

## Forecast Report

### Framework conditions: Future Development of the Economy as a whole and the Jenoptik Sectors

The International Monetary Fund (IMF) expects 2023 to be a difficult year economically, as the three most important economic regions – the US, the EU, and China – are all showing signs of weakness at the same time; half of the countries in the EU will see recession in 2023, as may a third of all countries worldwide. The IMF, however, sees the outlook for the [global economy](#) as “less gloomy” than last feared in the October 2022 forecast, as many economies have proved more resilient than expected and the end of the zero-Covid strategy in China could become a driver for the economy. On the other hand, a worsening of the coronavirus situation in China due to rapidly rising infections could also become a risk for the domestic and global economy. The IMF sees further risks in the possible escalation of the Ukraine war or from the impacts resulting from it, such as high energy prices. In addition, although central banks’ strict monetary policies are increasingly curbing inflation, they are also increasing the risk of a possible debt crisis in many emerging and developing economies.

For 2023, the IMF is expecting year-on-year global economic growth of 2.9 percent – 0.2 percentage points higher than assumed in October 2022. Growth of 3.1 percent is forecast for 2024. T37

#### T37 Gross domestic product growth forecast (in percent)

	2023*	2024*
World	2.9	3.1
US	1.4	1.0
Eurozone	0.7	1.6
Germany	0.1	1.4
China	5.2	4.5
India	6.1	6.8
Emerging countries	4.0	4.2

Source: International Monetary Fund, World Economic Outlook (Update), January 2023

\* Forecast

Although the IMF raised its growth forecast for [China](#) by 0.8 percentage points compared with its October forecast, it still sees considerable risks. The unpredictable further course of the coronavirus pandemic following the end of the zero-Covid policy, a crisis in the real estate market, and weaker global demand could all particularly impact on China’s economic growth.

According to the IMF, the [US](#) could avoid or see only a very mild recession in 2023. In its view, labor markets are stable and consumer demand is strong, despite interest rate hikes to reduce inflation. The subsidy law passed in 2022, the Inflation Reduction Act, is intended to provide very large subsidy incentives and tax cuts in the US to green the economy. It is coupled with regulations for domestic production in the US, which is why the EU sees this subsidy program, worth around 430 billion US dollars, as discriminating against European companies that want to export environmentally friendly products to the US, or the risk that companies may relocate their investments and plants to the US. In response, the EU therefore plans to simplify its regulations for subsidies and speed up approvals, as reported by the EU Commission at the beginning of 2023.

In the [eurozone](#), the IMF forecasts economic growth of 0.7 percent in the current year and 1.6 percent in 2024. The forecast, which is slightly higher than in October, reflects the ECB’s faster rate hike and lower wholesale energy prices, as well as additional announcements to strengthen purchasing power in the form of energy price controls and financial aid. The EU Commission expects economic growth in the eurozone of 0.9 percent in 2023.

According to the IMF’s January 2023 assessment, the German economy has proved surprisingly robust, making it possible to avoid a recession in the current year. After the weak growth of 0.1 percent forecast for 2023, the economy could grow by 1.4 percent year-on-year in 2024. The German government expects a year-on-year increase in gross domestic product in 2023, rather than shrinking by 0.4 percent as was feared in the fall. It is expecting a difficult year for Germany’s export industry, with exports likely to grow just 2.2 percent.

Thanks to digitization, the [photonics](#) industry remains part of a growing environment, 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. According to Spectaris, efforts to better protect the climate and promote sustainability are expected to make a positive contribution. Light-based technologies deployed in the service of “green photonics” are key here: Spectaris expects that photonics will help to cut almost 3 billion tons of CO<sub>2</sub> by 2030.

Industry experts see a number of trends that will influence the [photonics](#) industry. For example, more photonic solutions may be needed in the semiconductor equipment industry as new chip factories will be built in the wake of funding programs such as the CHIPS and Science Act in the US, the Chips Act in the EU, or similar state initiatives in China, South Korea, and Taiwan. The market for industrial lasers, especially for cutting and welding applications, could also grow by 5 to 10 percent in 2023, but with uncertainties regarding China. In the semiconductor industry, EUV (extreme ultraviolet) technology is also helping to produce ever smaller chip structures. Another growing market segment for photonic components is free space optical communication: The next generation of satellites will need laser terminals for optical communication in space.

