Combined Management Report

» In short «

The adjusted EBITDA margin was 17.0%.
Excluding the PPA impacts, the EBITDA margin increased to

17.6 %

Jenoptik has thus again improved its profitability.

The Remuneration Report, the Information and Notes relating to Takeover Law as well as the Corporate Governance Statement (see Corporate Govermance 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, is responsible for 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 & 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.

For more information on the acquisitions, see the "Business Model" chapter and the Segment Report from page 99 on

The divisions are responsible for Jenoptik's operating business which is focused mainly on the growth market of photonics. According to a study conducted by ReportLinkers this market is expected to see annual average growth of 7.0 percent in the years 2020 through 2027. Since the beginning of 2019, the photonics business has been organized within three photonics divisions, Light & Optics (OEM business), Light & Production (industrial customer business), and Light & Safety (business with public-sector customers). 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. Activities based on mechatronic technologies are managed under the VINCORION brand. With this organizational structure, which is based on a common understanding of markets and customers using the same business models, we have further improved our market and customer orientation.

For more information on the development of the photonics market, see the "Macro-economic and Sectoral Developments" chapter from page 119 on

The three photonics divisions and VINCORION represent the segments as defined in IFRS 8. G10

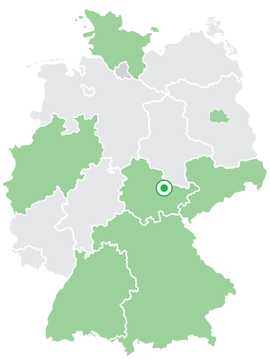
On the closing date of September 24, 2020, Jenoptik completed the acquisition of an initial 75-percent stake in Trioptics GmbH. The Group will acquire the remaining 25 percent from the owners on December 31, 2021. The TRIOPTICS business is being integrated into the Light & Optics division.

In February 2020, Jenoptik also acquired the Spanish INTEROB Group, consisting of INTEROB, S.L. and INTEROB RESEARCH AND SUPPLY, S.L, which was integrated into the Light & Production division. In March 2020, Jenoptik acquired 33.42 percent of shares in JENOPTIK Japan Co. Ltd. from its partner Kantum Ushikata Co., Ltd. and is now a wholly-owned group subsidiary.

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.

G10 Organizational structure of the Jenoptik Group since January 1, 2019

G11 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

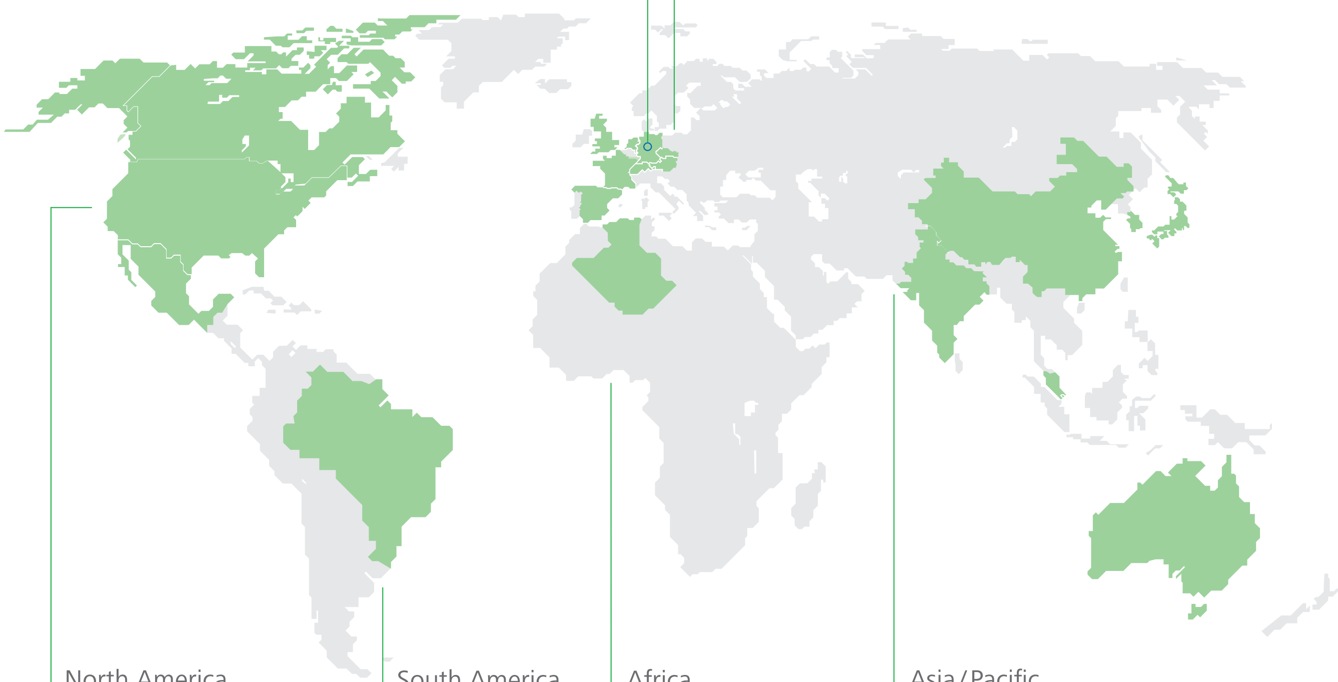
Netherlands
Riel

Austria
Vienna

Switzerland
Peseux
Uster

Czech Republic
Teplice

Spain
Valladolid



North America

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

Mexico
Saltillo

Canada
Barrie
Toronto

South America

Brazil
São Bernardo do Campo

Africa

Algeria
Algiers

Asia / Pacific

Australia
Sydney

China
Shanghai
Hongkong

India
Bangalore

Taiwan
Taiwan

Japan
Yokohama
Shizuoka-City

Singapore
Singapore

South Korea
Pyeongtaek
Suwon-si

As of December 2020

Key locations

Jenoptik is represented in over 80 countries worldwide, with a direct presence in 20 of them, e.g., through its own companies, investment companies, or affiliated firms. The majority of the Group's products are manufactured in Germany, followed by the US. The Group's Jena headquarters is primarily home to the photonic activities carried out in the Light & Optics and Light & Production divisions. Other major German sites are at Wedel near Hamburg (Light & Optics and VINCORION), Essen and Altenstadt in Bavaria (VINCORION), Monheim near Düsseldorf (Light & Safety), Villingen-Schwenningen (Light & Production), Dresden, Berlin, and Triptis (Light & Optics).

Outside Germany, Jenoptik maintains sites or is represented by subsidiaries or affiliated firms in the following countries: Algeria, Australia, Brazil, Canada, China, the Czech Republic, France, Great Britain, India, Japan, Korea, Mexico, the Netherlands, Switzerland, Singapore, Spain, Taiwan, and the US. G11

For investment holdings of the Jenoptik Group, see pages 231/232

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. Pulsed laser technology is also used, allowing satellite constellations, for example, to share data at high speeds. In the process, they use the special physical properties of light quanta (photons) in place of electrons or also combine optics and electronics. Under the VINCORION brand name, the Group also supplies mechatronic solutions. Our key markets primarily include the semiconductor equipment industry, the medical technology, automotive, mechanical engineering, traffic, aviation, and security and defense technology industries. As a supplier of innovative capital goods for these markets, Jenoptik is primarily a technology partner to industrial companies. Our range of products comprises OEM or standard components, modules and subsystems through to complex systems and production lines for various sectors. It further includes total solutions and full-service operator models. Alongside industrial customers, the Light & Safety division and VINCORION primarily serve public sector clients, in part indirectly through system integrators.

Jenoptik competes with its product range with a wide range of internationally operating companies not uncommonly specializing in only one or a few of the product areas and markets listed above. Differing product and 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. Our technology-intensive products and systems are often created in close collaboration with customers. Such lasting and successful cooperations with key customers are an important factor of our 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 16.3 million euros in the 2020 fiscal year.

Examples of innovative products can be found in the "Research and Development" chapter from page 92 on

The Jenoptik Divisions

Light & Optics

The Light & Optics division is a global OEM supplier of solutions and products based on photonic technologies. Jenoptik offers a wide range of products and services in this field, combining comprehensive expertise in optics, laser technology, digital imaging, optoelectronics, and software. Our systems, modules, and components help customers to tackle the challenges they face using photonic technologies. Customers include plant and machinery manufacturers, equipment manufacturers, and research institutions. As a high-tech photonics company, Jenoptik can assist its customers as an OEM partner offering an in-house technology portfolio covering everything from development to volume production.

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 works with leading international manufacturers in this field.

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 example in the market for information and communication technology, and increasingly also in the laser material processing market. Customers in the field of information and communication technology included manufacturers of fiber optic transceiver modules, predominantly in the US and Asia. In the laser material processing market, customers include system integrators and manufacturers of laser production equipment.

In the field of biophotonics, the division focuses on 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 Light & Optics division develops OEM solutions and products for the medical technology/life science industry.

Our diode and solid-state lasers are used in ophthalmology, dermatology / aesthetics (tattoo and hair removal), and 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. A new product concept for the fields of diagnostics and analysis is the JENOPTIK SYIONS modular technology platform for digital imaging and analysis, which can be configured according to customer requirements. It can be used to generate image data from in-vitro diagnostics for use in scientific and clinical environments.

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

For the field of industrial solutions, Jenoptik supplies high-peformance optoelectronic components and modules as well as integrated solutions that combine optics, laser technology, sensors, and digital imaging as required. The company focuses on applications in the fields of industrial automation and automotive and mobility. In addition to complex components for head-up displays, lenses for driver assistance systems, laser optical systems for particle sensors, and polymer optics for machine vision applications, we also produce LED components. Sensor products cover infrared camera systems and laser rangefinders, which are used in automation technology, security technology, and military reconnaissance.

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 develops and manufactures measurement and production systems for optical components and sensors in the digital world. 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, or the automotive industry.

In 2018, the Group acquired the OTTO Group, allowing it to boost its range of services for innovative metrology solutions, e.g., for 3D inspections, and further expand its market position as a systems supplier for production metrology and industrial imaging applications. To better utilize synergies, OTTO has been part of the Test & Measurement area in the Light & Optics division since January 1, 2021 (OTTO was part of the Light & Production division until December 31, 2020).

Detailed information on the course of business in the segments can be found in the Segment Report from page 119 on; see the Forecast Report from page 146 on for information on the development of the divisions

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

Key sales regions in 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 defense and security technology industries. The Light & Optics division's competitors include MKS/Newport, Excelitas/Qioptiq, IDEX, Berliner Glas, OptoAlignment Technologies, and Optikos.

Light & Production

The Light & Production Division is a global specialist in the optimization of manufacturing processes, and increasingly also offers integrated solutions (complex production lines utilizing a range of technologies) from a single source.

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 division's 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.

In addition to this, Light & Production develops 3D laser processing machines that are integrated into customer production lines as part of process optimization and automation. They are used to process plastics, metals, and leather at high speed and with accurate contours, and are thus both efficient and precise.

In a similar way to Five Lakes Automation (FLA), which was acquired in 2017, Prodomax (Canada), which was acquired in 2018, plans and designs automated production lines and integrates them into customer production environments. The acquisition of the Spanish INTEROB Group in early 2020 further boosted Jenoptik's position as a turnkey provider of automated production solutions. The Light & Production division is in a position to offer not only stand-alone laser machines but also complete process solutions from a single source. 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 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 the division 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 processing machine business, and firms such as Centerline Automation in Canada and Serra in Spain with our automation business.

Light & Safety

The Light & Safety Division operates in three areas of business: traffic law enforcement, civil security, and road user charging. Here, Jenoptik develops, produces, and sells various components, systems, and services used by public sector customers to monitor compliance with applicable road traffic regulations and thus make the world's roads safer. Its product portfolio includes systems covering all aspects of road traffic, such as speed and red light monitoring systems and custom solutions for identifying other traffic violations. Further expertise relates to the measurement of average speeds (section control) and automatic number plate recognition (ANPR), including applications for the police. In order to improve the recognition rate for car license plates using ANPR cameras, the division uses artificial intelligence and computer-based algorithms. Jenoptik thus supplies integrated solutions for public safety and future smart cities.

Beyond this, the division also offers a combination of equipment business and services, known as Traffic Service Provision. Here, Jenoptik covers the entire supporting process chain – from system development, construction, and installation of the monitoring structure, to capturing images of traffic violations and their automated processing.

Jenoptik has contributed to the further technical development of toll payment systems in Germany. For these applications, the Group markets innovative toll payment monitoring pillars that combine various digital sensor technologies such stereo image processing and axle number detection in a single system.

The Light & Safety division's regional areas of focus are also primarily determined by customers. Over 30,000 Jenoptik devices are in use around the world. Competitors here include Redflex, the Sensys Gatso Group, Safran, and Vitronic.

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. As all companies have to go through these procedures, they represent a significant barrier to market entry for potential suppliers.

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 which customers integrate into their systems. VINCORION does not manufacture components or systems for controversial or internationally banned weapons. The division specializes in energy systems, drive and stabilization systems, and aviation systems. Qualified customer service ensures product support over what are typically long service lives. Products include diesel-electric generating units, electrical machinery such as generators, electric motors, and converters, power electronics, heating systems, rescue winches, and radomes. They are used in military and civilian vehicles and in rail and aircraft equipment.

VINCORION supplies equipment to major systems companies such as Krauss-Maffei Wegmann and Rheinmetall in Germany or Raytheon (US), and aircraft manufacturers such as Airbus (France/Germany) and BAE Systems (Great Britain); it also supplies governments directly. In the area of defense and security technology as well as aviation and rail equipment, VINCORION is a business partner to national and international customers, with end products frequently exported worldwide by the systems companies it supplies. Many of the components and subsystems are developed specially on behalf of clients. Business is predominantly geared toward the long term and is subject to exacting security, certification, and export control requirements. The platforms on which the systems are deployed, such as the Leopard 2 tank and the Patriot missile defense system, often remain in use for many years and decades, increasing the importance of spare parts business and modernization projects. Competition with other companies is frequently limited to individual product groups. VINCORION's competitors include Moog, UTC Aerospace Systems, and Meggitt.

Further information on the development of the sectors and markets can be found in the Group Management Report

Targets and Strategies

Strategic orientation of the Group

As noted in the chapter titled "Business Model and Markets", the Jenoptik Group offers the majority of services and products for the photonics market. As so-called enabling technologies, the extremely precise, flexible methods and processes of photonics have great economic leverage and continue to enjoy an increasing share in industrial value creation.

With a greater focus on photonics growth markets, we want to develop into a focused and globally positioned photonics company. A concentration on core competencies in optics and photonic technologies is the core of our Strategy 2022. In implementing this strategy, Jenoptik is concentrating on internationalization and innovation, in addition to focusing. We want to target in particular 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.

In order to implement the growth strategy, we

- are focusing on our core areas of expertise in the field of photonics and optics,
- have reorganized and simplified our corporate structure,
- actively manage our portfolio with a view to additional purchases as well as transformatory acquisitions and selective divestments,
- are continuing to work on further internationalization in conjunction with greater vertical integration and customer proximity in our growth regions,
- want to drive innovation even more strongly and be an innovation leader in our markets,
- are contributing to more sustainability in our production processes as well as in our products to achieve the Sustainable Development Goals / global sustainability targets,
- are expanding our system and application expertise and developing as a solutions provider,
- are promoting an active cultural change within the company, and
- are continuing to steadily strengthen our financial resources.

Focus

Our activities in the market for photonic technologies focus on the fields of information processing, intelligent production processes, sensor technology, metrology, and biophotonics. For us, these are markets that are not only characterized by growth, but also by technological differentiation potential. Jenoptik continues to benefit from the global trends in digitization, health, mobility & efficiency, infrastructure as well as security and sustainability, and is increasingly establishing itself as a strategic systems partner for international customers, with whom it works to design forward-looking solutions.

G12 Strategy of the Jenoptik Group

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

The clustering of the operating business according to a similar understanding of the market and customers into three photonic divisions and VINCORION is based on the same business models. This helps us to increase the reach of our products and solutions and opens up improved growth opportunities. For us, however, focusing does not just mean an emphasis on our core areas of expertise, but also efforts to simplify structures and make the company more agile. That is why we have already reorganized our business structure. Decision-making processes and responsibility have been further decentralized and, increasingly, relocated into the operating areas. This will enable us to prioritize initiatives for future growth more clearly and to achieve success more quickly and efficiently.

Our planned profitable growth will be further supported by efficiency measures and increasingly by the expansion of the service business as well as realizing economies of scale.

Further information on the group structure can be found in the "Business Model and Markets" chapter from page 80 on

Innovation

As an innovative high-tech company, it is of critical importance for Jenoptik to identify future customer needs and trends early on, to align them with our strategic actions and business activities to derive appropriate technology and product developments and to help drive developments forward. That is why we want to increase our R+D investment, including customer-related projects, to a total of approximately 10 percent of revenue by 2022 (2020: 9.0 percent) in order to strengthen our market position in the field of photonics. We will continue to expand our software expertise and our knowledge in the field of artificial intelligence across all business segments in order to supply technological solutions for new requirements with interdisciplinary teams. In addition, we will drive the expansion of our technology platforms in order to better utilize synergies.

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 innovation forward independently of customer-related orders.

Further information can be found in the "Research and Development" section, from page 92 on

Internationalization

Due to a continuing strengthening of the respective domestic industrial production as well as the demographic development, Jenoptik sees especially great potential for future growth in the regions of the Americas and Asia/Pacific. In terms of internationalization, we are therefore focusing on these markets. In 2020, one of the priorities for implementing the group strategy was development in Asia. Alongside China, the focus here is increasingly on Japan, Korea, and other southeast Asian markets. In addition, we are aiming to increase value creation by expanding manufacturing and product development in this region. This will enable us to also offer local customers with their different needs locally manufactured products and solutions as well as the associated services, and to support them in achieving their innovation goals. The plan by 2022 is to establish local R+D teams and our own production facilities in all major growth markets – such as China – in order to better target our customers in their local markets.

To further improve our market orientation and customer proximity, we are adapting our structures and developing products and solutions that are consistently geared to the trends and needs of our customers. In the future, Jenoptik will also continue to invest in the establishment 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

By focusing on optics and photonics, our aim is to further increase profitability along with organic growth. 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. Examples of this include the acquisitions of the Canadian Prodomax and the German OTTO Group, successfully completed in prior years, along with the acquisition of TRIOPTICS in Germany and INTEROB in Spain in the past fiscal year. The acquisition of TRIOPTICS in particular is 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 new technological growth markets such as virtual and augmented reality

Further information on sustainability can be found in the Non-financial Report from page 60 on

applications in the industrial and consumer segments and expand the Group's presence in Asia. Each acquisition must be a strategic fit for us and fulfill the criteria for increasing corporate value as well as integratability. The discontinuation of existing business activities or the sale of parts of companies is also continuously reviewed against the backdrop of the intended focus on 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 is positioning 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 boost Jenoptik's growth 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 rate, which is calculated from the average proportion of executives with an international background and female executives, is to increase to 30 percent by 2022 and to 33 percent by 2025. The top four management levels are decisive here. In the past fiscal year 2020, the diversity rate was already increased to 27.8 percent (prior year: 25.5 percent).

Further information on the subject of personnel can be found in the Non-financial Report from page 64 on

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 make an important contribution to the conservation and efficient use of resources with our innovative products and solutions, enabling our customers to achieve greater sustainability and efficiency. We have also taken numerous measures to improve resource and energy efficiency, 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 detailed and explained on page 63 of the Non-financial Report. We are also breaking new ground in the area of "green finance", and plan to place a debenture bond with a "green component" in March 2021.

Priorities for strategy implementation 2020 and 2021

In the gradual implementation of Strategy 2022, the Executive Board had set the following priorities for 2020:

- Development in Asia
- Global business excellence and
- Cultural change.

The Executive Board, the members of the EMC and our employees continued to work hard to implement these strategic group initiatives in 2020. For example, sales activities in Asia were aligned even more closely with customers and markets, while revenue in the Asia/Pacific region increased from 97.2 million euros to 105.8 million euros. With TRIOPTICS, we have acquired a company with its own sites in the Asian markets enabling it to maintain a very strong presence and generating more than 50 percent of revenue there. Jenoptik also acquired the remaining shares in JENOPTIK Japan in 2020, thereby converting the company into a wholly owned subsidiary of the Group.

With the Global Business Excellence (GLOBE) program, we want to create the prerequisites for future digital business models and standardized processes and data in the Group. In doing so, our processes and systems are to be consistently aligned with the needs of Jenoptik's photonics core business. The objective is to have lean and harmonized processes, to map them in a new SAP system (S/4HANA), and thus provide management with a better basis for control. The GLOBE project is being implemented in three phases, the third of which began at the end of 2019. In this, the GLOBE template that has been created, is to be gradually introduced in the divisions in several roll-outs and continuously be expanded to meet business-specific and local requirements. The introduction of the S/4HANA within JENOPTIK AG took place in mid 2020.

The cultural change in the Jenoptik Group became another focus within our strategic initiatives in 2020. The focus was on, among other things, intensive communication and exchange with our employees, the efficient design of our meeting culture, and the topic of diversity. The progress on all topics was determined by conducting a total of three so-called Culture Cockpits, an employee survey on the implementation status of our actions. Jenoptik advocates a respectful and prejudice-free working environment that values talent based on achievement. This is why Jenoptik signed the Diversity Charter in August 2020, making it part of an employer initiative to promote diversity in companies and institutions.

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

- Strengthening innovation,
- Anchoring sustainability even more firmly within the Group.

As a technology group, innovation is of key importance to Jenoptik. That is why we are focusing even more strongly 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. In the current fiscal year, we will therefore focus our attention even more strongly on our innovation power.

We are also convinced that we can only achieve our economic goals and profitable growth in the long term by behaving responsibly towards society and the environment. So, this year, we are also placing particular emphasis on environmental protection, social commitment and corporate governance. We intend to continue with actions taken and strengthen initiatives to anchor sustainability even more firmly in our group strategy and in all areas involved, such as our supply chain and product development.

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 them. Infrastructures and cross-section functions are also increasingly used jointly, for example for global procurement or in the expansion of the international sales network. shared 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.

In the Light & Optics division, we use our expertise in photonics as a key technology and support our OEM customers in improving their competitiveness and environmental sustainability. We are continuing to consistently focus our optical systems business on the "digitization" megatrend, which market assessments, such as those from SEMI, indicate is set to intensify. In addition to the semiconductor equipment market, our optical and micro-optical solutions are being targeted at other digital world markets such as advanced manufacturing or industrial solutions. Jenoptik is already positioning itself in the market for optical information and communication technology. 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 investments, e.g. in a new electron beam lithography system. In the long term, we want to position ourselves as a system-relevant supplier to our customers. Ongoing internationalization, including in Asia, expansion of the systems business, focus on key customers as well as the use of economies of scale form the basis for sustainable profitable growth.

In the market for biophotonics, we are also focusing on the "health" megatrend. Based on beam sources that use lasers and LEDs, optical precision components, digital imaging, and platform technologies, we want to increasingly position ourselves as one of the leading, sustainably profitable partners for the development of system solutions and products 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.

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.

