Group Management Report

Consolidated Management Report: This report summarizes the report on the situation of the company and the report on the situation of the Group of First Sensor AG.

Basic information on the First Sensor Group

Group structure and business activities

Group legal structure

The First Sensor Group (hereinafter also referred to as "First Sensor" or "the Group") consists of the parent company First Sensor AG, based in Berlin, and ten subsidiaries in which First Sensor AG holds a majority stake or all the shares. An overview can be found in the notes under "Basis of consolidation."

Segments

We operate as a company which encompasses the development, production and sale of sensor chips, sensor components, sensors and sensor systems. We also monitor our sales by target market (Industrial, Medical, Mobility) and geographically according to the origin of our customers (DACH region, Europe, North America, Asia). Market and sector developments are thus compared with the company's own positioning and corresponding measures derived for strategic orientation. Operational management at Group level is implemented in line with the principles described under "Management system."

Locations

The Group has a total of nine development and production locations that specialize in different products and stages of the value chain. Most development work and production is "made in Germany". There are locations in Berlin (Oberschöneweide and Weißensee), Dresden (Albertstadt and Klotzsche), Oberdischingen, and Puchheim, as well as international locations in Dwingeloo (the Netherlands), Westlake Village (USA), and Montreal (Canada). There are another six locations that act as sales companies in Paris (France), Shepshed (Great Britain), Valkenswaard (the Netherlands), Copenhagen (Denmark), Kungens Kurva (Sweden), and Mansfield (USA). An in-house sales organization is currently being established in China. The international sales companies ensure local proximity to customers in order to tap further market potential.

Products, services and business processes

In the growth market of sensor systems, First Sensor develops and manufactures standard products and customer-specific solutions for the ever-increasing number of applications in the Industrial, Medical, and Mobility target markets.

Value creation is characterized by two core competencies in particular. Firstly, the Group specializes in detecting physical parameters thanks to the design and manufacture of its silicon-based sensor chips. Secondly, it uses its expertise in microelectronic layout and connection technology to continue to process the sensor chips with the best "form factor" for the application. In this context, First Sensor is an expert in the areas of photonics, pressure and advanced electronics. In addition, First Sensor is generating increasing growth in its target markets through new applications that are created via system solutions (so-called sensor systems), for example. They do not just measure; they react intelligently to the measurement results and communicate with other systems.

First Sensor develops, produces and sells a wide range of its own standard sensors. This extensive range of its own standard products is supplemented by other sensors and complementary products from partner companies. In addition, First Sensor uses its decades of expertise in sensor systems to offer customers tailored solutions to meet the application-specific challenges posed by their products. We increasingly support our customers with systematic approaches to sensor technology in conjunction with a wide range of technical solutions in the area of actuation systems and embedded software. For this reason, product and technology development is an important core process for the company.

Processes ranging from market analysis to customer support and from qualification as a supplier of the customer to the conclusion of a contract are bundled within the Group's own sales organization. In this process, First Sensor focuses on specialized key account management for markets and applications that puts the emphasis on sales of customer-specific sensor solutions. This is supplemented by regional oriented sales, which concentrates on high-volume sales of standard products as well as securing potential solutions customers. The sales organization furthermore encompasses the product management and marketing departments and is also supported by a global network of trading partners in a variety of countries.

Sales markets

In the growth market of sensor systems, First Sensor focuses on customer-specific solutions and standard products for the ever-increasing number of applications in the Industrial, Medical, and Mobility target markets. In fiscal year 2018, sales of €80.4 million were generated in the Industrial target market, corresponding to 51.8% of total sales. The company generated sales of €34.6 million in the Medical target market, representing a 22.3% share of sales. And in the Mobility target market, sales of €40.2 million or 25.9% of total sales were generated.

The company strengthened its international presence further in the last fiscal year. It generated 12.4% of its sales in North America, with a focus on the USA. 12.5% of sales were attributable to Asia, with a focus on China. First Sensor generated 74.1% of its sales in European countries, although its focus continues to be on the German-speaking countries. The share of sales attributable to the DACH region (Germany, Austria, Switzerland, Liechtenstein) was thus 49.2% in 2018.

External influences

External influences that cause a change in customers' demand-related behavior and regulatory frameworks are of key importance to First Sensor.

With its focus on the three target markets of Industrial, Medical, and Mobility business, First Sensor is participating in the rapidly growing number of sensor applications developed for new functions, as well as safety, comfort, and efficiency. In the mobility target market, optical sensors and camera systems are used in connection with the introduction of partially and fully autonomous driving. Pressure sensors are also required for use in plug-in hybrid vehicles or vehicles for the shaping of a low-emission mobility.

The complexity of applications within the target markets is increasing due to the growing requirement for integrated solutions and the need to extend the use of intelligent sensor systems. These systems can analyze measured data themselves and communicate with other systems, for example. First Sensor is in an excellent position to cover this rising demand thanks to its many years of experience as a provider of solutions along the entire value chain, from chips to sensor systems. The company is expanding its product and technology portfolio in a targeted fashion in order to increase its own added-value share further through forward integration.

The sales markets on which First Sensor focuses are also subject to an economic cycle that can neither strengthen nor curb its growth. As a result of focusing on different technology-oriented sectors, economic fluctuations in individual industries should have only a limited influence on business as a whole.

Targets and strategies

Strategic orientation of business units

First Sensor's strategy is geared toward sustainably increasing value through profitable growth. With this orientation in mind, the company is working to generate and utilize economies of scale via the five pillars of focus, which are (1) target markets, (2) key customers and products, (3) forward integration, (4) internationalization, and (5) operational excellence.

As part of the first pillar, First Sensor is already participating in the promising growth of the technologically driven Industrial, Medical, and Mobility target markets. The significance of sensor systems is continuously increasing in these target markets, which means that the company will also benefit from the megatrends driving these markets in the future. These include Industry 4.0, digital and miniaturized medical technology and new mobility with partly and fully autonomous low-emission vehicles.

Intelligent networking of products and production processes as part of Industry 4.0 is driving growth in the Industrial target market, while sensors are creating the basis for advancing digitalization in the industrial environment and helping to make processes more efficient and improve human-machine interaction. In order to meet growing demand, First Sensor provides tailored solutions and standard products for customers based on tried-and-tested technology platforms.

Developments in the Medical target market are also heading in the direction of ever more intelligent and precise solutions for diagnostics and treatment. The focus in imaging procedures is on high-definition images of the human organism. Furthermore, operation robots are increasingly used for precise, minimally invasive procedures. In addition, advancing miniaturization enables the mobile use of medical devices. Respiratory and dialysis systems designed for home use and equipped with sensitive standard sensors and customer-specific developments have long been part of everyday life. A growth market for e-health applications is emerging in parallel to this, which enables continuous monitoring of a patient's health thanks to networked sensor systems.

Vehicle manufacturers and suppliers in the Mobility target market are working on specific applications for the introduction of autonomous driving. Advanced driver assistance systems promise greater comfort and road safety, which can only be realized via the use of networked sensor systems. A further driver of growth is the implementation of green mobility, in which sensor systems feature as key elements of low-consumption and low-emission drives. Based on the several million units First Sensor has delivered the company is known as a reliable partner among leading automotive groups and suppliers and will also play an increasingly important role in the next steps toward environmentally friendly mobility.

In all three target markets, First Sensor is focusing on key customers and key products as the second strategic pillar for profitable growth. Key customers are customers that purchase high unit quantities. First Sensor develops tailored solutions for them and supplies large volumes over a long period of time. The high cost of acquiring customers and development work is thus seen alongside attractive economies of scale and orders covering several years. This cooperation leads to long-term and trusting partnerships, with which new projects can be developed with significantly less expense. Smaller customers or customers with low unit quantities rely on key products from the standard portfolio as developing individual solutions is often not efficient for them. Nevertheless, it is possible to derive modifications from First Sensor's platform strategy, which is an important feature that distinguishes it from the competition.

With regard to the third pillar of the strategy for profitable growth, First Sensor is pressing ahead with forward integration along the value chain as an expert in the areas of photonics, pressure and advanced electronics. This is based on the growing demand for complex solutions that combine several functions in customer applications. In order to strengthen its position as a solution provider the company is focusing on further developing the core competencies of chip design and production as well as layout and connection technology and is also building and expanding expertise in other process technologies, as well as in software and sensor communication. In addition, integrating third-party products, which are required for successful business as a system provider, also plays an important role.

As a manufacturer of sensors and sensor systems that are "made in Germany," First Sensor is extending its international presence in a targeted manner with a focus on Asia and North America in order to develop additional sales potential. This internationalization forms the fourth pillar of the strategy for profitable growth. The company is also working on strengthening its strong position in the German-speaking countries. The aim is to acquire both standard and solution customers in all sales regions.

Operational excellence is the fifth strategic pillar of the strategy for profitable growth. In this connection First Sensor has already successfully initiated and partly already implemented fundamental measures such as the introduction of SAP and refined core processes. Furthermore, the Group is adding long-term measures aimed at reducing lead times, development in line with targeted costs (design to cost) and improving delivery reliability and quality through ongoing optimization of the product portfolio, targeted involvement of external partners to make the cost structure more flexible and expansion of technological expertise, for example in the field of 3D printing.

Strategic equity investments

First Sensor is well positioned to play an active role in ongoing consolidation in the highly fragmented sensor systems market. For the company, "attractive fit" companies are those that can provide support in driving forward the implementation of the strategy for profitable growth. In view of this, as part of a "buy-and-build" strategy, strategic equity investments, through which additional Applications in the target markets of Industrial, Medical, and Mobility can be tapped into, are reviewed as regularly as investments that expand our own technological expertise and abilities along the value chain. Furthermore, investments that can drive forward wider access to customers or tap into the growth markets of North America and Asia are also conceivable.

Strategic financing measures

In order to support the operating business First Sensor relies on a balanced financing structure in line with the corporate strategy. Besides self-funding from the operating business and working capital management, this is also done by means of maturity-matched financial hedging of business activities with borrowing. A KfW loan of €13.0 million agreed back in 2017 was drawn on in November 2018. The term is 10 years and the interest rate is 1.15% p.a. The funds from this ERP digitalization and innovation program of the German state-owned development bank Kreditanstalt für Wiederaufbau (KfW) will serve to finance the Group's further growth. In addition, there are currently three promissory note loans totaling €28.0 million that were placed in 2015. The first tranche is in portions of €7.0 million and €18.0 million and has a term of five years. The second tranche of €3.0 million has a term of seven years. The company aims to optimize capital turnover in conjunction with working capital management and occasionally uses liquidity management instruments such as agreeing payment terms, discounts or forfaiting, and has rigorous accounts receivable management.

Furthermore, as a listed company, First Sensor AG also has the opportunity to use the capital market.

Internal management system of the company

The Executive Board comprises two people and is responsible for the strategic orientation of the company. The Supervisory Board advises it on and monitors this. The interests of customers, employees, investors and suppliers are taken into account to the best possible extent when determining strategic objectives. The medium-term plan for a three-year period is updated once a year based on the strategic objectives. The detailed annual plan for the following year prepared on this basis is subsequently coordinated with the Supervisory Board and implemented.

The employees in the first management level below the Executive Board form the management team, with which the Executive Board regularly debates strategic and significant operating issues, analyzes the current business development, and discusses the identification of opportunities and risks. In this context, the Executive Board also manages the business operations of the First Sensor Group. The Executive Board is monitored in this task by the Supervisory Board in accordance with the Articles of Association, the rules of procedure and statutory requirements.

At this point, management of the First Sensor Group is focused primarily on communicating and monitoring the implementation of annual and medium-term planning. The aim is to identify deviations as early as possible so that suitable measures can be implemented promptly where required. The persons accountable for the results report on their areas each month and set out the financial situation for the Executive Board based on a comparison of actual financial figures with the target figures and the prior-year figures, as well as describing day-to-day business and any exceptional transactions.

Key performance indicators used

The operating units of First Sensor AG and its subsidiaries are primarily managed based on the targets for sales and for the EBIT margin (EBIT = earnings before interest and taxes according to the income statement). At Group level, EBITDA (EBIT before depreciation and amortization) and ROCE (return on capital employed) are also monitored. In addition, the Group monitors the main key figures for working capital (equivalent to current assets less current liabilities), in particular: DIH (days inventory held), DSO (days sales outstanding), and DPO (days payable outstanding). Investments are monitored by a profitability analysis, in addition to the planned pay-back period.

