely due to the increase in current financial debt to 149.0 million euros (31/12/2020: 130.9 million euros/127.8 million euros excluding VINCORION). Following acquisition of the remaining 25-percent stake in TRIOPTICS, the value of other current financial liabilities fell from 75.3 million euros (74.6 million euros excluding VINCORION) at the end of 2020 to 22.0 million euros at the end of 2021. In the prior year, a purchase price liability was recognized for the acquisition of the remaining 25-percent stake in TRIOPTICS. As of the reporting date, current trade accounts payable increased in value to 94.2 million euros (31/12/2020: 89.7 million euros/71.0 million euros excluding VINCORION). An increase in advances received for projects with revenue recognition at a point in time resulted in higher contract liabilities of 47.3 million euros (31/12/2020: 46.3 million euros/36.4 million euros excluding VINCORION).

Liabilities related to assets held for sale (VINCORION) amounted to 93.6 million euros at year 2021 (31/12/2020: 0 million euros).

Acquisitions and disposals

The following acquisitions and disposals were made in fiscal year 2021.

In the fall of 2021, Jenoptik boosted its global photonics business with the acquisition of BG Medical Applications GmbH (BG Medical, since January 13, 2022 JENOPTIK Medical GmbH) and the SwissOptic Group. Jenoptik acquired from Berliner Glas GmbH, a wholly-owned subsidiary of ASML Holding N.V., 100-percent stakes in

- BG Medical Applications GmbH, a supplier of high-precision components for the medical technology industry based in Berlin,
- SwissOptic AG, a specialist in the development and manufacture of optical components and assemblies, primarily for the medical technology, semiconductor, and metrology industries based in Heerbrugg/Switzerland, and
- Chinese company SwissOptic Co., Ltd., based in Wuhan/China, incl. Berliner Glas Wuhan Trading Co., Ltd. (together with SwissOptic AG, SwissOptic Group).

T52 Components of working capital (in million euros)

	2021 Continuing operations	2020 Continuing operations (simulation)	2020 Group [1]
Inventories	200.2	134.5	191.4
Trade receivables	120.5	94.7	138.0
Contract assets	81.4	63.4	74.7
Trade accounts payable	94.2	71.0	89.7
Contract liabilities	47.3	36.4	46.3
Total	**260.6**	**185.2**	**268.1**

[1] Group covers continuing operations and discontinued operation (VINCORION)

The closing date was November 30, 2021. Revenue and earnings for 2021, including the impacts arising from the purchase price allocation, were consolidated on a pro rata basis from the time of acquisition. The acquired companies are being integrated into the Light & Optics division. In addition to accelerating growth and sharpening Jenoptik's focus on photonics, the acquisition will enable the Group to expand its global presence, especially in the semiconductor and medical technology industries, and boost its product and technology portfolio.

As it continues to focus its business on photonic applications, Jenoptik concluded an agreement on the sale of its crystal growth business to Hellma Materials GmbH in early July 2021. The closing date was August 31, 2021.

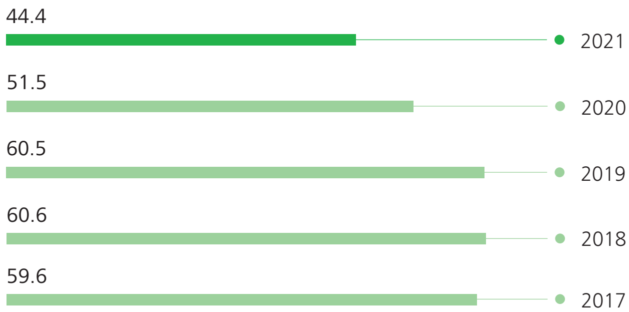
Also in July 2021, Jenoptik reported the sale of its non-optical process measuring technology business for grinding machines to the Italian Marposs Group. The closing date was July 30, 2021.

For VINCORION, which sells mechatronic products, in particular for the security and defense technology, aviation, and rail and transport industries, a sale agreement with a fund managed by STAR Capital Partnership LLP was concluded in November 2021, with closing expected in 2022. VINCORION is already shown as a discontinued operation in accordance with IFRS 5.

There were no other acquisitions or disposals in 2021.

For more information on acquisitions and disposals, see the Notes, from pages 175 on

G25 Equity ratio (in percent)



T53 Financial liabilities by due date (in million euros)

	Up to 1 year		1 to 5 years		More than 5 years		Total as of 31/12	
	2021	2020 [1]	2021	2020 [1]	2021	2020 [1]	2021	2020 [1]
Liabilities to banks	137.6	118.6	201.9	82.1	219.3	8.6	558.8	209.2
Liabilities from leases	11.4	12.3	25.4	32.8	2.2	14.9	38.9	60.0
Total	**149.0**	**130.9**	**227.3**	**115.0**	**221.5**	**23.4**	**597.7**	**269.3**

[1] Figure for Group, incl. VINCORION

T54 Components of interest-bearing liabilities (in million euros)

	2021	2020 [1]	Change in %
Current	149.0	130.9	13.8
Liabilities to banks	137.6	118.6	16.0
Lease liabilities	11.4	12.3	−7.2
Non-current	448.7	138.4	224.2
Liabilities to banks	421.2	90.7	364.5
Lease liabilities	27.5	47.7	−42.3

[1] Figures for Group, incl. VINCORION

Assets and liabilities not included in the Statement of Financial Position

The value of the Jenoptik brand is one of the main assets we do not include in the statement of financial position. Jenoptik operates in the highly fragmented photonics market, which is characterized by a multitude of highly-specialized companies. We aim to further boost awareness of our brand, especially on the international stage, in the coming years. Since early 2019, Jenoptik has been on the market with new brand positioning and a new corporate design. Strategically, Jenoptik is positioning itself with its brand as a photonics specialist.

Non-capitalized tax loss carryforwards. Tax loss carryforwards arise from losses in the past that have not yet been offset against taxable profits. They represent potential future cash flow benefits, since actual tax payments can be reduced by these losses being offset against taxable profits.

For non-usable tax loss carryforwards, deferred tax assets are not recognized for corporation tax purposes in the amount of 25.5 million euros (prior year: 23.8 million euros) and trade tax purposes in the amount of 11.8 million euros (prior year: 81.3 million euros), as they are unlikely to be used within a determined planning time frame. Equally, no deferred tax assets were recognized for deductible timing differences in the amount of 2.0 million euros (prior year: 6.6 million euros).

Off-balance sheet financing instruments for the financial and asset position. Since the end of 2019 Jenoptik has been using a factoring program limited to 25 million euros, a further instrument for managing its liquidity and working capital, in order to sell trade receivables from selected customers to a factoring company. This allows Jenoptik to convert some long-term receivables into liquidity at short notice. Since the economic opportunities and risks associated with the receivables are transferred to the buyer when the receivables are sold, those receivables are no longer recognized in Jenoptik's statement of financial position ("real factoring"). Jenoptik does not use any other significant off-balance sheet financing instruments.

With regard to off-balance sheet obligations, we refer to the section "Other financial obligations" on page 236 of the Group Notes.

Information on contingent assets and liabilities can be found in the Notes, from page 186 on.

Clauses in contracts concluded by JENOPTIK AG, which apply in the event of a change of control within the ownership structure of JENOPTIK AG following a takeover bid, exist for financing agreements with a total utilized volume of approximately 549.6 million euros (prior year: 190.5 million euros). More information can be found in the Information on Takeover Law, from page 36 on.

General Statement by the Executive Board on the Development of Business

Over the fiscal year 2021, Jenoptik reported good performance in terms of revenue, earnings, and order intake, despite the fact that Covid-19 continued to impact on the operating activities of the Jenoptik businesses and thus on the Group's earnings, financial, and asset position. Jenoptik raised its forecasts during the year, and for fiscal year 2021 achieved the upper end of the forecast range in revenue and even exceeded it for the EBITDA margin.

The continuing operations generated appreciable revenue growth in 2021, sustained by strong ongoing demand in semiconductor equipment business, good developments in the biophotonics market, and by TRIOPTICS. In the Light & Production division, revenue was almost level with the previous year, while revenue generated in the Light & Safety division was slightly down due to the project-based nature of its business.

The profitability of continuing operations also improved significantly in fiscal year 2021. In addition to the strong increase in revenue, this was due to one-off effects in connection with the acquisitions of TRIOPTICS and INTEROB, as positive impacts arising from the restructuring measures put in place by the Executive Board in 2020.

All three divisions saw considerable order intake growth in 2021. The Group's order backlog was also up on the good level of the prior year and thus represents, in the opinion of the Executive Board, a solid basis for further profitable growth.

Following signing of the contract to sell VINCORION, this division, in accordance with IFRS 5, is now shown as a discontinued operation.

Despite the higher cash flows from operating activities, the free cash flow of the continuing operations was down on the prior-year figure. Jenoptik issued both debenture bonds and took out a syndicated loan in 2021. The Executive Board used the resources thus made available to finance the acquisition of BG Medical and the SwissOptic Group, as well as the purchase of the remaining 25-percent stake in TRIOPTICS. It also has room for maneuver to invest in the core photonics business and for further acquisitions. This has created a solid basis for our ongoing growth.

Even following financing of the above-mentioned acquisitions, the Executive Board assesses that the company's balance sheet and financing structure have remained robust. Due to the significant increase in financial debt resulting from the acquisition, the equity ratio came to 44.4 percent.

In view of the still difficult environment caused by the pandemic, the Executive Board was very satisfied overall with the company's performance.

Segment Report

The three photonics divisions, Light & Optics, Light & Production, and Light & Safety, represent the segments as defined in IFRS 8. Following signing of the contract to sell VINCORION, this division has been classified as a discontinued operation in accordance with IFRS 5 and is no longer included in the Segment Report.

The divisions' range of services and competitive positioning are set out in greater detail in the Group Business Model chapter, from page 89 on.

The revenue, order intake, and order backlog numbers provided in the Segment Report are external figures.

Information on the various markets can be found in the Sector Report, from page 110 on, and on future developments in the Forecast Report, from page 153 on

Light & Optics Division

On the closing date of September 24, 2020, Jenoptik acquired an initial 75-percent stake in the optics specialist TRIOPTICS based in Wedel, Germany. On the basis of the existing control, the company was already fully consolidated. As of December 31, Jenoptik legally acquired the remaining 25 percent from the owners. The company specializes in measurement and production systems for optical components and systems. TRIOPTICS was integrated into the Light & Optics division, but not included in the financial statements until the closing date of September 24, 2020. As a result, TRIOPTICS is only included in prior-year figures such as revenue, earnings, and order intake from the end of September 2020 on, and then for the full 2021 year.

On the closing date of November 30, 2021, Jenoptik successfully completed the acquisition of BG Medical and the SwissOptic Group. The acquired companies' contributions to revenue, earnings and order intake are also disclosed in the text below.

The Light & Optics division acts as a partner to support its customers with a broad photonics technology portfolio covering everything from development to volume production. Cooperation as a development and production partner with numerous international companies was again an important part of the business in the 2021 reporting year.

Light & Optics generated revenue of 460.7 million euros in 2021 (prior year: 321.4 million euros). The fourth quarter was the strongest, with 136.4 million euros in revenue (prior year: 108.9 million euros). Business with the semiconductor equipment industry continued to grow in 2021. The Biophotonics and Industrial Solutions areas also contributed to the positive business development. TRIOPTICS made a strong contribution of 99.5 million euros (prior year: 27.8 million euros) to the increase; BG Medical and SwissOptic Group generated combined revenue of 9.6 million euros. The Light & Optics division's share of revenue rose to 61.4 percent (prior year: 52.2 percent).