Industry experts expect a compound annual growth rate (CAGR) for the global [photonics](#) industry of at least 6 percent in the coming years: Market researcher Tematys (together with Photonics21) is forecasting a CAGR of 6 percent by 2025, to 900 billion euros, MarketsandMarkets 7.1 percent to 837.8 billion US dollars by 2025, and Triton 8.1 percent to 921.7 billion US dollars by 2028. Growth will primarily be driven by the increasing use of photonics products in the healthcare sector, in industry, and in IT and communications.

In view of strong chip demand in many industries, but also potential trade conflicts, countries and regions such as the US or the EU plan to increase their own [chip capacities](#) with support programs and thus become less dependent on supplies from abroad. Under the auspices of the European Chips Act, the EU Commission plans to build new chip factories in Europe in the medium to long term, doubling Europe’s share of global chip production to 20 percent by 2030. The US also plans to promote investment and innovation in US chip manufacturing with the CHIPS Act passed in August 2022. According to the SIA, the construction of 23 new chip factories and the expansion of 9 fabs have already been announced, which in turn will lead to investment by suppliers and equipment manufacturers. The [semiconductor equipment manufacturers](#) association, SEMI, also confirmed the positive impact of government efforts to expand production capacity and strengthen supply chains: As it says, the global semiconductor industry will invest more than 500 billion US dollars in 84 chip fabs through the end of 2023.

In terms of short-term chip demand, market analyst IC Insights expects weakness in the memory market to persist through the first half of the year, leading to a 25 percent decline in memory capital spending in 2023. In addition, US sanctions on Chinese semiconductor manufacturers adopted in October 2022, especially those related to the acquisition of chip manufacturing equipment from US companies, would cause a year-on-year drop of 30 percent in capital spending by Chinese companies in 2023. In early 2023, the US agreed with the Netherlands and Japan on further export restrictions against China, and this could impact on supply chains in the semiconductor equipment industry. For the global [semiconductor equipment](#) market, the SEMI association expects a decline from 108.5 billion US dollars in the prior year to 91.2 billion US dollars in 2023 and renewed revenue growth to 2022 levels in 2024.

The German Electrical and Electronic Manufacturers’ Association (ZVEI) expects the German [electrical and digital industry](#) to achieve a break-even point in production in 2023, corresponding to consolidation at a very high level.

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Despite the overall economic uncertainties, the growth prospects for the **machine vision industry** remain good for the next few years, according to VDMA Machine Vision, which states that economic recovery in “seeing machines” has continued and that machine vision is a key component in automation systems. According to market research company MarketsandMarkets, the market for augmented reality and virtual reality (AR/VR) applications could grow by an average of 25.3 percent per year through 2027, which would then correspond to a volume of 114.5 billion US dollars based on 2022 revenue of 37.0 billion US dollars.

For the German **medical technology industry**, the Spectaris industry association is anticipating revenue growth in 2023 below the level of 2022. Growth will also be accompanied by cost increases, which will worsen earnings. A majority of companies in the industry are experiencing production constraints due to material shortages and a lack of skilled workers. According to Spectaris, long-term growth drivers are opportunities due to demographic developments, particularly in industrial nations, and high healthcare investments in many emerging countries. The pandemic has further intensified digitization within the industry; as a consequence, manufacturers’ business models are moving from traditional instrument engineering via solution providers in the current decade toward suppliers of digital and holistic healthcare solutions in the next decade. Based on assessments by Frost & Sullivan, the global medical technology market will grow by an average of over 6 percent a year to 582 billion US dollars in 2025. Market researcher Fortune Business Insights forecasts the global market for medical technology devices to grow at an annual growth rate of 5.5 percent to reach a market volume of 718.9 billion US dollars by 2029. It sees development of the market being driven, for example, by increasing demand for wearable healthcare devices such as fitness trackers, the spread of chronic diseases, and the shift to home care, which requires portable, easy-to-use equipment. For the point-of-care diagnostics market segment, market researcher MarketsandMarkets calculated average growth of 10.7 percent to 75.5 billion US dollars in 2027, based on the 2022 value (45.4 billion US dollars), due to the continuing prevalence of respiratory, cardiovascular, and infectious diseases, which can be better contained with PoC diagnostics.

In the German **mechanical and plant engineering industry**, the VDMA industry association anticipates a minor 2-percent decline in production in 2023, as well as a year-on-year decline in revenue of 2.9 percent. The export-oriented sector will be impacted by the expected continued weak growth in China, high energy prices as a result of the war in Ukraine, and rising interest rates, it states.