Renumeration systems

Renumeration system for the Executive Board

The remuneration system for the Executive Board of First Sensor AG promotes value-oriented business management geared toward sustainably increasing the company's success. This includes competitive remuneration and an incentive system that is geared toward the achievement of ambitious short and medium-term targets. The Supervisory Board determines the remuneration, taking into account the duties of the respective member of the Executive Board, their personal performance, and the financial situation and success of the company. The elements of the remuneration system consist of a fixed and a variable cash component, participation in share option plans and in a scheme that is dependent on share price performance and length of service as a long-term incentive, as well as additional benefits.

The fixed component of the annual cash component amounts to between 50% and 75% of the total remuneration, depending on the contractual arrangement, and is paid in 12 equal monthly installments. The variable cash component is linked to the achievement of up to five quantitative and qualitative annual targets. They are agreed between the Supervisory Board and the members of the Executive Board. In the event of unforeseen extraordinary developments, this remuneration component may be adjusted by the Supervisory Board. A further part of the variable cash component of remuneration is calculated based on length of service and share price performance during this period.

In addition, the members of the Executive Board participate in two share option plans (2016/II and 2017/I) that were resolved by the respective Annual General Meeting as a long-term incentive system. Further details of the share option plans can also be found in sections 18 and 32 of the notes and in the agendas of the 2016 and 2017 Annual General Meetings.

In accordance with the conditions for the share option plans, the Supervisory Board may issue a total of up to 400,000 subscription rights for shares to the members of the Executive Board at its discretion until the end of 2019. In fiscal year 2018, 105,000 subscription rights were issued to the sitting members of the Executive Board (Previous year: 105,000). In addition to the achievement of a performance target, a condition of exercising the share options is that the beneficiary must have acquired one share in the company for every ten share options granted no later than six months after the issue date and must still hold these shares when exercising the options.

In addition, the members of the Executive Board have contractually agreed claims to additional benefits such as use of a company car and laptop, an allowance for health and long-term care insurance, temporary allowances for accommodation in Berlin for those with primary residences outside Germany, and reimbursement of expenses. Furthermore, the company has taken out term life insurance, as well as third-party financial loss insurance (D&O insurance) with an appropriate deductible, for the benefit of members of the Executive Board and pays the premium for this.

In the event of a change of control, the members of the Executive Board have individually agreed claims to a one-off payment if they leave the company following the takeover. This one-off payment shall not exceed twice the amount of annual remuneration. This limitation does not apply to the share option plans described above. An individualized overview of the Executive Board remuneration paid and granted in the 2018 fiscal year can be found in section 32 of the notes.

Renumeration system for the Supervisory Board

Remuneration of the Supervisory Board is determined by the Annual General Meeting and is set out in Article 13 of the Articles of Association. Members of the Supervisory Board subsequently receive remuneration of €20 thousand for each full year of membership of the Supervisory Board. This increases to €50 thousand for the Chairman and to €30 thousand for the Deputy Chairman. In the interests of the company, the members of the Supervisory Board are covered by D&O insurance taken out by the company at an appropriate level. The company pays the premiums for this insurance. No deductible is envisaged. The company reimburses each member of the Supervisory Board for any reasonable expenses incurred in the performance of their duties for which proof has been provided and for any value-added tax that applies to their remuneration. Remuneration for the four members of the Supervisory Board amounted to €120 thousand in fiscal year 2018 (previous year: €112 thousand). Supervisory Board members do not receive any performance-related remuneration and do not participate in the company's share option plan.

in € thousand	2017	2018
Prof. Dr. Alfred Gossner (Vors.)	50	50
Götz Gollan (Stellv. Vors.)	30	30
Marc de Jong	20	20
Prof. Dr. Christoph Kutter	12	20
Total	**112**	**120**

Research and development

Innovative applications based on the diverse possible new uses of sensors and sensor systems are driving the target markets in which First Sensor operates. For this reason, development plays a key role in the success of the Group. Firstly, it shapes the implementation of customer-specific solutions and determines the production development process and the construction of prototypes. Secondly, its high priority as a key business process is due to the fact that it provides the key technologies in the two core competencies of chip design and layout and connection technology, thus creating the basis for First Sensor's platform and technology strategy.

Development bundles the Group's expertise into five areas of responsibility across locations. The Design & Simulation unit is responsible for semiconductor development and designing sensors. The responsibilities of the LCT & Process Development unit range from layout and connection technology to prototype construction. The Sensor Electronics unit designs circuits, programs microcontrollers, and conceptualizes testing and calibration technology. The Software & Systems unit focuses on complex sensor systems. It concentrates on designing assemblies and systems, integrating sensors and electronic circuits and providing software for communicating, processing and interpreting data. Project management coordinates the units within the product development projects to ensure the project targets are met. Given the significance of development within the company, processes and interfaces undergo continuous reviews to identify potential areas for optimization, and adjustments made where required.

Approaches and key areas

First Sensor's development activities are based on a structured process. This applies irrespective of whether the impetus for a new development project comes from the customer or ourselves. Before the project begins the business case is reviewed, taking into account not only the cost and time frame, but also its potential for First Sensor. Aspects such as the expected production volume and the duration of production can usually already be estimated before development starts. Development therefore provides important indications for medium-term corporate planning. In the event of a positive decision, implementation of the project follows, from creating a design to producing prototypes to preparing for series production. The organization of development projects is based on a multistage process. It ensures that the results at every stage are in line with the desired goal by using pre-defined milestones and standardized reporting requirements, while deviations are recognized, analyzed, and processed in a timely manner.

Medium and short-term development activities are guided by a strategic technology and product road map. This guarantees that projects that provide high sales volumes or are implemented together with key customers are prioritized, taking into consideration the overarching corporate strategy. The focus is firstly on new sensor solutions and thus developing new sensor chips, for example for avalanche photodiodes or low pressure and flow rate sensors. These are supplemented by innovative signaling electronic systems and layout and connection technologies such as polyphotonics to enable particularly precise and reliable detection of physical parameters. Secondly, the requirements for the use of sensor systems are constantly becoming smarter and more complex: They are not only expected to measure, but also to interpret data, communicate with other systems, require little space and energy, and work reliably. Therefore, among other things, First Sensor is pushing ahead with the fusion of LiDAR and camera modules, building software expertise for detecting gas properties and developing multi-sensor systems for condition monitoring. It is also important to have the best “form factor” for the relevant application, i.e. to be particularly robust, for example. Furthermore, customers expect innovations that are still state-of-the-art in three to five years while still being competitive in terms of price.

Cooperations

To ensure technically excellent solutions and short development times for demanding customers, First Sensor follows an approach of opening up innovation processes and entering into strategic alliances with strong industrial partners and research institutes. Each partner benefits from sharing expertise and can contribute its respective core competencies in the context of joint development projects and coordination of road maps in selected areas. Through regular close dialog with research institutes, Development ensures that scientific findings are transferred into useful innovations.

Apart from devising new sensor solutions, Development also focuses on optimizing existing products and production processes. To this end, First Sensor continuously enhances its core competencies in chip development and in microelectronic layout and connection technology and focuses on stable cooperations with key suppliers. First Sensor also relies on purchasing development services from third parties such as institutes of Fraunhofer Gesellschaft with the aim of making its cost structure more flexible or drawing on specialist knowledge. However, their economic scale is of minor significance.

The Group does not conduct its own research outside the existing cooperations.

R&D key figures

The annual R&D expenses are based on a budget. Project costs are determined within the context of internal orders and are integrated in the income statement as expenses. Costs for individual customer projects are recorded separately and are passed on or amortized over the term of the products where this has been agreed. Strategic development projects are also recognized separately; these are activated only if the criteria in accordance with IAS 38 are met.

in € thousand, unless otherwise indicated	2017	2018
R&D expenses	8,578	10,171
R&D ratio in %	5.8	6.6
New capitalization of development costs	1,612	1,642
Carrying amounts of capitalized costs	5,107	6,121
Amortization of capitalized development costs	748	460
Number of R&D employees (FTE)	94	104
Number of patents and licenses	39	43

In fiscal year 2018, R&D expenses rose by 18.6% to €10.2 million. The R&D ratio came to 6.6% of sales. With 104 employees, 12.5% are now employed in Development, compared to 12.0% in the previous year. Recruitment chiefly focused on developing the system and software component in relation to forward integration.

R&D results

One area of focus in the field of photonics was on designing LiDAR receivers for driver assistance systems and self-propelled vehicles consisting of multichannel detector chips, a scalable packaging platform and receiver electronics for evaluation kits and system demonstrators. First Sensor has also developed customer-specific camera modules for demanding applications in industrial inspection and aerial surveillance. The chip-on-board structures of various very large imager chips comply with the highly precise mechanical tolerances required by the applications. Furthermore, First Sensor presented an embedded electronic control unit (ECU) as a scalable hardware and software platform for driver assistance systems. Applications such as area view, rear mirror substitutes and object recognition have already been implemented and customers can add to them.

A key development project in the area of pressure was the provision of a customer-specific pressure sensor component for industrial transmitters. The solution is based on precise sensor chips from semiconductor production in Berlin Oberschöneweide which are combined with tailored layout and connection technology for the highest level of precision and long-term stability. A further development is an innovative gas property sensor system for fast and efficient detection of gas mixtures.

In the key area of advanced electronics the company combined optical and electronic functionality with an innovative poly-transceiver for 5G broadband expansion for the first time. First Sensor is cooperating with other development partners in the PolyPhotonics Berlin growth center in connection with this.

Development projects like the examples mentioned above usually contribute to the Group's sales within 6 to 24 months. Patents and utility models are registered only selectively. Therefore, the company first examines whether the benefits of an application exceed the risks of disclosure, whether there is a strategic need for it, and whether an application is required for competitive reasons. Patents are subsequently subject to an annual review. If the market situation or the strategic orientation of the company have changed, or if their value can no longer be proven, the company decides to let certain patents expire.

Economic Report

General economic and sector conditions

General economic and sector conditions

According to an assessment by the Kiel Institute for the World Economy (IfW), the global economy lost momentum over the course of 2018. Although the experts anticipated growth of 4.0% as late as March 2018, they revised their forecast to 3.8% in September and to 3.7% in December. In addition to increasing concern in relation to trade conflicts, this was due to the tightening of monetary policy in the United States, which led to a sudden change in international capital movements, thus slowing economic expansion in emerging countries. From a country-specific perspective, a very varied picture emerged: While the USA even increased its rate of expansion and many Asian countries and Russia hardly felt the downturn, the economy in the euro zone slowed considerably. Following revision of the IfW growth forecast for Europe from 2.4% to 2.1% in September 2018, this was reduced by a further 0.2 percentage points to 1.9% in December. The reasons for the subdued sentiment were the fear of trade disputes and a disorderly Brexit, as well as the discussion regarding Italy's indebtedness. The impact of this has been particularly pronounced in Germany, where a sharp decline in automotive production combined with the introduction of new standards for measuring emissions and the uncertainty resulting from "Dieselgate" have been palpable. Production was also adversely affected by low water levels in the Rhine, which slowed economic output in the third quarter of 2018 significantly. According to the German Federal Statistical Office (Destatis), growth in Germany consequently amounted to just 1.5% in 2018, although the IfW had still anticipated growth of 2.5% at the start of the year. Economic output thus declined for the first time in three years.

Development of the sensor market

The sensor systems market also continued to grow in 2018. According to the industry association AMA, the strongest drivers of growth were the digitalization and artificial intelligence megatrends, which cannot be implemented without sensor systems. At the same time, only the intelligent use of sensors is enabling industry to make technical innovations. The experts therefore anticipate further steady growth in the sector. However, the slower economic growth in Germany, Europe and the world has also slowed growth in the sensor systems industry. The German Electrical and Electronic Manufacturers' Association (ZVEI) calculated growth of just 1.9% for the German electrical and electronics industry, to which sensor systems are assigned, in 2018. However, the long-term growth trend remains intact. Optical sensors continue to drive growth here. According to surveys by market research company Research and Markets, they are expected to post global growth at an average rate of 7.3% p.a. between 2018 and 2024. Studies by research company Mordor Intelligence attribute the highest annual growth to China at 10.0%. The market for optical sensors is expected to grow by an average of 7.7% between 2017 and 2026 in Japan, and by 6.7%, 5.7% and 5.2% p.a. in North America, Europe and South Korea in the same period. This growth is partly driven by demand for new optical diagnostics devices, the increasing use of sensors in factory automation and investments in performance and safety for passenger cars and trucks.