T55 Light & Optics at a glance (in million euros)

	2021	2020[2]	Change in %
Revenue	460.7	321.4	43.4
EBITDA	136.6	68.3	100.1
EBITDA margin in %[1]	29.6	21.2	
EBIT	110.8	51.5	115.3
EBIT margin in %[1]	24.0	16.0	
Capital expenditure	28.9	18.7	55.1
Free cash flow	78.0	40.9	90.6
Cash conversion rate in %	57.1	59.9	
Order intake	631.1	343.4	83.8
Order backlog	408.5	179.1	128.1
Frame contracts	107.4	12.6	750.0
Employees	2,535	1,845	37.4

[1] Based on the sum of external and internal revenue
[2] Prior-year figures were adjusted due to the reclassification of OTTO Vision GmbH into the Light & Optics division (before Light & Production)

In total, around 85.3 percent of the division's revenue was generated abroad in 2021 (prior year: 83.1 percent). Revenue increased in all regions. Europe (incl. Germany) grew to 221.1 million euros (prior year: 174.1 million euros) and still enjoyed the greatest share, followed by Asia/Pacific, where revenue saw a sharp rise from 70.5 million euros to 129.4 million euros, particularly due to the contribution from TRIOPTICS.

Earnings before interest, taxes, depreciation, and amortization (EBITDA) almost doubled year-on-year to 136.6 million euros (prior year: 68.3 million euros), including negative PPA impacts of 2.1 million euros (prior year: 4.6 million euros). In addition to the very good operating performance, this was also due to a one-off effect of around 25.6 million euros in connection with the conditional purchase price components arising from the acquisition of TRIOPTICS and earnings of 0.4 million euros from the sale of the crystal growth business. In terms of EBITDA, the fourth quarter was again the most profitable of the year, with 38.8 million euros. The EBITDA margin of 29.6 percent in 2021 noticeably exceeded the prior-year figure of 21.2 percent.

The division's EBIT came to 110.8 million euros (prior year: 51.5 million euros), including the abovementioned one-off effects and the PPA impacts from the acquisitions in 2020 and 2021 of minus 10.8 million euros (prior year: 8.6 million euros). The EBIT margin came to 24.0 percent (prior year: 16.0 percent).

At 631.1 million euros, the order intake exceeded the prior-year figure of 343.4 million euros by 83.8 percent. The division posted its strongest contribution in the fourth quarter, with orders worth 195.0 million euros (prior year: 126.1 million euros). Growth was seen in all areas – particularly in the semiconductor equipment industry and in the biophotonics area. In addition, growth was bolstered by new orders from TRIOPTICS, worth 120.9 million euros (prior year: 26.9 million euros), and from BG Medical and the SwissOptic Group, worth 9.9 million euros. Set against revenue, this resulted in a book-to-bill ratio of 1.37 for the reporting period (prior year: 1.07).

Due to the higher order intake, the division's order backlog rose to 229.4 million euros in value, to 408.5 million euros, at the end of 2021 (31/12/2020: 179.1 million euros). TRIOPTICS' order backlog was worth 50.3 million euros (prior year: 27.1 million euros); BG Medical and the SwissOptic Group reported an order backlog of 62.7 million euros. The Light & Optics division also has frame contracts worth 107.4 million euros (31/12/2020: 12.6 million euros), the increase resulting in particular from the acquisition of BG Medical.

In the light of good business performance and the contribution from TRIOPTICS, the free cash flow increased to 78.0 million euros before interest and taxes (prior year: 40.9 million euros). The cash conversion rate fell just slightly, from 59.9 percent in the prior-year period to 57.1 percent at the end of 2021, despite the non-cash income included in EBITDA, in particular the one-off effect in connection with the acquisition of TRIOPTICS. The division continued to utilize factoring as a financing instrument in 2021; the factoring volume increased marginally. By contrast, a strong increase was seen in the working capital, in part due to the significant build-up of inventories and the acquisition, from 114.6 million euros at the end of 2020 to 172.1 million euros as of December 31, 2021.

For further information, see the Segment Report in the Notes from page 225 on

As of December 31, 2021, Light & Optics had a total of 2,535 employees, 690 more than in the prior year (31/12/2020: 1,845 employees), primarily due to the acquisition of BG Medical and the SwissOptic Group. At the end of 2021, the division had 107 trainees (31/12/2020: 86 trainees).

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Including development services on behalf of customers, the division's R+D output came to 39.7 million euros, sharply up on the prior-year figure of 32.8 million euros. R+D expenses totaled 18.2 million euros in the past fiscal year (prior year: 19.7 million euros). The share of total R+D costs in division revenue was 8.6 percent (prior year: 10.2 percent).

Capital expenditure on property, plant, and equipment and intangible assets rose to 28.9 million euros (prior year: 18.7 million euros). This was offset by scheduled depreciation/amortization in the sum of 25.8 million euros (prior year: 16.5 million euros), up due to PPA impacts in connection with the acquisition of TRIOPTICS and higher depreciation/amortization on property, plant, and equipment and intangible assets.

For more information on the key development topics, see the Research and Development chapter from page 103 on

Key areas of investment in the fiscal year 2021 included the expansion of capacities and the technical development of the manufacturing infrastructure, e.g., for the semiconductor equipment sector. These investments aim to help secure the long-term competitiveness of the Light & Optics division in its core business of photonics. As an example, the division is investing a double-digit million sum in a new electron-beam lithography tool (e-beam), which will go into operation at its Dresden site in mid-2022. It will be a core element for the development and production of the most sophisticated next-generation precision sensors, which are essential for the further development of DUV and establishing high-precision EUV wafer exposure in semiconductor production processes.

Acquisitions and disposals. With the signing of the agreement to acquire BG Medical and the SwissOptic Group in mid-October and the closing at the end of November Jenoptik boosts its global photonics business.

In addition to accelerating growth and sharpening Jenoptik's focus on photonics, the acquisition will enable the division to expand its global presence in attractive markets, especially the semiconductor and medical technology industries, and boost its product and technology portfolio. The acquired companies are expected to contribute around 130 million euros of revenue in 2022. Combined, BG Medical and the SwissOptic Group employ around 500 people worldwide.

Further information on the acquisition of BG Medical and the SwissOptic Group can be found in the Group Notes, point 2.4

In early July 2021, Jenoptik announced that the Group had concluded an agreement for the sale of its crystal growth business (2020 revenue of around 6 million euros) to Hellma Materials, thereby allowing it to continue to focus its business on photonic applications. The closing date was August 31, 2021.

Production and organization. In the light of rising demand for optics and sensors for the semiconductor industry, Jenoptik is planning to expand its manufacturing capacities and invest in a state-of-the-art production building and a new office complex in Dresden. For this purpose, the Group acquired a plot of land at the Airportpark Dresden industrial park in May 2021. Construction is due to commence in the second half of 2022, with production at the new factory to begin in early 2025.

In 2021, the Global Operations area in the Light & Optics division again managed to improve its quality and on-time delivery performance, in our opinion, and in the future will work to expand its international reach and better pool expertise at its locations. A project was also launched in 2021 to help meet increased demand for a product group through the establishment of a global supply chain and an international project team.

Light & Production Division

The Light & Production division particularly focuses on solutions for the automotive industry in its Metrology, Laser Processing, and Automation & Integration business areas.

In the Light & Production division, signs of recovery in the automotive industry have become particularly apparent in recent months. Despite this, the impacts of the coronavirus pandemic from the prior year, especially the lower order backlog at the beginning of 2021, have not yet been fully overcome.

Revenue in the Light & Production division rose just slightly, by 0.4 percent to 176.2 million euros (prior year: 175.5 million euros), The reporting year's highest quarterly revenue of 54.9 million euros was achieved in the fourth quarter. Automation & Integration saw growth, while Metrology and Laser Processing were slightly down on the prior year. The division's share of revenue fell to 23.5 percent (prior year: 28.5 percent).

At around 79.0 percent, the division again generated most of its revenue abroad in 2021 (prior year: 72.3 percent). While revenue in the Americas (increase of 68.2 million euros to 85.1 million euros), in particular the US, and in the Asia / Pacific region sharply exceeded the prior-year figures, revenue in Europe (incl. Germany) was down.

EBITDA, growing 60.9 percent to 13.2 million euros (prior year: 8.2 million euros), increased at a stronger rate than revenue. Here impacts resulting from the reversal of provisions, which were recorded in particular in connection with the restructuring and cost-cutting measures implemented in fiscal year 2020, earnings of 3.5 million euros from the sale of the measuring technology business for grinding machines, and a one-off effect worth around 4.9 million euros in connection with the conditional purchase price components arising from the acquisition of INTEROB all made positive contributions. The prior year's EBITDA item included restructuring costs of 7.9 million euros. The EBITDA margin improved to 7.5 percent, compared with 4.7 percent in the prior year.

EBIT in the Light & Production division increased to 2.3 million euros (prior year: minus 4.1 million euros), and included impacts arising from the purchase price allocation for the acquisitions of INTEROB, Prodomax, and Five Lakes Automation amounting to minus 5.2 million euros (prior year: minus 5.8 million euros). The EBIT margin improved to 1.3 percent (prior year: minus 2.4 percent).

Improved sentiment in the automotive industry, the key sector for the Light & Production division, was reflected in its order intake. In 2021, the division received new orders worth a total of 185.3 million euros, 20.4 percent more than in 2020 (prior year: 154.0 million euros). The Automation & Integration and Laser Processing areas posted particularly strong growth in order intake. In 2021 the book-to-bill ratio in reached a figure of 1.05 (prior year: 0.88).

In the period covered by the report, the division reported several orders for its Automation & Integration business in North America. The orders from automotive customers in the Tier 1 segment include automation lines producing structural assemblies for several major car manufacturers.

At the end of 2021, the order backlog was worth 80.7 million euros, 8.0 percent above the figure at the end of 2020 (31/12/2020: 74.7 million euros).

Despite improved earnings before tax, the strong build-up of working capital in conjunction with the commencement of work on projects, the non-cash income included in earnings, and the reduction of provisions led to a reduction in the free cash flow (before interest and income taxes) to minus 12.5 million euros (prior year: minus 0.1 million euros). As in the prior year, the cash conversion rate was below 0 due to the negative free cash flow. The working capital increased from 66.6 million euros at the end of 2020 to 76.9 million euros at the end of the reporting year, chiefly due to the rise in contract assets.

As of December 31, 2021, the Light & Production division had 878 employees (31/12/2020: 1,040 employees), mostly down due to the restructuring measures implemented. 24 people were in trainee positions in the division as of the reporting date (31/12/2020: 28 trainees).

The division's R+D output fell to a value of 8.9 million euros (prior year: 10.3 million euros). This included developments on behalf of customers in the amount of 2.6 million euros (prior year: 3.6 million euros). R+D expenses came to 6.3 million euros (prior year: 6.7 million euros). In 2021, the share of R+D output in total revenue in the Light & Production division was 5.1 percent (prior year: 5.9 percent).

For more information on the key development topics, see the Research and Development chapter

Capital expenditure on property, plant, and equipment and intangible assets fell to 3.4 million euros (prior year: 4.8 million euros). The prior year's capital expenditure had included investment in the new build at the Villingen-Schwenningen site. In 2021, capital expenditure was offset by scheduled depreciation/amortization in the sum of 10.9 million euros (prior year: 12.2 million euros). This includes amortization resulting from PPA impacts.

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T56 Light & Production at a glance (in million euros)

	2021	2020[2]	Change in %
Revenue	176.2	175.5	0.4
EBITDA	13.2	8.2	60.9
EBITDA margin in %[1]	7.5	4.7	
EBIT	2.3	−4.1	n. a.
EBIT margin in %[1]	1.3	−2.4	
Capital expenditure	3.4	4.8	−29.8
Free cash flow	−12.5	−0.1	n. a.
Cash conversion rate in %	<0	<0	
Order intake	185.3	154.0	20.4
Order backlog	80.7	74.7	8.0
Employees	878	1,040	−15.6

[1] Based on the sum of external and internal revenue
[2] Prior-year figures were adjusted due to the reclassification of OTTO Vision GmbH into the Light & Optics division (before Light & Production)

Disposals. As part of its focus on the metrology business, Jenoptik announced in early July 2021 that an agreement had been reached with Marposs to sell its non-optical process measuring technology business for grinding machines (2020 revenue of around 7 million euros). The closing date was July 30, 2021.

Light & Safety Division

The Light & Safety division is responsible for the Group's business with systems and services related to road traffic, such as speed and red light monitoring systems and custom solutions for identifying other traffic violations, and for the fields of public safety and road user charging. Business in the Light & Safety division is predominantly project-based.