Only slow improvement is expected in the **automotive industry**: In Germany, production and new registrations will rise again compared with the prior year, but will still be well below pre-crisis levels, according to the German Association of the Automotive Industry (VDA). The VDA expects a similar picture in the US. Only in China the car market will grow more slowly, as it has already recovered from the crisis.

The global **traffic safety** market is expected to grow by an annual average of 12.4 percent, to 6.6 billion US dollars, through 2028, according to the US market research company Grand View Research in its May 2021 market report. Market researcher MarketsandMarkets is expecting average annual growth of 9.6 percent through 2026, with key roles for increasing urbanization and expansion in the transport and traffic sector, the further development of smart systems, and initiatives for greater road safety such as “Vision Zero”. Within the speed monitoring segment, automatic license plate recognition (ALPR) accounts for a significant portion of industry revenue, and demand here is forecast to remain solid through 2028. Also becoming more important are services, or the ability to provide end-to-end monitoring and maintenance services.

Globally, the “Decade of Action for Road Safety 2021-2030” aims to largely prevent road traffic deaths and injuries. According to an EU regulation, all new vehicle types must be equipped with an Intelligent Speed Assistant (ISA) from July 2024 on. This assistance system is to become a supporting speed brake in the vehicle by means of sensor fusion between traffic sign recognition, cruise control, and navigation system. In the US, the Department of Transportation wants to improve traffic statistics and safety with a new “Safe Systems” strategy. By the end of 2023, it plans to provide advice and 5 billion US dollars in funding to enable US states to introduce speed limits or launch pilot programs to increase the use of speed cameras.


## Expected Development of the Business Situation

### Planning assumptions for the Group and the divisions

The forecast for business growth in 2023 is based on the [group planning](#) set out in the fall of 2022.


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

The starting point is formed by the separate plans from the divisions and operational business units, which are harmonized and integrated in the group planning. Potential acquisitions, divestments, and exchange rate fluctuations are generally not taken into account in the planning process.

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



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

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



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

Overall, the Executive Board anticipates consistently good business performance, with an increase in revenue and earnings, in the [Advanced Photonic Solutions division](#) in 2023. We will enable this by stepping up our activities as an active global supplier of solutions and products based on photonic technologies, by focusing on key sales markets, by growing our global reach, and with innovative products and a larger range of integrated system solutions. The division should continue to benefit here from strong demand for optical and micro-optical system solutions for semiconductor production. In the Biophotonics area (medical technology and life science), existing cooperation arrangements with key international customers are to be further expanded and new customers acquired in the current fiscal year, thus generating further growth. Good performance is also expected for the area of Optical Test & Measurement, which will also be supported by applications in the field of virtual and augmented reality.



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

In the current fiscal year, the Advanced Photonic Solutions division will invest in its operational performance and sales to help promote future growth. Key measures in this regard include the construction of a new clean room factory in Dresden and the expansion of our site in Berlin.

For the 2023 fiscal year, the Executive Board expects further growth in the [Smart Mobility Solutions division](#). This is to be supported by new products, the expansion of own sales channels, and a promising project pipeline. By optimizing the product pipeline, also in the form of new business models such as software-as-a-service, and a broader range of products in the value chain, the aim is to increase the share of recurring revenue contributions in the division. On a regional level, Jenoptik is primarily expecting growth momentum benefiting the Smart Mobility Solutions division to come from North America and Australia.

In 2022, business growth in the [Non-Photonic Portfolio Companies](#) was still impacted by the effects of the Covid-19 pandemic, negative impacts due to projects in the automation area, but also by structural changes in the automotive industry. For 2023, the Executive Board expects to see good growth in the segment, particularly in the Automation & Integration business in North America.

### 2023 earnings position forecast

Based on the good order intake and backlog in the fiscal year 2022 and ongoing promising developments in the core photonics businesses, especially in the semiconductor equipment sector, the Executive Board is confident of further profitable growth in the fiscal year 2023.

In order to achieve the planned growth, we continue to assume that the political and economic conditions will not deteriorate. In particular, these include economic trends, the war in Ukraine, regulations at European level, the pandemic situation, and further macropolitical developments in our sales markets.

Possible portfolio changes were not considered in the forecast.

For 2023, Jenoptik is expecting [revenue growth](#) to between 1,050 million and 1,100 million euros (2022: 980.7 million euros).