In addition to optical sensors, pressure sensor technology is making a significant contribution to growth in the sector. For Europe, Mordor Intelligence predicts average growth of 7.0% p.a. between 2017 and 2022. This trend will be driven by demand for MEMS and piezoelectric sensors as well as pressure transmitters for the automotive industry, medical technology, and the petrochemical and oil and gas industries. Japan and China are posting even higher annual growth rates in this area at 7.8% and 8.1%, while growth in South Korea and North America is slightly lower than in Europe at 5.6% and 5.3%.

Development of the target markets

Industrial

German industry reflected the mood in the global economy in 2018: The fiscal year was impacted by geopolitical issues. World trade developed more slowly than expected, which had a negative effect on German exports. Production only grew slowly and incoming orders declined slightly. At the beginning of the year, the German Federal Ministry of Economics and Technology (BMWi)'s forecast for German industry still predicted that gross domestic product would increase by 2.4%, but revised its forecast to 1.8% in October. According to the year-end result reported by Destatis, gross domestic product adjusted for price changes ultimately rose by just 1.5% in 2018. Stronger growth – driven in particular by Industry 4.0 – is exhibited by sensor systems. Its average annual growth based on industrial applications is 7.3%.

Medical

The medical technology sector remains a growing market. According to a sector report by the German Medical Technology Association (BVMed), sales in medical technology climbed by an average of almost 6% globally in 2018, and by 4.2% in Germany. The rise in sales is primarily attributable to volume growth resulting from demographic trends and to new treatment methods. Germany ranks second after the USA in terms of both patent applications and share of world trade. Almost two thirds of products produced in Germany are exported – half of the exports went to European countries, followed by North America and Asia with around a fifth each. The growth in the medical technology sector is also reflected in increasing demand for sensor systems for optical diagnostics and pressure sensors. Market research company Yole Développement (Yole) expects an average growth rate of 5.7% between 2018 and 2021.

Mobility

The automotive industry was impacted by the introduction of the new WLTP approval procedure on September 1: The significantly more complex procedure led to substantial bottlenecks in the registration of new vehicles due to a lack of testing capacity. Registrations of new German vehicles consequently fell by more than 30% in September. Automotive production was dampened as a result, leading to negative effects on the upstream and downstream sectors of industry. According to IfW estimates, WLTP-related output reductions subdued the gross domestic product by 0.4 percentage points in the third quarter. In addition to this there were the loss of trust in the automotive sector caused by the diesel scandal, and the repercussions of trade conflicts. In the USA, newly introduced tariffs led to major losses for American automotive manufacturers. The Chinese automotive market shrank for the first time since the start of the 1990s as a result of the trade dispute with the USA. This also had an impact on Germany: Passenger car exports plummeted by 7% in 2018. Overall, the German automotive market only posted results at the previous year's level in the 2018 fiscal year. The automotive industry nevertheless remains a key growth area for the sensor systems sector as new sensor technologies are gaining ground in terms of "more sensors per vehicle" in relation to increasingly autonomous and low-emission vehicles. For the LiDAR systems market alone, Yole anticipates growth of $726 million to $5 billion in 2023 and $28 billion in 2032.

Financial position, net assets and results of operations

Business performance in 2018 and comparison with the forecast development

The First Sensor Group continued its growth course in fiscal year 2018, with sales increasing to €155.1 million. Stronger momentum developed in the second half of the year, with around €6.5 million more sales than in the first half of the year. Profitability also improved further. At the end of the year the EBIT margin was at 7.9%.

The target markets made varying contributions to the growth in sales. Sales in the Industrial target market developed positively with an increase of 7.0%. Sales in the Medical target market enjoyed a growth surge of 23.7% as rising demand for standard H series pressure sensors was met through expanded production capacity. By contrast, sales in the Mobility target market recorded a decline of -9.6%, reflecting the volatile geopolitical developments that have burdened the automotive industry in the last year.

Besides growth, the figures of fiscal 2018 show the further positive effects of implementing the strategy for profitable growth and operating excellence. The company is therefore well prepared for the future development.

Targets for key performance indicators for fiscal 2018

For fiscal 2018, the aim was for consolidated sales in the range of €150 and €160 million. An EBIT margin between 7% and 9% was anticipated. These targets were published on March 22, 2018 and confirmed during the year.

Comparison of target and actual figures for 2018

The table below shows the figures achieved in the previous year, the guidance and the figure achieved in the past fiscal year:

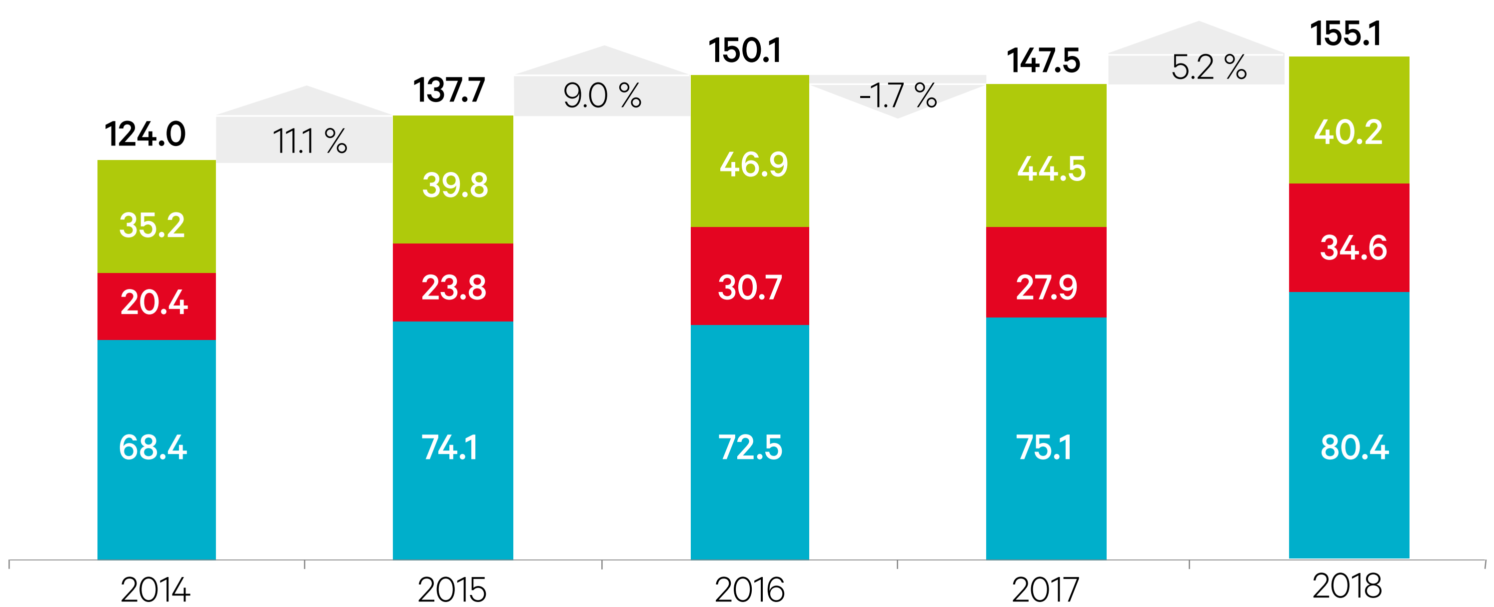
	2017	Guidance 2018	2018
Sales in € million	147.5	150 - 160	**155.1**
EBIT margin in %	7.2	7 - 9	**7.9**

After an initially restrained first quarter, sales and profitability improved in line with expectations over the course of the year. The sales and earnings forecast for fiscal year 2018 was thus confirmed.

Sales development

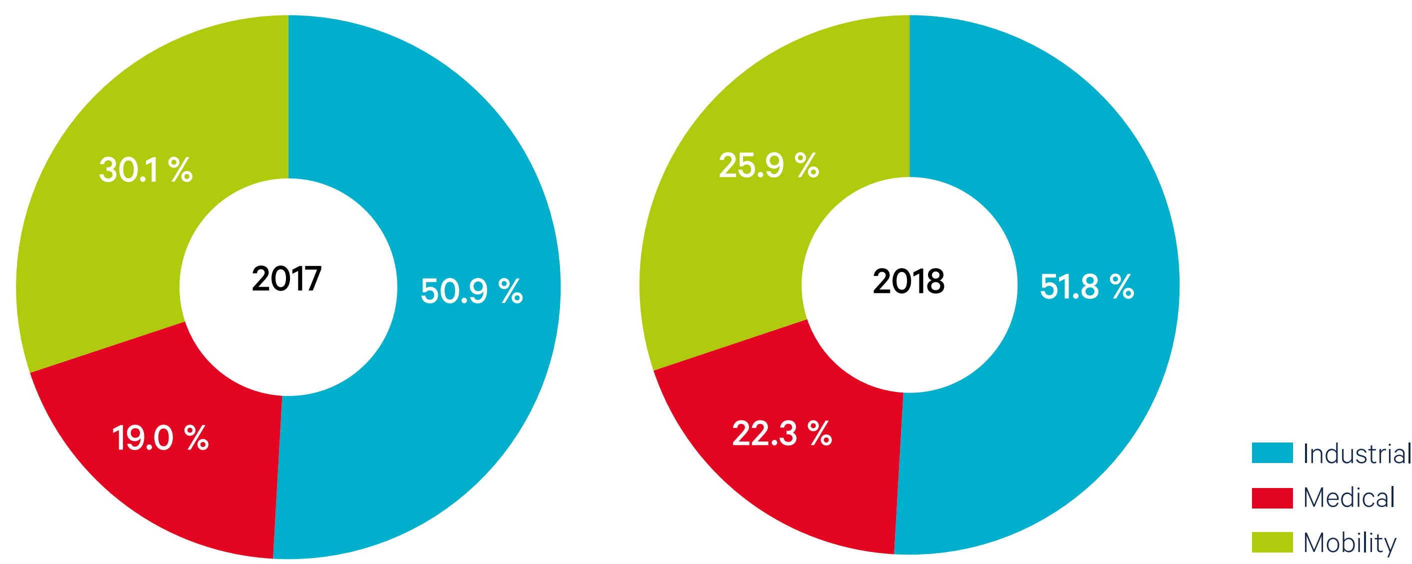
In fiscal 2018, sales in the First Sensor Group were €155.1 million (previous year: €147.5 million). The growth of €7.6 million or 5.2% is attributable to growing demand for sensors and sensor solutions in the Industrial and Medical target markets, which more than offset the decline in the Mobility target market. The company's medium-term strategy is targeting average annual growth of 10%.

The graph below shows the development of consolidated sales during the last five years:



in € thousand	2017	2018	Δ absolute	in %
Industrial	75,096	80,387	5,291	7.0%
Medical	27,943	34,559	6,616	23.7%
Mobility	44,461	40,202	-4,259	-9.6%
Total	**147,500**	**155,148**	**7,648**	**5.2%**

The Industrial target market thus continued to contribute the largest share of total sales with 51.8%, followed by Mobility (25.9%) and Medical (22.3%).