The acquisition of TRIOPTICS in the 2020 fiscal year has enabled the Jenoptik Group to significantly expand its product portfolio in the Test & Measurement business unit. Combining the two companies' expertise in optics and industrial imaging will enable them to further expand their technological leadership

Further information on employees and corporate culture can be found in the Non-financial Report starting on page 64

and gain associated market shares, for example in the growing markets for new virtual and augmented reality applications in both the industrial and consumer segments. In the automotive industry, the expanded portfolio for manufacturing high-precision optical components and systems offers considerable potential, particularly in view of the growing importance of driver assistance systems and new mobility concepts in the field of autonomous driving, for which improved image and data acquisition are essential. With its strong presence and the established access to key TRIOPTICS customers in Asia, Jenoptik wants to expand its existing market share in strategic markets such as China, Japan, and Korea. The Group is also strengthening its position in North America, expanding its range of services for important American customers in the digital and communications sector. The integration of OTTO Vision (OTTO) into the Light & Optics division is also intended to expand market and customer reach by using the global TRIOPTICS distribution channels.

As a supplier of products, systems, automation solutions and services for industrial customers (B2B), the Light & Production division primarily addressed the trend towards more flexibility and efficiency in production processes. We will use our high-performance Smart Manufacturing applications to support the manufacture of efficient products in various sectors such as the automotive industry. As our customers rely increasingly on central suppliers for complex production lines, the division wants to position itself even more strongly as a technology integrator in the future and to offer end-to-end solutions, based on its many years of process knowledge and existing systems expertise.

A concentration on automated plastic and metal processing will support further growth in the field of laser processing systems and automation. The acquisitions of INTEROB (2020) and Prodomax (2018) have also contributed to this development. As an integrated supplier, Jenoptik is now able to offer end-to-end solutions for efficient production environments, from its own products and systems to automated system concepts and complete process solutions. The Light & Production division is therefore developing from a supplier of key technologies to a strategic partner for globally active customers in our target markets. At regional level, we intend to grow our business primarily in Asia.

Jenoptik's use of inspection and production metrology enables it to focus, above all, on the need to reduce fuel consumption and CO_2 emissions, particularly in combustion engines. However, the current trend in the automotive industry towards more and more e-mobility has been reflected in business development within the metrology business area. Actions have already been taken to bring the business back on track for sustainable growth and to significantly increase profitability. As the market for metrology is growing particularly rapidly in Asia, the business is to be strengthened here. In addition, the product portfolio and associated technologies are being further developed, for example for electrical powertrains in the field of alternative drives. However, applications outside the automotive industry are also being developed, e.g. in production metrology for machining processes or in the aviation industry. The aim is for the metrology area to become a premium niche provider of customized metrology solutions.

In the Light & Safety division, we are pursuing two further future trends with a focus on infrastructure 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. With the global trends toward increasing mobility, urbanization and security, particularly in newly industrialized countries, Jenoptik is also tapping into new sales regions. To support the further growth, the product portfolio is being modernized and a new uniform product platform developed. In the existing key markets, demand is primarily for more applications/functionalities as well as greater information density per monitoring system. The division will meet this demand through the expansion of its growing technology and software expertise as well as the increased use of ANPR. In the global traffic safety technology market, there is also a trend towards larger projects with a combination of equipment business and services, known as Traffic Service Provision. That is why Jenoptik is focusing on strengthening this profitable service business. The Light & Safety division also sees good growth opportunities in the area of toll enforcement and therefore also wants to develop and expand this business further.

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. The introduction of the SaaS (Software as a Service) model supports the ambition to grow further in the smart cities sector. The expansion of our presence in international markets, selected cooperation arrangements as well as the concentration on innovative and competitive products are aimed at securing future growth and boosting our market position.

Jenoptik's mechatronics business was consolidated under the VINCORION brand and will continue to position itself as a partner for systems companies and customers who have a need for individual solutions that meet the stringent requirements of heavily regulated markets such as those of aviation and defense technology. Opportunities for further growth are seen in global trends such as the growing need for security, mobility, and efficiency as well as the increasing electrification in military and civilian sectors. For this reason, the focus will be on such high-growth business areas as energy systems. Beyond this, the proportion of products used in civilian fields such as aviation is to be increased. More newly developed systems will be placed on the market, while at the same time the product portfolio will become focused and customer relationships and cooperation with OEMs and end customers worldwide will be intensified. VINCORION is also seeking to expand its service business and international sales and service structures, especially in North America and Asia.

Strategy development and processes

Jenoptik's Corporate Development department strives to achieve an optimum strategic market alignment of the Group with its segments and foreign locations. The Corporate Strategy team supports the development, implementation, and follow-up of the strategy implementation. The head of the division reports directly to the Chairman of the Executive Board.

To underpin the group and division strategies, on the one hand, there is close cooperation between Corporate Development and the divisions in the area of market intelligence – particularly with respect to global target markets, trends and customer requirements, disruptive developments, opportunities and risks, as well as competitors and other framework conditions. On the other hand, it is important to bundle and expand our own technological expertise and unique selling points, including by means of strategic roadmaps and structural adaptations. Here the operating business units are also supported in terms of process and content. This contributes to securing the targeted market position.

In addition, the central Corporate Development department also supports the operating units in planning and implementing their strategic plans and in designing business models and structures – all with the target of securing sustained profitable growth within the Group. This target can also be supported through company acquisitions.

Further information on the segments can be found in the Segment Report on page 119 and the "Business Model and Markets" chapter from page 80

Control System

The company control system is geared toward the long-term corporate strategy and is therefore 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 and monitors the implementation of defined measures at quarterly business reviews. At annual strategy meetings, 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 on the basis of global trends. 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 created 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 made 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 meetings as part of the EMC meetings are used for operational control: 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 events. They 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 the event of planning deviations. The internal reports for the monthly Executive Board meetings provides aggregated financial and non-financial information for the divisions and the Corporate Center, which is used as a basis to manage the Group on a global level, allocate resources in a targeted manner, and pass resolutions on the Executive Board.

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

The indicator system used in internal reports and to manage the business units in 2020 comprises high-priority performance indicators ("key performance indicators"), and other financial and non-financial information parameters. All the indicators focus on shareholder value, the interests of our stakeholders,

G13 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, adjusted EBITDA margin (2020)		
Information parameters	Growth	Order backlog, frame contracts	Growth	Number of employees
	Return	ROCE EBIT margin, adjusted EBIT margin (2020)	HR management	Training, fluctuation, sick days
	Liquidity	Net debt, working capital, free cash flow	Process control	Throughput times, reject quotas, and indicators for quality management

the requirements of the capital market, and the corporate strategy. The key indicators are shown in the chart 13. One major key performance indicator is the EBITDA margin. Due to the structural and portfolio measures announced already at the beginning of the fiscal year, the Executive Board had decided to report for fiscal year 2020 an EBITDA margin which was adjusted for expenses and income arising from these measures.

In addition to the key performance indicators at group level, there are also control parameters used only within the business units, e.g. order backlog or number of employees. Alongside quarterly forecasts, a rolling three-month forecast for revenue and order intake updated monthly is used to manage the company's development. G13

In the current fiscal year, too, the Jenoptik Group is committed to the continuous improvement of its processes. One key aspect of this remains the implementation of an SAP Business Warehouse, combined with the SAP Analytics Cloud as the front-end, which will allow us to better reflect the markets' dynamic growth and thus obtain important control information both faster and more efficiently.

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.

Adjusted EBITDA margin: The EBITDA margin is adjusted for expenses and income arising from site optimization/restructuring and cost reduction programs as well as costs related to M&A activities. More detailed information can be found in the chapter Earnings position in the Management Report on page 104.

EBIT means earnings before interest and taxes.

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 income from operations (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.

Structural and portfolio measures can be found on page 104

For more information on the non-financial information parameters, see the Non-Financial Report from page 60 on

77 Combined Management Report 152

For the development of the key performance indicators please see Forecast Report (page 151)

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 market-oriented products and platforms with unique selling points, protecting them where possible by means of industrial property rights. With our products and solutions, not only do we want to improve our customers' performance and profitability, but also contribute to greater energy efficiency and the responsible use of resources.

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. By appointing a Chief Innovation Officer from within the company, Jenoptik has further reinforced its innovation focus on photonics in 2020. In addition to evaluating the group-wide research and development portfolios, new stimulus activities such as exciting tech talks, creative co-working, discussions in digital best practice communities, a new innovation workshop and the promotion of projects by means of an innovation budget are intended to identify innovators, accelerate innovation and communicate it more strongly externally. 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 is one of the three pillars of Strategy 2022. As part of the group initiative "Speed up Innovation", numerous process improvements were developed and implemented in a series of cross-divisional workshops. 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 and monitored 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. 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 17.1 percent compared with the prior year (prior year: 16.2 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 2022, the Executive Board has set itself the goal of increasing revenue with new products to 20 percent. By 2025, the Vitality Index should be 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. To this end, a number of activities were initiated in 2020, including the establishment of best practice communities and the publication of an employee podcast for technology and innovation.

One major highlight saw the Innovation Workshop take place in a new format in cooperation with Optonet e.V., the local optics trade association, and the Kombinat01 co-working space. With international participation, Jenoptik employees and high-potential photonics students worked together to develop seven innovative ideas on three topics ("Smart City", "Industry 4.0", "Photonics in the Pandemic"). The results were presented and judged in the form of an investor pitch to a panel of internal and external experts. The winner of this year's Innovation Workshop was a team of Jenoptik employees who worked on photonic plug&play solutions for the mechanical and plant engineering market. In addition to the winning idea, other promising ideas are to be followed up and validated in the future. In addition to generating new innovative ideas, the

Innovation Workshop also identified intrapreneurs (i.e. entrepreneurs within the company) and future talents for Jenoptik. The fields of technology created were also further examined this year. Of particular note is the field of photonic integrated circuits, which has disruptive potential for the communications and medical diagnostics
markets. Jenoptik is already working on this in the semiconductor and communications segments. One panel identified particular potential for biophotonics.

Innovation budget

To generate stimulus, innovation management allocates additional budget for promising but also more risky projects with cooperation partners. Five projects were funded in total, targeting markets such as "Electromobility", "Industry 4.0", "Autonomous Driving" and "Smart Infrastructure". In collaboration with the Fraunhofer Institute of Optronics, System Technologies and Image Exploitation (IOSB), for example, a new modular system architecture is being developed for the Metrology unit. The first positive results have already been recorded. There are plans to fund further projects in 2021.

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 the fiscal year just past, we hired additional employees in the R+D area and acquired others through our acquisitions. T23

T23 Employees in R+D

	2020	2019*
Number of employees in R+D	692	548
Percentage of overall workforce	15.2	12.9

* Values not comparable with those published in the prior year: 516 FTE or 13.4 percent from the 2019 Annual Report correspond to 548 employees or 12.9 percent

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. The Scientific Advisory Council is a committee of experts available to Jenoptik which supports the Group in the monitoring and evaluation of long-term technology trends. In order to accelerate communication and the transfer of knowledge, the plan is to continue the collaboration in a new, more agile and intensive manner in the future.

Information on the members of the Scientific Advisory Council can be found from page 246 on

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 here are the activities of the Executive Board of Optonet and the Executive Board of the Photonics division within SPECTARIS. In addition to active membership, the future aim is for more close interaction with the above networks in order to exploit the range and cooperation potential for disruptive innovations.

Development output

The R+D output of the Jenoptik Group, including developments on behalf of customers, was at 69.0 million euros at approximately the level of the prior year (prior year: 68.4 million euros). The R+D expenses fell slightly in comparison with the prior year to 43.7 million euros (prior year: 44.1 million euros). The costs for developments on behalf of customers amounted to 16.3 million euros and are included in the cost of sales (prior year: 20.4 million euros). Development services including patents were capitalized in the amount of 9.0 million euros in 2020 (prior year: 4.0 million euros). The increase resulted mainly from the capitalization of internal development projects at VINCORION and in the Light & Optics division. Hence, the capitalization ratio, i.e. the capitalized development costs divided by total R+D expenses, was 20.7 percent in 2020 (prior year: 9.1 percent). Information on the amortization of internally generated intangible assets can be found on page 185 of the Notes. T24

As shown in the table, R+D output is distributed among the divisions. T24

R+D output in the Light & Optics division includes expenses arising from developments on behalf of customers in the amount of 9.3 million euros (prior year: 13.2 million euros), which were down on the high figure of the prior year due to the development of a laser-optical subsystem for a particle sensor carried out in 2019. R+D expenses in 2020 totaled 19.2 million euros (prior year: 19.0 million euros).

The R+D output of the Light & Production division included developments on behalf of customers of 3.6 million euros (prior year: 3.4 million euros). The R+D expenses came to 7.2 million euros (prior year: 7.9 million euros).

In the Light & Safety division, the R+D output in 2020 was 13.8 million euros (prior year: 12.0 million euros). Of this, 0.6 million euros were developments on behalf of customers (prior year: 1.0 million euros).

VINCORION reported developments directly on behalf of customers amounting to 2.8 million euros in 2020 (prior year: 2.9 million euros). VINCORION is also a long-term partner for large systems companies and develops platform technologies in conjunction with its customers. The R+D expenses reduced to 4.2 million euros (prior year: 6.1 million euros), mainly due to capitalization of development costs to be carried out.

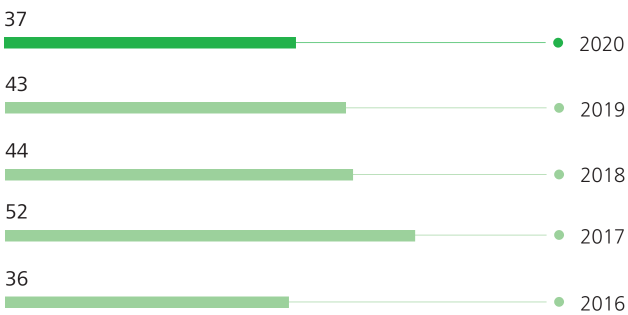
Patents

Our R+D investments is protected via central IP management in close cooperation with the operating areas. We accord particular importance to patent applications in dynamic growth markets such as China and the US. In 2020, a total of 37 patents were filed by Jenoptik subsidiaries (prior year: 43 patents), more than half of which were in the field 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. G14

T24 R+D output by division (in million euros)

	2020	2019	Change in %
Group	69.0	68.4	0.9
Light & Optics	32.3	34.6	−6.6
Light & Production	10.8	11.3	−4.6
Light & Safety	13.8	12.0	15.0
VINCORION	12.1	10.5	15.1

G14 Number of patent registrations



T25 R+D output (in million euros)

	2020	2019	2018	2017	2016
R+D expenses	43.7	44.1	47.4	43.1	42.3
Capitalized development costs including patents	9.0	4.0	1.5	1.4	0.1
Developments on behalf of customers	16.3	20.4	20.2	22.2	15.0
R+D output	69.0	68.4	69.2	66.6	57.4
R+D ratio 1 (R+D output / revenue) in %	9.0	8.0	8.3	8.9	8.4
R+D ratio 2 (R+D expenses / revenue) in %	5.7	5.2	5.7	5.8	6.2

Key projects and results

Our aim is to offer our customers excellent solutions. We do this by combining our all-round 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 brought to the market by Jenoptik in 2020:

In the semiconductor equipment area, significant investment continued to be made in the development of technologies required for the realization of products for the deep ultraviolet (DUV) and, in particular, the extreme ultraviolet (EUV) wavelengths range in order to expand the customer-specific product portfolio. For example, both manufacturing and assembly technologies have been developed for extended nanostructurable membranes which have a micro-optical functionality in the EUV wavelength range. The further development of manufacturing and coating technologies for high-precision flat, lens and freeform surfaces for the DUV wavelength range has also been possible, along with the adaptation of assembly and measurement technologies for optical modules and systems based on these components.

We also worked on the further development of technologies to support the next product generations and to improve the cost-of-ownership (COO) of selected products. Due to the extremely high demands regarding machine availability in semiconductor production and the fact that machine maintenance is only possible at increasingly high cost, the service life of the individual machine components plays a key role in the COO of machines for semiconductor lithography or inspection. The development and introduction of a novel and high-performance coating technology has made it possible to significantly lengthen the expected service life of high-precision micro-optical sensors, thereby meeting customer expectations.

In the field of information and communications technology (ICT), the innovative Ultra-Fast Opto-electronic Probecard for parallel testing of photonic integrated circuits (PICs) at wafer level has been further developed into a first industrial product platform. Applications for these PICs include optoelectronic transceivers, which are used today in their millions in data centers for conversion between electrical and optical signals and for which significant growth is expected in the next few years. One outstanding feature of this probecard when compared with competing solutions is that it can be used by customers within their existing test environment for electronic integrated circuits (IC), i.e. there is no need to purchase separate testing equipment in order to test PICs. Working with pilot customers, the industrial suitability of the Ultra-fast Opto-electronic Probecard has been successfully demonstrated in several high-volume tests on series products.

In the laser material processing market, the JENvelt (JENOPTIK Vision-enhanced laser-tool) system platform with AI-supported (artificial intelligence) image processing and intelligent software was transferred from the concept and prototype phase to pilot systems for customer-specific applications in close cooperation with pilot customers. The automatic position recognition and laser microprocessing of the component, supported by AI, enables the customer to directly increase production yields while simultaneously reducing the level of scrap. 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 laser components area, Jenoptik was able to bring a new type of passive heat sink for diode lasers into series production in 2020. With unprecedented performance worldwide for passively cooled diode lasers combined with cost efficiency (€/W), Jenoptik was able to promote technology substitution among laser material processors. As the principle is applicable to different wavelengths, it can also be used for different end applications. An internal innovation budget has also been allocated to expand the laser components family for the electromobility area.

Jenoptik is seeking active networking with the scientific community in order to improve its understanding of applications in the life science field. To this end, the biophotonics unit is a cooperation partner at the InfectoGnostics Research Campus in Jena, which focuses on on-site diagnostics of infectious agents. Together with InfectoGnostics and other research companies, Jenoptik is also a leading industrial partner in the "ReHwIN" research project which is funded by the German Federal Ministry of Education and Research. It focuses on research into "Rapid resistance testing for urinary tract infections at the point of need".

For the automotive industry, 2020 saw the continuation of work on the automation and integration of laser processing systems. On behalf of a Spanish automotive supplier, Jenoptik developed several production cells for cutting and welding car body components for the European e-vehicle market. In addition to development, Jenoptik is responsible for installation and commissioning of the automation line at the vehicle manufacturer's premises. In doing so, Jenoptik is continuing its course to become an integrator of photonic solutions for applications with a promising future.

Polymer optics and opto-mechatronic assemblies are indispensable to industrial automation and for the provision of new driver assistance systems. While conventional optics has reached its limits, freeform optics enables what is physically feasible. Jenoptik is involved here as part of the fo+ (freeform optics plus) research hub, which intensively works on options for manufacturing freeform optics. Freeform optics opens up a wide range of opportunities for manufacturers in the life science, automation and sensor technology fields, such as LiDAR (Light Detection and Ranging) or virtual reality for head-mounted devices.

Work is being done to develop a new IR portfolio based on the latest microbolometer technology for the use of high-resolution and high-performance thermography, for example in production facilities or for security equipment. A new product family is being developed. Based on the latest infrared technology, it will be competitive on the market thanks to high performance, miniaturization and modularization.

In the traffic safety market, Jenoptik developed a new type of modular system platform in 2020 for the next generation of products. This is intended to support all new developments as well as current solutions, such as the ANPR cameras working with artificial intelligence or LiDAR. With the help of a completely redesigned application programming interface (API), and the modularity of the system, new features can be quickly integrated and configured into solutions, such as the real-time recording of data on air quality for emission-free zones. The flexibility of this system platform strengthens our market position in road user charging (toll enforcement) and also enables strategic entry into the safety market for connected autonomous vehicles. We are already cooperating with established international partners as a means of building up application knowledge.

In the market for security and defense technology, VINCORION has developed the next generation of stabilization systems – the GTdrive Modular. Behind this is a form of modular system enabling individual solutions that offer a particularly high degree of flexibility in both product design and the manufacturing process. A recent in-house development, GTdrive Modular combines hardware and software for modular control units with scalable power electronics and gyroscopes. Together with high-performance height and lateral directional drives, also developed by VINCORION, this can be integrated precisely into different system architectures as a platform-specific assembly. Many years of experience with stabilization systems for different platforms has helped with the development of the GTdrive Modular. VINCORION is responding with custom solutions to continuously growing customer requirements such as shortest possible development times, low costs, system availability over several decades as well as increasing energy requirements often due to additional integrated functions.

In the specialized energy systems sector, VINCORION developed portable power management modules, or P^2M^2 for short. In particular these enable public authorities, emergency personnel, security forces, and specialized industrial users to set up a modular mobile power supply depending on their requirements. Consequently, operations become more flexible and independent of costly logistics. The joint development of a fuel cell module with cooperation partner SFC Energy AG will ensure even greater self-sufficiency in the future.

VINCORION developed the P^2M^2 Portable Power Management Module for the flexible supply of power to mobile divisions. These can use all available energy sources and can also be supplied with memory modules independently of energy sources. Units can select the appropriate modular power supply for each mission, thus becoming independent of costly logistics.

In the aviation field, VINCORION developed a floor heating system for the entrance areas of airplanes, which modifies existing heating elements and expands the product portfolio. This heating system is extremely reliable and robust; It can neither overheat nor burn out and provides more comfort and safety in civil aviation. The first delivery of the innovative heated floor panels was made in the first quarter of 2019 for the A330 and the first quarter of 2020 for the A350. In addition, a further major Airbus program was won. Development began at the start of 2020. The development team also worked on the new "SkyHoist 800" electric helicopter rescue hoist, which, thanks to its innovative product features, exceeds the standard market parameters with a dead weight of less than 50 kg, tensile loads of up to 350 kg and a lifting speed of up to 2 meters per second. Its modular concept also reduces maintenance-related downtime and thus operating costs.

Employees

Development of employee numbers

As of December 31, 2020, with 4,472 employees (incl. trainees), Jenoptik recorded growth in its workforce of 8.5 percent or adjusted of 9.4% (31/12/2019: 4,122 employees; adjusted for the employees of HILLOS GmbH: 4,089). The number of Jenoptik employees abroad rose by 12.6 percent to 1,112 (31/12/2019: 988 employees). At 24.9 percent, the proportion of employees abroad is largely unchanged compared to the prior year (31/12/2019: 24.0 percent). T26

Temporary workers were also employed in the past fiscal year to cover production peaks and 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, 2020, 55 temporary workers were employed in the Group (31/12/2019: 101).

At 291.0 million euros, personnel expenses (wages, salaries, social security contributions, costs for retirement provision) were up 3.3 percent in 2020 compared with the prior year's figure of 301.1 million euros. The reduction is mainly due to savings from short-time working and temporary leaves of absence depending on statutory regulations in the regions. This mainly affected the Industrial Metrology area in the Light & Production division.

T26 Employees by region (incl. trainees)

	31/12/2020	31/12/2019	Change in %	Absolute change
Germany	3,360	3,134	7.2	227
Germany (adjusted)[1]	3,360	3,101	8.4	259
Germany in %	75.1	76.0	−1.2	−1
Germany in % (adjusted)[1]	75.1	75.8	−0.9	−1
Abroad	1,112	988	12.6	124
Abroad in %	24.9	24.0	3.7	1
Abroad in % (adjusted)[1]	24.9	24.2	2.9	1
Europe (excl. Germany)	280	232	20.7	48
Americas	560	565	−0.9	−5
Asia / Pacific	272	191	42.4	81

[1] Prior-year figures without HILLOS GmbH

Revenue per employee (including temporary employees) measured in full time equivalent fell by 12.3 percent to 188.0 thousand euros in the 2020 fiscal year (prior year: adjusted 214.3 thousand euros or 216.6 thousand euros) which was attributable to the revenue decline and the ínclusion of TRIOPTICS during the year. T27

The employee age distribution, as can be seen in the table below, is balanced. The figures are largely unchanged compared with the prior year. T28

The proportion of women in the Group (in Germany and abroad) was 25.7 percent on December 31, 2020, a slight fall in comparison with the prior year (31/12/2019: 27.0 percent).