In 2021, the division generated revenue of 110.1 million euros (prior year: 114.0 million euros), 3.4 percent less than in the prior year. New orders came in later than originally expected, and there were pandemic-related delays in the supply of electronic components, especially in the first half-year, therefore, fewer orders were delivered than planned. In this division, too, the fourth quarter was the strongest, with 37.8 million euros (prior year: 31.9 million euros). Light & Safety's share of revenue in the past fiscal year came to 14.7 percent (prior year: 18.5 percent).

At around 72.0 percent, the share of revenue generated abroad in 2021, was slightly up on the prior-year figure of 69.6 percent which was attributable to the project business. The division saw growth in the Americas and the Asia/Pacific region. By contrast, revenue was down in Europe (incl. Germany) and the Middle East/Africa.

The decline in revenue was also reflected in the division's profitability. At 19.2 million euros, EBITDA was down on the prior-year figure of 22.3 million euros. A considerable contribution to earnings of 10.6 million euros (prior year: 8.8 million euros) was generated in the fourth quarter. In 2021, the EBITDA margin came to 17.4 percent, compared with 19.6 percent in the prior year.

At 14.1 million euros, EBIT was also down on the prior-year figure of 15.2 million euros; the corresponding EBIT margin came to 12.8 percent (prior year: 13.3 percent).

The division's order intake is subject to typical fluctuations in project business. In 2021, Light & Safety received new orders worth a total of 116.5 million euros, more than in the prior year (prior year: 92.3 million euros). The book-to-bill ratio increased to 1.06 (prior year: 0.81).

In early 2021, Light & Safety received several orders for traffic safety technology in North America. The orders were awarded as part of "Vision Zero," a multinational traffic safety project that aims to drastically reduce the number of traffic accidents and deaths or serious injuries on the roads.

Due to the higher order intake, the order backlog grew to a value of 54.3 million euros as of December 31, 2021 (31/12/2020: 46.0 million euros). The division also has frame contracts worth 27.7 million euros (31/12/2020: 8.9 million euros).

With a total of 491 employees, the number of people employed in the Light & Safety division at the end of 2021 was virtually unchanged (31/12/2020: 489 employees). At the end of December, the division had 9 trainees (31/12/2020: 14 trainees).

In 2021, the division's R+D expenses of 14.4 million euros were up on the prior-year figure of 13.1 million euros. Development costs on behalf of customers remained practically unchanged at 0.6 million euros. Overall, the division's R+D output increased to 15.0 million euros (prior year: 13.8 million euros).

In the year covered by the report, the division invested 8.1 million euros in property, plant, and equipment and intangible assets (prior year: 4.6 million euros), primarily in connection with traffic service provision (TSP) projects, especially in Canada and Germany. The traffic safety technology employed on these projects is installed and operated by Jenoptik on behalf of the customer. As a result, the level of capital expenditure was 75.2 percent higher than in the prior year. Capital expenditure was offset by scheduled depreciation/amortization totaling 5.1 million euros (prior year: 7.1 million euros).

As of December 31, 2021, the working capital came to 25.6 million euros, up on the prior-year figure of 12.1 million euros, primarily due to increases in inventories and trade receivables and a decrease in trade payables.

Significantly lower earnings before tax, a higher level of capital expenditure, and a strong rise in working capital resulted in a lower free cash flow (before interest and income taxes) of minus 4.4 million euros in the fiscal year (prior year: 21.4 million euros). As a result, the cash conversion rate was also significantly down on the prior-year figure of 95.9 percent.

Production and organization. Over the past fiscal year, the Light & Safety division increased its inventories, worked closely with its key suppliers, and thus prevented any significant production shutdowns. A weaker first half-year followed by a very strong second six months was managed by effective control of production capacity. Investment in automation of final testing increased flexibility and reduced production costs. The Operations unit was reorganized to cut costs and increase the responsibility and competence of the quality organization. In the service organization, a new training platform was set up and preparations were made for a new service management system to further push on with expansion of the service business.

For information on the key development topics, see the Research and Development chapter from page 103 on

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T57 Light & Safety at a glance (in million euros)

	2021	2020	Change in %
Revenue	110.1	114.0	−3.4
EBITDA	19.2	22.3	−14.1
EBITDA margin in % [1]	17.4	19.6	
EBIT	14.1	15.2	−7.4
EBIT margin in % [1]	12.8	13.3	
Capital expenditure	8.1	4.6	75.2
Free cash flow	−4.4	21.4	n.a.
Cash conversion rate in %	<0	95.9	
Order intake	116.5	92.3	26.2
Order backlog	54.3	46.0	18.0
Frame contracts	27.7	8.9	211.8
Employees	491	489	0.4

[1] Based on the sum of external and internal revenue

General Statement by the Executive Board on the Development of the Segments

The Light & Optics division benefited from good revenue and order intake with the semiconductor equipment industry in 2021, but the significant growth was also due to good performance in the Biophotonics and Industrial Solutions areas, and at TRIOPTICS. In the light of good business performance and TRIOPTICS' contribution, the division's free cash flow also improved.

The acquisition of BG Medical and the SwissOptic Group will allow Light & Optics to accelerate growth, expand its global presence in attractive markets, especially the semiconductor and medical technology industries, and boost its product and technology portfolio.

In the Light & Production division, signs of recovery in the automotive industry have become apparent particularly in recent months. Nevertheless, the impacts of the coronavirus pandemic from the prior year have still not yet been fully overcome. As a result, revenue increased only slightly. The appreciable improvement in EBITDA was due to positive impacts in connection with the restructuring and cost-cutting measures implemented by the Executive Board in the fiscal year 2020 and in connection with a sale and the conditional purchase price components arising from the acquisition of INTEROB. Improved sentiment in the automotive industry was reflected in the increased order intake. Among other factors, the strong rise in working capital and payments in connection with the reduction in provisions led to a decline in the free cash flow.

In 2021, the Light & Safety division generated slightly less revenue than in the prior year. New orders came in later than originally expected, and there were pandemic-related delays in the supply of electronic components. This was also reflected in lower profitability. Due to the project-related business, including orders from the US, the division's order intake in the past fiscal year was higher than in the prior year. Nevertheless, lower earnings before tax and the strong rise in inventories produced a lower free cash flow.

Over the course of the past fiscal year, Jenoptik boosted its capital expenditure on expanding international sales structures, in efficient processes, and the development of new products.

In 2021, we also managed to establish a broader range of systems and secure both international projects and new customers. We reported revenue increases in two divisions; this performance was also reflected in our profitability. Demand in all three divisions was higher than in 2020. In the past fiscal year, the acquisition of BG Medical and SwissOptic Group represented a key step in Jenoptik's plans to become a pure, globally operating photonics group.

JENOPTIK AG

(Abridged Version According to HGB)

Supplementary to the reports on the Jenoptik Group, the development of JENOPTIK AG is set out below.

JENOPTIK AG is the parent company of the Jenoptik Group and based in Jena. Its asset, financial, and earnings position is fundamentally defined by its capacity as the holding company of the Jenoptik Group. The operating activities of JENOPTIK AG primarily cover the provision of services for subsidiary companies and the subleasing of commercial premises.

The Annual Financial Statements of JENOPTIK AG are prepared in accordance with German commercial law (HGB) and the supplementary regulations of the German Stock Corporation Act (AktG). The Consolidated Financial Statements are prepared in accordance with the International Financial Reporting Standards (IFRS) valid on the reporting date and the interpretations of the International Financial Reporting Interpretations Committee (IFRIC) whose application is mandatory within the European Union. This gives rise to differences in the accounting and measurement methods, chiefly concerning fixed assets, derivatives, provisions, deferred taxes, leases, and revenue recognition.

The Group's strategic policy entails a greater focus on photonic growth markets and thus its transformation into a globally positioned photonics company.

T58 Abbreviated Income Statement of JENOPTIK AG (in thousand euros)

	1/1 to 31/12/2021	1/1 to 31/12/2020
Revenue	44,167	50,234
Cost of sales	44,047	45,589
Gross profit	119	4,645
Selling expenses	1,643	1,504
General administrative expenses	14,487	15,004
Research and development expenses	57	125
Other operating result	1,094	−1,612
Income and expenses from profit and loss transfer agreements and income from investments	88,937	61,954
Financial result	−48,483	−6,627
Income taxes	9,437	4,566
Earnings after tax	16,044	37,162
Net profit	16,044	37,161
Retained profits from prior year	30,000	30,000
Accumulated profit	46,044	67,161

Asset, Financial, and Earnings Position

Earnings Position

Revenue was down 6.0 million euros on the prior year, at 44.2 million euros, mainly the result of postponed invoicing of the incidental rental costs for two fiscal years in the prior year.

Selling expenses of 1.6 million euros (prior year: 1.5 million euros) covered costs for communications, advertising, sponsorship, and strategic brand projects.

Administrative expenses remained at the prior-year level. They included, in particular, personnel costs of 8,334 thousand euros (prior year: 8,317 thousand euros).

JENOPTIK AG posted research and development expenses amounting to 0.1 million euros (prior year: 0.1 million euros), primarily covering expenditure for innovation management and the coordination of R+D work in the Jenoptik Group.

The other operating result included other operating income of 19.2 million euros (prior year: 13.9 million euros), which was offset by 18.1 million euros of other operating expenses (prior year: 15.5 million euros).

Other operating income primarily included intra-group recharging of costs of 8.4 million euros (prior year: 5.4 million euros), currency gains worth 4.7 million euros (prior year: 4.5 million euros), and income arising from the reversal of provisions in the sum of 1.5 million euros (prior year: 3.3 million euros).

Key items in the other operating expenses were expenses for intra-group recharging of costs of 8.7 million euros (prior year: 5.6 million euros) and currency losses of 6.1 million euros (prior year: 3.5 million euros).

The financial result of minus 48.5 million euros (prior year: minus 6.6 million euros) included unscheduled depreciation/amortization on shares in associates of 47.1 million euros, of which 38.3 million euros were due to the scheduled sale of a subsidiary.

Income taxes were 4.9 million euros above the figure for the prior year due to higher taxable income of the companies consolidated for tax purposes in fiscal year 2021.

JENOPTIK AG's net profit fell by 21.1 million euros, or 56.8 percent, to 16.0 million euros (prior year: 37.1 million euros). The company's earnings position was mainly influenced by high amortization on financial investments of 47.3 million euros and the subsidiaries' earnings, which are paid to JENOPTIK AG on the basis of existing control and profit and loss transfer agreements. The net earnings contribution of the subsidiaries increased on the prior year, by 40.2 million euros to 88.3 million euros. This was the result of good earnings performance with the semiconductor equipment and medical technology industries, as well as the positive development in the Biophotonics and Industrial Solutions areas. The automotive industry showed good signs of recovery in the last months, producing an increase in profit transfer.

T59 JENOPTIK AG Statement of Financial Position (in thousand euros)

	31/12/2021	31/12/2020
Assets		
Intangible assets, property, plant, and equipment	79,587	76,753
Financial investments	1,047,663	715,940
Non-current assets	**1,127,250**	**792,693**
Inventories, trade receivables, and other assets	135,732	85,923
Cash and cash equivalents	3,305	17,334
Current assets	**139,036**	**103,257**
Accruals and deferrals	1,764	2,137
	1,268,051	**898,087**
Equity and liabilities		
Share capital	148,819	148,819
(Conditional capital 14,950 thousand euros)		
Capital reserves	180,756	180,756
Revenue reserves	287,101	264,249
Accumulated profit	46,044	67,161
Equity	**662,721**	**660,986**
Provisions	**16,978**	**11,937**
Liabilities to banks	531,538	179,646
Trade accounts payable	11,914	7,270
Other liabilities	44,271	38,248
Liabilities	**587,723**	**225,164**
Accruals and deferrals	629	0
	1,268,051	**898,087**

Asset and Financial Position

At 1,268 million euros, JENOPTIK AG's total assets were 41.2 percent up on the figure for the prior year (31/12/2020: 898 million euros).

The assets side of the statement of financial position reflected JENOPTIK AG's status as a holding company. Alongside a capitalization ratio of 88.9 percent, of which 82.6 percent was attributable to financial investments, and 6.3 percent to other fixed assets (in particular real estate), the total assets are also dominated by a high level of loans to associates (10.6 percent).