Sales developed positively in the Industrial target market in which roughly half of the sales are generated. Growth of 7.0% to €80.4 million (previous year: €75.1 million) was generated here. Rising demand and a simultaneous increase in production capacity in the Medical target market led to a 23.7% increase in sales to €34.6 million (previous year: €27.9 million). Sales in the Mobility target market amounted to €40.2 million (previous year: €44.5 million). The decline reflects the volatile geopolitical developments that burdened the automotive industry in the last year

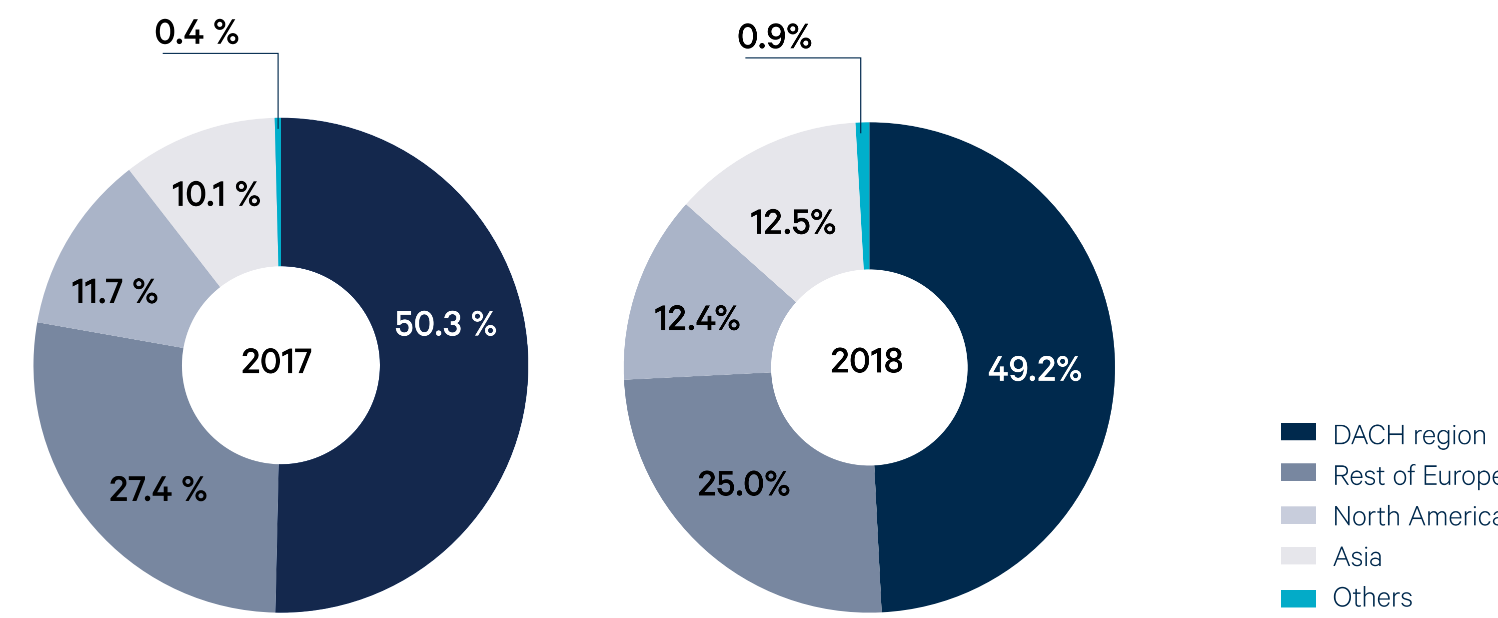
Looking at the seven top-selling countries, First Sensor again achieved the majority of its sales in Germany, posting €63.2 million (previous year: €62.9 million) in the fiscal year of 2018. In the USA, the sales revenues have increased by 4.3% to €14.6 million (previous year: €14.0 million). The sensor and sensor solutions business continued to grow in China. The increase of €4.4 million was generated through the acquisition of new projects in the field of optical sensor technology and further expansion of the pressure transmitter business. The drop in sales in Hungary resulted from the burdens on the automotive industry, the €1.2 million increase in sales in Switzerland is attributable to higher demand for the H series.

In € thousand	2017	2018	Δ absolut	in %
Germany	62,915	63,228	313	0.5
USA	14,015	14,622	607	4.3
China	9,180	13,561	4,381	47.7
Hungary	10,423	9,390	-1,033	-9.9
Switzerland	7,985	9,142	1,157	14.5
Great Britain	7,484	7,089	-359	-4.8
Netherlands	5,975	6,011	369	0.6

However, business has not only been expanded in the USA, sales have also increased in Canada. Thus, sales revenues in North America overall increased by €2.0 million. The share of sales now amounts to 12.4%. Asia's share of total sales also climbed, supported by the growth in China. It now amounts to 12.5%. Accordingly, the shares of sales generated by the DACH region and the rest of Europe have declined slightly to 49.2% and 25.0% respectively.

In € thousand	2017	2018	Δ absolut	in %
DACH*	74,303	76,378	2,075	2.8
Rest of Europe	40,414	38,790	-1,624	-4.0
North America	17,293	19,244	1,951	11.3
Asia	14,911	19,416	4,505	30.2
Others	579	1,320	741	127.9
Total	**147,500**	**155,148**	**7,648**	**5.2**

*Germany, Austria, Switzerland, Liechtenstein



Order situation

Demand for the First Sensor Group's sensors and sensor solutions remains high. In fiscal 2018 incoming orders totaled €159.6 million. The order backlog rose by €5.1 million in the 2018 fiscal year. It now amounts to €97.6 million, with about 80.0% scheduled for 2019. This already provides a good starting point for a successful new fiscal year.

In € thousand	2017	2018	Δ absolute	in %
Sales	147,500	155,148	7,648	5.2
Incoming orders	163,674	159,634	-4,040	-2.5
Orders on hand	92,465	97,619	5,154	5.6
Book-to-bill-ratio	1.11	1.03	-0.08	-7.2

Earnings

With sales growing by €7.6 million to €155.1 million in 2018 (previous year: €147.5 million) and pre-production in order to safeguard supply capability at the beginning of 2019, inventories were increased by €5.9 million to €17.9 million (previous year: €12.0 million). Other capitalized costs fell by €0.5 million to €2.0 million. The decline is attributable to conclusion of the introduction of SAP at the First Sensor AG locations. At the same time, own capital contributed for the commissioning of equipment and new projects in the R&D sector rose slightly. Consequently, total operating performance amounted to €161.6 million (previous year: €148.5 million).

With the 8.1% increase in total operating performance, cost of material including purchased services rose by €6.8 million to €76.1 million (previous year: €69.3 million). Gross income improved by €5.5 million to €88.1 million (previous year: €82.5 million). In percentage terms the gross income margin, adjusted for other operating income, remained almost constant at 52.9% (previous year: 53.3%). Projects aimed at increasing material efficiency have been initiated. Larger numbers of temporary workers were hired in order to meet the growing demand at short notice. The costs for this were €0.7 million higher than in the previous year and are part of the cost of material.

Personnel expenses increased year-on-year, amounting to €49.0 million (previous year: €46.6 million). The main reasons for this were wage adjustments to ensure competitiveness on the labor market and the recruitment of new highly qualified employees for expansion of the camera business.

Overall, it was not possible to reduce other operating expenses further year-on-year. They rose slightly by around €1.5 million from €16.3 million to €17.8 million. The reasons for this include increased costs for maintenance of buildings and production equipment, as well as recruitment costs.

Despite increased costs, EBITDA (earnings before interest, taxes, depreciation and amortization) improved from €19.6 million in the previous year to €21.3 million. The EBITDA margin thus climbed from 13.3% to 13.7%.

Depreciation on property, plant and equipment and amortization of intangible assets and from purchase price allocations (PPA) amounted to €9.0 million in fiscal year 2018 and was thus almost unchanged (previous year: €9.1 million). Adjusted for amortization of intangible assets income resulted in EBITA of €14.5 million (previous year: €12.8 million), corresponding to a margin of 9.3% (previous year: 8.7%). EBIT improved correspondingly, achieving €12.2 million (previous year: €10.6 million), an upturn of 16.0%. The EBIT margin reached 7.9% on a whole-year basis (previous year: 7.2%).

The contribution to earnings from currency gains and losses also improved considerably, having amounted to €-1.6 million in the previous year due partly to the early reversal of currency option contracts (TARF). These losses melted away in 2018, resulting in a net figure of €-0.2 million.

Net interest improved by €237 thousand in the last fiscal year as further loans were repaid as planned in 2018. Tax expenses increased marginally to €2.9 million (previous year: €2.8 million). This corresponds to a tax rate in the Group of 27.6% (previous year: 38.8%). This development can be explained by the increasing earnings contributions from individual foreign group companies and the use of previously unrecognized tax loss carryforwards.

We can thus report significantly increased consolidated net income (before minority interests) of €7.5 million for fiscal 2018 (previous year: €4.4 million). Earnings per share in circulation were €0.72 (previous year: €0.40).

Financial position

Principles and aims of the financial management

The aim of First Sensor's financial management is to ensure adequate liquidity for the production processes, growth and investments. It is managed centrally by First Sensor AG. It primarily includes liquidity management, borrowing of external funds, and management of interest rate and exchange rate risks.

The company counters the risk of interest rate increases by using interest rate swaps for variable-interest loans. First Sensor counteracts foreign currency risks arising from purchases of materials and purchased services in USD, particularly in Asia, by optimizing customer payments in USD (natural hedge) and making distributions from foreign subsidiaries in USD.

A Group-wide Financial Risk Management Directive was adopted in the 2018 fiscal year. This monitoring tool enables early identification of exchange rate and interest rate risks and regulates permissible hedging instruments. As at December 31, 2018, the outcome of the measurement of the risk limit and materiality limits did not result in any need for action in terms of concluding hedging transactions for the coming quarter.

Capital structure

As at December 31, 2018, the Group's equity amounted to €88.8 million (previous year: €81.9 million). Based on the balance sheet total of €168.4 million, this corresponds to a sound equity ratio of 52.7% (previous year: 51.3%). Financial liabilities amounted to €48.0 million (previous year: €48.3 million).

A €28.0 million portion of financial liabilities results from taking out promissory note loans maturing in 2020 and 2022. In 2015, First Sensor placed three promissory note loans totaling €28.0 million: two tranches – one of €7.0 million and one of €18.0 million – with a term of five years and one tranche of €3.0 million with a term of seven years. An issue in 2013 resulted in another tranche of €12 million, which was settled on maturity as planned in 2018. In November 2018, First Sensor AG drew on the €13.0 million KfW loan taken out in 2017 as agreed. The funds from the ERP digitalization and innovation program will serve to finance the planned growth further. This financing structure allows the company to choose between investing surplus liquidity in company growth or using it for repayment in the coming years.

In connection with the KfW loan and the promissory note loans, contractual covenants have been agreed to the end of the year in each case. As at December 31, 2018, First Sensor fulfilled all required key financial ratios.

In € thousand	2017	2018
Leverage, net debt to EBITDA	1.16	0.92
Interest cover ratio, EBITDA to interest expense	11.0	13.2
Equity ratio	43%	45%

In 2018, net debt (as financial liabilities less cash and cash equivalents) decreased further from €22.8 million to €19.5 million and was composed as follows:

In € thousand	2017	2018	Δ absolute	in %
Non-current financial liabilities	32,184	44,111	11,927	37.1
Current financial liabilities	16,115	3,891	-12,224	-75.9
Cash and cash equivalents	25,505	28,534	3,029	11.9
Net debt	22,794	19,468	-3,326	-14.6

The ratio of net debt to equity (gearing) amounted to 21.9% as of the balance sheet date (previous year: 27.8%).

As at December 31, 2018, First Sensor also had unused credit lines of €10.1 million (previous year: €11.1 million). The volume-weighted average cost of capital as at the end of the fiscal year came to roughly 2.9%.

There were no restrictions in 2018 with regard to the availability of the loans granted. The long-standing business relationships with our banks once again proved stable. It can also be assumed for the future that First Sensor will be in a position to finance planned growth from the resources at its disposal. Utilization of the capital market is not planned in the foreseeable future.

First Sensor does not use off-balance sheet financing instruments.