At 5.2 percent, the absenteeism rate among Jenoptik employees in Germany in 2020 remained at the level of the prior year (prior year: 5.6 percent). The fluctuation rate in the Group has fallen to 3.1 percent compared to the prior year (prior year: 4.1 percent). At the German sites, the fluctuation rate fell from 3.1 percent in 2019 to 1.9 percent in 2020. It is calculated by dividing the number of employees leaving the company in the fiscal year by the number of employees as of the reporting

T27 Revenue per employee (in thousand euros)

	2020	2019	Change in %
Revenue per employee (adjusted, incl. temporary workers)[1]	188.0	214.3	−12.3
Revenue per employee (incl. temporary workers)	188.0	216.6	−13.2

[1] Prior-year figures without HILLOS GmbH

T28 Group age distribution (in percent)

	2020	2019
Under 30	15.50	14.15
30–39	27.36	26.61
40–49	22.87	22.84
50–59	24.04	25.18
60–65	8.85	9.88
More than 65	1.39	1.34

date of the prior year plus those who joined the company in the fiscal year. Temporary workers are not included in the calculation.

Training & HR development

As of December 31, 2020, 189 trainees and students of the Cooperative State University were employed by the Group (31/12/2019: 156). Of these, 52 were new hires. At the same time, 28 trainees and students of the Cooperative State University successfully completed their training in the year covered by the report.

At the Wedel, 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 also established itself as a training center for optics and photonics at a national level.

Further information on this can be found in the Non-financial Report from page 60

In 2020, Jenoptik invested around 2.2 million euros in the professional development of its employees (prior year: 2.6 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.

Economic Report

Macro-economic and Sectoral Developments

The coronavirus pandemic had a massive impact on the global economy. According to the International Monetary Fund (IMF), the world experienced an unprecedented crisis leading to the worst recession since the Great Depression appox. 90 years ago. Tough lockdown measures weakened the economy even more severely in the second quarter than in the first. As reported by the IMF, global economic output fell 3.5 percent for the year as a whole, which was slightly better than feared in October thanks to a modest recovery in the second half-year and the start of vaccination campaigns. Investment growth slowed or stalled entirely in many sectors, while consumer spending declined. Emerging countries were particularly devastated by the pandemic, according to the IMF. Corona-related production and work stoppages also had a knock-on effect on exports: according to the Federation of German Wholesale and Foreign Trade (BGA), border closures, disruptions in logistics, and interruptions in supply chains left deep scars, especially in trading between China, the US, Germany, and the Eurozone.

The US was plunged into a deep recession in the spring; in the second quarter, gross domestic product (GDP) fell by as much as 32.9 percent, the struggle to contain the pandemic resulting in extensive plant and business closures and economically crucial consumer spending falling significantly. Overall, economic output contracted 3.5 percent in 2020 compared to the prior year and thus at the same rate as the global economy. The economy recovered slightly in the second half-year, in part due to large stimulus packages and relatively relaxed measures to contain the pandemic.

T29 Change in gross domestic product (in percent)

	2020*	2019
World	−3.5	2.8
USA	−3.4	2.2
Eurozone	−7.2	1.3
Germany	−5.4	0.6
China	2.3	6.0
India	−8.0	4.2
Emerging countries	−2.4	3.6

Source: International Monetary Fund, World Economic Outlook, January 2021
* Estimate

The Chinese economy grew more slowly than at any time since 1976 but was still the only major economy not to contract in 2020: according to the Chinese National Bureau of Statistics, year-on-year GDP increased 2.3 percent. Driven by domestic demand, growth in industrial production and services, and government support measures, the economy rapidly returned to normal following the spring lockdown.

In Germany, the pandemic caused GDP to fall 5.0 percent in 2020 compared to the prior year, according to the German Federal Statistical Office. Although the economy initially recovered slightly following the sharp decline at the beginning of the pandemic, an upswing failed to materialize at the end of the year, with GDP growing just 0.1 percent in the fourth quarter. Industrial order intakes declined by 7.2 percent in 2020, industrial production by 8.5 percent. Border closures, disruptions in logistics, and interruptions in supply chains also caused German exports to drop 9.3 percent to a value of 1,204.7 billion euros, the sharpest decline since the financial crisis of 2009; imports fell 7.1 percent. T29

Photonics is regarded as a key technology for future industries and revenue markets. In March 2020, the European Commission presented a new industrial strategy for a competitive, green, and digital Europe. This strategy explicitly names photonics as one of its key enabling technologies. The development of the industry is driven by topics such as autonomous driving, digital production, new developments in the medical sector, and initiatives for more sustainability. The coronavirus pandemic did have one positive effect, with light-based technologies increasingly being researched and developed in the fight against the virus. On the other hand, however, reduced or postponed investment in mechnical engineering, in the automotive industry, or in the healthcare sector due to the pandemic put considerable pressure on the photonics industry in the first half-year 2020, according to a survey conducted by the German industry association Spectaris in cooperation with Optecnet Germany. Many companies suffered from border and plant closures, especially in the first quarter of 2020. As the year progressed, the business outlook saw quarterly improvements following the spring slump, as reported by Spectaris in its world market index for Optical Technologies. Revenues of the 15 international firms assessed in the index were down on the prior-year figures in the first three quarters, in the third by 4.5 percent. More recent figures were not available by the editorial closing date for this report.

Following a fall in revenue in 2019, the global semiconductor industry recovered strongly in 2020. According to the Semiconductor Industry Association (SIA), global revenue amounted to 439.0 billion dollars, which was 6.5 percent up on the prior-year figure of 412.3 billion US dollars and a clear reflection of the demand for semiconductor technology in many sectors. For 2020, IT analysts Gartner also reported a good increase in industry revenue compared to the prior year, by 7.3 percent to 449.8 billion US dollars, as measures introduced during the pandemic such as working from home, e-learning, and remote medical care worked to boost demand, e.g., for server capacity and PC equipment. Merger and acquisition activities in the semiconductor industry again increased significantly in 2020: by the end of September, the prior-year's figure of 31.5 billion US dollars had already been exceeded by the value of two major transactions, and at 63.1 billion US dollars was the second-highest figure ever, according to the market analysts at IC Insights.

Compared to strong demand in the consumer electronics sector, car manufacturers reduced their semiconductors requirements in spring 2020 due to production stoppages. Demand, however, picked up again faster than expected starting in the summer, resulting in a shortage of some semiconductors for the automotive industry, which chip manufacturers, especially in Asia, have been slow to respond to by ramping up their production capacities. Overall, semiconductor equipment manufacturers achieved global revenue of 68.9 billion US dollars in 2020, according to the year-end forecast of the Semiconductor Equipment and Materials International (SEMI) industry association. This was 16 percent higher than the prior year and a new record. China, Taiwan, and South Korea were again the regions with the highest level of investment.

The German electronics industry experienced a severe slump in demand from the automotive industry in spring 2020 and was forced to reorganize its capacities or find new customers – with success, according to the German Electrical and Electronic Manufacturers' Association (ZVEI). There was an upturn in consumer electronics, in particular, but demand for semiconductors was also strong in medical technology or the core IT business.

In 2020, the German mechanical and plant engineering industry reported its worst figures since the financial crisis of 2009. According to provisional figures issued by the German Federal Statistical Office, production fell 12.1 percent compared to the prior year, while the order intake was down 11 percent. Domestic orders remained 6 percent down on the prior year, with orders from abroad a full 13 percent lower. According to the German Mechanical Engineering Industry Association (VDMA), the order situation gradually improved slightly in the last few months of 2020.

The German robotics and automation industry was unable to escape the economic impacts of the coronavirus pandemic, as reported by the VDMA's R+A sector group in a joint analysis with BayernLB Research. Over the first three quarters of 2020, order intakes in the German industry as a whole were down 11 percent on the prior year, with revenue falling 19 percent in the same period. For the year as a whole, VDMA R+A is expecting an unprecedented fall in revenue of around 20 percent, to a value of 11.8 billion euros. Despite this, Germany remains by far the biggest market for industrial robots in Europe, driven by demand and robot density in the automotive industry, according to the International Federation of Robotics (IFR). In North America, robotics orders saw a year-on-year increase of 3.5 percent in 2020, as reported by the Robotic Industries Association (RIA) in January 2021, with non-automotive sectors such as life science or food and consumer goods dominating for the first time. As seen by the RIA, growth was driven by two trends: automation expertise in the industry generally, and with it rising demand for technology, together with changes in consumer behavior, as industries outside the automotive sector increasingly employ robots and automation, for example in the medical sector and to comply with physical distancing requirements.

According to the German Association of the Automotive Industry (VDA), the coronavirus pandemic had a devastating impact on the automotive markets in 2020. The global passenger car market contracted 15 percent. New car registrations were down by a quarter on the prior year in Europe and fell around 15 percent in the US. The Chinese market recovered relatively quickly over the first half-year, resulting in an overall decline of just 6 percent. Automotive manufacturers and suppliers responded to lower demand and the temporary break in the supply chain with production stoppages, plant closures, cost-cutting measures, and job cuts. In terms of electromobility, Germany remained on a course of growth, according to the VDA: both electric car production and new registrations rose significantly in 2020, in part driven by the government's environmental bonus for electric car purchases in Germany.

In the traffic safety sector, the German Federal Statistical Office's accident statistics indicated that the number of road deaths in Germany was down 10.4 percent on the prior year by the end of November. As it states, this is partly due to lower volumes of traffic during the coronavirus pandemic. The European Transport Safety Council (ETSC) also reported lower traffic volumes on European roads resulting from less traffic. In Germany, the first section control radar, which operates using Jenoptik technology, recorded more than 1,000 speeding violations from the time it began operation in November 2019 through the end of June 2020, as reported by the Federal Ministry of the Interior in early July. With regard to driving behavior and accident incidence, the results show a significant increase in traffic safety; there were no serious accidents. In September, the German Federal Administrative Court definitively approved the section control radar, confirming its use as legal. Regarding the discussion relating to any raw measurement data, requested by German appraisers in addition to the reading from the standardized measuring method, the Physikalisch-Techische Bundesanstalt (PTB) in Braunschweig confirmed in spring 2020 that this data must not be made available in any speed measurement system. Software used in instruments that previously output raw measured data had to be revised. The Netherlands started issuing fines for using cellphones while driving in late 2020. Violations are identified using smart cameras and number plate recognition systems.

Consolidation continued in the rail industry as a method of countering competition from Chinese companies. In February 2020, French company Alstom announced its acquisition of Bombardier Transportation, which was completed in January 2021 to create a new railway technology group with revenue of around 15 billion euros.

The coronavirus pandemic unleashed an enormous crisis in the international aviation industry, among aircraft manufacturers, and their suppliers. Border closures and travel restrictions forced airlines to park finished aircraft; they ordered fewer new planes or canceled existing orders. Excess capacity, production stoppages, growing cost pressures, and an unsure outlook all weighed heavily on the overall industry, and especially its medium-sized suppliers. In late 2020, the German Aerospace Industries Association (BDLI) anticipated a year-on-year drop of 40 percent in revenue for civil aviation. Unlike in Germany, France established a fund financed by the government and industry – primarily the Airbus Group – to provide aid to the sector, for example by financing suppliers' inventories. Orders and deliveries developed at disparate rates at major aircraft manufacturers. Boeing posted a record loss and its weakest revenue for some 15 years. Just 157 deliveries of commercial aircraft were well short of the 806 in the company's record year of 2018. Boeing's business was also adversely affected by the flight ban on the 737-Max model in force since March 2019. Following a series of technical adjustments and software improvements, the plane was approved to fly again by the US Federal Aviation Administration in late 2020, in Europe in early 2021. By contrast, aircraft manufacturer Airbus benefited from the rapid recovery of air traffic in China and the need for smaller aircraft types, which only Airbus could supply as of late 2020. In total, Airbus delivered 566 aircraft, around a third less than in 2019. Despite the slump in demand, especially in the spring of 2020, Airbus received more new net orders than cancellations over the year as a whole.

Affecting the German security and defense technology industry, the German government extended for a further year and further tightened its ban on armaments exports to Saudi Arabia in December 2020. Licenses already issued, previously on hold, will be revoked, with the exception of supplies for European cooperation projects. The ban, which has been in effect since March 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, arms exports to countries involved in conflicts in Yemen or Libya, worth 1.16 billion euros, were nevertheless approved in 2020. Looking at the overall picture, it became apparent by mid-December 2020 that the value of approved arms exports for the year, at less than 6 billion euros, was sharply down on the record figure of 8.02 billion euros achieved in 2019. In January 2021, the US confirmed that Morocco would be acquiring the Patriot missile defense system.

Legal Framework Conditions

The legal framework conditions governing business operations essentially remained constant in 2020 and therefore had no significant impact on the business development of the Jenoptik Group.

77 Combined Management Report 152

Earnings, Financial, and Asset Position

Comparison of actual and forecast course of business

Thanks to good order intake growth in the fourth quarter of 2019 and sustained good performance of the semiconductor equipment business, the Jenoptik management forecast continued growth when it announced its preliminary results for the 2020 fiscal year in February 2020. This forecast was specified in the management report of the Annual Report 2019 which was prepared as of March 10, 2020. On publication of the final figures in March the management added a proviso to its outlook, as at this time it was not yet possible to reliably assess the extent to which the spread of coronavirus would impact on Jenoptik's business. At this point, the Executive Board expected the pandemic to have a significant impact on at least the first half-year.

Based on the countermeasures taken at the beginning of the pandemic and in view of an expected stronger second half-year, in early May the Executive Board expected to meet analysts' current average market expectations for the full year 2020, with revenue of around 800 million euros and a non-adjusted EBITDA margin of some 14.3 percent. In addition to this, the initiated structural adjustment, efficiency, and portfolio management projects were due to contribute to accelerated growth and improved profitability in the Group starting in 2021 at the latest.

On publication of earnings figures for the first half-year 2020, the management fleshed out its outlook for the year, forecasting revenue of between 770 and 790 million euros (not including the impacts arising from the pending acquisition of TRIOPTICS). This forecast was buttressed by the action taken to contain the impact of COVID-19 and an expected stronger second half-year. The EBITDA margin, adjusted for the impacts arising from the initiated structural and portfolio measures, was expected to be between 14.5 and 15.0 percent. Signs of recovery in the economy, at minimum, and no second wave of coronavirus were seen as prerequisites for a stronger second half-year.

Due to persistently weak overall economic development and the significantly increased risk of further drastic measures to contain the coronavirus pandemic, in mid-October the Executive Board then anticipated revenue, excluding TRIOPTICS, to come in at between 730 and 750 million euros in the 2020 fiscal year. Following a further improvement in the quality of earnings in the third quarter compared to the prior quarter, however, the adjusted EBITDA margin was now expected to be at the top end of the previously forecast range of 14.5 to 15.0 percent. Including TRIOPTICS' contribution to revenue of around 25 million euros, revenue of between 755 and 775 million euros and an adjusted EBITDA margin of between 15.0 and 15.5 percent (excluding PPA impacts arising from the acquisition of TRIOPTICS) was expected on publication of the 2020 nine-month earnings in mid-November.

In the year covered by the report, the Jenoptik Group generated revenue of 767.2 million euros, which was within the now expected range.

Extensive structural and portfolio measures were implemented over the course of the 2020 fiscal year. In order to ensure good transparency and easier comparability with prior-year figures, an adjusted EBITDA margin has been reported since publication of the first-quarter earnings. The margin was also decisive for internal control. The adjustments arise from expenses and income from site optimizations, restructuring, and cost-cutting programs, as well as from the costs related to M+A activities. To enable a better comparison, the prior-year figures have been similarly adjusted. Starting with publication of the half-year earnings, a forecast of an adjusted EBITDA margin has also been provided. Over the reporting year, the adjusted EBITDA margin, including PPA impacts, came to 17.0 percent, or 17.6 percent excluding PPA impacts of 4.6 million euros arising from the acquisition of TRIOPTICS, exceeding both the most recently forecast figure (excluding PPA impacts) and the prior-year figure of 16.5 percent. In the 2020 fiscal year, an EBITDA margin of 14.6 percent before adjustments was achieved (prior year: 15.7 percent).

Revenue and EBITDA of the divisions and their forecast development are shown in the following table. T30

At the beginning of 2020, the Executive Board expected to see a significant rise in order intake. In late March a proviso was also added to this assumption due to the COVID-19 pandemic. At the end of the year, the order intake was 6.7 percent down on the adjusted, 9.0 percent on the non-adjusted, prior-year figure.

Also affected by the pandemic, another proviso was added to the forecast cash conversion rate of slightly over 50 percent in March. By the end of 2020, the cash conversion rate was 55.8 percent (prior year: 57.7 percent) and thus above the 50-percent target.

It was expected that capital expenditure would be at around the same level as in the prior year in the 2020 fiscal year. This forecast was also issued as subject to a proviso in late March. Capital expenditure amounted to 47.3 million euros and was thus down on the 2019 figure.

T30 Actual and forecast course of business (in million euros / or as specified)

Indicator	Year-end 2019	2020 forecast		Year-end 2020	Change in %
Revenue	855.2	February: March: August: October: November:	further growth growth in the low single-digit percentage range [1] 770 to 790 million euros 730 to 750 million euros 755 to 775 million euros, incl. TRIOPTICS	767.2	−10.3
Light & Optics	350.0	March:	stable development	318.0	−9.2
Light & Production	228.9	March:	growth in the low double-digit percentage range [1]	178.9	−21.8
Light & Safety	108.7	March:	growth in the mid single-digit percentage range [1]	114.0	4.9
VINCORION	164.8	March:	growth in the mid single-digit percentage range [1]	151.7	−7.9
Adjusted EBITDA margin/ adjusted EBITDA margin excl. PPA TRIOPTICS	16.5 %	August: October: November:	14.5 to 15.0 % at top end of forecast range 15.0 to 15.5 % excl. PPA impacts from acquisition of TRIOPTICS	17.0 % / 17.6 %	
EBITDA / EBITDA margin	134.0 / 15.7 %	March:	growth/margin approx. 16 percent [1]	111.6 / 14.6 %	−16.7
Light & Optics	69.8	March:	marked increase [1]	68.6	−1.8
Light & Production	25.8	March:	growth stronger than revenue [1]	7.9	−69.4
Light & Safety	18.8	March:	slight increase [1]	22.3	18.8
VINCORION	24.2	March:	growth in line with revenue [1]	16.6	−31.2
Order intake	812.6	March:	markedly up on prior year [1]	739.4	−9.0
Cash conversion rate	57.7 %	March:	slightly above 50 percent [1]	55.8 %	
Capital expenditure [2]	55.6	March:	at prior-year level [1]	47.3	−15.0

[1] Subject to proviso
[2] without capital expenditure on financial investments

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".

Impacts of structural and portfolio measures

As part of Jenoptik's scheduled strategic development, the Executive Board has initiated a series of structural and portfolio measures, to drive growth and increase profitability over the medium to long term. In the interest of greater transparency regarding these measures, adjusted EBITDA, EBIT, and free cash flow figures are additionally reported for both the Group and the segments. The adjustments for the structural and portfolio measures result from expenses and income arising from site optimizations (e.g. merger, consolidation or closing of sites), restructuring and cost-cutting programs, as well as from the costs related to M+A activities. To enable comparisons, the figures for the prior-year period have also been adjusted. The impacts of the COVID-19 pandemic on operating business performance, including the impacts arising from the actions taken to contain it, are not included in the EBITDA, EBIT, or free cash flow adjustments.

Change to method of consolidation for HILLOS GmbH since 1/1/2020

HILLOS GmbH was qualified as a joint venture (formerly joint operation) from the 2020 fiscal year on, and is therefore no longer proportionately consolidated. As a result, indicators such as order intake and contributions to revenue and earnings are no longer included pro rata in the various items of the Consolidated Financial Statements. Instead, the economic success of the joint venture is now reported in other operating income. In order nevertheless to ensure comparability of the information, the prior-year figures have been adjusted for the contributions of HILLOS GmbH with regard to revenue, order intake and backlog, and employees.

Earnings position. Even in these challenging times, Jenoptik has, in part, a crisis-resistant business model and is in a good financial and balance sheet position.

At the time this report was prepared in March 2021, all production sites were open and operating. The company's operating business performed as expected from January through early March 2020. Since the end of March, however, significant impacts arising from the coronavirus pandemic and increasing uncertainty in the automotive industry became apparent and compromised business performance in this sector in the second quarter. Ongoing weak overall economic development continued into the second half-year, particularly in the traditional automotive business, but also in parts of the aviation, biophotonics, and industrial solutions businesses. Business with our public-sector contractors in the field of traffic safety technology and with the semiconductor equipment industry saw good growth.

Momentum did, however, pick up marginally in the course of the year; the quarter with the highest revenue both in the 2020 fiscal year and the prior year was the fourth, with 262.2 million euros (prior year: adjusted 255.7 million euros). Growth in 2020 came from the Light & Safety division, while all the other divisions saw a decline in revenue compared to the prior year. In the Light & Optics division, demand in the semiconductor equipment area remained at a high level, even during the coronavirus pandemic, while the consolidation of TRIOPTICS in the fourth quarter also contributed positively to revenue, but weak

T31 Revenue by division (in million euros)

	2020	2019	Change in %
Group (adjusted) [1]	767.2	837.0	−8.3
Group	767.2	855.2	−10.3
Light & Optics (adjusted) [1]	318.0	331.8	−4.2
Light & Optics	318.0	350.0	−9.2
Light & Production	178.9	228.9	−21.8
Light & Safety	114.0	108.7	4.9
VINCORION	151.7	164.8	−7.9
Other	4.5	2.8	60.6

[1] prior-year figures without HILLOS GmbH

growth in the biophotonics and industrial solutions businesses resulted in lower revenue overall. The Light & Production division posted a significant decline due to the coronavirus pandemic and structural issues in the automotive industry. As expected, business with public-sector contractors in the Light & Safety division developed positively. Figures in the VINCORION division were down on the prior year, in particular due to a weaker aviation business.