The increase of 331.7 million euros in financial investments was predominantly the result of 401.0 million euros of capital contributions, primarily to finance the acquisition by subsidiaries. This was offset by unscheduled depreciation/amortization of 47.1 million euros and loan repayments by subsidiaries in the amount of 24.5 million euros.

Receivables from associates amounting to 134.3 million euros (31/12/2020: 85.5 million euros) mainly relate to cash pool balances of subsidiaries amounting to 127.8 million euros (31/12/2020: 79.2 million euros), which have also increased as a result of the profit transfer, and short-term loans arrangement with a subsidiary, which amounted to 6.5 million euros.

The reduction by 14.0 million euros in cash and cash equivalents is due to the balance sheet date and the result of active liquidity management.

Accruals and deferrals essentially comprised accrued costs for IT service and maintenance contracts.

JENOPTIK AG's financing function as the holding company for the Jenoptik Group was reflected on the liabilities side. Equity came to 662.7 million euros (52.3 percent of total assets), liabilities to banks to 531.5 million euros (41.9 percent of total assets).

Thanks to the positive annual result of 16.0 million euros, equity improved by 1.7 million euros from 661.0 million euros to 662.7 million euros. This was countered by the payment of dividends worth a total of 14.3 million euros for the 2020 fiscal year. Following the take-up of new liabilities to banks, the equity ratio fell from 73.6 percent to 52.26 percent.

Tax provisions for the companies consolidated for tax purposes rose by 3.7 million euros, of which 2.8 million euros are income taxes for the current year and 1.2 million euros for taxes in prior years.

The increase in liabilities to banks of 352.3 million euros, from 179.6 million euros to 531.5 million euros, was the result of restructuring of the financing. New debenture bonds with various tranches and terms, worth a total of approximately 400 million euros, were issued in the fiscal year 2021. In addition, the old syndicated loan of 230 million euros was repaid and a new syndicated loan for 400 million euros taken out. As of the reporting date of December 31, 2021, 75.0 million euros of this loan had been utilized.

Other liabilities essentially comprised 24.4 million euros of cash pool liabilities, and 12.6 million euros to offset earnings at a subsidiary.

Over the reporting year, JENOPTIK AG's debt ratio changed, primarily due to the increase in borrowing, from a 26.4-percent to a 47.74-percent share of total assets.

As of December 31, 2021, JENOPTIK AG had 261 employees, of which 27 were temporary workers and trainees (prior year: 257 employees, of which 29 temporary workers and trainees).

Risks and Opportunities

Due to its function as a holding company, JENOPTIK AG's development of business is subject to the same risks and opportunities as the Jenoptik Group. It generally participates in the risks of equity holdings and subsidiaries in line with their equity interests and financial investments. The risks and opportunities of the Group and the segments are set out in the Risk and Opportunity Report.

Forecast Report

The annual result of JENOPTIK AG is largely dependent on the development of contributions to earnings by the subsidiaries.

Based on the development of business set out in the Group Forecast Report, in fiscal year 2022, JENOPTIK AG is expecting service allocations to be 2.9 million euros higher than in the prior year due to the change to group license agreements. Revenue from holding company services and from rentals will remain at the prior-year level.

JENOPTIK AG's earnings – prior to transfer of subsidiaries' earnings contributions – is expected to remain stable compared to the past fiscal year. For a detailed presentation of the expected future development of the Jenoptik Group and its segments, we refer to the Forecast Report.

Report on Post-Balance Sheet Events

The JENOPTIK AG Executive Board approved the submission of the present Consolidated Financial Statements to the Supervisory Board on March 16, 2022. The Supervisory Board is responsible for reviewing and approving the Consolidated Financial Statements at its March 25, 2022 meeting.

Dividend. According to the Stock Corporation Act, the amount available for a dividend payment to the shareholders is based on the accumulated profit of the parent company JENOPTIK AG, as determined by the regulations of the HGB. For the fiscal year 2021, JENOPTIK AG's accumulated profit totaled 46,043,833.67 euros, comprising net profit for 2021 in the amount of 16,043,833.67 euros plus retained profits of 30,000,000.00 euros.

The Executive Board recommends to the Supervisory Board that for the fiscal year 2021 a dividend of 0.25 euros per qualifying no-par value share be proposed to the 2022 Annual General Meeting (prior year: 0.25 euros). This would mean that a sum of 14,309,528.75 euros of from JENOPTIK AG's accumulated profits in the fiscal year 2021 will be distributed. Of the remaining accumulated profits of JENOPTIK AG, an amount of 11,734,304.92 euros will be allocated to other profit reserves and an amount of 20,000,000.00 euros will be carried forward to the new account.

New group structure in the first quarter 2022. Jenoptik's new growth agenda, "More Value," is set to accelerate the company's plans to become a pure, globally-leading photonics group. As part of its new organizational set-up, the Group is consolidating its core photonics business in two new division, Advanced Photonic Solutions (industrial customer business) and Smart Mobility Solutions (business with public sector contractors). The former Light & Optics and Light & Production divisions will be merged into the new Advanced Photonic Solutions division, while non-photonic activities, particularly for the automotive market, will be separated and operate as independent brands (incl. Hommel, Prodomax, and INTEROB) within the Jenoptik Group's Non-Photonic Portfolio Companies. The former Light & Safety division will become the Smart Mobility Solutions division. These two new divisions will focus on the three core markets of semiconductor & electronics, life science & medical technology, and smart mobility. The new structure will take effect in the first quarter of 2022.

Ukraine war. The war in Ukraine and the associated sanctions may have an impact in particular on the supply of energy, and affect its price development as well as the short-term availability of raw materials and logistics services. Similarly, the interdiction of financial transactions may also have an impact on the procurement or distribution of non-sanctioned goods. This may have a negative impact on both production costs and productivity in parts of our value chains as well as a decisive influence on the overall economic development in Jenoptik's growth markets. At the time of preparing this report, the situation is still very dynamic and the effects of the war cannot be assessed conclusively. A significant increase in inflation rates could have an impact on our business activities, with price increases for raw materials and intermediate goods negatively affecting our cost structure. We are attempting to counter this through various measures in Purchasing, through further optimization of the internal cost structure and, if necessary, through price adjustments in close cooperation with our customers.

No further events of significance occurred after December 31, 2021.

Risk and Opportunity Report

Principles of Risk and Opportunity Management (Enterprise Risk Management) at Jenoptik

Jenoptik operates in a global and complex business environment, and is therefore constantly exposed to internal and external influences on its business activities. Every business decision therefore involves weighing the risks and opportunities within the corporate environment. This, for Jenoptik, is one of the principles of responsible and value-oriented corporate management.

Jenoptik's comprehensive risk management system is based on an interactive and management-oriented approach. Its enterprise risk management (ERM) accounts for both risks and opportunities, and is integrated throughout the company. The goal is to support the implementation of the group strategy and to define actions that create an optimum balance between growth and return targets on the one side and the associated risks on the other. In implementing the strategy, it is necessary to identify strategic, operational, financial, and compliance-related risks and opportunities early on, to present, evaluate, and manage them transparently and in a way that facilitates comparison. This is achieved by promoting an open risk culture, and through regular development of the enterprise risk management system guided by the ISO 31000 standard. G26

Structure and organizational integration of enterprise risk management

The Supervisory Board's Audit Committee monitors the existence and effectiveness of Jenoptik's enterprise risk management. The Executive Board is responsible for the ERM system in the Jenoptik Group. The group-wide approach is set out in a risk manual. The structure and process is shown in figure G27.

Functional responsibility lies with the Compliance & Risk Management department, which reports on group risk management directly to the CFO, who is also defined as the Group's risk officer.

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G26 Risk assessment

Metrics	Probability of occurence	Consequences/extent of damage: Qualitative		Quantitative EBITDA deviation
5 = High	up to 50%	The goal of the Group or the risk reporting unit is jeopardized	or	> 20%
4 = Medium-high	up to 40%	The goal of the Group or the risk reporting unit has to be adapted immediately	or	> 15 to 20%
3 = Medium	up to 30%	The goal of the Group or the risk reporting unit has to be adapted in the medium term	or	> 10 to 15%
2 = Low	up to 20%	Further measures are necessary in order to achieve the goals of the Group or the risk reporting unit	or	> 5 to 10%
1 = Very low	up to 10%	Minor consequences	or	> 0 to 5%

The Risk Committee is made up of the members of the Executive Board and the head of central Compliance & Risk Management. It consolidates all aggregated reporting results to form a top-level evaluation of the Group's risk position. G27

The definition and ongoing development of the system takes place with the close cooperation of central Compliance & Risk Management, the Executive Board, and the Audit Committee of the Supervisory Board. The Executive Board is responsible for the system and approves it. The Central Compliance & Risk Management communicates the current requirements of the risk management system to the Executive Board, advises on its practical implementation and monitors the measures and results of the risk management processes.

Compliance & Risk Management also organizes and manages the system, working closely with the other central departments and the risk officers in the divisions. These, in turn, are responsible for implementing the ERM system in the various risk reporting units. The risk reporting units are defined reporting units that are employed to accurately identify and allocate risks and opportunities. They can be both business units and individual subsidiaries or consolidated regional units.

While Internal Audit monitors the effectiveness, appropriateness, and efficiency of enterprise risk management, the Supervisory Board's Audit Committee performs the external monitoring function for or in conjunction with the Supervisory Board.

As part of the audit of the Annual Financial Statements, the risk early warning system of JENOPTIK AG is examined by the auditor with regard to the requirements of stock corporation law. The audit for the fiscal year 2021 showed that Jenoptik's ERM system complies with the legal requirements for a risk early warning system and that it is designed to be suitable for the early detection of developments that could jeopardize the continued existence of the Group.

The group of consolidated companies exposed to risk corresponds to those included in the consolidated financial statements.

Enterprise risk management system procedure and processes

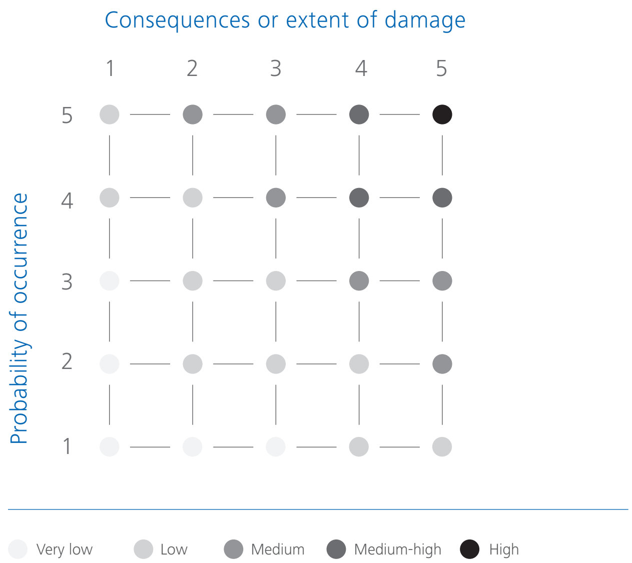
Risks are defined as potential developments and events that may result in a negative divergence from objectives and forecasts for the company and involve uncertainty regarding the occurrence of an event. Correspondingly, opportunities are events that may result in a positive divergence from expected targets.