Investments

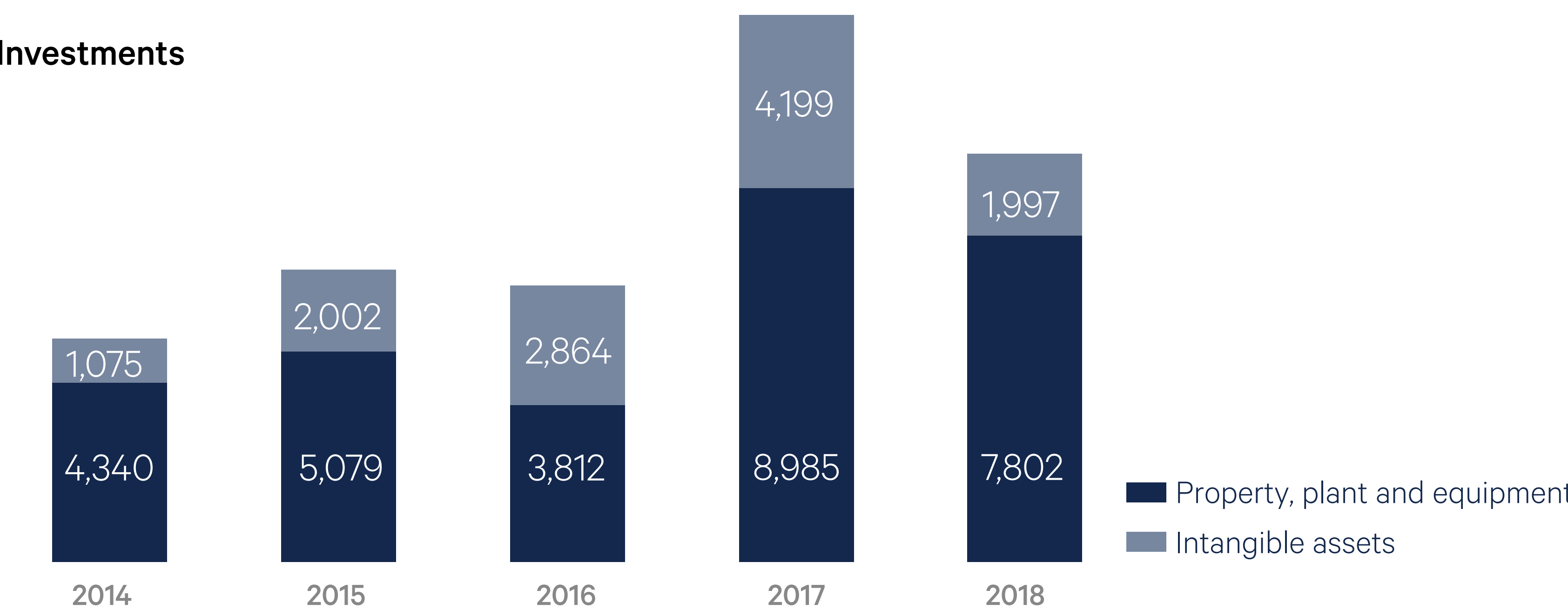
Investments in the area of intangible assets amount to €2.0 million (previous year: €4.2 million) and related mainly to the capacity required for commissioning equipment and new projects in the R&D sector. In the area of property, plant and equipment, €7.8 million (previous year: €9.8 million) of investments related primarily to new machinery and equipment for expanding capacity (for example in H series and wafer production) and for stabilizing and improving processes at the Berlin and Dresden locations.

In € thousand	2017	2018	Δ absolute	in %
Investments in intangible assets	4,199	1,997	-2,202	-52.4
Investments in property, plant, and equipment	8,985	7,802	-1,183	-13.2
Investments	13,184	9,799	-3,385	-25.7
Disposal of non-current assets and investments	589	91	-498	-84.6
Other effects	62	37	-25	-40.3
Cash flow from investment activities	-12,533	-9,671	2,862	22.8
Amortization of intangible assets	3,757	3,555	-202	-5.4
Depreciation of property, plant, and equipment	5,327	5,470	143	2.7
Depreciation and amortization	9,084	9,025	-59	0-1.0

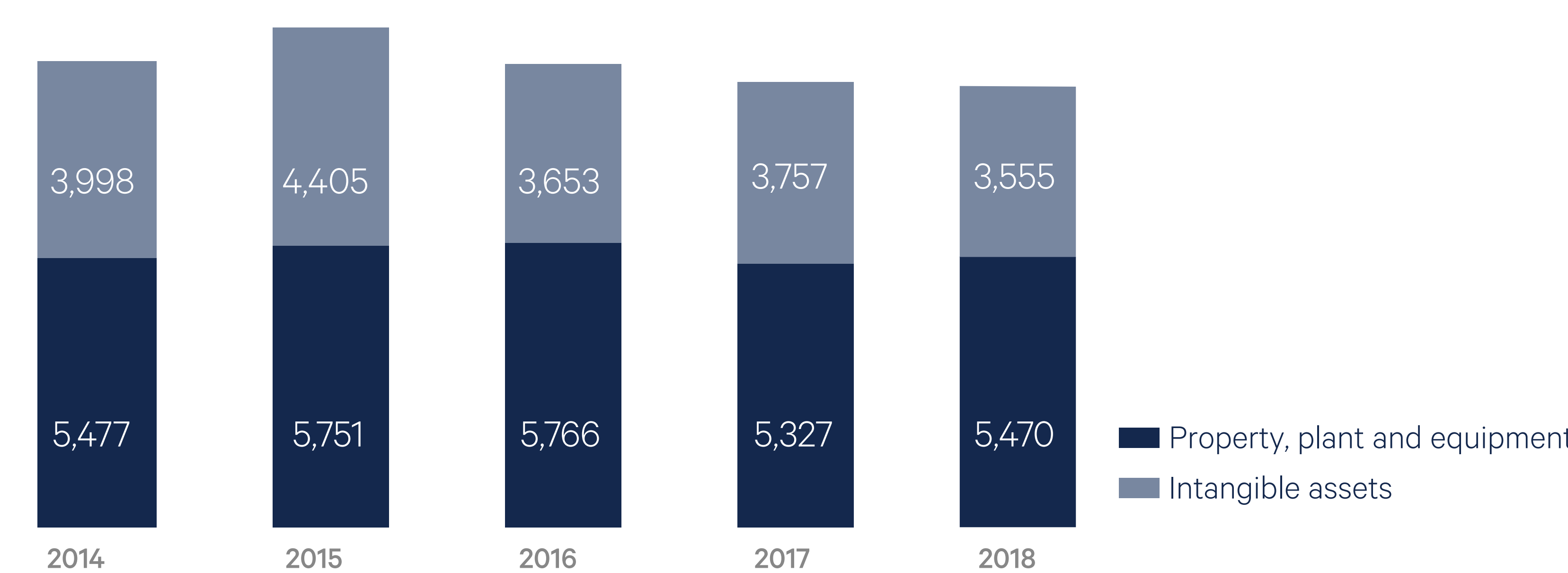
Investments were at the same level as depreciation and amortization.

The following graphs show investments and depreciation and amortization over the last five years:

Investments



Depreciation and amortization



Liquidity

Operating cash flow was down 0.6% year-on-year and amounted to €15.9 million (previous year: €16.6 million). Although cash flow from investing activities decreased by €2.9 million, it still reflects the high level of investment required by First Sensor as an innovative high-growth company. It amounted to €-9.6 million following €-12.5 million in the previous year, when the standard ERP software was acquired. The investments in 2018 largely related to new machinery and equipment for expanding vertical integration, process improvements and increasing capacity. Free cash flow, which represents the balance of the operating cash flow and cash flow from investing activities, developed positively and amounted to €6.3 million (previous year: €3.5 million).

In € thousand	2017	2018	Δ absolut	in %
Cash flow from operating activities	16,005	15,923	-82	-0.5
Cash flow from investment activities	-12,533	-9,671	-2,862	-22.8
Cash flow from financing activities	-1,704	-3,409	-1,705	-100.1
Change in cash and cash equivalents	1,768	2,844	1,076	60.9
Exchange differences	-54	186	240	444.4
Cash and cash equivalents at the beginning of the financial year	23,791	25,505	1,714	7.2
Cash and cash equivalents at the end of the financial year	25,505	28,534	3,029	11.9
Free-cash flow	3,472	6,252	2,780	80.1

Cash flow from financing activities totaled €-3.4 million (previous year: €-1.7 million) and included the dividend distribution of €1.6 million. Cash and cash equivalents increased from €25.5 million to €28.5 million in fiscal 2018. From the perspective of the Executive Board, the Group's liquidity position thus remains comfortable. First Sensor will thus again be able not only to meet its payment obligations from operating business and repay its debt financing at all times in 2019 but also to pay a dividend to shareholders.

To assess First Sensor's solvency, the following table shows the company's liquidity in the form of liquidity ratios. To calculate the cash ratio, cash and cash equivalents are shown in relation to current liabilities. The quick ratio includes current receivables, while the current ratio also takes inventories into account. The following changes arise in comparison to the previous year:

In %	2017	2018	Δ PP
Cash ratio	72.7	115.5	42.8
Quick ratio	141.3	203.6	62.3
Current ratio	211.5	333.9	122.4

Net assets

Total assets increased to €168.4 million in fiscal 2018 (previous year: €159.6 million). As a result of the retained earnings for fiscal 2018 and the issue of shares from contingent capital (share option program), the equity ratio rose by 1.4 percentage points to 52.7%.

Assets

The volume of investments in fiscal 2018 exceeded scheduled depreciation of property, plant and equipment and amortization of intangible assets by €0.8 million. Non-current assets amounted to €85.9 million (previous year: €85.3 million). The amount of goodwill remained unchanged at €29.8 million.

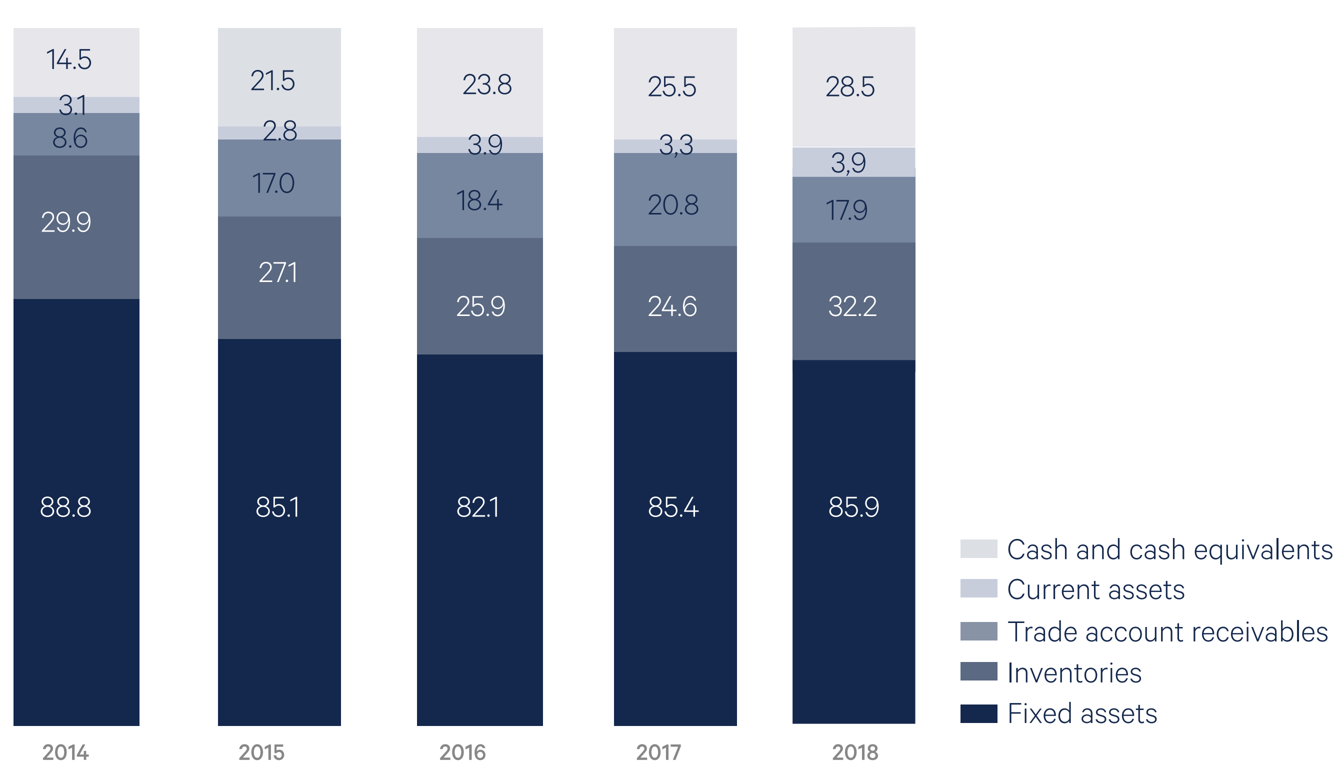
Current assets recorded an increase of €8.3 million to €82.5 million. Inventories were increased by €7.6 million in view of the market and order situation. Conversely, accounts receivable were reduced by €2.9 million to €17.9 million owing to rigorous receivables management and the use of factoring. These measures also contributed to the further rise in cash and cash equivalents, which improved by €3.0 million compared with the previous year and form a solid basis for further investments in the future.