At present, the Executive Board is expecting **EBITDA** (earnings before interest, taxes and depreciation/amortization, incl. impairment losses and reversals) to show strong year-on-year growth in the current fiscal year 2023 (2022: 184.1 million euros). The **EBITDA margin** is due to come in at between 19.0 and 19.5 percent (2022: 18.8 percent).

The **order intake** is in part affected by major orders, particularly in the Smart Mobility Solutions division. In the past fiscal year, the continuing operations received new orders worth 1,185.4 million euros and had thus built up a good order base at year-end 2022. 83.4 percent of the order backlog as of December 31, 2022 is expected to be converted to revenue in 2023. For the current fiscal year 2023, the Executive Board expects the order intake to be roughly at the very high level of the prior year.

The **Advanced Photonic Solutions division** is expecting revenue growth in the low double-digit percentage range for 2023. EBITDA is expected to grow in line with revenue.

The **Smart Mobility Solutions division** also expects growth in 2023, with a revenue increase in the high single-digit percentage range. EBITDA is expected to show a stronger rate of growth than revenue.

The **Non-Photonic Portfolio Companies** are expecting revenue to grow in the mid single-digit percentage range in 2023. EBITDA is expected to show a significantly stronger rate of growth than revenue partly due to the elimination of negative impacts from projects in the automation area.

### Group asset and financial position forecast

Jenoptik expects that **capital expenditure** in the fiscal year 2023 will be significantly above the prior-year level of 106.0 million euros. Capital expenditure on property, plant, and equipment will focus on the growth areas within the divisions or take place within the scope of new customer projects. It aims to expand capacities, thereby ensuring future growth, e.g., through construction of the new cleanroom facility in Dresden.

The Executive Board expects growth in the **cash conversion rate** (ratio of free cash flow to EBITDA) to over 50 percent in 2023 (31/12/2022: 44.9 percent).

**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 and macroeconomic development, market risks, and geopolitical risks, especially the Ukraine war and associated sanctions.

## T38 Summary of targets for Group and segments (in million euros)

	Actual 2022	Forecast for 2023 (without major portfolio changes)
Revenue	980.7	1,050 to 1,100 million euros
Advanced Photonic Solutions	729.6	Growth in the low double-digit percentage range
Smart Mobility Solutions	114.3	Growth in the high single-digit percentage range
Non-Photonic Portfolio Companies	132.3	Growth in the mid single-digit percentage range
EBITDA/EBITDA margin	184.1 / 18.8%	Marked growth/19.0 to 19.5 percent
Advanced Photonic Solutions	170.0	Growth in line with revenue
Smart Mobility Solutions	19.3	Growth stronger than revenue
Non-Photonic Portfolio Companies	2.7	Growth stronger than revenue
Order intake	1,185.4	Roughly at the very high level of the prior year
Cash conversion rate	44.9%	>50 percent
Capital expenditure <sup>1</sup>	106.0	Significantly above the prior-year level

<sup>1</sup> Without capital expenditure on financial investments

## General Statement by the Executive Board on Future Development

In the current fiscal year 2023, the Jenoptik Group will push on with its strategic Agenda 2025, concentrating on three core photonics markets. In terms of economic development, our key focus remains on profitable growth. We believe that revenue growth, a positive product mix, economies of scale, and more efficient and faster processes will result in higher earnings. Thanks to the continuing good asset situation and a viable financing structure, the Executive Board believes that Jenoptik has sufficient room for maneuver to finance both investments in further organic growth and potential acquisitions.

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

On the basis of very good order intake growth in the fiscal year 2022, the current order backlog, and ongoing promising

developments in the core photonics business, the Executive Board remains positive for the fiscal year 2023 and expects revenue growth to between 1,050 and 1,100 million euros in the current fiscal year. The EBITDA margin is due to come in at between 19.0 and 19.5 percent.

In 2023, we will again invest a significant portion of our funds in developing innovative products and expanding capacities. As part of our active portfolio management, potential acquisitions are closely scrutinized; divestments have not been ruled out.

Based on the information available at the time this report was created, the Executive Board expects the Jenoptik Group to see positive business development in 2023.

Jena, March 20, 2023  
JENOPTIK AG



Dr. Stefan Traeger  
President & CEO



Hans-Dieter Schumacher  
Chief Financial Officer



Dr. Prisca Havranek-Kosicek  
Member of the Executive Board



Dr. Ralf Kuschnereit  
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