In the 2020 fiscal year, the Jenoptik Group generated revenue of 767.2 million euros, which, due to the pandemic and despite the acquisition of TRIOPTICS, was 8.3 percent down on the high level of the prior year (prior year: adjusted 837.0 million euros). The companies acquired in 2020 contributed a total of 47.2 million euros euros of revenue. The total revenue of HILLOS GmbH of 18.2 million euros was adjusted in the prior-year revenue figures for the Light & Optics division. T31

On a regional level, revenue fell in almost all regions, with growth seen only in Asia/Pacific. Revenue in Europe (excluding Germany) fell by 1.5 percent due to weaker demand in all divisions except Light & Safety. With good demand in the market for traffic safety technology and the acquisition of INTEROB, the share of group revenue, however, exceeded the high level of the prior year at 29.5 percent (prior year: adjusted 27.4 percent). In the Americas, revenue fell by an adjusted 18.0 percent compared to the prior year, primarily due to weaker demand from the automotive industry in the coronavirus pandemic. Revenue in Asia/Pacific rose 8.8 percent, mostly as a result of greater contributions to revenue from the Light & Optics and Light & Safety divisions, but also in connection with the acquisition of TRIOPTICS. At 552.5 million euros, Jenoptik generated 72.0 percent of revenue abroad in the past fiscal year (prior year: adjusted 603.3 million euros / 72.1 percent). Revenue in Germany decreased by 8.1 percent, here again due to a slump in demand in the automotive, biophotonics, and aviation businesses, which could only be partially offset by sustained good demand for traffic safety solutions, automation solutions, and the consolidation of the TRIOPTICS Group in the Light & Optics division in the fourth quarter of 2020. T32 T33

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

T32 Revenue by region (in million euros)

	2020	2019	Change in %
Group	767.2	855.2	−10.3
Germany	214.7	234.0	−8.2
Europe	226.1	246.0	−8.1
Americas	195.5	239.7	−18.4
Asia / Pacific	105.8	97.2	8.8
Middle East / Africa	25.2	38.3	−34.1

T33 Revenue by region adjusted[1] (in million euros)

	2020	2019	Change in %
Group	767.2	837.0	−8.3
Germany	214.7	233.7	−8.1
Europe	226.1	229.6	−1.5
Americas	195.5	238.3	−18.0
Asia / Pacific	105.8	97.2	8.8
Middle East / Africa	25.2	38.3	−34.1

[1] prior-year figures without HILLOS GmbH

Once again, in 2020 the Group generated its largest share of revenue of 29.7 percent in the automotive and mechanical engineering target market, although this figure was significantly down on the prior year (prior year: adjusted 35.5 percent). The share of revenue in the security and defense technology business (component business) remained at the prior-year level of 19.0 percent (prior year: adjusted 19.0 percent). Revenue generated with the semiconductor equipment industry increased to 21.8 percent (prior year: adjusted 20.1 percent). The medical technology market also had to battle the impacts of COVID-19, with hospitals postponing elective surgeries and therapeutic treatments as part of efforts to fight the pandemic. Revenue fell to 5.0 percent (prior year: adjusted 5.8 percent). The share of revenue in the new "consumer & electronics manufacturing" market segment, added in September 2020 following the consolidation of TRIOPTICS, came to 2.9 percent. In the 2020 fiscal year, our top three customers accounted for 19.2 percent of group revenue (prior year: adjusted 17.7 percent). T34 T35

The cost of sales fell by 10.4 percent to 505.0 million euros and thus at a slightly stronger rate than the revenue (prior year: 563.4 million euros). In addition to better utilization of manufacturing capacity in the photonics divisions and general cost savings, this was due to a lower cost of sales in the context of project settlements at the end of the year. This item also includes expenses arising from developments on behalf of customers, which totaled 16.3 million euros (prior year: 20.4 million euros), which were offset by corresponding revenues. T36

Owing to lower volumes, gross profit was down on the prior-year figure of 291.8 million euros and came to 262.2 million euros. With a lower cost of sales, the gross margin of 34.2 percent was slightly up on the prior year (prior year: 34.1 percent).

T34 Revenue by target market (in million euros and as percent of total revenue)

	2020		2019	
Automotive & mechanical engineering	227.8	29.7 %	296.8	34.7 %
Semiconductor equipment industry	167.6	21.8 %	168.2	19.7 %
Security and defense technology	145.8	19.0 %	159.3	18.6 %
Aviation & traffic	143.1	18.7 %	148.7	17.4 %
Medical technology	38.1	5.0 %	48.4	5.7 %
Consumer & electronics manufacturing	22.2	2.9 %	0.0	0.0 %
Other	22.7	3.0 %	33.7	3.9 %
Total	**767.2**	**100.0 %**	**855.2**	**100.0 %**

T35 Revenue by target market adjusted [1] (in million euros and as percent of total revenue)

	2020		2019	
Automotive & mechanical engineering	227.8	29.7 %	296.8	35.5 %
Semiconductor equipment industry	167.6	21.8 %	168.2	20.1 %
Security and defense technology	145.8	19.0 %	159.3	19.0 %
Aviation & traffic	143.1	18.7 %	148.7	17.8 %
Medical technology	38.1	5.0 %	48.4	5.8 %
Consumer & electronics manufacturing	22.2	2.9 %	0.0	0.0 %
Other	22.7	3.0 %	15.5	1.9 %
Total	**767.2**	**100.0 %**	**837.0**	**100.0 %**

[1] prior-year figures without HILLOS GmbH

Research and development expenses came to 43.7 million euros in 2020, at a similar level as in the prior year (prior year: 44.1 million euros). The share of R+D expenses as a proportion of revenue thus increased slightly to 5.7 percent (prior year: 5.2 percent). The R+D output, including developments on behalf of customers, was 69.0 million euros, remaining at approximately the level of the prior year (prior year: 68.4 million euros).

More detailed information on research and development can be found on page 92

As a result of travel restrictions imposed due to the coronavirus crisis, canceled trade shows, and lower personnel expenses, the selling expenses fell 3.3 percent to 86.4 million euros in 2020 (prior year: 89.3 million euros). Due to fixed costs and lower revenue, the selling expenses ratio of 11.3 percent was slightly up on the prior year figure (prior year: 10.4 percent).

General administrative expenses came to 61.8 million euros (prior year: 60.5 million euros), this increase the result of first-time inclusion of TRIOPTICS and INTEROB. In organic terms, administrative expenses actually fell; increased personnel expenses following adjustments to pay rates were offset by short-time working allowances. The administrative expenses ratio rose to 8.0 percent (prior year: 7.1 percent).

Impairment gains and losses on trade receivables and contract assets were positive overall, with a value of 3.9 million euros (prior year: minus 2.7 million euros). This was essentially due to an increased focus on receivables management, which resulted in a sharp reduction in overdue receivables and thus also a reduction in general bad debt allowances.

At 20.6 million euros, other operating income was up on the prior-year figure of 16.8 million euros, in particular due to gains from the disposal of fixed assets and slightly higher currency exchange gains of 8.1 million euros (prior year: 7.0 million euros).

Other operating expenses came to 35.6 million euros (prior year: 23.0 million euros). They included expenses for group projects, structural and portfolio measures, costs in connection with corporate transactions, and impairment losses on fixed assets. At 10.1 million euros, currency losses were up on the prior year (prior year: 9.1 million euros).

Overall, other operating income and expenses came to minus 15.0 million euros (prior year: minus 6.2 million euros).

Detailed information on the composition of other operating income and expenses can be found on page 178 of the Notes and in the Statement of Total Other Comprehensive Income on page 154

As a result of the drop in revenue, earnings before interest, taxes, depreciation, and amortization, incl. impairment losses and reversals (EBITDA) fell to an adjusted 130.7 million euros and were thus 5.3 percent down on the comparable prior-year figure of an adjusted 138.0 million euros. The impacts arising from structural and portfolio measures in the other operating expenses and functional costs items are worth a total of minus 19.1 million euros (prior year: minus 4.0 million euros). Of this figure, minus 11.4 million euros is attributable to restructuring/site optimization, minus 4.0 million euros to cost-cutting programs, and minus 3.6 million euros to costs for M+A activities. In total, these impacts, together with the decline in revenue, resulted in a significant year-on-year fall in non-adjusted EBITDA

77 Combined Management Report 152

T36 Key items in the Statement of Comprehensive Income (in million euros)

	2020	2019	Change in %
Cost of sales	505.0	563.4	−10.4
R+D expenses	43.7	44.1	−0.9
Selling expenses	86.4	89.3	−3.3
Administrative expenses	61.8	60.5	2.0
Impairment gains and losses on trade receivables and contract assets	3.9	−2.7	n.a.
Other operating income	20.6	16.8	22.4
Other operating expenses	35.6	23.0	54.5

T37 ROCE (in million euros)

	2020	2019
Long-term non-interest bearing assets	569.6	451.1
Short-term non-interest bearing assets	381.8	368.0
Non-interest bearing borrowings	−249.2	−213.3
Average tied capital	702.2	605.8
EBIT	59.3	88.9
ROCE (in percent)	8.4	14.7

Information on the segment EBITDA can be found in the Segment Report from page 119 on

to 111.6 million euros (prior year: 134.0 million euros). The companies acquired in 2020 contributed a total of 6.0 million euros to earnings, including PPA impacts of minus 4.6 million euros. Government grants, especially abroad, and short-time working allowances of 12.5 million euros were utilized. Primarily due to a lower cost of sales than expected in the photonics divisions, the adjusted EBITDA margin, including TRIOPTICS, increased to 17.0 percent, excluding PPA impacts to 17.6 percent (prior year: adjusted 16.5 percent). The EBITDA margin, including these adjustments and PPA impacts, came to 14.6 percent. T38 T39

EBITDA also saw sharply growing momentum over the course of the year. After 13.6 million euros in the first quarter of 2020 and 24.3 million euros in the second quarter, EBITDA rose to 28.8 million euros in the third quarter and an impressive 45.0 million euros in the fourth quarter (adjusted EBITDA Q1: 17.3 million euros; Q2: 24.9 million euros; Q3: 31.7 million euros; Q4: 56.8 million euros).

Adjusted for the impacts arising from structural and portfolio measures, worth a total of 19.4 million euros, EBIT (income from operations before interest and taxes) of 78.8 million euros was a significant 15.6 percent down on the prior-year figure (prior year: adjusted 93.4 million euros). The Group's adjusted EBIT margin consequently fell to 10.3 percent (prior year: adjusted 11.2 percent). The group EBIT item includes the operating result of the companies acquired in 2020 in the amount of minus 0.7 million euros, including impacts arising from the purchase price allocation of minus 10.2 million euros. T40 T41

As a result of the company acquisitions and the associated assets acquired, as well as the lower EBIT, the Group's ROCE (return on capital employed) also fell to 8.4 percent as of December 31, 2020 (prior year: 14.7 percent). Jenoptik shows this indicator inclusive of goodwill and before taxes. The calculation of the ROCE is explained in the Control System chapter on page 90 and shown in the following table. The average capital employed is calculated as the average of the month-end values in the reporting period. T37

T38 EBITDA (in million euros)

	2020	2019	Change in %
Group	111.6	134.0	−16.7
Light & Optics	68.6	69.8	−1.8
Light & Production	7.9	25.8	−69.4
Light & Safety	22.3	18.8	18.8
VINCORION	16.6	24.2	−31.2
Other	−3.8	−4.6	17.5

T39 EBITDA (adjusted)[1] (in million euros)

	2020	2019	Change in %
Group	130.7	138.0	−5.3
Light & Optics	72.7	71.7	1.4
Light & Production	15.8	25.8	−38.9
Light & Safety	22.7	18.8	20.9
VINCORION	20.6	24.2	−14.6
Other	−1.1	−2.5	54.1

[1] Figures adjusted for structural and portfolio measures (see explanation on page 104), including PPA impacts of minus 4.6 million euros

T40 EBIT (in million euros)

	2020	2019	Change in %
Group	59.3	88.9	−33.3
Light & Optics	52.1	57.9	−10.0
Light & Production	−4.8	14.5	n.a.
Light & Safety	15.2	11.7	30.3
VINCORION	9.7	17.4	−44.3
Other	−12.9	−12.5	−2.9

T41 EBIT (adjusted)[1] (in million euros)

	2020	2019	Change in %
Group	78.8	93.4	−15.6
Light & Optics	56.6	60.2	−6.0
Light & Production	3.1	14.5	−78.8
Light & Safety	15.6	11.7	33.8
VINCORION	13.7	17.4	−21.3
Other	−10.2	−10.4	1.7

[1] Figures adjusted for structural and portfolio measures (see explanation on page 104)

Higher interest expenses due to a higher level of debt and present value compounding of purchase price liabilities arising from company acquisitions, together with currency losses arising from the measurement of loans for group financing, were mainly responsible for the net balance of financial income and financial expenses decreasing, impacting on the financial result. Financial income included a dividend payment from a real estate firm. The financial result thus decreased to a total of minus 6.1 million euros (prior year: minus 3.7 million euros).

The lower EBIT was also reflected in the earnings before tax, which at a total of 53.2 million euros were a full 37.5 percent down on the prior year (prior year: 85.2 million euros).

The current income taxes of 8.4 million euros were also down on the level of the prior year (prior year: 11.4 million euros). Of these, 5.1 million euros (prior year: 8.4 million euros) are attributable to Germany and 3.3 million euros (prior year: 3.0 million euros) to other countries. The decline in Germany is due to the reduced domestic income in the reporting period.

The Jenoptik Group's cash effective tax rate, the relationship between the current income taxes and earnings before tax, rose due to the decreased domestic share of taxable income to 15.8 percent (prior year: 13.3 percent), but in view of the domestic earnings and the deductible tax losses carried forward in Germany was at a comparatively low level for a German company.

Non-cash deferred tax expenses came to 2.1 million euros in the past fiscal year (prior year: 6.2 million euros). The decrease is mainly due to a reduced utilization of the domestic tax losses carried forward and increased deferred tax income from effects of purchase price allocations of company acquisitions. The group tax rate thus amounted to 19.7 percent (prior year: 20.6 percent); income taxes totaled minus 10.5 million euros (prior year: minus 17.6 million euros).

See Notes for detailed information on the subject of taxes

T42 Order intake (in million euros)

	2020	2019	Change in %
Group (adjusted) [1]	739.4	792.7	−6.7
Group	739.4	812.6	−9.0
Light & Optics (adjusted) [1]	339.5	304.7	11.4
Light & Optics	339.5	324.7	4.6
Light & Production	157.8	199.3	−20.8
Light & Safety	92.3	107.9	−14.5
VINCORION	145.2	177.9	−18.4
Other	4.5	2.8	60.6

[1] Prior-year figures without HILLOS GmbH

T43 Order backlog (in million euros)

	2020	2019	Change in %
Group (adjusted) [1]	460.1	464.7	−1.0
Group	460.1	466.1	−1.3
Light & Optics (adjusted) [1]	178.0	143.5	24.0
Light & Optics	178.0	144.9	22.8
Light & Production	75.8	81.6	−7.1
Light & Safety	46.0	69.9	−34.2
VINCORION	160.3	169.7	−5.6

[1] Prior-year figures without HILLOS GmbH

T44 Frame contracts (in million euros)

	2020	2019	Change in %
Group	42.3	49.9	−15.3
Light & Optics	12.6	12.4	2.0
Light & Production	0	0	0
Light & Safety	8.9	12.6	−29.5
VINCORION	20.8	24.9	−16.7

T45 Book-to-bill ratio

	2020	2019
Group (adjusted) [1]	0.96	0.95
Group	0.96	0.95
Light & Optics (adjusted) [1]	1.07	0.92
Light & Optics	1.07	0.93
Light & Production	0.88	0.87
Light & Safety	0.81	0.99
VINCORION	0.96	1.08

[1] Prior-year figures without HILLOS GmbH

See page 119 of the Segment Report for detailed information on the order intake in the divisions

In 2020, Jenoptik generated earnings after tax of 42.7 million euros, a reduction of 36.8 percent (prior year: 67.6 million euros). At 41.8 million euros, earnings attributable to shareholders were down on the prior year's figure of 67.7 million euros, and earnings per share of 0.73 euros were also significantly lower than the prior year's figure of 1.18 euros per share.

Despite persistently weak overall economic development, demand picked up encouragingly, growing over the course of the year from 122.2 million euros in the second quarter to 177.0 million euros in the third and 228.5 million euros in the fourth quarter of 2020. For the full reporting period, however, the order intake fell 6.7 percent to a value of 739.4 million euros (prior year: adjusted 792.7 million euros) following the postponement of projects and one major cancellation, which were in part due to the coronavirus pandemic. Of this figure, 47.3 million euros were attributable to TRIOPTICS and INTEROB. The 2019 year included HILLOS GmbH orders worth an adjusted 19.9 million euros. T42

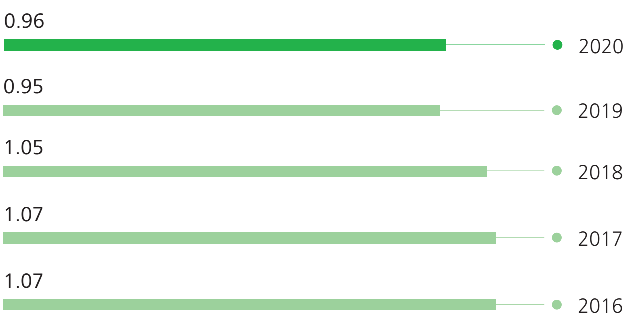
The order intake was also lower than the revenue generated in the fiscal year. The book-to-bill ratio increased marginally to 0.96 (prior year: adjusted 0.95/0.95). T45 G15

The Light & Optics division reported sustained good demand from the semiconductor equipment industry in 2020 and, as a result of the consolidation of TRIOPTICS in the fourth quarter, an order intake actually up on the prior year. Over the cumulative reporting period, the Light & Production division, which posted a major order from the automotive industry in September, was still down on the prior year due to continuing market uncertainty and the coronavirus pandemic, and despite the acquisition of INTEROB. Due to the project-related business, the Light & Safety division received fewer orders; VINCORION also posted an order intake down on the prior year, here due to weaker demand in the aviation business.

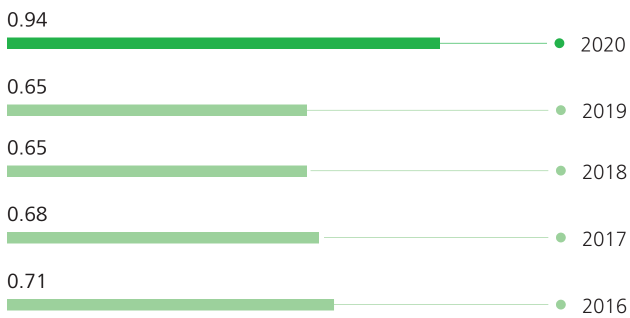
The order backlog reached a value of 460.1 million euros at the end of 2020, almost at the same good level as in the prior year (31/12/2019: adjusted 464.7 million euros). Of this order backlog, 78.5 percent (prior year: adjusted 68.0 percent) will be converted to revenue in 2021. Together with encouraging order intake growth in the fourth quarter of 2020, the well-filled order pipeline, and continued good performance in the semiconductor equipment business, this represents a solid basis for further growth in the 2021 fiscal year, to which organic growth and TRIOPTICS, which will be consolidated for the full year for the first time, will make a significant contribution. T43

Frame contracts reached an expected amount of 42.3 million euros (31/12/2019: 49.9 million euros). Frame contracts are contracts or framework agreements with customers, where the exact extent and time of occurrence cannot yet be specified precisely. The decline in the frame contracts is due to reclassifications in the order intake or adjustments. T44

G15 Development of the book-to-bill ratio



G16 Debt-to-equity ratio



Financial Position

Over the 2020 fiscal year, COVID-19 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. Despite the challenges posed by the pandemic and a higher level of debt arising from the acquisitions, the Group continues to ensure an ample supply of liquidity. As a result, Jenoptik succeeded in maintaining its free cash flow at a good level in fiscal year 2020 despite missing contributions to earnings.

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. 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 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.

As a result of the above measures, the existing syndicated loan, the remaining debenture bonds, the bridge financing mechanism concluded in the middle of the year, and existing cash and cash equivalents, the liquidity of all the group companies in the past fiscal year was sufficiently secured at all times.

See page 216 of the Notes for more information

Capital structure and financing analysis

With an excellent equity ratio of 51.5 percent as of December 31, 2020 and net debt of 201.0 million euros, the Group enjoys a solid and viable financing structure, as well as healthy balance sheet ratios. This gives Jenoptik the flexibility and financial latitude to finance future organic growth and potential acquisitions in the process implementing its international growth strategy.

The issued debenture bonds, worth 69.0 million euros, mature in April 2022. The Group is currently planning to issue new debenture bonds with a volume of at least 200 million euros and then to terminate the bridge financing of 300 million euros that has not been utilized to date. Jenoptik can also make use of a syndicated loan in the amount of 230.0 million euros through March 2022. Financial covenants have been agreed for this syndicated loan, of which around 120 million euros have been utilized as of the balance sheet date, and Jenoptik is in compliance with all their conditions. The syndicated loan is scheduled to be renewed and expanded in the second half-year 2021.

In addition to cash and cash equivalents of 63.4 million euros and current financial investment of 4.9 million euros, the Group also has unused capacity from the framework loan agreements mentioned above totaling 400 million euros to fall back on. This means that, as of the end of 2020, Jenoptik had over 450 million euros available for corporate development projects.

See page 196 of the Notes for more information on factoring

77 Combined Management Report 152

T46 Net and gross debt (in million euros)

	2020	2019	2018	2017	2016
Non-current financial debt	138.4	122.6	111.4	108.6	120.5
Current financial debt	130.9	37.0	10.1	19.3	4.1
Gross debt	**269.3**	**159.6**	**121.5**	**127.9**	**124.6**
minus current financial investments	4.9	69.7	59.5	64.6	50.5
minus cash and cash equivalents	63.4	99.0	89.3	132.3	92.0
Net debt	**201.0**	**−9.1**	**−27.2**	**−69.0**	**−17.9**

In 2020, the Group's non-current financial debt increased to 138.4 million euros (31/12/2019: 122.6 million euros). This item included financial liabilities to banks in the amount of 90.7 million euros (31/12/2019: 72.2 million euros) and lease liabilities of 47.7 million euros (31/12/2019: 50.4 million euros).

Current financial debt increased sharply due to utilization of the syndicated loan, to 130.9 million euros (31/12/2019: 37.0 million euros). At the end of 2020, non-current financial debt accounted for around 51 percent of Jenoptik's financial debt (31/12/2019: 77 percent).

The debt-to-equity ratio was 0.94 at the end of 2020 (31/12/2019: 0.65) due to a significant increase in borrowings in connection with the acquisition of the initial 75-percent stake in TRIOPTICS. The debt-to-equity ratio is defined as the ratio between borrowings (649.5 million euros) and equity (689.4 million euros). G16

At year-end 2020, the net cash position, defined as the total cash, cash equivalents, and current financial investments minus current financial debt, amounted to minus 62.6 million euros (31/12/2019: 131.7 million euros). The value of cash, cash equivalents, and current financial investments increased to 68.3 million euros (31/12/2019: 168.7 million euros); current financial debt rose to 130.9 million euros (31/12/2019: 37.0 million euros).

Cash, cash equivalents, and current financial investments fell as of December 31, 2020, in particular due to the acquisitions of TRIOPTICS and INTEROB and the repayment of a debenture bond. The sharp rise in financial debt following the acquisitions resulted in net debt increasing to 201.0 million euros as of December 31, 2020 (31/12/2019: minus 9.1 million euros).