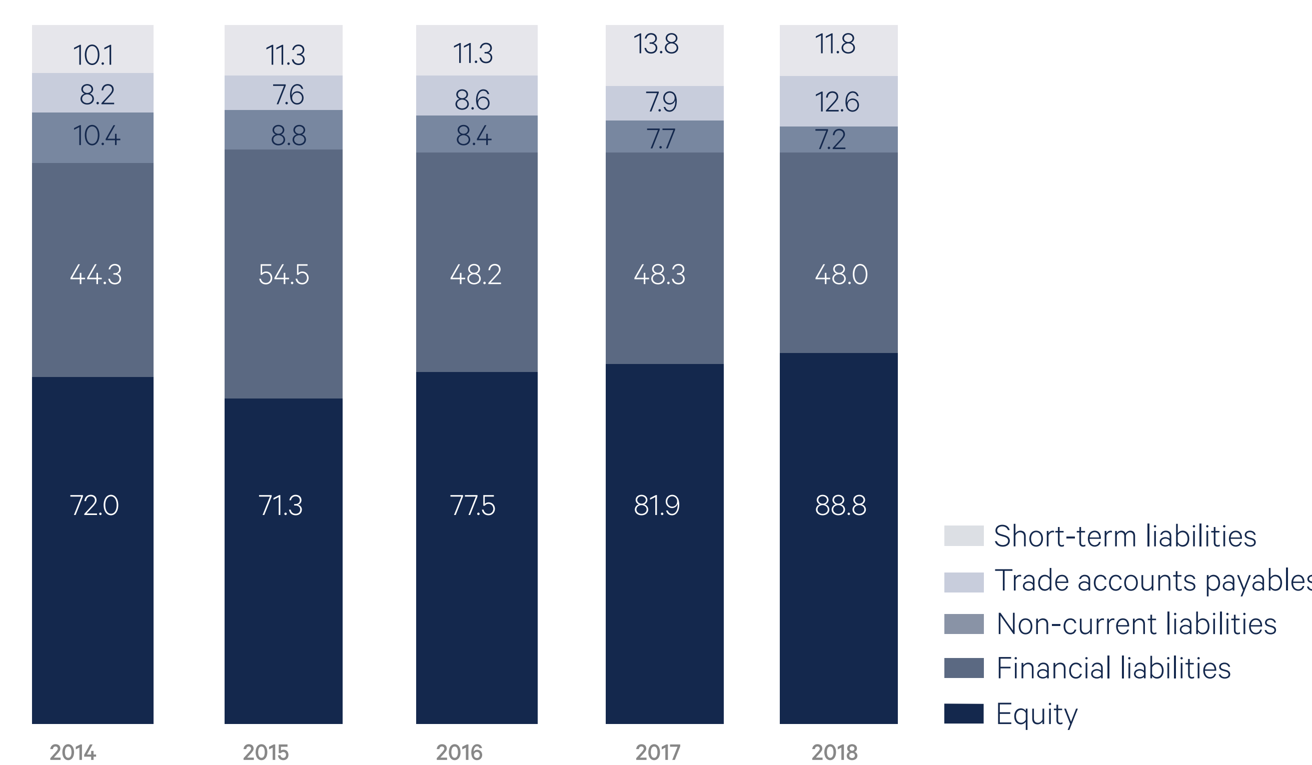
Equity and liabilities

On the equity and liabilities side of the balance sheet, equity increased by €6.9 million to €88.8 million (previous year: €81.9 million). Subscribed capital increased slightly due to issuing 6,000 shares from the share option plans. Retained earnings climbed to €18.1 million (previous year: €12.4 million) as a result of net income.

Non-current liabilities rose by €11.9 million, primarily due to the disbursement of a KfW loan. Current liabilities fell by €9.5 million to €28.3 million. The decisive factor here was the scheduled repayment of a promissory note loan of €12.0 million. Trade payables recorded a rise of €4.7 million, which also reflects the contractual arrangements in accounts payable management.

On balance, working capital remained almost unchanged at €37.3 million (previous year: €35.7 million) due to changes in the individual items mentioned above amounting to €-0.2 million. Capital employed was also very similar, deviating by €0.3 million to €123.2 million (previous year: €122.9 million). ROCE developed positively from 8.6% in the previous year to 9.9% in fiscal 2018.





Results of operations, financial position and net assets of First Sensor AG (HGB)

In contrast to the consolidated financial statements, the annual financial statements of First Sensor AG are not prepared in accordance with International Financial Reporting Standards, but in accordance with the rules of the Handelsgesetzbuch (HGB – German Commercial Code). First Sensor AG's management report and consolidated management report for fiscal 2018 are combined in accordance with section 315(5) HGB in connection with section 298(2) HGB. The combined management report also comprises all mandatory elements for First Sensor AG. In addition to the reporting on the First Sensor Group, the development of First Sensor AG is explained below.

First Sensor AG's results of operations

Sales revenues grew by €7.9 million year-on-year to €81.4 million (previous year: €73.5 million). Inventories were increased by €3.1 million. Key reasons for this were the significantly improved order situation in the second half of the year and the necessity of safeguarding supply capability.

Other capitalized costs declined by €0.7 million to €0.7 million. Own capital contributed related mainly to new projects in the R&D sector and the commissioning of equipment. No additional own capital was contributed in connection with the successful introduction of ERP software. Other operating income chiefly comprised investment grants and changes in provisions and fell by €1.3 million to €2.2 million (previous year: €3.5 million). Total operating performance including other operating income increased by €9.1 million to €87.0 million (previous year: €77.9 million). This equates to a growth of 11.9%.

The higher sales volume and increase in inventories caused costs of materials to climb 11.7% to €40.1 million (previous year: €35.9 million). Gross income improved from €38.5 million to €44.7 million, resulting in a gross income margin of 52.7% (previous year: 51.8%). Personnel expenses in direct and indirect areas climbed to €27.2 million (previous year: €26.7 million) owing to wage and salary increases and the expansion of personnel levels for H series and chip manufacturing. This corresponds to a personnel expenses ratio of 33.4% (previous year: 36.3%).

Depreciation relates to machinery and equipment, operating and office equipment and production and office buildings. It remained almost unchanged year-on-year at €6.2 million (previous year: €6.1 million).

Other operating expenses amounted to €12.1 million (previous year: €11.9 million), only rising by €0.2 million overall despite a €0.4 million increase in expenses for maintenance and repair of equipment and buildings.

First Sensor AG reported a positive result with EBIT of €1.3 million. This represents a significant rise of €3.9 million on the previous year (€-2.6 million). Costs for central functions in the Group remained almost the same at €8.3 million (previous year: €8.3 million). In 2018, preparations were made for transferring these costs to the subsidiaries on a pro rata basis and this will be implemented for the first time in 2019.

There are profit and loss transfer agreements in place with First Sensor Microelectronic Packaging GmbH and First Sensor Lewicki GmbH. The profit and loss transfer agreements resulted in income of €6.5 million (previous year: €5.7 million). In addition, distributions by two subsidiaries resulted in income from investments of €2.7 million (previous year: €1.2 million).

Other interest and similar income totaled €0.1 million (previous year: €0.4 million). Interest and similar expenses dropped to a normal level of €1.3 million again after having risen to €3.0 million in the previous year due to non-recurring effects.

Earnings before taxes were significantly higher at €9.3 million (previous year: €2.5 million), while the tax rate fell from 30.1% to 26.3%.

For fiscal 2018, First Sensor AG's net income amounts to €6.8 million (previous year: €1.7 million), corresponding to a net margin of 8.4% (previous year: 2.3%). €1.6 million of the retained earnings of €4.1 million from the previous year was distributed to the shareholders. The remaining amount of €2.4 million was allocated to retained profits. This thus results in retained earnings for the current fiscal year of €9.3 million in total.

Shareholders are also expected to participate in these earnings. The Executive Board and the Supervisory Board intend to propose to the Annual General Meeting that a dividend of €0.20 per share in circulation be distributed (previous year: €0.16 per share). With 10,222,396 shares outstanding, this corresponds to a total distribution of €2.0 million or 22.0% of retained earnings, or 38.5% of growth in retained earnings in fiscal 2018.

First Sensor AG's income statement (HGB)

In € thousand	Jan. 01.- Dec. 31, 2017	Jan. 01.- Dec. 31, 2018	Δ absolute	in %
Sales	73,471	**81,415**	7,944	10.8
Change in inventories of finished goods and work-in-progress	-484	**2,615**	3,099	640.3
Other own work capitalized	1,468	**738**	-730	-49.7
Other operating income	3,474	**2,217**	-1,257	-36.2
	77,929	**86,985**	**9,056**	**11.6**
Cost of materials	-29,925	**-32,260**	-2,335	-7.8
Expenses for services	-5,962	**-7,830**	-1,868	-31.3
	-35,887	**-40,090**	**-4,203**	**-11.7**
Salaries and wages	-22,776	**-23,050**	-274	-1.2
Expenses for social securities	-3,907	**-4,174**	-267	-6.8
	-26,682	**-27,224**	**-542**	**-2.0**
Depreciation and amortization of intangible assets and property, plant, and equipment	-6,024	**-6,176**	-152	-2.5
Write-downs of current assets	0	**0**	0	0
Other operating expenses	-11,923	**-12,162**	-239	-2.0
Earnings before interest and taxes (EBIT)	**-2,587**	**1,333**	**3,920**	**151.5**
Income from profit transfer agreement	5,678	**6,501**	823	14.5
Income from investments	1,200	**2,741**	1,541	128.4
Income from appreciations to fixed assets	973	**0**	-973	-100.0
Interest income	406	**107**	-299	-73.6
Write-downs of financial assets	-222	**0**	222	100.0
Interest expenses	-2,954	**-1,296**	1,658	56.1
	5,082	**8,052**	**2,970**	**58.4**
Results from ordinary operations	**2,495**	**9,385**	**6,890**	**276.2**
Income taxes	-760	**-2,478**	-1,718	-226.1
Other taxes	-34	**-53**	-19	-55.9
Net loss for the financial year	**1,701**	**6,854**	**5,153**	**303.0**
Retained earnings	2,361	**4,062**	1,701	72.0
Appropriation/distribution of earnings	0	**-1,635**	-1,635	-100.0
Net profit	**4,062**	**9,282**	**5,220**	**128.5**

First Sensor AG's financial position and net assets

On the assets side, the extension of the balance sheet by €7.8 million is primarily due to the increase in inventories and the positive development of cash and cash equivalents and investments in fixed assets. The increase in inventories is the result of positive sales growth and serves to safeguard supply capability. The measures introduced in the area of accounts payable and accounts receivable management made an impact.

The ongoing expansion of capacity required for further growth and improvements in efficiency made further investments in fixed assets necessary. Extending the pool of equipment and machinery made it possible to implement targets related to improving processes and further expanding vertical integration.

The following table shows the balance sheet as at December 31, 2018:

Assets

In € thousand	2017	2018	Δ absolute	in %
Intangible assets	2,327	3,746	1,419	61.0
Internally-generated intangible assets	2,375	2,482	107	4.5
Goodwill	20,220	18,063	-2,157	-10.7
Advance for customers	2,632	779	-1,853	-70.4
Property, plant, and equipment	28,284	29,779	1,495	5.3
Shares in affiliated companies	33,533	33,533	0	0
Non-current assets	**89,371**	**88,382**	**-989**	**-1.1**
Inventories	15,854	19,696	3,842	24.2
Trade accounts receivables	7,155	7,411	256	3.6
Due from affiliated companies	8,080	9,075	995	12.3
Other assets	316	1,479	1,163	368.0
Cash and cash equivalents	15,993	18,514	2,521	15.8
Current assets	**47,399**	**56,176**	**8,777**	**18.5**
Prepaid expenses	418	415	-3	-0.7
Deferred tax assets	0	0	0	0
ASSETS	**137,188**	**144,972**	**7,784**	**5.7**

EQUITY AND LIABILITIES

In € thousand	2017	2018	Δ absolute	in %
Share capital	51,082	51,112	30	0.1
Capital reserves	20,626	20,686	60	0.3
Earning reserves	1,004	1,004	0	0
Net profit	4,062	9,282	5,220	128.5
Equity	**76,774**	**82,084**	**5,310**	**6.9**
Special account with reserve characteristics	3,270	3,068	-202	-6.2
Provisions	6,335	6,588	253	4.0
Liabilities to banks	40,000	28,000	-12,000	-30.0
Promissory note loans	1,954*	13,843	11,889	608.5
Payments received on account of orders	196	260	64	32.7
Trade accounts payables	3,253	6,145	2,892	88.9
Due to affiliated companies	196	384	188	95.9
Other liabilities	4,474*	3,826	-648	-14.5
Deferred tax liabilities	736	774	38	5.2
EQUITY AND LIABILITIES	**137,188**	**144,972**	**7,784**	**5.7**

*In fiscal 2018, rental lease liabilities were recognized under other liabilities (Previous year liabilities to banks). The 2017 figures have been adjusted accordingly in order to enhance comparability.