G27 Process of risk reporting

Risk Officers in the divisions and central departments	Assessment of single risks
Central Functions	Review of aggregated risks
Corporate Compliance & Risk Management department	Review and analysis of group risks
Risk Committee	Analysis of group risks
Executive Board	Final assessment of group risks
Audit Committee	Evaluation of group risks
Supervisory Board	

The self-contained, regular, and IT-supported risk management process consists of various risk assessments, which are carried out using a combination of top-down and bottom-up elements. In order to ensure that risk identification and comparability are as complete as possible within the company, a risk register was developed to support management in the evaluation of risks. It comprises several specified categories, further divided up into subcategories, which are associated with predefined risk symptoms and provide the risk reporting units with a framework to assign potential risks and opportunities. This is to ensure that each risk reporting unit deals with the entire risk landscape and that, simultaneously, an aggregation of the results is guaranteed across the specified categories. While operational and financial targets are analyzed over a time frame of up to two years, strategic topics are considered for periods of up to four years. Under the current system, sustainability risks are not determined in a separate risk category. They are, however, in part covered by the existing risk categories. G29

G28 Calculation of risk scores



G29 Risk and opportunity categories

Operational Risks / Opportunities	Strategic Risks / Opportunities
Supply Chain Management / Safety and Environmental Protection / Production (incl. Quality Management) / Marketing & Sales / Patents & IP rights / Human Resources Management / IT / Compliance / Legal Affairs / Real Estate	Market Development / Product Development (incl. Research and Development) / Corporate Development (Portfolio and Structure) / Organizational Setup (Processes and Resources)
Financial Management Risks / Opportunities	
Accounting / Finance Management (Treasury) / Controlling / Taxes	

1st year · 2nd year · 3rd year · 4th year

Within the scope of the risk analysis, the risk reporting units determine the risks and opportunities, recorded by divisional risk managers, in order to be able to undertake a valid risk assessment in the next stage regarding the assessment methods (qualitative or quantitative) and the measures already taken or still required. The information is recorded using both the gross and net methods. Only the assessed residual risks (net risks) are used for aggregation and reporting, i.e., mitigating measures are already included in the assessment. The assessment of a risk is the product of the probability of occurrence and the quantitative amount of loss or the qualitative extent of damage. The opportunities are evaluated in the same way.

There is a scale of 1 to 5 for both assessment factors mentioned, probability of occurrence and amount of loss, with 1 being the smallest and 25 the greatest possible risk indicator. G28

Every six months, the results of the assessments are requested by central Compliance & Risk Management from the risk reporting units, and aggregated to the Group Risk and Opportunity Report. The findings are then validated by the central departments of the Corporate Center prior to discussion on the Risk Committee. The Executive Board undertakes a general evaluation and, as necessary, approves required further action. The Group Risk and Opportunity Report is then presented to and discussed by the Audit Committee of the Supervisory Board and the Supervisory Board itself.

In addition, any risks identified during the year which have a high probability of occurrence and significant potential for damage, are communicated without delay to the Chief Compliance & Risk Officer and the Executive Board. Following joint analysis with the technical departments, they decide on further measures to be taken and, if necessary, the required communication.

Risk prevention and ensuring compliance

Prevention is a key element of the risk management system, and an integral part of regular business operations and committee work. It essentially comprises risk monitoring as part of a range of assessments and special approval procedures. Risks and opportunities, as well as their impact on the company, are discussed during the monthly meetings of the Executive Board, the EMC meeting, and the quarterly business reviews. At the same time, potential risks to achieving the strategic goals can be considered directly in the strategy development process and suitable measures adopted.

Compliance with national and international compliance requirements is an integral part of risk prevention and of the processes of Jenoptik's risk management system. In order to improve employee awareness and achieve a company-wide uniform understanding of our compliance standards, regular training is provided on subjects relevant to compliance, such as anti-corruption or anti-trust law, as well as data protection issues. Online training on key compliance issues is obligatory for all employees. More information can be found in the Corporate Governance Statement from page 26 on. A help desk is available on the intranet to assist employees on any risk or compliance issues they may have. The guidelines implemented within the Group with regard to important company processes are regularly reexamined, expanded, and updated if necessary. They are published on the intranet. Together with the Jenoptik Code of Conduct, they are a further aspect of risk prevention.

In accordance with international standards, a supplier code of conduct requires Jenoptik's suppliers to comply with a number of different compliance requirements. Central business partner screening (third-party due diligence) is used to check whether a cooperation is viable from a compliance perspective.

Jenoptik therefore has a preventive system of regulations, processes, and controls that enable it to identify any possible deficits in the company and to minimize them using appropriate measures at an early stage.

Alongside the risk and compliance management systems, the Internal Control System (ICS) is a key element of corporate governance. It covers technical and organizational regulations and control steps to ensure compliance with guidelines and prevent losses, as well as ensuring clear divisions of responsibility and function, in adherence to the principle of double-checking. In particular, its intention is to ensure the security and efficiency of transaction processing as well as the reliability of financial reporting. In the past fiscal year, ICS self-assessments were again carried out at all group companies, to be completed by the respective management. Monitoring and evaluation of the completed questionnaires is carried out by Internal Audit. Reported deficits are analyzed and appropriate countermeasures are defined to ensure they are lastingly eliminated.

Internal Audit supports the Jenoptik Group in achieving its goals by using a systematic and comprehensive approach to assessing and improving the effectiveness of its risk management, control, and monitoring processes. It is responsible for the risk-oriented audit of all processes in the divisions, regions, group companies, operating sites/facilities, strategic business units or functions/specialist areas of the Group ("audit universe"), and follow-up of measures for any deficiencies identified. 14 audits were carried out in 2021. In order to ensure the greatest possible independence and objectivity, the function is a staff function of the Executive Board at JENOPTIK AG. In addition to ongoing reporting to the Executive Board, reports are also submitted directly to the Audit Committee every six months.

Key features of the Internal Control and Risk Management System (ICS) with regard to the accounting processes of the Group and JENOPTIK AG (§ 289 (4) and § 315 (4) of the German Commercial Code [HGB])

The accounting-related internal control system is part of the overall ICS of the Jenoptik Group. Its purpose, in part, is to ensure a due and proper process in preparing the Consolidated Financial Statements, guaranteeing compliance with statutory regulations, accounting rules, and internal guidelines for uniform accounting and valuation principles, which are binding for all companies included in the Consolidated Financial Statements. New regulations and changes to existing rules are analyzed and implemented promptly. All employees involved in the accounting process receive regular training. Regional financial delivery centers carry out some of the operational accounting processes. They also support the harmonization of processes, their efficiency and quality, and thus also the reliability of the internal control system.

Access restrictions in the respective IT systems protect the financial systems against abuse. Centralized control and regular backup of the IT systems reduce the risk of data loss.

In order to prepare the Consolidated Financial Statements, data from the companies is recorded directly by them in the consolidation tool. The transferred data from the statements and the financial statements of consolidated companies is verified by manual and technical system inspections. All consolidation processes required for the preparation of the Consolidated Financial Statements are documented. These processes, systems, and controls enable Jenoptik to ensure a group accounting process that complies with both the IFRS and statutory requirements. The group auditor audits JENOPTIK AG's Consolidated Financial Statements prepared in accordance with IFRS regulations, and the Annual Financial Statements in accordance with Section 317 of the German Commercial Code (HGB) and the EU Audit Regulation (537/2014), giving consideration to the generally accepted German audit principles defined by the Institute of Public Auditors in Germany (IDW).

The Corporate Governance Statement in accordance with §§ 289f, 315d of the German Commercial Code can be found from page 33 on of the Annual Report and on our website at www.jenoptik.com by going to Investors/Corporate Governance. In accordance with § 317 (2) (6) of the German Commercial Code, the information required under §§ 289f, 315d HGB is not considered by the auditor.

The Group's Risk and Opportunity Profile

The Group's risk profile for 2021 and subsequent years was determined with the aid of the risk and opportunity assessments from the segments. Part of the risk assessment of the segments is a review by the central functions of the Corporate Center, their identified risk assessments are then included in the segment reporting and in the final group assessment. Our risk and opportunity management makes possible a direct comparison of the individual risk profiles at the level of risk symptoms. The risk assessment at the level of the risk and opportunity categories in the individual subcategories is shown in more detail in the following chart. T60

Overall, the risks to which the Group is exposed remains at the lower end of the medium risk range. No significant changes on the prior year were identified.

At the time the risks and opportunities were assessed, the VINCORION segment was still fully integrated into the enterprise risk management process set out above, and pursuant to IDW PS 340 (new version) will remain so until closing, which is expected in 2022. However, following signing of the contract to sell VINCORION, this division is already classified as a discontinued operation pursuant to IFRS 5; accordingly, risks or opportunities for the units being sold are only set out in the following Risk Report, when they may have a material impact on the Jenoptik Group.

The expected disposal of VINCORION does not result in a different presentation of Jenoptik's overall risk, as the risks aggregated for the division in the subcategories fall into the same assessment categories as the aggregated values of the continuing divisions.

T60 Risk profile of the Jenoptik Group 2021

	Group risk assessment	
	Current (2021)	Prior year (2020)
Strategic risks		
Market development	Medium	Medium
Product development (incl. R+D)	Medium	Medium
Corporate development (portfolio and structure)	Medium	Medium
Organizational setup (processes and resources)	Medium	Medium
Operational risks		
Supply chain management	Medium high	Medium high
Safety and environmental protection	Low	Low
Production (incl. quality management)	Medium	Medium
Marketing and sales	Medium	Medium
Patents and IP rights	Low	Low
Human resources management	Medium	Medium
IT	Medium	Medium
Compliance	Medium	Medium
Legal affairs	Low	Low
Real estate	Low	Low
Financial management risks		
Accounting	Low	Low
Finance management	Low	Medium
Controlling	Low	Low
Taxes	Low	Low
Total risk	Medium	Medium

Once again, strategic risks and opportunities for the overall Group were on average assessed as the most important, compared to operational and financial management risks, in 2021. Our focus on photonic market segments represents both an opportunity and a risk to the Group.

The spread of Covid-19 infection (e.g., potential new variants) and the potential resulting action to contain the pandemic may continue to have an impact on Jenoptik's business activities. China's zero-Covid strategy is of particular note here, and may well impact on our direct business relationships, as well as on supply chains.

Impacts on our businesses still include extended project lead times, postponements, and supply chain issues. Restrictions on international travel and access to our customer's plants are also impacting on our ability to plan installations, technical acceptance procedures for systems, and our service business.

The internal processes and measures applied since 2020 to address Covid-19 remain in place and are continuously reviewed on the basis of changing requirements to minimize the risks to the health and safety of our employees and to safeguard the operating business.

The easing of coronavirus restrictions offers opportunities for our business activities, such as customer service and visits, trade show participation, and international travel.

Uncertainties arising from trade and geopolitical conflicts persist or are increasing again in some regions. For example, an increasing economic decoupling between the US and China due to rising trade barriers and technical regulations may impede global growth. The war in Ukraine and the associated sanctions may have an impact in particular on the supply of energy, and affect its price development as well as the short-term availability of raw materials and logistics services. Similarly, the interdiction of financial transactions may also have an impact on the procurement or distribution of non-sanctioned goods. This may have a negative impact on both production costs and productivity in parts of our value chains as well as a decisive influence on the overall economic development in Jenoptik's growth markets. At the time of preparing this report, the situation is still very dynamic and the effects of the war cannot be assessed conclusively. with price increases for raw materials and intermediate goods negatively affecting our cost structure. We are attempting to counter this through various measures in Purchasing, through further optimization of the internal cost structure and, if necessary, through price adjustments in close cooperation with our customers.

Jenoptik is dependent on the economic development of specific industries. On the one hand, we are particularly affected by the continuing weakness of the automotive markets, which is currently mainly due to the ongoing semiconductor shortage. At the same time, acute market changes resulting from the Covid-19 crisis are also impacting on our success as a business. For example, travel restrictions (e.g., zero-Covid strategy) continue to have a negative impact on our project business, but at the same time they are assisting the global trend toward digitization, which is driving demand for optical technologies.

Jenoptik is exposed to intense competition throughout its business. The company counters the risk of being squeezed out by competitors with, for example, innovative USPs, specific and flexible changes to its product range, or customization options for existing products and solutions. In addition, mergers and acquisitions in the markets we target may intensify the competitive environment, and potentially improved cost structures at competitor companies, and the resulting increasing pricing pressure, may have negative effects on group earnings. We counter this risk by continuously analyzing our portfolio, i.e., by determining whether and how specific acquisitions and disposals may usefully support our strategy to generate lasting profitable growth. M+A activities and the integration of acquisitions pose a fundamental risk to the Group. We proactively counter this risk with extensive due diligence and a structured integration process tailored to the acquired company.

Operational risks and opportunities were assessed with low to medium-high risk indicators for the overall Group.

The increasing number of complex international projects, particularly those of a technically challenging nature, place enormous operational demands on all parts of the business. Supplier management and production are predominantly responsible for assuring the quality of our products. The use of individual single-source suppliers and the continuing possibility of insolvencies, for example, may increase the risk of dependency on or the loss of individual suppliers. Inflation may also lead to increased price pressure on purchased parts by our suppliers in the coming months. Ongoing refinement of our purchasing and production organization aims to ensure that our customers continue to receive high-quality, tailored solutions when they need them.