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

	2020	2019	Change in %
Capital expenditure	47.3	55.6	−15.0
Intangible assets	17.3	11.7	48.2
Property, plant, and equipment	29.9	43.9	−31.8
Investment properties	0	0	n. a.
Depreciation / amortization / impairment losses and reversals	52.3	45.1	16.1
Intangible assets	15.8	11.6	36.4
Property, plant, and equipment	36.5	33.4	9.2
Investment properties	0.1	0.1	−2.6

T48 Capital expenditure by division – Intangible assets and property, plant and equipment (in million euros)

	2020	2019	Change in %
Group	47.3	55.6	−15.0
Light & Optics	18.6	18.4	1.0
Light & Production	4.9	13.9	−65.0
Light & Safety	4.6	4.1	13.8
VINCORION	9.2	8.8	4.2
Other	10.0	10.4	−4.0

Analysis of capital expenditure

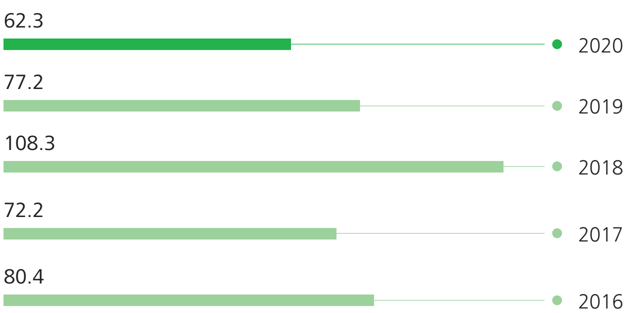
The focus of capital expenditure is derived from the group strategy and is in line with the planned growth targets and the asset structure of the Group. To ensure this, the individual investments are systematically reviewed with respect to sustainability or their value contribution on the basis of performance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

In 2020, the Group invested 47.3 million euros in intangible assets and property, plant, and equipment (prior year: 55.6 million euros). Capital expenditure was primarily deployed to create the conditions for growth and new customer orders, for example by increasing manufacturing capacity or investing in new technical equipment. T47

At 29.9 million euros, the largest share of capital expenditure was once again on property, plant, and equipment (prior year: 43.9 million euros). Due to business performance in the past year, capital expenditure declined significantly in the Light & Production division. A large share of capital expenditure in the prior year was attributable to the new build at the Villingen-Schwenningen site.

Capital expenditure for intangible assets (excluding additions to the group of consolidated entities) rose to 17.3 million euros (prior year: 11.7 million euros), in part due to the costs involved in setting up and launching an SAP S/4 HANA system and an increase in development services arising from internal projects which had to be capitalized and came to 8.6 million euros during the reporting period (prior year: 3.8 million euros). T48

G17 Free cash flow (in million euros)



Scheduled depreciation / amortization grew to 50.9 million euros (prior year: 43.8 million euros). This increase was mainly due to impacts arising from the purchase price allocation for the companies acquired in 2020. Impairment losses and reversals came to minus 1.4 million euros (prior year: minus 1.2 million euros).

Due to a higher level of capital expenditure in the 2019 fiscal year and the acquisitions in 2020, depreciation on property, plant, and equipment increased to 35.2 million euros (prior year: 33.0 million euros) and was thus above the figure for capital expenditure on property, plant, and equipment.

Amortization on intangible assets amounted to 15.6 million euros (prior year: 10.8 million euros), and, as in the prior year, primarily included depreciation of patents, trademarks, and software, as well as intangible assets identified in the course of company acquisitions.

Analysis of cash flows

Cash flows from operating activities fell to 89.7 million euros in the year covered by the report (prior year: 108.9 million euros). The operating cash flow was primarily affected by lower earnings before tax and the negative impacts arising from the change in provisions and working capital (working capital – see page 115). T49

In 2020, cash flows from investing activities amounted to minus 188.4 million euros (prior year: minus 54.4 million euros), Over the reporting period, they were largely influenced by payments amounting to 220.4 million euros, primarily for the acquisitions of TRIOPTICS in September and INTEROB in February. Other key items included the capital expenditure for intangible assets and property, plant, and equipment, and proceeds from and capital expenditure for short-term investments in connection with purchase price payments, where the net inflow was significantly higher than in the prior year. Proceeds exceeded capital expenditure by 69.9 million euros and thus had a positive impact (prior year: negative impact of 9.7 million euros).

Due to lower cash flows from operating activities before taxes and interest, the free cash flow of 62.3 million euros was down on the prior year (77.2 million euros). Adjusted for the cash impacts of structural and portfolio measures, the free cash flow came to 67.2 million euros (prior year: adjusted 79.3 million euros). The free cash flow is calculated as the cash flows from

More information on capital expenditure can be found in the Segment Report from page 119 on; on future investment projects in the Forecast Report from page 146 on

operating activities before payments for income tax in the amount of 102.3 million euros (prior year: 121.6 million euros), less expenditure for operating investment activities, i.e., minus proceeds from and capital expenditure for intangible assets and property, plant, and equipment, amounting to 40.0 million euros (prior year: 44.3 million euros). G17

The cash conversion rate, adjusted for the impacts arising from structural and portfolio measures, came to 51.4 percent in the 2020 fiscal year (prior year: adjusted 57.5 percent). On a non-adjusted basis, the figure was 55.8 percent (prior year: 57.7 percent).

The cash flows from financing activities amounted to 63.7 million euros in the period covered by the report (prior year: minus 46.1 million euros), and were particularly influenced by the use of the syndicated loan in connection with the acquisition of TRIOPTICS and the drawdown of a KfW loan for the new build in Villingen-Schwenningen. This was offset by repayments of bonds and loans, as, among other things, a debenture bond was repaid. Payments to acquire the 33.42 percent of shares in JENOPTIK Japan Co. Ltd. from the former minority shareholder are included in the "payments for the acquisition of non-controlling interests" item. Dividends worth a total of 8.4 million euros were also paid out in 2020 (prior year: 20.0 million euros), of which 7.4 million euros were paid to JENOPTIK AG shareholders and 1.0 million euros to TRIOPTICS minority shareholders.

Asset Position

Over the 2020 fiscal year, COVID-19 impacted on the operating activities of the Jenoptik businesses. First-time consolidation of TRIOPTICS on September 24, 2020 also resulted in significant changes to the Consolidated Statement of Financial Position. Despite the challenges posed by the coronavirus pandemic and a higher level of debt arising from the acquisitions, the Group continued to ensure healthy balance sheet ratios in the view of the Executive Board.

As of December 31, 2020, the Jenoptik Group's total assets increased to 1,338.8 million euros (31/12/2019: 1,083.3 million euros), a rise of 255.5 million euros. There were significant changes to individual items, in particular due to first-time consolidation of TRIOPTICS and INTEROB.

On the assets side, the acquisitions primarily had the effect of boosting non-current assets to a value of 848.9 million euros (31/12/2019: 555.2 million euros). Intangible assets saw a particularly strong increase compared to year-end 2019, rising from 212.7 to 487.1 million euros, largely due to the goodwill recognized during first-time consolidation of the acquired companies. The "Goodwill" item increased to 390.2 million euros (31/12/2019: 165.9 million euros) and thus remained the largest item in intangible assets. The increase in intangible assets was also the result of an increase in acquired patents, trade-

T49 Cash flows (in million euros)

	2020	2019	2018	2017	2016
Cash flows from operating activities	89.7	108.9	135.5	96.3	100.1
Cash flows from investing activities	– 188.4	– 54.4	– 117.5	– 42.2	– 71.3
Cash flows from financing activities	63.7	– 46.1	– 60.9	– 12.9	– 20.7
Cash-effective change in cash and cash equivalents	– 35.0	8.4	– 42.9	41.3	8.0
Non-cash change in cash and cash equivalents	– 0.6	1.4	– 0.1	– 0.9	0.1
Change in cash and cash equivalents	**– 35.6**	**9.8**	**– 43.1**	**40.3**	**8.1**
Cash and cash equivalents at the end of the fiscal year	**63.4**	**99.0**	**89.3**	**132.3**	**92.0**

marks, and software, as well as advances for intangible assets. Property, plant, and equipment increased from 251.1 million euros at the end of 2019 to 263.5 million euros as of December 31, 2020, in part due to the real estate acquired in the course of the acquisitions. Advances/assets under construction were sharply down on the prior year following completion of the new plant in Villingen-Schwenningen. Financial investments grew in value to 16.3 million euros (12/31/2019: 8.3 million euros), in particular due to growth in the included shares in investments accounted for using the equity method. There were only minor changes in the remaining items under non-current assets.

Over the past fiscal year, current assets fell to 489.9 million euros (31/12/2019: 528.1 million euros), primarily due to the financing of the two acquisitions in 2020. The value of cash and cash equivalents decreased to 63.4 million euros (31/12/2019: 99.0 million euros); current financial investments fell to 4.9 million euros (31/12/2019: 69.7 million euros). The acquisition of TRIOPTICS was mainly responsible for the rise in inventories to 191.4 million euros (31/12/2019: 153.7 million euros). Trade receivables remained virtually unchanged, despite the TRIOPTICS and INTEROB receivables included in this item for the first time. This was in part due to active receivables management and lower revenue during the pandemic. Following the acquisition of INTEROB (project business), contract assets increased in value to 74.7 million euros (31/12/2019: 54.9 million euros).

The working capital rose as of December 31, 2020, also essentially due to the acquisitions, to 268.1 million euros (31/12/2019: 217.8 million euros). On the assets side, inventories 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 to 34.9 percent compared to year-end 2019 (31/12/2019: 25.5 percent) due to the fall in revenue and the increase in working capital. Reasons for this include the first-time consolidations; TRIOPTICS is included here on a pro rata basis with regard to revenue but in full in the balance sheet items and thus in working capital. T50

The positive earnings after tax, in particular, but also the recognition of the minority interests of the TRIOPTICS foreign subsidies in the "non-controlling interests" item, produced a 33.9-million-euro increase in equity, to 689.4 million euros (31/12/2019: 655.4 million euros). By contrast, equity was reduced by the dividend payment, currency differences, and the acquisition of shares in JENOPTIK Japan Co. Ltd. The equity ratio, that of equity to total assets, fell to 51.5 percent in the light of significantly higher total assets (31/12/2019: 60.5 percent). G18

Non-current liabilities were primarily affected by the financing for the acquisition of TRIOPTICS, and rose to 233.0 million euros (31/12/2019: 176.0 million euros). The taking up of a

More information on the intangible assets and property, plant, and equipment can be found in the Notes, points 5.1 and 5.2

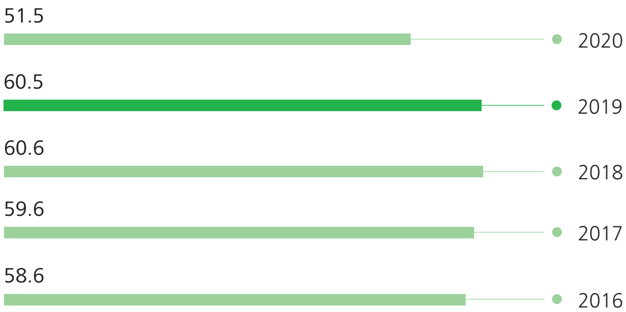
T50 Components of working capital (in million euros)

	2020	2019	Change in %
Inventories	191.4	153.7	24.6
Trade receivables	138.0	136.9	0.8
Contract assets	74.7	54.9	36.2
Trade payables	89.7	83.7	7.2
Contract liabilities	46.3	43.9	5.5
Total	**268.1**	**217.8**	**23.1**

KfW loan and the acquired companies' liabilities assumed during first-time consolidation produced a sharp rise in non-current financial debt, of 15.8 million euros to 138.4 million euros (31/12/2019: 122.6 million euros). Other non-current liabilities increased in connection with the acquisitions of TRIOPTICS and INTEROB, in part due to the recognition of other conditional purchase price components. Deferred taxes also increased as a result of the first-time consolidation of TRIOPTICS and INTEROB. Non-current liabilities also include the debenture bonds issued in 2015, currently totaling 69.0 million euros (31/12/2019: 69.0 million euros). A fall in interest rates caused pension provisions to increase slightly (see the Notes, chapter "Provisions for pensions and similar obligations" from page 201 on).

Current liabilities rose to 416.4 million euros (31/12/2019: 251.9 million euros). This was largely due to the increase in current financial debt to 130.9 million euros (31/12/2019: 37.0 million euros), primarily from the utilization of the syndicated loan. This was offset by the repayment of a debenture bond in the sum of 21.5 million euros. Following recognition of the purchase price liability for the acquisition of the remaining 25 percent in TRIOPTICS, other current financial liabilities increased from 12.5 million euros at the end of 2019 to 75.3 million euros at the end of 2020. As of the reporting date, current trade accounts payable increased in value to 89.7 million euros (31/12/2019: 83.7 million euros). First-time consolidation of TRIOPTICS and an increase in advances received for projects with revenue recognition at a point in time resulted in higher contract liabilities of 46.3 million euros (31/12/2019: 43.9 million euros).

G18 Equity ratio (in percent)



T51 Financial debt by due date (in million euros)

	Up to 1 year		1 to 5 years		More than 5 years		Total as of 31/12	
	2020	2019	2020	2019	2020	2019	2020	2019
Liabilities to banks	118.6	26.3	82.1	72.2	8.6	0	209.2	98.5
Lease liabilities	12.3	10.7	32.8	34.0	14.9	16.4	60.0	61.1
Total	**130.9**	**37.0**	**115.0**	**106.2**	**23.4**	**16.4**	**269.3**	**159.6**

T52 Components of interest-bearing debt (in million euros)

	2020	2019	Change in %
Current	130.9	37.0	253.7
Liabilities to banks	118.6	26.3	351.1
Lease liabilities	12.3	10.7	14.9
Non-current	138.4	122.6	12.9
Liabilities to banks	90.7	72.2	25.6
Lease liabilities	47.7	50.4	−5.3

Acquisitions and disposals

The following acquisitions and disposals were made in the 2020 fiscal year.

In February 2020, Jenoptik acquired the Spanish INTEROB Group, consisting of INTEROB, S.L. and INTEROB RESEARCH AND SUPPLY, S.L. The group of companies specializes in projects relating to the plant planning, design, manufacture, and integration of automation solutions, as well as robotics applications with a focus on the automotive industry. The acquisition allows the Jenoptik Group to boost its position as a turnkey provider of automated production solutions. In 2019, INTEROB posted some 22 million euros of revenue; its profitability was above the average in the Jenoptik Group. Revenue and earnings for 2020, including the impacts arising from the purchase price allocation, were consolidated on a pro rata basis.

In March 2020, Jenoptik acquired 33.42 percent of shares in JENOPTIK Japan Co. Ltd. from its partner Kantum Ushikata Co., Ltd. and converted the company into a wholly-owned group subsidiary. Jenoptik Japan's business covers sales of Jenoptik photonic components, systems, and equipment – in addition to diode lasers, primarily laser processing machines, optics, and industrial metrology. Jenoptik will chiefly focus its investment on sales structures and thus its local presence.

On the closing date of September 24, 2020, Jenoptik completed the acquisition of an initial 75-percent stake in Trioptics GmbH. The Group will acquire the remaining 25 percent from the owners on December 31, 2021 on terms already agreed. TRIOPTICS is a leading international supplier of measurement and production systems for optical components and sensors in the digital world. In 2019, the company generated revenue of around 80 million euros, with an EBITDA margin of some 27 percent. The acquisition of TRIOPTICS allows Jenoptik to further sharpen its focus on high-growth cutting-edge photonics industries and will contribute to the further internationalization of the Group. The TRIOPTICS business is being integrated in the Light & Optics division. The company, based in Wedel near Hamburg, has over 400 employees around the world. More than half of its revenue is generated in Asia. Revenue and earnings for 2020, including the impacts arising from the purchase price allocation, were consolidated on a pro rata basis.

There were no other acquisitions or disposals in 2020.

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 February 2019, Jenoptik has been on the market with new brand positioning and a new corporate design. With "Strategy 2022," the Group is concentrating on the core photonics areas of light and optics under the Jenoptik brand. The independent VINCORION brand for the mechatronics business was launched in 2018 to take better account of specific market requirements.

Non-capital tax losses carried forward. Tax losses carried forward 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 losses carried forward, deferred tax assets are not recognized for corporation tax purposes in the amount of 23.8 million euros (prior year: 29.3 million euros) and trade tax purposes in the amount of 81.3 million euros (prior year: 129.0 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 6.6 million euros (prior year: 7.3 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. Although customers' payment terms have in some cases been significantly extended, this has allowed Jenoptik to convert some long-term receivables into liquidity at short notice. This additional liquidity is then available to the Group for various operational purposes, e.g. investment and acquisitions. 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 on Jenoptik's Statement of financial position ("real factoring"). Jenoptik does not use any other off-balance sheet financing instruments.

See page 167 of the Notes for more information on the acquisition of INTEROB, JENOPTIK Japan, and TRIOPTICS

With regard to off-balance sheet obligations, we refer to the section "Other Financial Obligations" on page 223 of the Notes.

Information on contingent assets and liabilities can be found in the Notes, from page 223 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 190.5 million euros (prior year: 104.4 million euros). More information can be found in the Remuneration Report, from page 51 on, and in the Information on Takeover Law, from page 47 on.

General Statement by the Executive Board on the Development of Business

The coronavirus pandemic had varying impacts on revenue performance in the different divisions within the Jenoptik Group. The pandemic had little to no impact on business with public-sector contractors and the semiconductor equipment industry, with both areas actually posting growth. Overall economic development was still weak, however, particularly in the traditional automotive business, but also in parts of the aviation and biophotonics industries. In the 2020 fiscal year, the Jenoptik Group posted an overall fall in revenue, primarily due to the pandemic. By contrast, Jenoptik managed to increase the EBITDA margin, adjusted for the impacts arising from structural and portfolio measures, to 17.0 percent, or an even higher 17.6 percent including TRIOPTICS and excluding PPA impacts. TRIOPTICS, acquired in September 2020, made a positive contribution to revenue and earnings performance.

In the fourth quarter, the Group achieved a sharp increase in the order intake compared to prior quarters. Overall, the Group received orders worth 739.4 million euros in the past fiscal year, thus falling short of the 2019 figure. The 2020 order intake also includes new orders at the companies acquired this year. The Group's order backlog was almost on a par with the good level of the prior year and thus represents a solid basis for further profitable growth.

Thanks to the initiated measures and good working capital management, the Executive Board maintained the free cash flow at a good level. Jenoptik was not only able to further boost profitability (adjusted) but also to secure the liquidity, finance two acquisitions and other investments, thereby creating a good basis for further investment in our growth.

The balance sheet and financing structure remained highly robust, despite the challenging environment caused by the COVID-19 pandemic and financing for two acquisitions. Due to the significant increase in total assets resulting from the acquisitions, the equity ratio came to 51.5 percent.

In view of the difficult environment caused by the coronavirus, 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, together with VINCORION represent the segments as defined in IFRS 8.

The range of services and competitive positioning of the divisions and VINCORION are set out in greater detail in the Group Business Model chapter, from page 80 on.

The revenue, order intake, and order backlog numbers provided in the segment report are external figures.

Light & Optics Division

In interpreting the business performance of the Light & Optics division, it should be noted that HILLOS GmbH is qualified as a joint venture (formerly joint operation) from the 2020 fiscal year on as a result of the scheduled reduction in production capacity used by the company itself, and is therefore no longer proportionately consolidated. As a result, indicators such as order intake and contributions to revenue and earnings are no longer included pro rata in the various items of the Consolidated Financial Statements. Instead, the economic success of this joint venture is now reported in other operating income. In order nevertheless to ensure comparability of the information, we have adjusted the prior-year contributions of HILLOS GmbH with regard to revenue, order intake and backlog, and employees.

On the closing date of September 24, 2020, Jenoptik successfully completed the acquisition of an initial 75-percent stake in Wedel-based optics specialist TRIOPTICS. The company specializes in measurement and production systems for optical components. The TRIOPTICS business was integrated as a business field into the Light & Optics division. Jenoptik will acquire the remaining 25 percent of TRIOPTICS from the owners on December 31, 2021 on terms already agreed. Based on the existing control and present ownership relating to the remaining 25 percent of the shares, the company was consolidated at 100 percent of the shares. The company was included in the financial statements from the time of closing; contributions to revenue, earnings, and order intake are set out below.

Information on the various markets can be found in the Sector Report, from page 99 on, and on future developments in the Forecast Report, from page 146 on

The Light & Optics division supports as an OEM partner its customers with a broad 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 2020 reporting year.

Despite the spread of the coronavirus, business with the semiconductor equipment industry remained robust over the period covered by the report, but the division posted sharp declines due to the pandemic in its biophotonics and industrial solutions businesses. Light & Optics generated revenue of 318.0 million

T53 Light & Optics at a glance (adjusted) (in million euros)

	2020	2019	Change in %
Revenue [1]	318.0	331.8	−4.2
EBITDA [2]	72.7	71.7	1.4
EBITDA margin in % [2,3]	22.8	21.5	
EBIT [2]	56.6	60.2	−6.0
EBIT margin in % [2,3]	17.8	18.1	
Free cash flow [2]	44.1	57.1	−22.7
Cash conversion rate in % [2]	60.7	79.6	
Order intake [1]	339.5	304.7	11.4
Order backlog [1]	178.0	143.5	24.0
Employees [1]	1,814	1,383	31.2

[1] Prior-year figures without HILLOS GmbH
[2] Figures adjusted for structural and portfolio measures (see explanation on page 104)
[3] Based on total revenue (prior year: based on adjusted revenue)

euros in 2020 (prior year: adjusted 331.8 million euros). The fourth quarter was the strongest, with 108.2 million euros in revenue (prior year: adjusted 95.5 million euros). TRIOPTICS contributed revenue of 27.8 million euros following the closing date in September 2020. In addition, there was also increasing revenue recognition over time based on the progress of projects. The Light & Optics division's share of group revenue rose to 41.4 percent (prior year: adjusted 39.6 percent).

In total, around 84 percent of the division's revenue was generated abroad in 2020 (prior year: adjusted 78 percent). Europe remained stable, enjoying the greatest share at 119.3 million euros (prior year: adjusted 118.3 million euros), followed by the Americas, still in second place despite a fall in revenue. Thanks to the revenue contribution from TRIOPTICS, Asia saw the strongest increase in 2020, from an adjusted 52.3 million euros to 70.4 million euros.

Adjusted earnings before interest, taxes, depreciation, and amortization (EBITDA) were up 1.4 percent on the prior year, to 72.7 million euros (prior year: adjusted 71.7 million euros), including negative PPA impacts of 4.6 million euros. Despite the minor fall in revenue, earnings increased, primarily due to a lower cost of sales and active cost management. TRIOPTICS contributed 4.3 million euros of these earnings. In terms of EBITDA, the fourth quarter was also the most profitable of the year, with an adjusted 24.7 million euros. The adjusted EBITDA margin of 22.8 percent in 2020 exceeded the prior-year figure of an adjusted 21.5 percent.

The division generated an adjusted EBIT of 56.6 million euros (prior year: adjusted 60.2 million euros), including PPA impacts of minus 8.3 million euros arising from the acquisition of TRIOPTICS. The adjusted EBIT margin came to 17.8 percent (prior year: adjusted 18.1 percent).

With a value of 339.5 million euros, the order intake exceeded the prior-year figure of an adjusted 304.7 million euros, primarily due to sustained good demand from the semiconductor equipment industry and new orders from TRIOPTICS worth 26.9 million euros. By contrast, the biophotonics business, in particular, received fewer orders as a result of the COVID-19 pandemic. Set against revenue, this resulted in a book-to-bill ratio of 1.07 for the reporting period (prior year: adjusted 0.92/non-adjusted 0.93). In the fourth quarter, the division saw a significant intra-year increase in its order intake thanks to orders from several different industries and the contributions from TRIOPTICS.

T54 Light & Optics at a glance (in million euros)

	2020	2019	Change in %
Revenue	318.0	350.0	−9.2
EBITDA	68.6	69.8	−1.8
EBITDA margin in % [1]	21.5	19.8	
EBIT	52.1	57.9	−10.0
EBIT margin in % [1]	16.3	16.5	
Capital expenditure	18.6	18.4	1.0
Free cash flow	40.5	57.1	−29.1
Cash conversion rate in %	59.0	81.7	
Order intake	339.5	324.7	4.6
Order backlog	178.0	144.9	22.8
Frame contracts	12.6	12.4	2.0
Employees	1,814	1,416	28.2

[1] Based on total revenue

Due to the higher order intake, the division's order backlog rose by 34.5 million euros in value, to 178.0 million euros, at the end of 2020 (31/12/2019: adjusted 143.5 million euros), mainly buoyed by acquisitions. TRIOPTICS' order backlog was worth 27.1 million euros. The Light & Optics division also has frame contracts worth 12.6 million euros (31/12/2019: 12.4 million euros).