On the equity and liabilities side of the balance sheet, First Sensor AG's equity amounted to €82.1 million on the balance sheet date (previous year: €76.8 million). Higher retained earnings had an impact here. The equity ratio climbed slightly to 57% (previous year: 56%). Based on a resolution adopted by the Annual General Meeting on May 23, 2018, a portion of the retained earnings from 2017 amounting to €1.6 million was used for distributing a dividend. The remaining amount of €2.4 million was allocated to retained profits. As a result, retained earnings increased by €5.2 million to €9.3 million (previous year: €4.1 million).

The tranche of the promissory note loan of €12.0 million issued in 2013 was repaid in fiscal 2018 as planned. The KfW loan taken out in 2017 was drawn on in November 2018, thus reducing liabilities from promissory note loans and to banks by €0.1 million overall. Trade payables rose to €6.2 million (previous year: €3.2 million) as a result of further improvements in accounts payable management and are hedged by the existing liquidity reserve.

Provisions changed only marginally against the previous year. The €0.6 million decrease in other liabilities was attributable to the settlement of hire purchase agreements as scheduled. Please refer to the notes at Group level for a detailed presentation of the financing situation.

Operating cash flow rose from €8.9 million to €12.7 million. This positive development is attributable to the increase in net income. Cash flow from investing activities declined to €-5.3 million (previous year: €-9.2 million). This was due to the investment made in a standardized ERP system in 2017. Payments for intangible assets fell by €2.4 million in the 2018 fiscal year. As a result, free cash flow increased by €7.8 million to €7.4 million (previous year: €-0.4 million). Cash and cash equivalents increased to €18.5 million (previous year: €16.0 million).

Opportunities and risks

Due to its role in the Group, business development at First Sensor AG is subject to the same risks and opportunities as the Group. To that extent, we refer the reader to the risk and opportunities report of the Group.

Outlook

The sales forecast of the previous year (between €70 million and €75 million) was exceeded at €81.4 million. For fiscal year 2019, the Executive Board anticipates sales of €85 million to €90 million based on corporate planning.

As in the previous year, a positive result from ordinary activities was achieved in the financial year 2018. A positive result for ordinary business activity is also anticipated for 2019.

Employees

First Sensor AG had 469 employees (FTEs – full-time equivalents) as at the end of the year (previous year: 431) as well as 21 apprentices (previous year: 20). The following table provides a breakdown of the workforce across the individual units.

Employees (FTE)	**2017**	**2018**	**Δ absolute**	**in %**
Berlin-Oberschöneweide	208	220	17	8.4
Puchheim by Munich	71	74	3	4.2
Berlin-Weißensee branch	156	174	18	11.5
Chemnitz branch	1	1	0	0
Total	**431**	**469**	**38**	**8.8**

Overall statement

Sales reached €155.1 million and were therefore within the guidance confirmed at the beginning of the year and during the year (€150 million to €160 million). Sales in the Medical target market developed positively in particular (up 23.7%), but the Industrial target market also recorded growth (up 7.0%). By contrast, sales in the Mobility target market (down 9.6%) reflected the volatile geopolitical developments that have burdened the automotive industry in the last year. This temporary effect was compensated by the strategic orientation toward three target markets, enabling the First Sensor Group as a whole to achieve year-on-year growth of 5.2% in 2018.

The company also continued to improve its profitability with the sales it realized in 2018. EBIT thus reached €12.2 million, which represents growth of 16%. The EBIT margin for the year as a whole is therefore 7.9% and thus in line with the plan of 7% to 9%.

Overall, the business performance in fiscal 2018 was thus in line with the forecasts.

Development of non-financial performance indicators

The non-financial reporting can be found as a coherent, separate section in the Annual Report 2018.

Employees

The First Sensor Group had a total of 863 employees (FTEs – full-time equivalents) as at the reporting date of December 31, 2018 (previous year: 798 FTEs). This equates to growth of 8%. The new jobs were created to secure further growth, primarily in the areas of production and development. In addition, 32 apprentices were employed at First Sensor as at the reporting date December 31, 2017 (previous year: 33).

To handle fluctuations in utilization and temporarily fill vacant positions, First Sensor works with temporary employment agencies. At December 31, 2018, the number of temporary workers was 67 (previous year: 52).

At €49 million, personnel expenses in the year under review were 5.2% higher than the prior-year level of €46.6 million. This is due to the hiring of new staff as well as salary increases. These exceeded the previous year's level. Further information on the breakdown of personnel costs can be found in the notes.

The age structure of employees has remained stable. Around half of employees are under 40 years old. In view of demographic change and the resulting shortage of skilled workers, which is predicted to rise, an important part of our personnel strategy involves ensuring that we meet our requirements for skilled labor by providing in-house training. Based on long-term personnel planning, the aim is to cover the requirements for talented young staff by providing high-quality, needs-based training in the company's own ranks, too. First Sensor provides professional training for microtechnologists (20), industrial clerks (6), specialists in warehouse logistics (3), mechatronics engineers (2) and specialized technicians (1). At the end of 2018, a total of 32 apprentices were employed at the company (previous year: 33).

Aging structure of employees in %	2017	2018
Age under 30 years	15	15
Age between 31 and 40 years	32	33
Age between 41 and 50 years	22	21
More than 51 years	31	31
Total	**100**	**100**

The need for staff development within the company is determined once a year as part of the budget in an analysis of further training requirements. Based on this analysis, €382 thousand was invested in staff training in fiscal 2018 (previous year: €315 thousand).

The sickness absence rate rose slightly in the last fiscal year, amounting to around 5.8% (previous year: 5.6%) and was heavily impacted by a wave of influenza. For this reason, new measures such as free fruit, flu vaccinations, additional cold-weather clothing for industrial employees and hand sanitizers were introduced. Furthermore, proven measures such as the implementation of health days and health checks, support for team sport activities, and provision of employee bicycles were continued.

The proportion of female employees remained virtually the same year-on-year and amounted to 36.1% (previous year: 36.2%) as at the reporting date. This ratio is comparatively high for a technology company. With a global grading system, First Sensor evaluated all positions at the company using an analytical procedure. This helps ensure performance-oriented, competitive remuneration in line with the importance of the respective position, regardless of gender of the incumbent.

At 35.9%, more graduates are employed at the company than in the previous year (34.0%).

Quality management

Cross-site harmonization of the processes relevant to quality continued, led by Corporate Quality Management. The aim of this is to ensure that standardized and cost-effective processes are employed throughout the First Sensor Group in the areas of quality management and quality assurance. Defined interfaces and responsibilities as well as key figures to measure effectiveness and efficiency are leading to increased cooperation internally and, externally, to a uniform image to customers and suppliers. This way, quality management is fulfilling ever-growing customer demands for robust processes and high product quality and supporting the strategic orientation of the Group and its growth course.

A key topic in the last fiscal year was the adjustment of processes following introduction of a cross-site ERP system. The quality assurance processes in incoming goods, production and supplier management as well as the processing of customer complaints were adapted in line with the changed requirements and redefined in parts. In addition, the existing CAQ software, a key specialized quality management tool, was adapted in line with the changed requirements and the interfaces aligned with the new ERP system.

A further area of focus was on standardized, Group-wide supplier management. Contract templates were created in cooperation with the purchasing department and uniform criteria introduced for supplier assessment and auditing. The necessary data are now provided centrally, too. This also implemented a further element of the purchasing risk management system in practice.

Activities also focused significantly more on HSE management, with uniformly defined processes and centralized requirements being used for the first time. This also established the conditions required for other Group locations to be able to use the system in the future.

Significantly increased use of the existing HSE software ensures the HSE processes are implemented in practice and is also a component of corporate social responsibility (CSR) reporting.

Based on the conditions established in the previous year, all locations met the increased demands of the new quality management standards and passed the certifications in line with the requirements of current standards.

The following certifications are currently audited at First Sensor:

- IATF 16949 Quality management systems for the automotive industry
- DIN EN ISO 13485 Quality management systems for medical products
- DIN EN 9100 Quality management systems for the aerospace and defense industry
- DIN EN ISO 9001 Quality management systems
- DIN EN ISO 14001 Environmental management systems

Supplementary Report

The company is not aware of other key events following the end of the fiscal year, which will affect the net assets, financial position and results of operations.

Forecast, Opportunity and Risk Report

Forecast report

General economic and sector conditions

The global economy lost momentum over the course of 2018 - a development which is likely to continue according to the Kiel Institute for the World Economy (IfW). The economic experts anticipate economic growth to slow slightly from 3.7% to 3.4%. Even though these expansion rates do not indicate any pronounced economic weakness, capacity utilization in the advanced economies is hardly likely to increase. In many emerging countries production is likely to expand at only a moderate pace in view of what are frequently unfavorable general economic and political situations and a difficult financial environment. As a result, the experts are anticipating that the upturn in world trade which was 3.2% in 2018 will decline considerably in 2019, to 2.3%. From an international perspective, the key risk is further intensification of the trade conflicts. In Europe concern about the ability of Italy to service its debts, the delay of reforms in France and not least the potential of a hard Brexit could result in the economy developing more weakly than even one year ago.

Thus the experts are forecasting that the economic momentum in the USA has peaked and that the gross domestic product will decline from 2.9% in 2018 to 2.5% this year. In this connection, the Federal Reserve policy on interest rates could have a attenuating impact on the development of the economy. The rate of expansion in Asia is also declining: after 6.6% in 2018 an upturn of only 6.2% is anticipated for the current fiscal year. China (6.1%) is still expanding considerably more rapidly than South Korea (2.4%) and Japan (1.0%). For 2019 economic output in the euro zone is expected to grow more slowly at 1.7% (previous year: 1.9%). In German-speaking countries, Switzerland at 2.2% is expected to grow more quickly than Germany and Austria. Both economies are slated to rise by 1.7%.

Development of the sensor market

According to the industry association AMA, the sensor systems market is likely to continue its growth in 2019. Growth drivers remain the digitalization and artificial intelligence megatrends, which cannot be implemented without sensor systems. However, the experts are anticipating that growth will slow to 5% (previous year: 10%). The German Electrical and Electronic Manufacturers' Association (ZVEI) makes a similar assessment, and anticipates that the German electrical and electronics industry, to which sensor systems are assigned, will move up by 1.0% in 2019, after 1.9% in the previous year.

However, Yole, the market research company, sees the global sensor market as being dominated by nine megatrends in the medium term. These include Smart Automotive (autonomous driving, electromobility, connected cars), Healthcare, and Industry 4.0. Driven by the resulting steady increase in demand for sensors, the experts anticipate that the market for MEMS sensors and sensor systems alone will grow at an average rate of approximately 17% to 2023.

Until 2022 Mordor Intelligence expects an average growth rate of 7.0% p.a. for the pressure sensors sector in Europe. Japan and China are even likely to post somewhat higher annual growth rates in this area at 7.8% and 8.1% respectively, while at 5.6% and 5.3% growth in South Korea and North America is slightly lower than growth expectations for Europe. This trend is driven by demand for MEMS and piezoelectric sensors, pressure transmitters deployed in the petrochemical and oil and gas industries as well as in medical technology and the automotive industry.

For optical sensors , market research company Research and Markets expects global growth at an average rate of 7.3% between 2018 and 2024. Studies by research company Mordor Intelligence attribute the highest annual growth to China at 10.0%. The market in Japan is expected to grow by an average of 7.7% to 2026, and by 6.7%, 5.7% and 5.2% p.a. in North America, Europe and South Korea in the same period. This growth is partly driven by demand for new optical diagnostics devices, the increasing use of sensors in factory automation and investments in performance and safety for passenger cars and trucks.

Development of the target markets

Industrial

The IfW anticipates that equipment investment will grow in 2019 by 2.7% (previous year: 4.2%). After 2.0% in 2018, exports are expected to rise this year by 3.6% . At the same time, progress is being made in the practical implementation of networking production systems. Under the general umbrella of "Industry 4.0", with increasing use of sensor systems, a range of applications are being provided with local processing power, as well as digital interfaces and wireless and wireline data transfer possibilities. Alongside the established areas of deployment for highly precise pressure sensors in process control and level measurement in industrial facilities, optical technologies play a decisive role for machine room monitoring, industrial process automation and predictive maintenance. Here, using sensors for early identification of wear and tear can prevent system downtimes. For this application alone, annual growth exceeding 20% is being forecast.

Medical

The industry association Spectaris is anticipating sales growth of approximately 4% in the medical technology industry in 2019, with a further rise in employee figures. This is driven by increasing demand for individual treatment solutions and the steady increase in life expectancy in Europe, North America and Asia, combined with the ongoing industrialization of the emerging countries. It is not only the classical treatment methods which are currently the focus, but increasingly innovative technologies such as point-of-care medicine, robot-supported surgery or diagnostic implants.