Global IT systems and processes are of great significance to Jenoptik in all its divisions. The security and availability of these systems have top priority. Data is stored on redundant storage media and secured against data loss by means of a partially tiered archive and backup system. This aims to enable rapid data recovery in the event of a crisis situation. Due to increasing IT threats worldwide, for example in the form of social engineering such as phishing attacks, Jenoptik is actively taking both preventive and corrective measures to reduce the risk of cyber attacks. As examples, all IT security issues are coordinated by the Chief Information Security Officer, existing processes are continuously scrutinized and adjusted, technical measures are implemented, and employees who are responsible for these are provided with internal training. Jenoptik has also set up a Security Operations Center (SOC) to better ensure protection of its IT infrastructure. It integrates, monitors, and analyzes all security-related systems such as our corporate networks, servers, workstations, and internet services, alerts the affected units, and takes action to protect our data and applications. However, these measures have been implemented to protect our IT infrastructure, intellectual property, and portfolio can never result in complete risk mitigation.

Our employees make the most important contribution to the company's success. As an international technology company, we need dedicated and highly qualified colleagues – now and in the future. Due to the difficulties in attracting qualified employees, particularly in Germany, Jenoptik is also exposed to the risk of not being able to fill vacant positions as they arise. We counter this risk with a large range of targeted measures, including the establishment of a succession planning process for management positions, leadership and professional career programs, an employer branding campaign, and both attractive and personalized incentive and loyalty schemes.

In view of Jenoptik's international business operations, one general risk is non-compliance with legal, ethical, and contractual requirements. Successfully completed M+A activities, in particular, require careful integration and coordination processes to ensure full integration into our corporate governance. The continuous improvement of our compliance structures and processes assists all departments and business units in this regard. As a company with customers and business partners in numerous countries, clients in the public sector and involvement in the US defense market, Jenoptik must grapple with many, partly increasing, compliance requirements in a wide range of different markets. Although the necessary organizational structures and measures to minimize potential compliance violations have been implemented with a group-wide export control and data protection organization, the central Compliance and Risk Management department, and corresponding processes, such violations cannot be entirely ruled out. Strict adherence to the compliance program and the continuous development of the compliance management system aim to close up any process gaps and ensure that processes comply with laws and regulations.

Financial management risks were assessed on average as low throughout the Group in 2021. The issues cited below also include the segment-specific risks. One key task of the central Treasury department is to safeguard and coordinate the financing of all group companies over the long term. For this purpose, Jenoptik has access to a range of financing instruments.

Currency-related risks arising from the Group's international activities are identified together with the group companies and reduced by adopting suitable measures such as the conclusion of currency forward transactions.

The risk of changing interest rates is in part reduced by the conclusion of fixed interest loans. Interest derivatives are also used where required.

Group-wide liquidity planning aims to identify liquidity risks at an early stage and systematically minimize them. Regular Treasury reports and quarterly planning updates have been established for liquidity control and monitoring.

With regard to the use of financial instruments, we refer to the Notes, section 8.2 from page 232 on

In the Financial Controlling and Accounting departments, opportunities predominantly arise from the continuing expansion and optimization of the standardized ERP system, and from the centralization of accounting activities for continuous quality improvement. Thanks to the establishment of new financial controlling instruments based on modern IT solutions, we counter the risk of lacking business-critical information in internal reporting.

Risk and Opportunity Profiles of the Segments

The risk and opportunity profile of the Jenoptik Group was derived from the various risk profiles of the photonics divisions and VINCORION. Financial management risks are consolidated and shown in the Group risk and opportunity profile. T61

Light & Optics

Strategic risks and opportunities primarily arise on the basis of demand in the semiconductor equipment industry. They may have a significant positive or negative effect on results. Beyond this, the focus on larger customers is generally associated with the risk that poor business performance or the loss of customers may impact severely on revenue and earnings. On the other hand, the loyalty of such customers enables profitable revenue growth due to economies of scale. Although there is always an inherent threat posed by the growing number of mainly Asian competitors and the trend among suppliers and customers toward forward and / or backward integration, it may still be achieved through the continuous expansion of existing competitive advantages, in-house development activities, and internationalization. In addition, the Light & Optics division addresses this risk by continuously reviewing vertical integration with the aim of supplying more system and service solutions to its customers.

The growing importance of digitization, further accelerated by the Covid-19 crisis, is boosting demand for applications and PC devices, both from private households and companies, and presents Light & Optics with major opportunities both in the present situation and in coming years. The relentless progress being made in medical technology and demographic developments, especially in our core markets of Asia and the Americas, are also boosting demand for product solutions. Ongoing development of the product portfolio and Jenoptik's stronger market orientation mean that we are better able to meet our customers' requirements. Increasing financing problems in healthcare systems, however, are resulting in growing price pressure among suppliers. The trend toward increasing complexity in the market environment makes clear and reliable forecasts more difficult, especially in innovative areas of application.

With the acquisition of BG Medical and the SwissOptic Group, Jenoptik is strategically strengthening its position in the medical technology sector and expanding its product portfolio in the semiconductor industry. In 2020, the acquisition of TRIOPTICS and its gradual integration into the Light & Optics division represented the foundation of Jenoptik's ongoing strategic focus on photonics. TRIOPTICS' innovative test solutions ideally complement the Jenoptik Group's expertise and portfolio, thus sharpening our focus on high-growth cutting edge industries. With its strong presence in Asian markets, TRIOPTICS also provides Light & Optics with additional market development opportunities in this region. Despite this, integrating two acquisitions of this size and international importance into our existing structure also poses challenges. We have to strike a fine balance between the requirements of the market and internal reporting, processes and specifications.

The exacting technology and quality requirements placed on Jenoptik and our suppliers with regard to source materials and production technology result in particular operational risks and opportunities in supplier management and production processes. For many components manufactured in the division, there is only a very limited number of qualified suppliers that are able to meet the necessary specifications in a timely manner. When such a supplier is lost or the customer changes specifications, this can result in corresponding problems in the development or production process. To ensure a stable base of suitable suppliers in the medium and long term, the division's partners are subject to ongoing qualification with the help of Strategic Purchasing. In addition, special supplier development teams support our suppliers where there is a need to evolve their organizational arrangements or business processes. Strained supply chains may also pose risks, especially at a time of increased demand for our products. For specific materials, these risks may be seen in fixed allocations by suppliers or sharp price increases. Efforts are being made to overcome these challenges by setting up dedicated task forces.

Specific customer requirements, especially regarding the quality and growing number of complex high-end products, and the dynamic growth of some business areas, lead to increased demands on production technologies, capacities, and floor area concepts, which are met through targeted expansion or replacement investment. Delays in necessary investments may increase the risk of quality and performance requirements not being met to the agreed schedule, or at all, resulting in either delivery delays or non-acceptance by the customer.

Through the expansion of manufacturing activities in Dresden and the purchased capacities at the SwissOptic Group, Jenoptik is taking action to meet this dynamic growth. At the Jena site, too, existing space is being optimized during ongoing operations in order to better meet growing demand in the future.

Light & Production

The strategic risks and opportunities in the Light & Production division are strongly influenced by the development of the automotive industry and its investments. In addition to current challenges facing the industry, based on technological shifts and sales trends, which may pose risks to our success as a supplier to this industry, the Covid-19 pandemic presents additional business risks. These still comprise extended project lead

T61 Risk profiles of the segments 2021

	Risk assessment					
	Light & Optics division		Light & Production division		Light & Safety division	
	2021	2020	2021	2020	2021	2020
Strategic risks						
Market development	Low	Medium	Medium high	High	Medium	Medium
Product development (incl. R+D)	Medium	Medium	Medium	Medium	Medium high	Medium high
Corporate development (portfolio and structure)	Medium	Medium	Medium	Medium	Medium	Medium
Organizational setup (processes and resources)	Medium	Medium	Medium high	Medium	Medium	Low
Operational risks						
Supply chain management	Medium high	Medium high	Medium high	Medium high	Medium high	Medium high
Safety and environmental protection	Low	Low	Low	Low	Medium	Medium
Production (incl. quality management)	Medium high	Medium	Medium	Low	Medium	Medium
Marketing and sales	Medium	Medium	Medium	Medium	Medium	Medium
Patents and IP rights	Low	Low	Low	Low	Medium	Medium
Human resources management	Medium high	Medium	Medium	Medium	Medium	Low
IT	Medium high	Medium	Medium	Medium	Medium	Medium
Compliance	Medium	Medium	Low	Low	Medium	Medium
Legal affairs	Low	Low	Low	Low	Low	Medium
Real estate	Medium high	Medium	Very low	Very low	Low	Low
Financial management risks						
Accounting	Low	Low	Low	Low	Low	Low
Finance management	Low	Medium	Medium	Medium	Low	Low
Controlling	Medium	Low	Low	Low	Low	Low
Taxes	Medium	Low	Low	Medium	Medium	Medium
Total risk	Medium	Medium	Medium	Medium	Medium	Medium

times, postponements, and significant supply chain issues, particularly in the automotive sector. A focus on larger customers in the field of process automation is generally associated with the risk that poor business performance or the loss of customers may impact severely on revenue and earnings. Moving the division's strategy away from major, integrated projects and toward smaller one-off projects may result in a need to adjust the working capital in the short term. By addressing other branches of industry with our product portfolio, we aim to reduce our dependence on the automotive industry in the future. Similarly, the further roll-out of operational improvement programs and structural adjustments to the product portfolio and workforce aim to reduce the risks arising from the challenging business situation.

In terms of operational risks and opportunities, the increasing internationalization of projects and parts of the value chain is reflected in increased demands on supplier management, manufacturing, marketing, sales, and HR management. The systematic expansion of efficient service and sales structures is of crucial importance to achieving growth targets, particularly abroad. Here, too, however, actions to contain the Covid-19 crisis are currently impacting on our business. We have had to postpone a number of projects, while restrictions on international travel and access to car manufacturers' plants are impacting on our ability to plan installations, technical acceptance procedures for systems, and our service business.

Financial pressure on stakeholders throughout the automotive supply chain is increasing, and may result in increased risks to the division due to cash flow optimization on the part of customers as well as the loss of suppliers. To counter this, we have initiated a more efficient receivables management system and the further qualification of suitable suppliers.

By building up a broad sales partner organization, we have consistently increased our access to new customers and markets in Asia over recent years. This network and the establishment of digital marketing and sales channels aim to make up for the loss of established forums for communicating with customers, such as trade shows and conferences, in the wake of the Covid-19 pandemic.

Light & Safety

Uncertain economic and political developments around the world represent the main strategic risks and opportunities currently affecting the Light & Safety division. As a supplier to international public-sector customers in particular, Jenoptik is exposed to both the political and economic development of the respective countries. Particularly in the event of unrest or regime change, this may result in projects being delayed or even stopped entirely. There is currently very little evidence of the Covid-19 crisis affecting our project business with public-sector customers, but the risk cannot be ruled out entirely in the future given the potential of cuts in public investment in traffic monitoring projects.

Consolidation of the traffic safety market through Verra Mobility's acquisition of Redflex in 2021 poses sales market risks, especially in the United States, but also in other international markets. At present, the division is working to adjust its sales organization to better meet these challenges in 2022.

At the same time, the growing demand for safety technologies, intelligent traffic flow solutions ("smart cities"), the levying of congestion charges for the use of inner-city traffic infrastructure, and compliance with emission values for air pollutants, especially in metropolitan areas, present good opportunities for the division. We want to improve our strategic competitive position by continuously optimizing our product range and develop a standardized platform to cover the above-mentioned future issues.

The operational risks and opportunities are dominated by the difficult situation in parts of the supply chain. The products made by the Light & Safety division require technical approval, particularly in European countries, the duration of which we are unable to influence. It is therefore not always an easy process to substitute purchased materials or modules or to apply for an updated operating license. In many cases, therefore, only a very limited number of companies are qualified as suppliers. If one of these suppliers is lost or products are discontinued, problems may arise due to the need for new approvals, modified production processes, delivery bottlenecks, and negative impacts on long-term sales. The division's partners are subject to qualification with the help of Strategic Purchasing to ensure a stable base of suitable suppliers in the medium and long term.