Due to a noticeable increase in working capital, and a reduction in provisions, the division achieved an adjusted free cash flow of 44.1 million euros before interest and income taxes in 2020 (prior year: 57.1 million euros). The division continued to utilize factoring as a financing instrument in 2020, but the factoring volume remained practically unchanged. By contrast, the working capital increased sharply for the reasons set out above, from 77.9 million euros at the end of 2019 to 114.3 million euros as of December 31, 2020.

As of December 31, 2020, Light & Optics had a total of 1,814 employees, 431 more than in the prior year (prior year: adjusted 1,383), primarily due to the acquisition of TRIOPTICS. At the end of 2020, the division had 86 trainees (prior year: 56).

R+D expenses in the past fiscal year totaled 19.2 million euros (prior year: 19.0 million euros). Including development services on behalf of customers, the division's R+D output came to 32.3 million euros, slightly down on the prior-year figure of 34.6 million euros. The share of total R+D costs in division revenue was 10.2 percent (prior year: 9.9 percent).

The division's capital expenditure in property, plant, and equipment and intangible assets remained virtually unchanged at 18.6 million euros (prior year: 18.4 million euros). This was offset by depreciation/amortization in the sum of 16.1 million euros (prior year: 10.7 million euros), up due to PPA impacts in connection with the acquisition of TRIOPTICS. Key areas of investment in the 2020 fiscal year included the expansion of capacities and the technical development of the manufacturing infrastructure, e.g., for the semiconductor equipment and automotive sectors. 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 two-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. In addition to acquiring TRIOPTICS, Jenoptik invested in Japan, acquiring the remaining 33.42 percent of shares in JENOPTIK Japan Co. Ltd. from its longstanding partner and minority shareholder Kantum Ushikata Co., Ltd in the first quarter.

Production and organization. The Global Operations area in the Light & Optics division again consistently improved its quality and on-time delivery performance around the world in 2020. An extensive package of site optimization measures was also successfully put in place. It covers the closure of a small site in Berlin and consolidation of its activities at two other sites, the restructuring of the Triptis plant, the merger of two production units within the imaging and sensor systems business in Jena, and the conversion of the Mühlhausen site into a center of development excellence for a strategic customer. In the future, Global Operations aims to further expand its global reach and better pool expertise at locations.

For more information on the key development topics, see the Research and Development chapter from page 92 on

Light & Production Division

The Light & Production division particularly focuses on solutions for the automotive industry in its Industrial Metrology, Laser Processing, and Automation & Integration business areas. With the acquisition of the Spanish company INTEROB in January 2020, the Light & Production division strengthened its position as a turnkey provider of automated production solutions. To achieve this goal, the division took an important step on the road to becoming an integrated supplier of high-tech production environments when it acquired Prodomax back in 2018.

Light & Production was the division most severely affected by the COVID-19 pandemic in the Jenoptik Group. This was exacerbated by the ongoing reluctance to invest and considerable uncertainty within the automotive industry, as well as the increasing shift from combustion engines to alternative, particularly electric, drive systems.

Revenue in the Light & Production division fell sharply, by 21.8 percent to 178.9 million euros in 2020 (prior year: 228.9 million euros), although it achieved the highest quarterly revenue in the reporting year of 60.0 million euros in the fourth quarter. All three units – Industrial Metrology, Laser Processing, and Automation & Integration – reported sharp declines in 2020, especially due to postponed projects, one major order cancellation, and the temporary closure of two Jenoptik plants in the division due to the coronavirus in the first half of the year. INTEROB (first-time consolidation on February 4, 2020) contributed revenue of 19.4 million euros over the reporting period. The division's share of group revenue fell to 23.3 percent (prior year: share of adjusted group revenue 27.3 percent).

T55 Light & Production at a glance (adjusted) (in million euros)

	2020	2019	Change in %
EBITDA[1]	15.8	25.8	−38.9
EBITDA margin in %[1,2]	8.8	11.3	
EBIT[1]	3.1	14.5	−78.8
EBIT margin in %[1,2]	1.7	6.3	
Free cash flow[1]	0.2	19.5	−99.2
Cash conversion rate in %[1]	1.0	75.6	

[1] Figures adjusted for structural and portfolio measures (see explanation on page 104)
[2] Based on total revenue

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

	2020	2019	Change in %
Revenue	178.9	228.9	−21.8
EBITDA	7.9	25.8	−69.4
EBITDA margin in %[1]	4.4	11.3	
EBIT	−4.8	14.5	k. A.
EBIT margin in %[1]	−2.7	6.3	
Capital expenditure	4.9	13.9	−65.0
Free cash flow	0.3	19.5	−98.5
Cash conversion rate in %	3.6	75.6	
Order intake	157.8	199.3	−20.8
Order backlog	75.8	81.6	−7.1
Employees	1,071	1,093	−2.0

[1] Based on total revenue

At around 72 percent, the division again generated most of its revenue abroad in 2020 (prior year: 79 percent). Germany was the only region in which division revenue saw a minor rise in 2020. By contrast, the Americas saw a sharp decline as a result of the pandemic, with revenues falling from 106.5 million euros in the prior year to 68.8 million euros.

As a consequence of the fall in revenue, adjusted EBITDA contracted 38.9 percent to 15.8 million euros (prior year: 25.8 million euros), despite a significantly lower cost of sales. The adjusted EBITDA margin came to 8.8 percent, compared with 11.3 percent in the prior year. To counter these developments, structural and portfolio adjustment projects were started at the beginning of the year, together with measures to contain the impact of the COVID-19 pandemic. The impacts arising from structural and portfolio measures affecting EBITDA amounted to 7.9 million euros in the period covered by the report which was attributable in particular to the restructuring expenses.

The adjusted EBIT in the Light & Production division came to 3.1 million euros (prior year: 14.5 million euros), with INTEROB contributing minus 0.4 million euros. The EBIT item includes impacts arising from the purchase price allocation for INTEROB, worth minus 1.9 million euros. The adjusted EBIT margin fell to 1.7 percent (prior year: 6.3 percent).

In 2020, the division's order intake was worth 157.8 million euros, also down on the prior-year figure of 199.3 million euros, and includes orders from INTEROB worth around 20.4 million euros. The book-to-bill ratio in 2020 reached a figure of 0.88 (prior year: 0.87).

The Laser Processing area achieved a minor increase in its order intake. In the Automation & Integration area, the impacts of a larger order cancellation in June and project postponements could not be fully offset by the larger order from Gestamp, an international specialist for the manufacture of metal components. The division will design and manufacture three fully automated production cells for body components for Gestamp. The cells used to produce complex car body parts for electric vehicles at a plant in Germany will also be equipped with Jenoptik laser processing machines.

Including INTEROB orders, the order backlog at year-end 2020 was worth 75.8 million euros, 7.1 percent down on the year-end figure for 2019 (31/12/2019: 81.6 million euros).

A sharp drop in EBITDA and the increase in working capital (prior year: decrease) were key reasons for the reduction in the division's adjusted free cash flow (before interest and income taxes) to 0.2 million euros (prior year: 19.5 million euros). The working capital increased from 50.1 million euros at the end of 2019 to 66.9 million euros at the end of the reporting year, chiefly due to the rise in contract assets.

As of December 31, 2020, the Light & Production division had 1,071 employees (31/12/2019: 1,093 employees). 28 were in trainee positions in the division as of the reporting date (31/12/2019: 29 trainees).

The division's R+D output fell to a value of 10.8 million euros (prior year: 11.3 million euros). This included developments on behalf of customers in the amount of 3.6 million euros (prior year: 3.4 million euros). R+D expenses came to 7.2 million euros (prior year: 7.9 million euros). In 2020, the share of R+D output in total revenue in the Light & Production division was 6.0 percent (prior year: 5.0 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 sharply, by 65.0 percent to 4.9 million euros (prior year: 13.9 million euros). The prior year included around 13 million euros for the new build at the Villingen-Schwenningen site, and business operations at this new site commenced in the spring of 2020.

In 2020, capital expenditure was offset by depreciation/amortization in the sum of 12.5 million euros (prior year: 11.3 million euros).

Acquisitions. In January 2020, the Light & Production division acquired the Spanish company INTEROB, which specializes in the design, construction, and integration of custom automation solutions and robotics applications.

For more information on the INTEROB acquisition, see the Notes, page 167

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.

Over the reporting year, largely stable capital spending patterns by public-sector clients ensured good business performance despite the COVID-19 pandemic in the Light & Safety division. In 2020, the division generated revenue of 114.0 million euros (prior year: 108.7 million euros), an increase of 4.9 percent. The division's share of group revenue in the past fiscal year came to 14.9 percent (prior year: share of adjusted group revenue 13.0 percent).

At around 70 percent, the share of revenue generated abroad in 2020 remained below the prior-year figure of 73 percent for project-related reasons. Light & Safety posted growth in all regions except the Middle East/Africa, with the sharpest rises in the Americas and Asia.

Primarily following the rise in revenue, adjusted EBITDA improved to 22.7 million euros (prior year: 18.8 million euros). A considerable contribution to earnings of an adjusted 8.8 million euros was generated in the fourth quarter. The adjusted EBITDA margin increased significantly to 19.9 percent in 2020 (prior year: 17.3 percent).

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

	2020	2019	Change in %
EBITDA [1]	22.7	18.8	20.9
EBITDA margin in % [1,2]	19.9	17.3	
EBIT [1]	15.6	11.7	33.8
EBIT margin in % [1,2]	13.7	10.7	
Free Cashflow [1]	21.8	11.3	93.0
Cash conversion rate in % [1]	95.9	60.1	

[1] Figures adjusted for structural and portfolio measures (see explanation on page 104)
[2] Based on total revenue

T58 Light & Safety at a glance (in million euros)

	2020	2019	Change in %
Revenue	114.0	108.7	4.9
EBITDA	22.3	18.8	18.8
EBITDA margin in % [1]	19.6	17.3	
EBIT	15.2	11.7	30.3
EBIT margin in % [1]	13.3	10.7	
Capital expenditure	4.6	4.1	13.8
Free cash flow	21.4	11.3	89.6
Cash conversion rate in %	95.9	60.1	
Order intake	92.3	107.9	−14.5
Order backlog	46.0	69.9	−34.2
Frame contracts	8.9	12.6	−29.5
Employees	489	496	−1.4

[1] Based on total revenue

At 15.6 million euros, adjusted EBIT was considerably up on the prior-year figure of 11.7 million euros; the corresponding EBIT margin rose to 13.7 percent (prior year: 10.7 percent).

The division's order intake is subject to typical fluctuations in project business and, at 92.3 million euros for the full year, was down on the prior-year figure of 107.9 million euros. The book-to-bill ratio was 0.81 (prior year: 0.99).

Light & Safety secured a number of new projects in 2020. As an example, the division received further orders for traffic safety technology from the US and Canada at the beginning of the year. These orders are intended to support "Vision Zero", a multinational traffic safety project that aims to drastically reduce the number of traffic accidents and deaths or serious injuries on motorways and highways. Jenoptik further secured an order for section control systems from TfL (Transport for London) in Great Britain.

As of December 31, 2020, the order backlog, worth 46.0 million euros, was down on the prior-year figure (31/12/2019: 69.9 million euros) as a result of the increase in revenue and a lower project-related order intake. The division also has frame contracts worth 8.9 million euros (31/12/2019: 12.6 million euros).

With a total of 489 employees, the number of people employed in the Light & Safety division at the end of 2020 was virtually unchanged (31/12/2019: 496 employees). At the end of December, the division had 14 trainees (31/12/2019: 13 trainees).

In 2020, the division's R+D expenses of 13.1 million euros were up on the prior-year figure of 11.0 million euros. The development costs on behalf of customers fell to 0.6 million euros (prior year: 1.0 million euros). Overall, the division's R+D output increased to a value of 13.8 million euros (prior year: 12.0 million euros).

In the year covered by the report, the division invested 4.6 million euros in property, plant, and equipment and intangible assets (prior year: 4.1 million euros), primarily in connection with traffic service provision (TSP) projects. 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 13.8 percent higher than in the prior year. Capital expenditure was offset by depreciation/amortization totaling 7.1 million euros (prior year: 7.2 million euros).

The free cash flow (before interest and income taxes) saw a sharp increase from 11.3 million euros in the prior year to an adjusted 21.8 million euros in the 2020 fiscal year, the result of improved earnings, active receivables management, and also the increase in trade payables. As of December 31, 2020, the working capital was reduced to 12.1 million euros, down on the prior-year figure of 14.8 million euros, primarily due to a reduction in trade receivables and increase in trade payables.

Production and organization. One particular challenge in a year marked by the pandemic involved close monitoring of the entire supply chain and initiating containment actions, such as two-shift operation in some areas of production, so as to minimize risks to and impacts on day-to-day business. In addition, the process in the manufacturing areas to increase the reliability of on-time delivery and quality was consistently improved. In preparation for Brexit, potential risks were analyzed and countermeasures (e.g., to safeguard supply chains on the procurement side) were initiated.

For information on the key development topics, see the Research and Development chapter from page 92 on

VINCORION

VINCORION is responsible for the Jenoptik Group's range of mechatronics solutions for the aviation, security and defense technology, and rail markets, and is a partner for systems companies and customers who require custom solutions for components or modules. Over the year covered by the report, public-sector business in the field of security and defense technology remained stable, but significant losses were posted for the aviation market, primarily due to the COVID-19 pandemic. In 2020, VINCORION continued to expand its international sales and service structures and to apply its technology and expertise to civil fields.

In the 2020 fiscal year, VINCORION generated revenue of 151.7 million euros, thereby falling short of the prior-year figure of 164.8 million euros. Demand in the Power Systems unit remained good throughout the year, while the aviation business saw an appreciable decline. The Energy & Drive area also posted lower revenue. As in prior years, VINCORION's fourth-quarter revenue of 60.7 million euros was sharply up on the prior quarters. Over the reporting year, its share of group revenue came to 19.8 percent (prior year: share of adjusted group revenue 19.7 percent).

Of the revenue, 30.6 million euros (prior year: 41.3 million euros) are attributable to the civil sector and 121.1 million euros (prior year: 123.5 million euros) to the defense sector.

T59 VINCORION at a glance (adjusted) (in million euros)

	2020	2019	Change in %
EBITDA[1]	20.6	24.2	−14.6
EBITDA margin in %[1,2]	13.6	14.7	
EBIT[1]	13.7	17.4	−21.3
EBIT margin in %[1,2]	9.0	10.5	
Free cash flow[1]	9.8	1.0	848.8
Cash conversion rate in %[1]	47.6	4.3	

[1] Figures adjusted for structural and portfolio measures (see explanation on page 104)
[2] Based on total revenue

T60 VINCORION at a glance (in million euros)

	2020	2019	Change in %
Revenue	151.7	164.8	−7.9
EBITDA	16.6	24.2	−31.2
EBITDA margin in %[1]	11.0	14.7	
EBIT	9.7	17.4	−44.3
EBIT margin in %[1]	6.4	10.5	
Capital expenditure	9.2	8.8	4.2
Free Cashflow	9.8	1.0	848.8
Cash conversion rate in %	59.1	4.3	
Order intake	145.2	177.9	−18.4
Order backlog	160.3	169.7	−5.6
Frame contracts	20.8	24.9	−16.7
Employees	775	795	−2.5

[1] Based on total revenue

At around 52 percent, the share of revenue generated abroad was almost unchanged from the prior-year figure of 51 percent. While revenue generated in Germany, Europe, and the Middle East/Africa fell, VINCORION increased its revenue in the Americas from 32.8 million euros to 34.9 million euros. Nevertheless, the majority of products are still sold to German buyers, whose end customers, however, are largely active on the international sales market.

In view of the fall in revenue, lower utilization due to the coronavirus pandemic, particularly in the aviation business, and a lower margin in the product mix, VINCORION's adjusted EBITDA, fell from 24.2 million euros to 20.6 million euros, despite a lower cost of sales. Restructuring measures were also put in place here. As a result of the increase in revenue, a significant contribution to revenue of an adjusted 13.8 million euros was generated in the fourth quarter. The adjusted EBITDA margin fell to 13.6 percent in 2020 (prior year: 14.7 percent).

At 13.7 million euros, the adjusted EBIT was also down on the prior-year figure of 17.4 million euros; the adjusted EBIT margin came to 9.0 percent (prior year: 10.5 percent).

In the fourth quarter, VINCORION increased its order intake compared to the two prior quarters, posting new orders worth around 40.0 million euros. At 145.2 million euros, the order backlog for the full year was, however, down on the prior-year figure of 177.9 million euros. Key orders received by VINCORION were for the Patriot missile defense system's diesel engines and, from a further US customer, to supply more than 700 generators for military ground vehicles. The aviation business and Energy & Drive unit posted significantly fewer orders than in the prior year. The book-to-bill ratio fell to 0.96 (prior year: 1.08).

As of December 31, 2020, the order backlog was worth 160.3 million euros (31/12/2019: 169.7 million euros). In view of the lower revenue figure, the decline here was far less marked than in the order intake. The division also had frame contracts worth 20.8 million euros (31/12/2019: 24.9 million euros).

With a total of 775 employees, the number of people employed in VINCORION at the end of the year was slightly down (31/12/2019: 795 employees). By the end of December, the number of trainees came to 51, unchanged from year-end 2019 (31/12/2019: 51 trainees).

R+D expenses fell to 4.2 million euros in 2020 (prior year: 6.1 million euros). The development costs on behalf of customers remained almost constant, at 2.8 million euros (prior year: 2.9 million euros), and are primarily due to joint development projects with systems companies. In view of the project-related increase in development services to be capitalized, e.g., for the rescue hoist or the heatable floor panel, VINCORION's R+D output increased to a total of 12.1 million euros (prior year: 10.5 million euros).

For information on the key development topics, see the Research and Development chapter from page 92 on

VINCORION invested 9.2 million euros in property, plant, and equipment and intangible assets (prior year: 8.8 million euros). As a result, the level of capital expenditure was 4.2 percent higher than in the prior year due to capitalized development costs. Capital expenditure was offset by depreciation/amortization totaling 6.9 million euros (prior year: 6.8 million euros).

The free cash flow (before interest and income taxes) improved considerably in the year covered by the report – from 1.0 million euros in the prior year to 9.8 million euros in the 2020 fiscal year. This increase was chiefly due to higher customer payments in the first quarter of 2020 following a significant build-up of receivables in the fourth quarter of 2019, as well as to the first-time use of factoring with a volume of 4.7 million euros. As of December 31, 2020, the working capital came to 82.9 million euros, down on the prior-year figure of 84.1 million euros.

Production and organization

On January 17, 2020, the Executive Board of JENOPTIK AG decided to stop the sales process for the mechatronics business operated under the VINCORION brand name. The Board had come to the conclusion that none of the offer submitted met the potential of VINCORION.

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

The COVID-19 pandemic affected business performance and growth in the Jenoptik Group's three photonics divisions and VINCORION in very different ways. The Light & Optics division benefited from good revenue with the semiconductor equipment industry, and the acquisition of TRIOPTICS made a positive contribution to growth. By contrast, the biophotonics and industrial solutions businesses were adversely affected by the impacts of the pandemic. Light & Production was the division most severely affected by the COVID-19 pandemic in the Jenoptik Group, with revenue and earnings well down on prior-year figures. Structural issues in the field of industrial metrology contributed to this development, and relevant initiatives have been taken to address them. An order from Gestamp further showed that the integrated sales approach for automation and laser processing machines is beginning to bear fruit. Largely stable capital spending patterns by public-sector customers ensured good business performance in the Light & Safety division, with revenue and earnings increasing compared to the prior year. VINCORION remained at a stable level with regard to security and defense technology, but overall revenue and earnings were still down on 2019 figures due to the difficult situation in the aviation industry caused by the pandemic. Restructuring measures were also put in place here.

The reporting segments also developed disparately in terms of free cash flow. The Light & Safety division and VINCORION generated growth. The development of the free cash flow in the Light & Optics division was positively influenced by the acquisition of TRIOPTICS. A sharp drop in EBITDA and higher working capital were key reasons for the reduction in the Light & Production division's adjusted 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 2020, we also managed to establish a broader range of systems and secure both international projects and new customers. Demand varied considerably by market and division as a result of the COVID-19 pandemic. The Light & Optics division increased its order intake due to good demand in the semiconductor equipment market and the acquisition of TRIOPTICS. The other three divisions posted a lower 2020 order intake than in the prior year, due both to the pandemic and project-related reasons.

Management Report of 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 photonics growth markets and thus its transformation into a globally positioned photonics company. In implementing this strategy, Jenoptik is primarily concentrating on internationalization and innovation.

T61 Abbreviated Income Statement of JENOPTIK AG (in thousand euros)

	1/1 to 31/12/2020	1/1 to 31/12/2019
Revenue	50,234	36,221
Cost of sales	45,589	32,640
Gross profit	4,645	3,580
Selling expenses	1,504	1,634
General administrative expenses	15,004	12,448
Research and development expenses	125	266
Other operating result	−1,613	−2,422
Income and expenses from profit and loss transfer agreements and income from investments	61,954	73,277
Financial result	−6,627	3,742
Income taxes	4,566	8,210
Earnings after tax	37,161	55,622
Net profit	37,161	55,621
Retained profits from prior year	30,000	30,000
Accumulated profit	67,161	85,621

Asset, Financial, and Earnings Position

Earnings Position

Revenue was up 14.0 million euros on the prior year, at 50.2 million euros, which was mainly the result of postponed invoicing of incidental rental costs beyond the cut-off date of December 31, 2019 to the 2020 fiscal year.

Administrative expenses were 2.6 million euros up on the prior year. In addition to digitization projects, they are mainly the result of the introduction of the ERA collective wage agreement in Thuringia, which saw many employees reclassified in higher pay scales.

JENOPTIK AG posted research and development expenses amounting to 0.1 million euros (prior year: 0.3 million euros), primarily covering expenditure for innovation management and the coordination of R+D work in the Jenoptik Group.

Selling expenses of 1.5 million euros (prior year: 1.6 million euros) concerned expenses for strategic brand projects, the web applications for the overall Group, communication, advertising, and sponsorship.

The other operating result included other operating income of 13.9 million euros (prior year: 10.7 million euros), which was offset by 15.5 million euros of other operating expenses (prior year: 13.1 million euros).

Other operating income primarily included currency gains worth 4.5 million euros (prior year: 3.6 million euros), intra-group cost allocations of 5.4 million euros (prior year: 4.0 million euros), and income arising from the reversal of provisions in the sum of 3.3 million euros (prior year: 1.2 million euros).

Key items in the other operating expenses were currency losses of 3.5 million euros (prior year: 3.8 million euros), expenses for intra-group cost allocations of 5.6 million euros (prior year: 4.0 million euros), 2.1 million euros for an internal group project to optimize business processes and introduce an SAP S/4 system, and 1.1 million euros for a project to restructure the organization and introduce efficient administrative processes.

The financial result of minus 6.6 million euros (prior year: 3.7 million euros) included earnings from securities and loans, depreciation on financial investments, and the interest result. The fall of 10.3 million euros is primarily attributable to unscheduled depreciation on existing financial investments of 8.9 million euros.

Income taxes were 3.6 million euros below the figure for the prior year due to lower taxable income of the companies consolidated for tax purposes in the fiscal year.

JENOPTIK AG's annual net profit fell by 18.4 million euros, or 33.2 percent, to 37.1 million euros (prior year: 55.6 million euros). The company's earnings position was mainly influenced by 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 fell compared to the prior year, by 24.8 million euros to 48.1 million euros. Increasingly challenging conditions in the automotive industry as a result of the move towards electromobility and impacts caused by the pandemic further reduced the contribution to earnings from the Metrology, Laser Processing, and Automation & Integration areas. To counter these developments, structural and portfolio adjustment projects were started at the beginning of the year, together with measures to contain the impact of the COVID-19 pandemic. Furthermore, the pandemic-related fall in revenue due to lower utilization in the aviation business, which is a supplier to the civil aviation sector, produced a loss from the transfer of profits by the company. Despite the spread of the coronavirus, business with the semiconductor equipment industry and with systems and services related to road traffic remained stable thanks to largely stable capital spending by public-sector customers.

Asset and Financial Position

At 898.0 million euros, JENOPTIK AG's total assets were 14.9 percent up on the figure for the prior year (prior year: 781.8 million euros).

The assets side of the Statement of financial position reflects JENOPTIK AG's status as a holding company. Alongside an asset intensity of 88.3 percent, of which 79.7 percent was attributable to financial investments and 8.6 percent to other fixed assets (in particular real estate), the total assets are also dominated by a high level of loans to affiliated companies (9.5 percent).

T62 JENOPTIK AG Statement of Financial Position (in thousand euros)

	31/12/2020	31/12/2019
Assets		
Intangible assets, property, plant, and equipment	76,753	76,605
Financial investments	715,940	459,471
Non-current assets	**792,693**	**536,076**
Inventories, trade receivables, and other assets	85,923	87,233
Cash and cash equivalents	17,334	154,903
Current assets	**103,257**	**242,136**
Accurals und deferrals	2,137	3,589
	898,087	**781,801**
Equity and liabilities		
Share capital	148,819	148,819
(Conditional capital 28,600 thousand euros)		
Capital reserves	180,756	180,756
Revenue reserves	264,249	216,070
Accumulated profit	67,161	85,621
Equity	**660,986**	**631,266**
Provisions	**11,937**	**20,166**
Liabilities to banks	179,646	90,500
Trade accounts payable	7,270	7,806
Other liabilities	35,440	32,061
Liabilities	**225,164**	**130,369**
	898,087	**781,801**

The increase of 256.5 million euros in financial investments was predominantly the result of 246.6 million euros of capital contributions to finance acquisitions by subsidiaries.

Receivables from associates, worth 85.9 million euros (prior year: 86.3 million euros) were mainly due to the issue or settlement of cash and cash equivalent transfers to and from group companies, and chiefly affected the settlement accounts for cash pool balances and the short-term loan to Prodomax, which was valued at 8.0 million euros as of the reporting date.

The reduction in cash and cash equivalents by 137.6 million euros, from 154.9 to 17.3 million euros, was chiefly due to the purchase price payments to acquire TRIOPTICS and INTEROB in Spain.

Accruals and deferrals essentially comprised accrued costs for IT service and maintenance contracts, as well as incidental rental costs for 2020.

JENOPTIK AG's financing function as the holding company for the Jenoptik Group is reflected on the liabilities side. Equity came to 661.0 million euros (73.6 percent of total assets), liabilities to banks 179.6 million euros (20 percent of total assets).

Thanks to the positive annual result of 37.2 million euros, equity improved by 29.7 million euros, rising from 631.3 to 661.0 million euros. This was countered by the payment of dividends worth a total of 7.4 million euros for the 2019 fiscal year. The equity ratio fell from 80.7 percent to 73.6 percent.

Tax provisions at the companies consolidated for tax purposes fell due to a payment for tax arrears of 4.3 million euros for the years 2018 and 2019.

The increase in liabilities to banks of 89.1 million euros, from 90.5 to 179.6 million euros, was the result of acquisitions by the subsidiaries. This was countered by the repayment of a debenture bond worth 21.5 million euros.

Other liabilities comprised 22.5 million euros of cash pool holdings and 10.1 million euros to offset earnings at subsidiaries.

Over the reporting year, JENOPTIK AG's debt-to-asset ratio changed due to the increase in liabilities to banks, from a 19.3-percent to a 26.4-percent share of total assets.

As of December 31, 2020, JENOPTIK AG had 257 employees, of which 19 were temporary workers and 10 were trainees (prior year: 258 employees, of which 18 temporary workers and 7 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 participated 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 from page 133 on.

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, JENOPTIK AG is also expecting revenue from holding company services to remain at the prior-year level in the 2021 fiscal year. Due to lower rental income, JENOPTIK AG anticipates an overall decline in revenue.

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 from page 146 on.

77 Combined Management Report 152

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, 2021. The Supervisory Board is responsible for reviewing and approving the Consolidated Financial Statements at its March 24, 2021 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 2020 fiscal year, JENOPTIK AG's accumulated profit totaled 67,161,476.79 euros, comprising net profit for the 2020 fiscal year in the amount of 37,161,476.79 euros plus retained profits of 30,000,000.00 euros.

The Executive Board recommends to the Supervisory Board that for the 2020 fiscal year a dividend of 0.25 euros per qualifying no-par value share be proposed to the 2021 Annual General Meeting (prior year: 0.13 euros). This means that an amount of 14,309,528.75 euros of JENOPTIK AG's accumulated profit in the 2020 fiscal year will be distributed. Of JENOPTIK AG's remaining accumulated profit, a sum of 22,851,948.04 euros will be allocated to revenue reserves, and a sum of 30,000,000.00 euros will be carried forward to new account.

The Executive Board is maintaining its consistent dividend policy with this recommendation. Despite the impacts of the COVID-19 pandemic, the acquisition of two companies, and a high level of capital expenditure, it is important that the shareholders of JENOPTIK AG appropriately participate in the company's success. With earnings per share of 0.73 euros (prior year: 1.18 euros), the payout ratio comes to 34.2 percent (prior year: 11.0 percent) and is thus considerably higher than in prior years.

No further events of significance occurred after December 31, 2020.

Risk and Opportunity Report

Principles of Risk and Opportunity Management at Jenoptik

For Jenoptik, the responsible evaluation of risks and opportunities within the corporate environment is one of the principles of responsible corporate governance. To ensure implementation of our strategy, it is necessary to identify risks and opportunities at an early stage, to evaluate them appropriately, and to control them efficiently. This is done by promoting an open risk culture and regularly examining the established risk management system. Jenoptik's risk and opportunity management system is annually reviewed for appropriateness and effectiveness at an internal risk workshop. Reporting processes employ centrally available software.

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

Jenoptik's risks and opportunities are assessed with the help of the probability of occurrence and extent of damage factors using a key matrix (see the "Structure and Processes of the Risk and Opportunity Management System" paragraph). The risks and opportunities described here are the result of the aggregation of locally identified risks and opportunities that were each allocated to defined categories. G19

Organizational integration of the risk and opportunity management

The Executive Board is responsible for the risk and opportunity management system in the Jenoptik Group. The group-wide approach is set out in a risk manual.

Central Compliance & Risk Management organizes and manages the system, working closely with the other central departments and the risk officers in the divisions, who in turn are responsible for implementing the risk and opportunity management system in the risk reporting units. The risk reporting units are defined reporting units that are employed to accurately identify and allocate risks and opportunities, and can be both business units and individual subsidiaries.

G19 Risk assessment

Metrics	Probability of occurence	Consequences / extent of damage: Qualitative		Quantitative EBIT 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%

Internal Audit monitors the effectiveness of the risk and opportunity management system, while the Audit Committee of the Supervisory Board takes up the external monitoring function for or in conjunction with the Supervisory Board.

The Risk Committee consolidates all aggregated reporting results to form a top-level evaluation of the Group's risk position, and consists of the members of the Executive Board and the head of central Compliance & Risk Management. G20

The consolidation companies exposed to risk correspond to those included in the consolidated balance sheet.

Structure and processes of the risk and opportunity management system

The Jenoptik risk and opportunity management system is based on the ISO 31000 standard.

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 Board, and advises on its practical implementation and monitors the measures and results of the risk management processes.

A core process of risk management are risk assessments, which are carried out using a combination of top-down and bottom-up elements. In order to ensure the most in-depth risk identification and comparability possible within the company, a risk register was developed to support management in the evaluation of risks. It comprises several specified categories to which potential risks and opportunities are allocated by the risk reporting units. 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. However, they are in part covered by the existing risk categories.

Within the scope of the risk analysis, the risk reporting units determine the risks and opportunities 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. This takes place in accordance with the net method, i.e. mitigating measures are already included in the assessment so that only the assessed residual risk is reported and aggregated. 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. G22

G20 Process of risk reporting

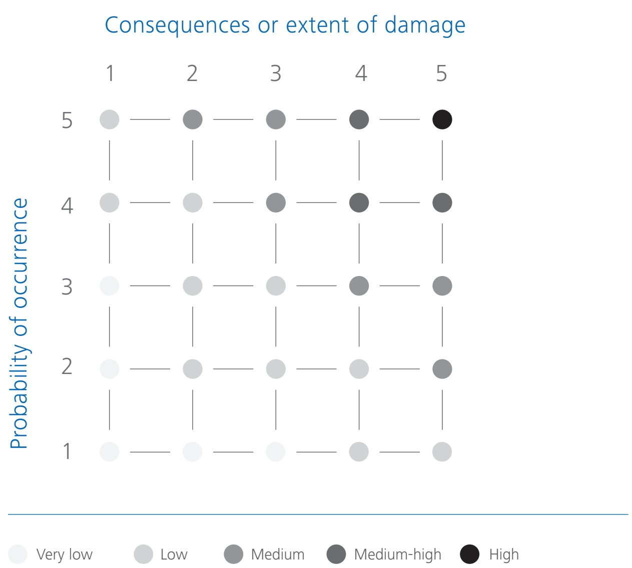
Risk Officers in the divisions and central departments	Assessment of single risks
Central Functions	Review of aggregated risks
Corporate Compliance & Risk Management department	Review and analysis of group risks
Risk Committee	Analysis of group risks
Executive Board	Final assessment of group risks
Audit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

There is a scale of 1 to 5 for both assessment factors mentioned – probability of occurrence and extent of damage – with 1 being the smallest and 25 the greatest possible risk indicator. G21

Every six months, the results of the assessments are requested by central Compliance & Risk Management at the risk reporting units and aggregated to the Group Risk and Opportunity Report. The findings are then validated by the central 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 that 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.

G21 Calculation of risk scores



77 Combined Management Report 152

G22 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

The above-mentioned reporting instruments also form the basis for the risk early warning system. This is reviewed by the auditor during the audit. The auditor confirms that it is designed in such a way that any developments that could jeopardize the continued existence of the Group can be identified in good time.

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. Consequently, risks and opportunities, as well as their impact on the company, are discussed during the monthly meetings of the Executive Board and at EMC and strategy meetings. At the same time, potential risks to achieving the strategic goals can be considered directly in the strategy development process and minimized by taking suitable measures.

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 the 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 on page 36. 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. They are published on the intranet. Together with our Code of Conduct, they act as 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 cooperation with a high-risk business partner is viable from a compliance perspective.

Jenoptik therefore has a 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 clear responsibilities and separation of functions, in adherence to the principle of double-checking. In particular, its intention is to ensure the security and efficiency of transactions as well as the reliability of financial reporting, and it is regularly reviewed by Internal Audit. ICS self-assessments, to be completed by the management of all subsidiaries and JENOPTIK AG in the form of questionnaires, were also carried out in the past fiscal year. 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 is permanently incorporated into the ongoing further assessment and development of the internal control and risk management system through process-independent audits and separate consulting projects. As a staff department, it reports to the Chief Financial Officer and acts on his behalf. Employees in Internal Audit are not subject to any instructions in their work. This includes the choice of audit items, the setting of priorities and the procedures used, the frequency and scheduling of audits, and reporting. The organizational units of the Jenoptik Group are analyzed and audited on the basis of a risk-oriented audit plan. The compliance with and proper implementation of the applicable guidelines form integral parts of the audit. This not only identifies errors, infringements, or process weaknesses and the most expedient remedial action, but also potential process improvements in the sense of a "best practice approach". The recommendations are prioritized, categorized, and reported directly to the persons responsible for the audited units, the respective central departments, and to the Executive Board. The audited unit then submits a report to the Executive Board, indicating the measures and deadlines for implementation of the stated recommendations. This is followed by follow-up audits that review the implementation of the recommendations, with information on the results being sent to the respective management levels and central departments as well as the Executive Board. Internal Audit submits a report containing its key findings since the last report to the Audit Committee of the Supervisory Board at least once a year. Eleven audits were carried out in 2020, including, for the first time, a preliminary audit of non-financial reporting, the systemic development of which had previously been monitored during the year.

Jenoptik has a centralized financial management system. The central Treasury department coordinates the financing needs of the Group, ensures liquidity and monitors the currency, interest rate, and liquidity risks on the basis of a group-wide rules and relevant process descriptions. These regulations include provisions for the clear separation of transaction and corporate oversight functions as well as trading within predetermined limits.

The purpose of financial risk management is to limit financial risks arising from changes in market rates, for example interest and exchange rates. Financial instruments are used exclusively for the purpose of securing underlying transactions and not for speculative purposes. They are only concluded with banks with an investment grade rating (at least BBB on Standard & Poor's rating scale).

Key features of the Internal Control and Risk Management System with regard to the consolidated accounting process 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 promptly and implemented. All employees involved in the accounting process receive regular training.

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 LucaNet consolidation tool. The transferred data from the statements and financial statements of consolidated companies is verified by manual and technical system inspections. All the 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 and Annual Financial Statements in accordance with the IFRS regulations in compliance with § 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 §§ 289 f, 315 d of the German Commercial Code can be found on page 36 ff 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 §§ 289 f, 315 d is not considered by the auditor.

The Group's Risk and Opportunity Profile

The Group's risk profile for 2020 and subsequent years was determined using the risk and opportunity assessments of the respective segments. Part of the risk assessment of the segments is a review by the central functions of the Corporate Center, whose risk assessments are then included in the segment reporting and in the final group assessment. Our risk and opportunity management allows to directly compare the individual risk profiles down to the level of risk symptons. 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. T63

Overall, the risk 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.

Once again, strategic risks and opportunities for the overall Group were on average assessed as the most important, compared to operational and finance management risks, in 2020. Our focus on photonic market segments represents both an opportunity and a risk to the Group.

The continuing and even increased spread of COVID-19 in the fall and winter of 2020/21, now also involving mutations of the virus, is resulting in higher rates of infection than in the first wave of the pandemic in spring 2020. The actions taken by governments and authorities to contain the COVID-19 pandemic are also having an impact on Jenoptik's business operations.

Since the end of the first quarter, these impacts on our business have become increasingly noticeable in the form of extended project lead times, postponements, and supply chain issues. Restrictions on international travel and access to our customers' plants are also impacting on our ability to plan installations, technical acceptance procedures for systems, and our service business.

T63 Risk profile of the Jenoptik Group 2020

	Group risk assessment	
	Current (2020)	Prior year (2019)
Strategic risks		
Market development	Medium	Medium
Product development (incl. R+D)	Medium	Medium
Corporate development (portfolio and structure)	Medium	Low
Organizational setup (processes and resources)	Medium	Medium
Operational risks		
Supply chain management	Medium high	Medium
Safety and environmental protection	Low	Low
Production (incl. quality management)	Medium	Low
Marketing and sales	Medium	Medium
Patents and IP rights	Low	Low
Human resources management	Medium	Medium
IT	Medium	Medium
Compliance	Medium	Low
Legal affairs	Low	Low
Real estate	Low	Low
Financial management risks		
Accounting	Low	Low
Finance management	Medium	Low
Controlling	Low	Low
Taxes	Low	Low
Total risk	Medium	Medium

Jenoptik has set up task forces and crisis teams in a number of functional areas and the divisions to carefully monitor and mitigate the different impacts of COVID-19. Our primary concern is to ensure the health and safety of our employees and safeguard our operating business. A central task force at group level is responsible for making overall decisions and coordinating their communication. Established emergency plans and measures are continuously reviewed, and management in the various businesses and countries is authorized to take appropriate action in line with local circumstances.

Continuing uncertainties arising from trade and geopolitical conflicts may have a decisive influence on overall economic development in Jenoptik's growth markets, for example in China.

At the time this report was prepared, the trade policy agenda of the new US government could not yet be fully reflected in the assessment of risks and opportunities. We nevertheless assume that the transatlantic relationship will be strengthened and accompanied by more binding communication of trade measures (e.g., tariffs), which will enable better planning. The new US administration will continue to prioritize domestic production ("Buy American") and preferably award public contracts to US firms. With its established and, in the case of VINCORION, expanded US sites, Jenoptik is already well prepared for this eventuality.

The Partnership Agreement negotiated by the EU and the UK is a set of rules that provisionally came into force on January 1, 2021 and comprehensively reorganizes the future relationship between the EU and the UK. Uncertainties regarding the exact regulations will be ironed out over the course of the 2021 fiscal year. Having taken preemptive action, Jenoptik is prepared for the various possible scenarios. We analyzed our supply chains and supplier management, evaluated alternative suppliers, made adjustments to working capital management, and adapted our systems and processes to account for the export and customs issues applicable to Brexit.

High levels of public debt in parts of Europe, which existed even before the COVID-19 crisis and have been further exacerbated by the economic and social policy measures taken to contain it, may inhibit investment by both public-sector customers and consumers, as budgetary consolidation is likely to be the main priority in the short to medium term once the pandemic subsides. In the course of active risk management, we also develop suitable measures to counter these political uncertainties within our business processes wherever possible.

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 due to both cyclical and structural factors. At the same time, acute market changes resulting from the COVID-19 crisis are also impacting on the company's success. To take an example, measures introduced by governments to counter the impact of COVID-19, such as travel restrictions, are exacerbating the negative impacts on our business with the aviation industry, at the same time as they promote the global trend towards digitization, in turn 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 increase in 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 may usefully complement our product range and 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. They have increased slightly compared with the prior year and are now in the lower range of medium risks overall.

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 increased likelihood of insolvencies in the economy as a whole, for example, may increase the risk of dependency on or the loss of individual suppliers. 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.

77 Combined Management Report 152

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 to enable rapid data recovery in the event of a crisis situation. The world is seeing a rise in the number of IT threats, e.g., in the form of phishing attacks, in which sensitive corporate information is obtained by third parties by means of deception. Jenoptik actively takes both preventive and corrective action to reduce the risk of cyber attacks: 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 in positions of responsibility are provided with internal training.

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 the Group's control systems. 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 evolving, 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 & 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 or medium throughout the Group in 2020. 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. Jenoptik has good internal financing and access to alternative, external financing options. Currency-related risks arise from the Group's international activities. These risks are identified by the central Treasury department in collaboration with the group companies and are controlled with appropriate 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. In addition, interest rate swaps are used to reduce the risk of changing interest rates for loans with variable interest. A variable interest rate was consciously agreed for the majority of the loans in order to profit from the current low interest rate environment.

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 3.9 from page 172 on

In the 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 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 aggregated in the Group risk and opportunity profile. T64

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, and the resulting increase in demand for applications and PC devices, both from private households and companies, 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 greater market orientation mean that we are better able to meet our customers' requirements. Increasing financial 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.

The acquisition of TRIOPTICS and its gradual integration into the Light & Optics division represents a key step in 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, the acquisition of TRIOPTICS also provides Light & Optics with additional market development opportunities in this region. Despite this, integrating an acquisition of this size and international importance into our existing structure also poses challenges. A fine balance needs to be struck between the requirements of the market and internal reporting, governance, and compliance requirements, for example.

The high technology and quality requirements placed on Jenoptik and our suppliers with regard to basic 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. 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 and capacities, 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.

77 Combined Management Report 152

Light & Production

The strategic risks and opportunities in the Light & Production division are strongly influenced by the development of the automotive industry and its investment schedule. In addition to current challenges the industry is facing, 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 comprise extended project lead times, postponements, and significant impact on the supply chain, particularly in the automotive sector. We are proactively countering these risks with the aid of the division's ongoing strategic focus and a corresponding adjustment to its product range, in addition to selectively broadening our positions as a turnkey supplier of automated production solutions and a systems supplier for production metrology and industrial imaging applications. 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 launch of operational improvement programs and structural adjustments to the product portfolio and workforce aim to reduce the risks arising from the challenging business situation.

T64 Risk profiles of the segments 2020

	Risk assessment							
	Light & Optics division		Light & Production division		Light & Safety division		VINCORION	
	2020	2019	2020	2019	2020	2019	2020	2019
Strategic risks								
Market development	Medium	Medium	High	Medium high	Medium	Medium	Medium high	Medium
Product development (incl. R+D)	Medium	Medium	Medium	Medium	Medium high	Medium high	Medium high	Medium
Corporate development (portfolio and structure)	Medium	Medium	Medium	Low	Medium	Low	Low	Medium
Organizational setup (processes and resources)	Medium	Medium	Medium	Medium	Low	Medium	Medium	Medium
Operational risks								
Supply chain management	Medium high	Medium	Medium high	Medium	Medium high	Medium	Medium	Medium
Safety and environmental protection	Low	Low	Low	Low	Medium	Low	Medium	Low
Production (incl. quality management)	Medium	Medium	Low	Low	Medium	Medium	Medium	Low
Marketing and sales	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium
Patents and IP rights	Low	Low	Low	Low	Medium	Medium	Very Low	Low
Human resources management	Medium	Medium	Medium	Medium	Low	Medium	Medium	Medium
IT	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium
Compliance	Medium	Low	Low	Medium	Medium	Medium	Medium	Medium
Legal affairs	Low	Low	Low	Very Low	Medium	Medium	Low	Low
Real estate	Medium	Low	Very Low	Very Low	Low	Low	Low	Low
Financial management risks								
Accounting	Low	Low	Low	Low	Low	Low	Low	Low
Finance management	Medium	Low	Medium	Low	Low	Low	Low	Low
Controlling	Low	Low	Low	Low	Low	Medium	Low	Low
Taxes	Low	Low	Medium	Medium	Medium	Medium	Very Low	Low
Total risk	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium

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 worked to increase our access to 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 forms for communicating with customers, such as trade shows and conferences, in the wake of the corona 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, given the potential of cuts in public investment in traffic monitoring projects, cannot be ruled out entirely in the future. By contrast, improvements in the political situation in certain sales markets and the economic prosperity of the countries are opening up opportunities to better serve the evolving demand for traffic safety technology.

At the same time, the growing demand for safety technologies, intelligent traffic flow solutions ("smart cities"), the levying of toll 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 Great Britain's withdrawal from the European Union and the associated potential regulatory gaps in continued economic cooperation. Brexit, which is now "done", could impact on the Light & Safety division, which maintains a production and development site in Great Britain. As stated above, we continue to analyze the potential consequences and have already implemented a range of measures. At the time the risk and opportunity report was prepared, not all of the impacts of the regulations contained in the new Partnership Agreement were quantifiable in full. We therefore cannot rule out the risk that unscheduled measures and necessary adjustments to our business processes could result in higher future costs, which would negatively impact on the division's earnings.

The products made by the Light & Safety division require technical approval, particularly in European countries. 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

Strategic risks and opportunities. The defense market is strongly influenced by political decision-making, in particular by governments' budgetary positions, and by the export license policies of the German government.