In addition, the Light & Safety division is compelled to meet strict compliance requirements, whether imposed by customers or legislation. They entail the risk of delays in our business processes or of additional costs that could adversely affect the business's earnings. In the field of traffic safety technology, the requirements of the General Data Protection Regulation are of particular significance. They can now be met thanks to the further expansion of a standardized group-wide data protection organization.

VINCORION

Due to the discontinuation of this division, no general risks and opportunities for the VINCORION business are listed here. In addition, apart from the known challenges arising from Germany's restrictive export policy and the pandemic-related effects on the civil aviation industry, no significant risks affecting the Jenoptik Group have been identified for this business. Future claims based on liability exemptions granted are not currently expected, but cannot be ruled out.

For the Group, the sale of the division will result in opportunities for the share price development, as the share of revenue of security and defense technology will fall below the five percent mark. As a result, the Jenoptik share will once again be available as an investment opportunity to institutional investors who have to comply with high ESG standards, which may have positive effects on the share price.

General statement by the executive board on the group's risk and opportunity situation

Significant and controllable risks and opportunities were identified and assessed on the basis of our risk and opportunity management system. Overall, in terms of strategic, operational, and financial management risks, the Jenoptik Group's exposure to risk is slightly increased on the prior year, and currently remains in the medium risk range. The risks addressed are limited – as far as possible – by the initiation and follow-up of appropriate measures.

In addition to the specific risks set out in the Group Management Report, however, unforeseeable events may occur at any time that have a significant impact on market developments, our sales and production process, and the reputation of the company.

For example, as described in the section on the Group's strategic risks, the war in Ukraine, which broke out during the preparation of this annual report, with the sanctions and counter-reactions that have been introduced, may have an impact on the supply and price development of energy, raw materials, and logistics, as well as construction services. Downstream, this could result in inflation rates remaining high or rising in the coming years, which could also impact our personnel cost structure in the context of upcoming collective bargaining rounds.

Overall, it can be said that a sharpened focus on the Group's strategic market segments (with the help of "Strategy 2025") may gradually help to reduce the existing strategic risks. The growing importance of the photonics industry and the strong related demand for applications and devices, both from private households and companies, continues to offer Jenoptik with the potential for further growth.

Overall, there is an acceptable relationship between risks and opportunities in the Jenoptik Group. No risks were identified that may jeopardize the continued existence of the Group.

Forecast Report

Framework Conditions: Future Development of the Economy as a Whole and the Jenoptik Sectors

At the beginning of 2022, the global economy is in a weaker position than previously forecast by the International Monetary Fund (IMF) in October. Before the outbreak of war in Ukraine, the IMF saw economic recovery as significantly impeded by supply chain issues, high levels of inflation, and the spread of coronavirus/Omicron. In addition, the two largest economic areas have not grown as strongly as was assumed in October. In the US, the administration's investment package was not approved by the US Congress, while the Chinese economy has been weakened by problems in the real estate sector, coronavirus regulations, and low levels of consumer spending. The IMF therefore cut back its forecast for the global economy by 0.5 percentage points and is now expecting global growth in 2022 to increase 4.4 percent on the prior year.

At the beginning of March 2022, the IMF, together with the World Bank, reported that the war in Ukraine would cause commodity prices to rise further, fueling already high inflation. Distortions in the financial markets would worsen if the conflict continued. In addition, the sanctions against Russia would have an impact on the economy.

T62 Gross domestic product forecast (in percent)

	2022*	2023*
World	4.4	3.8
US	4.0	2.6
Eurozone	3.9	2.5
Germany	3.8	2.5
China	4.8	5.2
India	9.0	7.1
Emerging countries	4.8	4.7

Source: International Monetary Fund, World Economic Outlook (Update), January 2022
* Forecast

Experts particularly see China's inflexible coronavirus policy as a risk to global trade and global supply chains. According to the IMF, China's economy had lost momentum by the end of 2021, and this slowdown will continue into 2022. Reasons, according to the IMF, include a restrictive fiscal policy, as the focus has shifted from supporting the economy to reducing debt, isolation related to the zero-Covid strategy, increased raw material costs and energy shortages, and a crisis in the real estate market, which has recently cooled sharply, among other things driven by uncertainties surrounding a highly indebted real estate group.

Following a weak fourth quarter 2021, Germany began the new year with subdued momentum. Experts expect the Omicron wave to burden the economy in the first quarter 2022, making a technical recession possible – if economic output falls in two successive quarters. From the second quarter 2022 on, economists are anticipating a noticeable recovery if the pandemic subsides and consumer spending picks up. For 2022, the German government is forecasting economic growth of 3.6 percent on the prior year, and an increase of 2.3 percent in 2023. According to experts, indicators such as the recent rise in industry order intakes suggest dynamic economic development – if the gradual resolution of supply bottlenecks means that the high order backlog can be worked off.

Thanks to digitization, the photonics industry remains part of a growing field, according to the Spectaris industry association. The use of lighting technologies is making an essential contribution to global market growth and has become indispensable for many innovations, e.g., as a basic technology for autonomous driving, for industry 4.0 and big data applications, for the so-called smart laboratory in analytical and biotechnology, and through the use of quantum technology, which may provide photonics with its next source of growth momentum. According to Spectaris, efforts to better protect the climate and promote sustainability are expected to make a positive contribution. Light-based technologies deployed in the service of "green photonics" are key here. The use of photonic solutions will save 3 billion tons of CO_2 emissions by 2030, according to Spectaris.

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Industry experts expects a compound annual growth rate (CAGR) for the global photonics industry of at least 6 percent in the coming years: Market researcher Tematys (together with Photonics21) is forecasting a CAGR of 6 percent, to 900 billion euros in 2025, MarketsAndMarkets 7.1 percent to 837.8 billion US dollars by 2025, and Triton 8.1 percent to 921.7 billion US dollars by 2028. Growth will primarily be driven by the increasing use of photonics products in the healthcare sector, in industry, and in IT and communications, where photonics can facilitate data generation, transmission, storage, and usage. Due to immense demand for cloud computing applications, the optical transceiver market alone is expected to grow at an average annual rate of 15.2 percent, from 7.0 billion US dollars in 2021 to 14.3 billion US dollars by 2026, according to MarketsAndMarkets.

Potential risks may arise from disruptions to supply chains caused by the pandemic, for example with delays in the roll-out of 5G in some countries or price increases for fiber optics because production in countries such as China has been or can be affected.

In the laser material processing market, the market researchers at ResearchAndMarkets are expecting stable revenue growth of an annual average of 7.8 percent to 2026. From 11.1 billion US dollars in the base year 2019, the market will grow to a value of 18.7 billion US dollars. In the laser-based micro material processing market segment, an important segment for Jenoptik, revenue with short-pulse laser sources is expected to grow by an average of 16.6 percent each year from 2021 through 2026.

According to Spectaris, the drivers of growth in the medical technology industry remain intact, and include opportunities arising from demographic changes, especially in industrial nations, and high levels of healthcare investment in many emerging economies. The pandemic has further intensified digitization within the industry; as a consequence, manufacturers' business models are moving from traditional instrument engineering via solution providers in the current decade toward suppliers of digital and holistic healthcare solutions in the next decade. Based on conservative assessments by Frost & Sullivan, The global medical technology market will grow by an average of over 6 percent a year to a value of 582 billion US dollars in 2025.

The growth prospects for the machine vision industry remain good for the next few year, according to VDMA Machine Vision, which sees revenue in the European industry growing 7 percent in 2022. The trend toward "seeing machines" remains unbroken; machine vision is a key component in the automation industry and the combination of embedded vision and deep learning will generate new growth momentum.

The boom in the semiconductor industry shows no signs of ending: Consulting firm McKinsey is expecting annual industry revenue growth of 6 to 8 percent through 2030. Market researcher IC Insight is projecting a revenue increase of 11 percent, to a record high of 680.6 billion euros in the current year, while the Semiconductor Industry Association (SIA) expects revenue 8.8 percent up on the prior year. The chip industry is seeing huge expansion, especially in China. The SIA predicts that if China maintains the strong momentum seen in recent years, with average growth of 30 percent in the next three years, and growth rates remain stable in other regions, China will be the third largest chip market, after the US and South Korea, by 2024. Following a record year in 2021, the semiconductor equipment market will continue to grow in the current year, according to the Semiconductor Equipment and Materials International (SEMI) industry association. Revenue is expected to grow from 103 billion US dollars in 2021 to 114 billion US dollars in 2022. The wafer fab equipment segment is expected to see double-digit growth to a figure of around 99 billion US dollars, after which a slight 0.5-percent decline is anticipated in 2023. The test equipment and back-end assembly and packaging segment will also contribute to grow in 2022, according to SEMI, in part driven by 5G applications and high-performance computing.

In view of strong chip demand in many industries, but also potential trade conflicts, countries and regions such as the US or the EU plan to increase their own chip capacities with support programs and thus become less dependent on supplies from abroad. Under the auspices of the European Chips Act, the EU Commission plans to build new chip factories in Europe in the medium to long term, doubling Europe's share of global chip production to 20 percent by 2030. The EU Commission plans to mobilize around 43 billion euros for this purpose, in part from its own budget, in part from member state budgets. The US also intends to invest 52 billion US dollars in establishing its own chip production industry under the "CHIPS for America Act".

According to the German Electrical and Electronic Manufacturers' Association (ZVEI), the German electrical and digital industry will see production growth of 4 percent in 2022. Capacity utilization in the industry was very high, 88.5 percent, at the beginning of the first quarter 2022; the order range of 4.8 production months is a historical high. On the other hand, many industry companies are having to contend with shortages of materials and skilled workers.

The German Mechanical Engineering Industry Association (VDMA) is expecting production in the German mechanical and plant engineering industry to again increase by 7 percent in 2022. The industry started the current year with a high order backlog, which provides certainty for the full year, although supply bottlenecks mean these orders cannot be processed quickly. Electromobility is one driver of industry growth, reflected in rising demand for production technology, for example for battery cells.

In the robotics industry, the VDMA Robotics and Automation sector group expects industry revenue to reach pre-crisis levels again in 2022, with industry revenue of 14.7 billion euros in Germany. This is dependent on disruptions to supply chains not significantly worsening, as reported by the VDMA in late 2021. In China, under a new Five-Year Plan for the robotics industry, innovation will be given targeted government support to make the country a leading location for robot technology. To date, the rapid automation of Chinese industry has primarily rested on supplies from foreign manufacturers, according to the International Federation of Robotics (IFR).

Slow improvement is expected in the automotive industry: The German Association of the Automotive Industry (VDA) believes the German market will grow around 7 percent to a figure of 2.8 million new registrations in 2022. For the global market, the VDA is anticipating growth of 4 percent, to around 75 million vehicles, which would be similar to prior-year growth, but 13 percent down on the record figure of 84 million units in 2017. A new "Future Fund" with a volume of 1 billion euros is being set up for the German car industry to promote the shift to electromobility and more digitization. The first automakers want to phase out internal combustion engines by 2035. The transformation could engender new dependencies in the raw materials market and lead to sharp price rises for important metals. The semiconductor shortage that has plagued the industry for months could last well into the current year or not end in a balance of supply and demand until 2023, according to chip manufacturer estimates.

The global traffic safety market is expected to grow by an annual average 12.4 percent, to 6.6 billion US dollars, from 2021 through 2028, according to the US market research company Grand View Research in its May 2021 market report. The further development of smart systems and initiatives for greater road safety, including "Vision Zero," in which any road traffic fatalities are considered unacceptable, play a key role here. Within the speed monitoring segment, automatic license plate recognition (ALPR) accounts for a significant portion of industry revenue, and demand here is forecast to remain solid through 2028. Also becoming more important are services, or the ability to provide end-to-end monitoring and maintenance services. The vehicle-to-everything (V2X) market also pursues objectives such as greater road safety, autonomous driving, energy saving, and the optimization of traffic flows. Here, market researchers such as Astute Analytica expect a CAGR of 33.8 percent from 2022 through 2027 and an increase in market volume from 3.3 billion US dollars in 2021 to almost 18.9 billion US dollars by 2027. V2X is a technology for real-time communication between vehicles and their surrounding environment.