This also applied to the restrictions in force in the 2020 fiscal year, particularly regarding the Middle East, which pose risks to our ability to deliver to customers at short notice. Associated with this is the risk that our customers will lose confidence in our reliability. By contrast, the requirement that NATO member states spend two percent of their gross domestic product on defense and the consideration being given by the European Union's member states to establishing a common armaments policy are both likely to stimulate the market environment. The planned increase in the defense budget and the associated growth in investment by the German government may result in higher order intakes for VINCORION. Public budgets, however, may also be endangered by the impacts of the pandemic in the future, limiting countries' ability to finance cutting-edge defense projects. In terms of corporate development, the potential risk of a dependency on political decisions and government budgets will continue to be countered by the targeted expansion of the product portfolio for civilian markets. The processes and resources required for this must be gradually adapted within the course of strategic organizational development. Marketing and sales activities are also being stepped up to fully exploit the relevant growth options. The VINCORION brand is helping us to better target our customers.

Since a large proportion of revenue generated by VINCORION is the result of project business, product developments and launches offer long-term growth prospects. VINCORION's development projects present great potential to generate future revenues. However, there are also inherent technological and market-specific risks here that may jeopardize the success of the development.

The COVID-19 pandemic will have a particularly strong impact on the civil aviation market over the short to medium term. In the wake of global travel restrictions, civil air traffic has declined significantly, with fleet utilization at times as low as 20 percent. This may, in particular, impact on our aviation and customer support business, given the reduced production of new aircraft and fewer sales of spare parts due to lower operating hours worldwide. Despite a still highly dynamic global situation that may present opportunities, e.g., in short-term changes to travel policies, advancing testing strategies, and the approval of vaccines, we do not expect the aviation market to fully recover before 2025 in our risk assessment. Due to the business model being focused on long-term customer relationships and long product life cycles, supplier performance is an important success factor. As a result, good cooperation to date also presents opportunities to establish VINCORION as a supplier for further Airbus aircraft.

The aforementioned uncertainty regarding future prospects of civil aviation determines the outlook in the Aviation area. While products developed and financed in-house are increasingly being integrated into more platforms (e.g., A350 and A32x family), OEMs have reduced their rates of production. There is thus a risk that our civil aviation business may not be able to offset the foreseeable decline in military business. However, there are also opportunities in product development, as higher production volumes will allow economies of scale to be realized once the business returns to growth, probably from the middle of the decade, as more platforms are equipped with the new products.

Operational risks and opportunities arise primarily from a strong dependency on single sources in a number of cases, which may endanger future business opportunities. We counter these risks through active supplier management.

The consolidation of VINCORION's ERP systems and an independent IT strategy that more closely integrates the specific IT requirements in the defense sector offer opportunities in terms of efficiency, improved control options, and compliance with other information security standards (e.g., NIST).

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 marginally higher than in the prior year, and currently remains at the lower end of 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.

Overall, it can be said that the realignment of the Group's strategic market segments (with the help of "Strategy 2022") may gradually help to reduce the existing strategic risks. The growing importance of the photonics industry and the strong related demand for applications and systems, both from private households and companies, continues to offer Jenoptik with the potential for good 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

Although the global economy remains in the grip of the coronavirus crisis, the International Monetary Fund (IMF) is moderately more positive about ongoing developments in its World Economic Outlook of January 2021 than it was in October, and has therefore raised its forecast for global economic growth in 2021 by 0.3 percentage points, to 5.5 percent, with the global economy due to grow 4.2 percent in 2022. Vaccines and vaccination campaigns, together with stimulus packages in many industrialized nations, are improving the outlook, according to the IMF. Although the IMF believes that Germany has managed the crisis well, it is less optimistic about future growth and has cut its forecast for 2021 (since the last forecast in October) by 0.7 percentage points, to 3.5 percent, followed by 3.1 percent in 2022. The IMF expects the eurozone to achieve growth of 4.2 percent this year, 1 percentage point down on its October forecast. The US will see stronger growth (5.1 percent), and in China, too, the IMF sees economic output growing by a good 8.1 percent.

Most analysts expect robust growth in the US economy in 2021, driven by stimulus packages and the advancing vaccination campaign. Experts see risks in the high levels of both corporate and household debt.

T65 Gross domestic product forecast (in percent)

	2021*	2022*
World	5.5	4.2
US	5.1	2.5
Eurozone	4.2	3.6
Germany	3.5	3.1
China	8.1	5.6
India	11.5	6.8
Emerging countries	6.3	5.0

Source: International Monetary Fund, World Economic Outlook, January 2021
* Estimate

China is expecting further growth impetus from a new Five-Year Plan, due to be officially adopted in March. A new economic policy aims to boost the domestic market and home-grown innovation. China wants to be less dependent on imports and foreign companies, with key technologies set to be manufactured by companies within the country. Wherever the use of foreign firms is indispensable, they will be expected to move their value chains to China.

For Germany, the Federal Government has cut back its growth forecast due to the extended lockdown, from 4.4 percent to 3.0 percent. Economic growth will be largely dependent on the course of the pandemic and the action taken to contain it, especially in the first quarter of 2021. A return to pre-crisis GDP and foreign trade levels is not expected until mid-2022 at the earliest. According to the German Federal Ministry for Economic Affairs and Energy, the outlook for industry remains muted in view of the pandemic and supply bottlenecks in the semiconductor industry. T65

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 smart laboratory in analytical and biotechnology, and through the use of quantum technology, which may provide photonics with its next source of growth momentum. Further growth is expected in the photonics industry, according to Spectaris, in the pursuit of climate protection and sustainability. 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. The market research company MarketsandMarkets expects the global photonics market to grow in value from 593.7 billion US dollars in 2020 to 837.8 billion US dollars by 2025, with an average annual growth rate of 7.1 percent.

The Photonics21 technology platform published a position paper on the promotion of optical technologies in June 2019. The paper details commitments by the European photonics industry to invest up to 100 billion euros in research and development throughout the next phase of the "Horizon Europe" research initiative (2021 to 2027) when the European Commission launches a new photonics PPP (public-private partnership). This PPP will double the Commission's annual commitment to

200 million euros, equating to a total of 1.4 billion euros in seven years. In the fall of 2020, however, the Commission announced a reduction of around 30 percent in this commitment, which was criticized by industry experts. Investment in photonics as a key technology is required to ensure competitiveness in the face of funding for photonics from China, South Korea, and the US, and to facilitate the digital transformation in Europe.

A major acquisition in the global laser market might take place in the second half of the year: photonics specialist Lumentum plans to buy laser manufacturer Coherent for 4.7 billion euros to help it meet the growing requirements of the shift to the 5G standard, modern microelectronics, and autonomous vehicles. Two other photonics companies (MKS Instrument and II-VI) also offered to acquire Coherent in February 2021.

Experts are anticipating another year of growth in the semiconductor industry. The Semiconductor Industry Association (SIA) expects year-on-year revenue growth of 8.4 percent. According to IT analyst Gartner, global revenue will increase 11.6 percent in 2021, equating to around 502 billion US dollars, partly driven by strong demand in connection with 5G and associated network equipment. Segments such as laptops could see lower growth than in the COVID-19 year 2020, and the trade dispute between the US and China remains a risk. Following the record year 2020, the semiconductor equipment market will continue to grow in the next two years, according to the Semiconductor Equipment and Materials International (SEMI) industry association. Revenue is expected to grow from 68.9 billion US dollars in 2020 to 71.9 billion US dollars in 2021, followed by 76.1 billion US dollars in 2022. Growth in the semiconductor industry and its equipment manufacturers will be driven by growing demand for cloud services, server capacity, PCs and laptops, and gaming and health technologies. New developments relating to the Internet of Things (IoT), artificial intelligence, and machine learning are also boosting demand for more connectivity, large data centers, and big data. After losing around half of its share of global chip production in the last two decades, the US industry is now due to be boosted with the help of government support such as the "American Foundries Act" or the "CHIPS for America Act". This includes, for example, a double-digit billion sum for the construction of new chip factories and for research funding. In Germany, the Federal Ministry for Economic Affairs and Energy plans to mobilize a huge investment of up to 50 billion euros in the semiconductor industry with an EU funding program known as the Important Project of Common European Interest (IPCEI) to reduce dependence on Asian and American companies.

In December, the German Mechanical Engineering Industry Association (VDMA) raised its production forecast for the German mechanical and plant engineering industry in 2021. Thanks to the slight upturn in the economy and a recent improvement in the order situation, the association expects real production growth of 4 percent instead of the previously expected 2 percent. This forecast, however, is significantly less certain than usual. In terms of revenue, the VDMA expects only minor growth, if any, which will primarily come from sales markets outside Germany and Europe. The high level of uncertainty in the global economy is particularly impacting on the export-oriented mechanical engineering industry. This problem is compounded by continuing protectionism, the structural change in the important customer sector of the automotive industry, and liquidity bottlenecks caused by the coronavirus crisis. Travel and residence restrictions, as well as health regulations, are also still hindering sales, installation, and service activities.

An initial recovery in the robotics industry following the coronavirus-related slump in demand in 2020 is not expected until the second half-year 2021, according to a joint analysis conducted by the VDMA and BayernLB Research. Pre-crisis levels will not be reached until 2022 at the earliest, and possibly not until 2023 if the lockdowns last longer. The industry will benefit from the coronavirus crisis in the medium and long term, because it is accelerating trends such as the smart, simplified user operability of robots, collaborative robotics – i.e., the cooperation between humans and robots –, and digitization, for example for remote maintenance and virtual commissioning of complex systems. This will help to advance the smart factory and provide important long-term growth momentum, according to the VDMA Robotics and Automation sector group. Alongside industrial robots, service robots will also grow in importance, e.g., for logistics in factories, warehouses, or medical facilities.

77 Combined Management Report 152

The German Association of the Automotive Industry (VDA) is expecting the market situation in the global automotive industry to slowly improve in 2021. Following the prior-year slump due to the pandemic, the global passenger car market could grow 9 percent, to 73.8 million vehicles. This sales volume, however, would still be well down on pre-pandemic levels. China is seen as the only country capable of exceeding pre-crisis levels in 2021; the other major markets of Europe and the US will only slowly return to their pre-crisis figures. At the beginning of 2021, the global automotive value chain is hindered by its dependence on chip manufacturers in Asia. Lacking semiconductors and semiconductor modules, which are required, for example, in electronic control units or for driver assistance systems, car manufacturers are reducing or stopping their production lines. It is unclear how long these supply issues will persist.

In its “Road Safety Market by Solution, Service, Region” report, US market research company MarketsandMarkets believes that the global traffic safety market will grow from 3.0 billion US dollars in 2020 to 4.9 billion dollars in 2025, an average annual increase of 9.3 percent. Key factors include the increase in numbers of people living in cities, growing mobility and motorization, a rising number of traffic accidents and deaths, and more government initiatives to promote road safety. On a regional level, the North American market will dominate, as it is home to the most advanced technology and many initiatives to increase safety. Many major cities in the US and Canada, for example, are looking to implement “Vision Zero” measures, under which fatalities in road traffic are considered unacceptable. Within the speed monitoring segment, automatic number plate recognition (ANPR) and section control systems, used to monitor speed limits not just at specific points but over a given stretch of road, are both growing in importance. Among manufacturers of traffic safety technology, the US company Verra Mobility will merge with the Australian supplier Redflex probably by May 2021. In Europe, the reduction in inner-city speeds to 30km/h is gaining traction in increasing numbers of regions and cities, among them Paris, Brussels, and Spain. In Great Britain, these initiatives for better road safety and noise protection are being promoted on the “twenty is plenty” campaign (20mph).

Following a sharp slump last year in the aviation industry due to COVID-19, the suppliers are also expecting a very weak 2021 fiscal year, and is concerned about an appreciable loss of jobs. Compared to 2019, revenue among suppliers is expected to fall 33 percent in 2021. Pre-crisis levels are unlikely to be reached until 2024 at the earliest. Both major aircraft manufacturers have announced job cuts. Airbus, however, states that no final assembly sites will be shut; all models will continue to be produced, albeit at a reduced speed, with the exception of the A380, which will be discontinued in 2021. Despite this, Airbus has changed its plans for ramping up production, reducing its aim to produce almost 60 aircraft a month from July 2021 on to just 50. In contrast short-haul and medium-haul routes, Airbus does not see demand increasing for long-haul models in the foreseeable future. A return to 2019 production levels will not be possible until 2023 to 2025 at the earliest.

In the security and defense technology industry, NATO announced in the summer of 2020 that it would build up its air defense capabilities against the backdrop of the tense relationship with Russia. One of the largest defense projects currently underway in Germany, the modernization of missile defense, might be delayed or even stopped if the budget for the “Technical Air Defense System” (TLVS) is not fully or partially approved by the Bundestag before the Bundestag elections in the fall. Experts estimate that the project will cost a total of 13 billion euros by 2030. The “Future Combat Air System” (FCAS) project, which is to be made operational by 2040 in cooperation with France, is also threatened by delays due to deficiencies in the financial planning and differences between the partner countries and companies involved regarding expertise and intellectual property rights arising from the innovations. Germany has extended until the end of 2021 and further tightened its ban on armaments exports to Saudi Arabia. Accordingly, no new applications for exports to Saudi Arabia would be approved; licenses that have already been issued but were only on hold will be revoked. Exceptions apply to companies involved in European cooperation projects, e.g., the Eurofighter or Tornado fighter jets, if it is guaranteed that the final assembled goods will not be delivered to Saudi Arabia or the United Arab Emirates.

Expected Development of the Business Situation

Planning assumptions for the Group and the divisions

The forecast for business growth in 2021 was based on the group planning. At the time the report was prepared, Jenoptik was still not able to make a conclusive quantitative assessment of possible negative economic influences associated with the spread of the coronavirus (effects of the lockdown at the beginning of the year and a possible third wave of the pandemic).

Jenoptik operates in the following reportable segments: the three photonic divisions Light & Optics, Light & Production, and Light & Safety as well as VINCORION.

Separate plans from the divisions, VINCORION, and the operational business units form the starting point, they are all harmonized and integrated in the group planning. Potential acquisitions, divestitures, and exchange rate fluctuations are not included in the planning.

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.

In 2021, we will continue to pursue our "Strategy 2022" – which focuses on photonic technologies – and implement measures to realize its objectives. In the process, we are concentrating on three issues – focus, innovation, and internationalization.

Overall, the Jenoptik Group anticipates consistently good business performance in the Light & Optics division in 2021. We will enable this by stepping up our activities as a global OEM 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. In addition, TRIOPTICS, which will be 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 should benefit from its range of optical and micro-optical system solutions for semiconductor production. In the field of biophotonics (medical technology and life science), existing cooperation arrangements with key international customers are to be further expanded, and new ones acquired in the current fiscal year. Following a corona-related decline in 2020, this field is expected to achieve growth in 2021 due to a renewed rise in demand. The division also expects an improvement in business growth in the Industrial Solutions area. The Test & Measurement unit, which in addition to TRIOPTICS has included OTTO as of January 1, 2021, also expects noticeable growth, primarily due to the first-time consolidation of TRIOPTICS. In order to support overall positive development in the Light & Optics division and to broaden our presence in our core markets, the range of optical solutions for information and communication technologies, along with applications in the field of virtual and augmented reality, is also growing in significance. In the current fiscal year, the Light & Optics division will also continue to invest in its operational performance and sales to promote future growth and continue the process of internationalization.

In 2020, business in the Light & Production division was clearly impacted by the effects of the COVID-19 pandemic, but also by structural changes in the automotive industry. Both the Automation & Integration and Laser Material Processing areas are expected to return to growth in the current fiscal year. We expect that the effects of the restructuring measures will already have a positive impact for Metrology in 2021. However, the measures will not take full effect until 2022.

Focusing on automated plastic and metal processing will support growth in the field of laser processing systems and automation. The acquisitions of INTEROB (2020) and Prodomax (2018) have also contributed to this. As an integrated supplier, Jenoptik is now able to offer end-to-end solutions for efficient production environments. In the metrology sector, we assume that the trend toward integrated production-related metrology will continue. The development from stand-alone machines to supplying modular systems and solutions for customer manufacturing in the B2B segment will continue, thereby boosting our customers' productivity. As the market for metrology is growing particularly rapidly in Asia, business is to be strengthened there.

See the "Control System" chapter for more information on the key performance indicators

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

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

77 Combined Management Report 152

The Light & Safety division is expecting a positive development in the 2021 fiscal year. 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, thus further improving direct customer support.

The traffic service provision business model will continue to be expanded. The civil security business is another area that is growing in significance. In 2021, we will modernize our product portfolio, particularly in the area of traffic monitoring, and develop a new uniform product platform. Additional new functions are also being integrated into existing systems in order to reflect the required interdependence of applications such as law enforcement, traffic monitoring, or automatic number plate recognition (ANPR). Deep learning technology is due to be used to a greater extent in safety and civil security applications. On a regional level, Jenoptik is primarily expecting growth momentum benefiting the Light & Safety division to come from the Americas, Europe, and the Arab and Pacific regions.

While VINCORION's defense and security systems business showed stable development in 2020, and this is expected to continue, the aviation area saw a downturn due to the coronavirus. An upturn in business is also not expected for this area in 2021.

VINCORION's business is predominantly project-based and geared toward the long term. European defense spending is picking up again. Various major new procurement projects are also planned in Germany, key criteria being connectivity, automation, and energy efficiency. At the same time, a potentially more restrictive export policy under the present German government could impact on or delay projects. In the medium term, a significant increase in investment for the German armed forces has political support, but we do not expect this to have any effect on our business in the short term, as political decision-making processes are generally highly protracted. In the years ahead, this may contribute to higher revenues. Beyond this, VINCORION is looking to increase the share of its systems used in civilian fields as well as its spare parts business. We expect that new in-house developments, such as the heatable floor panel for passenger aircraft, will also contribute to growth in the coming years, but the situation in the aviation industry is currently still heavily impacted by the effects of the COVID-19 pandemic. Internationalization also remains a key topic in 2021; foreign business is due to expand steadily, particularly in North America and Asia/Pacific.

2021 earnings position forecast

Based on good order intake growth in the fourth quarter of 2020, a well-filled project pipeline, and the continued promising development in the semiconductor equipment business, the Executive Board expects further growth in the current fiscal year. In addition to the organic growth in the divisions, TRIOPTICS, which will be consolidated for the full year for the first time, will also make a contribution to positive development. Current uncertainties are caused by the renewed lockdown at the start of the year due to COVID-19, and the risk of a third wave of the pandemic. However, our scheduled growth also presupposes that political and economic conditions do not worsen. In particular, these include economic trends, the potential impact of Brexit, regulations at European level, export restrictions, and further policy developments in our sales markets.

Major portfolio changes were not considered in the forecast.

For 2021, Jenoptik is expecting revenue growth in the low double-digit percentage range, including TRIOPTICS (prior year: 767.2 million euros).

At present, the Group is expecting EBITDA (earnings before interest, taxes and depreciation, incl. impairment losses and reversals) to increase significantly in the current fiscal year (prior year: 111.6 million euros). The EBITDA margin should be between 16.0 and 17.0 percent (prior year: 14.6 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, a more precise forecast is currently not possible. However, we will endeavor to specify the forecast during the course of the year.

The order intake for a period is also affected by major orders, particularly at VINCORION and in the Light & Safety division, and increasingly also in the Light & Production division. In the past fiscal year, Jenoptik received new orders worth 739.4 million euros and had therefore built up a good order base by the close of 2020, particularly following a strong fourth quarter. For the current 2021 fiscal year, Jenoptik expects the order intake to grow in the low double-digit percentage range.

It should also be noted that Jenoptik had frame contracts worth 42.3 million euros at the end of 2020, which are not included in the order intake or backlog. 78.5 percent of the order backlog reported as of December 31, 2020 (31/12/2019: adjusted 68.0 percent) is expected to be converted to revenue in 2021.

In 2021, the Light & Optics division expects revenue, including the contributions from TRIOPTICS and OTTO, to grow in the clear double-digit percentage range. The EBITDA is expected to show a significantly stronger rate of growth than revenue.

The Light & Production division expects revenue growth in the upper single-digit percentage range. The EBITDA is expected to show a stronger rate of growth than revenue. In this division, too, the accuracy of forecasts is influenced by the rising share of international projects, which are increasingly subject to accounting over time as specified in IFRS 15.

The Light & Safety division also expects growth in 2021, with a revenue increase in the mid to upper single-digit percentage range. The EBITDA is expected to see slight growth.

Based on its robust order backlog at the close of 2020, VINCORION expects the 2021 fiscal year to show stable development in both revenue and EBITDA, dependent on the extent to which the coronavirus affects development in the aviation area.

T66 Targets for Group and divisions (in million euros)

	Actual 2020	Forecast 2021 (without major portfolio changes)
Revenue	767.2	Growth in the low double-digit percentage range (including TRIOPTICS)
Light & Optics	318.0/321.4 [1]	Growth in the clear double-digit percentage range [1]
Light & Production	178.9/175.5 [2]	Growth in the upper single-digit percentage range [2]
Light & Safety	114.0	Growth in the mid to upper single-digit percentage range
VINCORION	151.7	Stable development (dependent on developments in the aviation industry resulting from the pandemic)
EBITDA/EBITDA margin	111.6/14.6%	Significant EBITDA growth / margin between 16.0 and 17.0% [3]
Light & Optics	68.6/68.3 [1]	Growth significantly stronger than in revenue [1]
Light & Production	7.9/8.2 [2]	Growth stronger than in revenue [2]
Light & Safety	22.3	Slight rise
VINCORION	16.6	Stable development (dependent on developments in the aviation sector resulting from the pandemic)
Order intake	739.4	Growth in the low double-digit percentage range
Cash conversion rate	55.8%	Over 50%
Capital expenditure [4]	47.3	Above prior year

[1] incl. OTTO
[2] excl. OTTO
[3] 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. However, we will endeavor to clarify the forecast during the course of the year
[4] Without capital expenditure on financial investments

Group asset and financial position forecast

Jenoptik expects that capital expenditure in the 2021 fiscal year will be up on the prior year's figure (prior year: 47.3 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.

We expect the cash conversion rate (ratio of free cash flow to EBITDA) to be over 50 percent in 2021 (31/12/2020: 55.8 percent).

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 solid base of equity for sustainable organic growth to increase the company value as well as the exploitation of 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.

General Statement by the Executive Board on Future Development

In the current 2021 fiscal year, the Jenoptik Group will continue to implement its "Strategy 2022", concentrating on photonic technologies. 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 and sustainable earnings. It is the assessment of the Executive Board that the still good asset position and the viable financing structure give Jenoptik sufficient room for maneuver to finance both organic and inorganic growth.

Achieving our targets is dependent on the development of the economic and political environment. However, uncertainty currently exists with respect to the impact of the COVID-19 pandemic on business growth in the current year.

On the basis of encouraging order intake growth in the fourth quarter of 2020 and the current order backlog, a well-filled project pipeline, and continued good performance in the semiconductor equipment business, the Executive Board remains positive for the 2021 fiscal year and expects revenue growth to be in the low double-digit percentage range. In addition to organic growth in the divisions, TRIOPTICS, which will be consolidated for the full year for the first time, will also make a significant contribution to growth. The Group's EBITDA margin should be between 16.0 and 17.0 percent.

In 2021, 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 still 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 2021.

Jena, March 16, 2021

JENOPTIK AG
The Executive Board