In June 2021, the European Parliament's Transport Committee adopted a document confirming the EU Commission's strategy for greater traffic safety: Under its plans, road traffic injuries and fatalities are to be reduced by 50 percent by 2030, key performance indicators (KPIs) for road safety will be defined by 2023, and speed limits will be recommended for the different EU states. This will help to reduce traffic noise, accidents, and CO_2 emissions. The World Health Organization (WHO) is also calling for a speed limit in urban areas of 30 km/h, or 20 mph in the Anglo-American system. In the summer of 2021, the German government initiated an amendment to the law on automatic license plate recognition, which would extend the recognition already possible for manhunts to cover other investigative purposes. Belgium wants to achieve the goal of zero road traffic fatalities by 2050 with a national "Vision Zero" plan. In addition, automatic detection of phone use at the wheel and the installation of cameras for section control will be made possible. According to an EU regulation, all new vehicle types must be equipped with an Intelligent Speed Assistant (ISA) from July 6, 2022 on. This assistance system is to become a supporting speed brake in the vehicle by means of sensor fusion between traffic sign recognition, cruise control, and navigation system. The ISA will be mandatory for all new cars from July 2024 on. In the USA, the Department of Transportation wants to improve traffic statistics and safety with a new "Safe Systems" strategy. Over the next two years, it plans to provide advice and 5 billion US dollars in funding to enable US states to introduce speed limits or launch pilot programs to increase the use of speed cameras.

Expected Development of the Business Situation

Planning assumptions for the Group and the divisions

The forecast for business development in 2022 was based on the group planning.

The group planning was made in the fall of 2021 and thus before the Ukraine war and the associated sanctions. Therefore, these events and any potential risks arising from them have not been taken into account.

Since the first quarter of 2022, Jenoptik operates in the following reportable segments: Advanced Photonic Solutions, Smart Mobility Solutions, and Non-Photonic Portfolio Companies.

As part of its new organizational set-up, the Group is consolidating its core photonics business in two new division, Advanced Photonic Solutions and Smart Mobility Solutions. The former Light & Optics and Light & Production divisions will be merged into the new Advanced Photonic Solutions division, while non-photonic activities, particularly for the automotive market, will be separated. In future, these business activities will operate as independent brands within the Jenoptik Group's Non-Photonic Portfolio Companies. The former Light & Safety division will become the Smart Mobility Solutions division.

The starting point are the separate plans from the divisions and operational business units, which are harmonized and integrated in the group planning. Potential acquisitions, divestitures (excluding VINCORION), and exchange rate fluctuations are not included in the planning process.

The system of key performance indicators covers the revenue, EBITDA margin, order intake, cash conversion rate, and capital expenditure indicators. Other indicators will also be regularly compiled in the future and are used by top management for informational purposes.

See the "Control System" chapter for more information on the top control parameters

With our strategic Agenda 2025, "More Value," we are targeting lasting profitable growth in the core photonic markets of semiconductor & electronics, life science & medical technology, and smart mobility. We continue to push on with our plans to become a pure, globally leading photonics group.

See the "Business Model and Markets" and the "Targets and Strategy" chapters for more information on the strategy and the division structure

Overall, the Jenoptik Group anticipates consistently good business performance in the Advanced Photonic Solutions division in 2022. We will help to enable this by stepping up our activities as an active global supplier of solutions and products based on photonic technologies, by focusing on key sales markets, by growing our global reach, and with innovative products and a larger range of integrated system solutions. Jenoptik Medical (formerly BG Medical) and the SwissOptic Group, consolidated for the full year for the first time, will also make a significant contribution to growth. Market observers and key customers expect continued high demand in the semiconductor equipment market in the current year. In this regard, the division will benefit from its range of optical and micro-optical system solutions for semiconductor production. In the Biophotonics area (medical technology and life science), existing cooperation arrangements with key international customers are to be further expanded and new ones won in the current fiscal year.
The above-mentioned acquisition will enable Jenoptik to roughly double the size of its medical technology business in this attractive market. The division expects stable business growth in the Industrial Solutions area, and appreciable growth is also anticipated in the Optical Test & Measurement area. Good performance in the Advanced Photonic Solutions division will be supported by both the range of optical solutions for information and communication technologies, and by applications in the field of virtual and augmented reality.

In the current fiscal year, the Advanced Photonic Solutions division will also continue to invest in its operational performance and sales to promote future growth and continue the process of internationalization.

For the fiscal year 2022, the Executive Board expects stable to slightly positive development in the Smart Mobility Solutions division. This is to be supported by new products, investment in the expansion of the customer portfolio, and a promising project pipeline. In addition, local project management and service structures will be strengthened to further improve direct customer support.

Optimizations that have been made in sales and the partner network are showing positive results, also in view of the global pandemic. Supply chains and security procedures continue to be closely monitored. The share of recurring revenue contributions in the division is to be increased by optimizing the product pipeline, also in form of new business models such as software as a service, and a broader range of products in the value chain. On a regional level, Jenoptik is primarily expecting growth momentum benefiting the Smart Mobility Solutions division to come from Europe and the Arab and Pacific region.

See the Framework Conditions chapter for more information on the future development of the Jenoptik sectors

Business development in the Non-Photonic Portfolio Companies was still impacted in 2021 by the effects of the Covid-19 pandemic, but also by structural changes in the automotive industry. For 2022, we expect to see a positive development in the segment.

We expect growth, particularly in our Automation & Integration business in the current fiscal year. In our Metrology business, we expect the effects of the implemented restructuring measures to have a positive impact as planned in 2022.

2022 earnings position forecast

Based on the good order intake in the fourth quarter 2021 and the full year 2021, the high order backlog, and ongoing promising developments in the core photonics businesses, especially in the semiconductor sector, the Executive Board is confident of further profitable growth in the fiscal year 2022.

The forecast provided is for continuing operations.

In addition to the organic growth in the divisions, Jenoptik Medical and the SwissOptic Group, consolidated for the full year for the first time, will also make a contribution to positive business development. At the present time, uncertainties exist with regard to the development of the Covid-19 pandemic and associated supply bottlenecks, although we are confident of our ability to manage them. However, our scheduled growth also presupposes that political and economic conditions do not worsen. In particular, these include economic trends, regulations at European level, export restrictions, and further policy developments in our sales markets.

Major portfolio changes were not considered in the forecast.

Jenoptik expects revenue growth of at least 20 percent for its continuing operations, including Jenoptik Medical and the SwissOptic Group, in 2022 (revenue 2021: 750.7 million euros).

At present, the Executive Board is expecting EBITDA (earnings before interest, taxes and depreciation, incl. impairment losses and reversals) to see significant growth in the current fiscal year compared with the prior year's EBITDA excluding one-off effects (2021: 125.2 million euros (excluding one-off effects)/ 155.7 million euros (including one-off effects)). The EBITDA margin is due to be around 18 percent (2021: 16.7 percent (excluding one-off effects) / 20.7 percent (including one-off effects)). We will endeavor to clarify the forecast during the course of the year.

Order intake is influenced by major orders, especially in the Smart Mobility Solutions division, and increasingly also in the Non-Photonic Portfolio Companies. In the past fiscal year, the continuing operations received new orders worth 936.7 million euros and had thus built up a good order base at year-end 2021, particularly following a strong fourth quarter. Due to a very good order intake in 2021, which included pull-forward effects, the Executive Board assumes that the order intake in the 2022 fiscal year will not reach this very high level again, instead remaining slightly below the figure in 2021.

Also worthy of note is that the continuing operations had frame contracts worth 135.1 million euros at the end of 2021, which are not included in the order intake or backlog. 85.9 percent of the order backlog as of December 31, 2021 is expected to be converted to revenue in 2022.

In 2022, the Advanced Photonic Solutions division expects revenue, including the contributions from Jenoptik Medical and the SwissOptic Group, to grow in the mid-double-digit percentage range. EBITDA is expected to increase in line with revenue on a comparable prior-year basis, i.e., excluding one-off effects in connection with the acquisitions made in 2020.

The Smart Mobility Solutions division also expects growth in 2022, with a revenue increase in the mid-single-digit percentage range. EBITDA is expected to be slightly up on the prior year.

The Non-Photonic Portfolio Companies are expecting revenue to grow in the low double-digit percentage range. The EBITDA is expected to show a stronger rate of growth than revenue.

Group asset and financial position forecast

Jenoptik expects that its continuing operations' capital expenditure in the fiscal year 2022 will be up on the prior year's figure (2021: 49.9 million euros). Capital expenditure on property, plant, and equipment will focus on the growth areas within the divisions or take place within the scope of new customer projects. It aims to expand capacities, thereby ensuring future growth, e.g., through construction of the new cleanroom facility in Dresden.

We expect the cash conversion rate (ratio of free cash flow to EBITDA) to grow to 45 to 55 percent in 2022 (31/12/2021: 27.7 percent).

Notwithstanding the current extreme geopolitical uncertainties, and in addition to financing the continued growth of the company, the future aim of the Executive Board remains to ensure a dividend policy in line with corporate success. In the view of the Executive Board, a stable provision of equity for sustainable organic growth to increase the company value as well as the exploitation of further opportunities for acquisitions are also of crucial importance to the interests of the shareholders.

See the Report on Post-Balance Sheet Events for more information on the dividend

Important note. The actual results may differ significantly from the forecasts of anticipated development made above and summarized below. This may arise, in particular, if one of the uncertainties mentioned in this report were to materialize or worsen, or if the assumptions upon which the statements are based prove to be inaccurate in relation to the economic development, especially in association with the spread of the coronavirus, risks arising from the markets as well as geopolitical risks, in particular in connection with the Ukraine war and the associated sanctions.

T63 Summary of targets for group (continuing operations) and divisions

	Actual 2021	Forecast for 2022 (without major portfolio changes)
Revenue	750.7	Growth of at least 20 percent
Advanced Photonic Solutions	525.6 [2]	Growth in the mid-double-digit percentage range
Smart Mobility Solutions	110.1 [2]	Growth in the mid-single-digit percentage range
Non-Photonic Portfolio Companies	111.3 [2]	Growth in the lower double-digit percentage range
EBITDA/EBITDA margin	155.7/20.7%	
EBITDA/EBITDA margin (excluding one-off effects from the acquisitions of TRIOPTICS and INTEROB)	125.2/16.7%	Marked growth/approx. 18 percent
Advanced Photonic Solutions	117.9 [2, 3]	Growth in line with revenue
Smart Mobility Solutions	19.2 [2]	Slightly above prior year
Non-Photonic Portfolio Companies	1.5 [2]	Growth stronger than revenue
Order intake	936.7	Slightly below prior year
Cash conversion rate	27.7%	Between 45 and 55 percent
Capital expenditure [1]	49.9	Markedly above prior year

[1] Excluding capital expenditure on financial assets
[2] Segment data is simulated
[3] Without one-off effects in connection with the acquisitions made in 2020

General Statement by the Executive Board on Future Development

In the current fiscal year 2022, the Jenoptik Group will begin rolling out its strategic Agenda 2025, concentrating on core photonics markets. In terms of economic development, our key focus remains on profitable growth. We believe that revenue growth, resulting economies of scale, and more efficient and faster processes result in higher, sustainable earnings. It is the assessment of the Executive Board that what is still a good asset position and a viable financing structure give Jenoptik sufficient room for maneuver to finance both further organic and inorganic growth.

Achieving our targets is dependent on the development of the economic and political environment, especially in connection with the Ukraine war and associated sanctions.

On the basis of encouraging order intake growth in the fourth quarter of 2021, the current order backlog, and ongoing promising developments in the core photonics business, the Executive Board remains positive for the fiscal year 2022 and expects revenue growth of at least 20 percent. In addition to the organic growth in the divisions, Jenoptik Medical and the SwissOptic Group, consolidated for the full year for the first time, will also make a significant contribution to growth. The EBITDA margin of the Group (continuing operations) is due to come in at around 18 percent.

In 2022, we will again invest a significant portion of our funds in the expansion of the international sales network and the development of innovative products. As part of our active portfolio management, potential acquisitions are closely scrutinized; divestitures have not been ruled out.

Based on the information available at the time this report was created, the Executive Board expects the Jenoptik Group to see positive business development in 2022.

Jena, March 16, 2022

JENOPTIK AG
The Executive Board