Mobility

According to the German Association of the Automotive Industry, German car production in January 2019 slumped 19% year-on-year, thus continuing the trend which started in the second half of 2018. But carmakers are facing problems not only because of the weak German market with the issues of diesel and WLTP approval backlog, global demand is also declining. In January 2019, car exports declined year-on-year by 20.3%. If the US administration were to intensify the trade conflict with China and in this connection also levy tolls on vehicles "Made in Germany", this could result in further negative repercussions on the market. At the same time, parallel to autonomous driving as a megatrend, ADAS (advanced driver assistance systems) and green mobility are increasing structural demand for sensors. Thus Yole Développement, the market research company, is anticipating growth rates of almost USD 8 billion in the area of cameras, USD 1.4 billion for LiDAR and USD 1.6 billion for pressure sensors, which also play a significant role with new drive technology or CO2-neutral air conditioning systems. Driverassistance systems are being deployed increasing not only in cars, but also in off-highway vehicles and commercial vehicles such as trucks and buses. Key factors here include not only safety aspects, but also business advantages for the logistics industry.

Forecast for the business development in 2019

Sales revenues

The First Sensor Group achieved sales of €155.1 million in the fiscal year 2018, in line with the corridor provided in the guidance. In the same period, profitability also increased, and was with an EBIT margin of 7.9% in the expected range.

In fiscal year 2019, First Sensor expects the strategy for profitable growth to continue taking effect. After sampling new customer-specific solutions for key customers, they are being taken into series production and becoming standard products with greater volumes. In addition, as a result of organizational changes, the business in Asia and North America is being strengthened further, which should result in an initial impact on sales as soon as in 2019.

For 2019, First Sensor thus anticipates sales of between €160 million and €170 million. This planning is the result of a bottom-up process that subsequently undergoes an intensive plausibility check, taking account of general economic conditions and markets, the applications, products and customers, and thus represents a real-case scenario. By systematically implementing our strategy, we aim to achieve the target of annual growth rates of around 10% in the medium term.

Industrial

As a result of their high precision and reliability, demand for First Sensor Photonic products is increasing. More and more applications are being added in the aerospace industries and for unmanned vehicles, such as drones, where the highest possible requirements on reliability under extreme conditions must be met. What is more, on the basis of their short response times, high reaction sensitivities and the large dynamic range, First Sensor products are being used in fully automatic industrial environment perception. This will form an important element of the LiDAR sales in the First Sensor Group. First Sensor is also experiencing high demand for MEMS-based pressure sensors and transmitters and has developed a customized multi-sensor system that is going into series production.

Medical

In 2018, in the Medical target market First Sensor concluded agreements for period over several years with new and existing customers for pressure sensors such as the H series. On the basis of the considerably expanded capacity in chip production and packaging and as a result of the qualification of a contract manufacturer in Eastern Europe, there will be a considerable sales contribution as early as 2019. For Photonics a key customer in imaging diagnostic equipment has registered increased volume requirements. In addition, as a result of successful design-ins in recent years, series ramp-ups for new products are scheduled for 2019.

Mobility

Compared with the previous year, in the Mobility target market, First Sensor moved into fiscal year 2019 with a high order backlog, in line with planning. On the basis of framework agreements in the area of pressure sensor technology as well as new LiDAR and camera project ramp-ups in the field of photonics, the objective is again to generate positive growth in the current fiscal year. However, due to the ongoing geopolitical conflicts and more stringent emission regulations, the year 2019 is another year of business challenges for the automobile industry. At the same time, the general slowing of economic growth could result in higher levels of consumer restraint when buying a car.

Earnings

First Sensor anticipates that from a further sales upturn it will be able to generate and leverage economies of scale, at the same time further improving efficiency and productivity. On this basis, the EBIT margin is expected to again improve against 2018 and achieve a sales revenue of €160-170 million as well as a target figure of 8.5% to 9.5% in fiscal year 2019. This planning is the result of a bottom-up process that subsequently undergoes an intensive plausibility check and thus represents a real-case scenario. The planning does not include EBIT effects from any possible acquisitions.

Fiscal year 2018 and guidance 2019	2018	Guidance 2019
Sales in € million	155.1	160 - 170
EBIT-margin [%]	7.9	8.5 – 9.5

Financial position and net assets

For fiscal year 2019, investments are planned at a similar level to depreciation and amortization at around €10 million. Part of this is attributable to shifts from the previous year. The investments will focus on the production facilities in order to expand capacity, modernize existing facilities, and achieve improvements in efficiency. To help finance these investments, a loan is to be used which was provided in 2018 under a KfW digitalization and innovation program.

Based on further solid free cash flow, cash and cash equivalents will increase slightly again over the course of 2019. We will use part of this liquidity to repay a promissory note loan of €12 million from 2013 as at the end of the year.

On the basis of optimized inventory management and a more efficient design of the production process, a further buildup of inventories is to be limited.

Overall statement

With the strategic preparations for profitable growth and our measures for operational excellence, we have established the conditions for another successful year for the First Sensor Group in fiscal year 2019. At the same time, the aim is to observe the impact of the muted global economic expectations and the ongoing unsolved geopolitical challenges in the automobile industry and to align the company accordingly. In this context, for 2019, we expect sales between €160 million and €170 million and an EBIT margin between 8.5% and 9.5%. The medium-term target remains sales growth of 10% per year and an EBIT margin of 10% in 2020.

Report on risks and opportunities

In this report, risks and opportunities refer to influences or events that make it likely that the short and medium-term corporate development exceeds or falls short of the management's objectives. The goal of opportunity management is to recognize such opportunities at an early stage and pursue them in a targeted manner, while risk management aims to ensure not only that risks are identified in good time, but also that countermeasures can be taken promptly in order to control the impact on the company and minimize it where necessary.

Risk management system

First Sensor AG and its subsidiaries are exposed to a range of risks in the course of their business activity that are inextricably linked to their business actions. This can have a negative impact on the assets, financial and earnings situation. Handling risks carefully is therefore a fundamental part of responsible corporate governance. Active risk awareness, an open risk culture and an effective risk management system are therefore necessary to ensure short and long-term success of the company.

Risk and compliance management are closely linked together and form an integral part of corporate governance at First Sensor. The Executive Board is responsible for the Enterprise Risk Management (ERM) system, which is used to analyze the risk and compliance situation regularly and assess, manage and control the risks identified. The ERM system is managed by the Business Processes, Risk Management & Compliance central unit in close cooperation with the management of the operating units. This includes all companies, locations, and business divisions. The Supervisory Board is kept regularly informed regarding the company's risk situation in a structured process and monitors the effectiveness of the ERM system within this framework. The ERM system at First Sensor supports both the effective management of corporate risks as well as implementation of and compliance with the ethical principles of corporate governance (Code of Conduct) and statutory provisions that drive the Group's business.

Targets and strategies

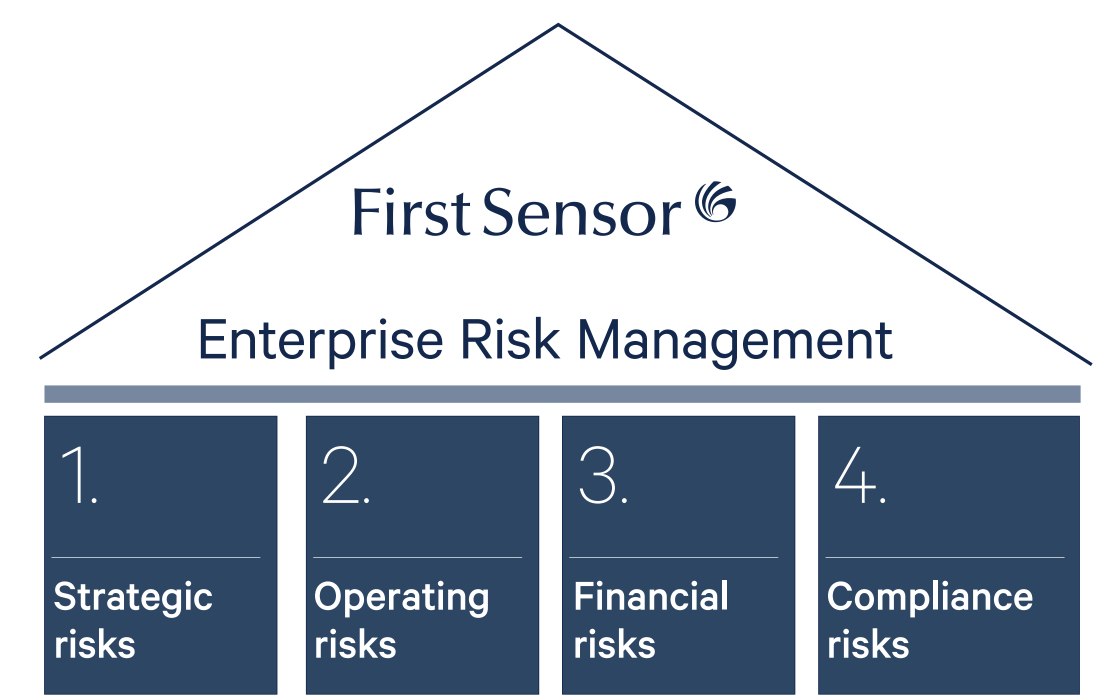
The most important goal of risk and compliance management is to identify potential risks at an early stage, to make a reliable assessment of their probability of occurrence and their possible impact on business performance, to manage them and to reasonably limit them as far as possible. At the same time, opportunities for success are to be utilized, unless their risk content exceeds an appropriate level. On this basis, the risks are managed by appropriate measures in accordance with the First Sensor Group's corporate strategy.

Various strategies are pursued depending on the risk assessment. Risks that could be seriously detrimental to the company's development or would even pose a threat to its continued existence are avoided as fully and consistently as possible. The impact of less significant risks is mitigated. For example, specific maximum values are prescribed for this, regular and systematic checks are carried out and/or the rigorous separation of functions is ensured. Risks are outsourced where possible or expedient, for example to insurers or suppliers. We enter into other risks in a conscious and controlled manner.

Structures and processes

Enterprise Risk Management structures and processes are standardized throughout the Group. They are based on the newly-introduced so-called First Sensor Risk House based on the COSO ERM framework with its four pillars which map significant risk categories for the company and also includes compliance issues:

First Sensor Risk House:



A quarterly risk assessment is conducted within these risk categories to identify and evaluate any potential risks to which the company considers itself exposed. This is carried out on a decentralized basis and documented via appropriate reports. To this end, each reporting entity considers and assesses a large number of risk types within the risk categories. The individual reports created on this basis are then validated in the Group Business Processes, Risk Management & Compliance unit and consolidated into an overall risk situation for the Group. The result of this structured process flows into the quarterly risk report, which is communicated to the Executive Board and the Supervisory Board in writing. This information thus is integrated in the regular business analyses of the Executive Board, location and division managers and is used to derive measures.

The ERM system is supplemented by an internal control system (ICS) to actively limit the risks identified as relevant for First Sensor with appropriate control activities and check the defined control activities regularly for adequacy and effectivity. The scope and effectiveness of the system are monitored regularly and extended where necessary through new control activities in the form of guidelines or process instructions, for example. For instance, new regulations were issued last year to limit risks in the areas of supplier management, data protection, project management and financial management further or manage them more actively. This also includes the new compliance management and whistleblowing system introduced at First Sensor in January 2018 for systematically recording and processing compliance-related matters.

At the end of 2018, First Sensor began preparations for supplementing risk reporting with robust opportunity reporting. As of 2019, the Group's opportunity situation is thus also to be surveyed quarterly in a systematic process in parallel to the risk situation and evaluated within the company.

Risk assessment

Risk assessment is based on a company-specific assessment matrix, which takes into consideration the probability of occurrence and potential amount of damage of possible events and derives priorities as a result. In each case, the probability of occurrence and possible impact are weighted on a rating scale from zero to three and multiplied with each other. If the calculated risk factor is over the materiality threshold of three, measures for managing the risk are defined and its implementation is periodically monitored. The accumulated risks are allocated accordingly to the categories **"low", "medium"** or **"high".**

Probability of occurence	Rating	Potential damage per event	Rating
Very unlikely	0	None	0
Unlikely, but possible	1	<€500 thousand	1
Likely, if no countermeasures are taken	2	>€500 thousand <€2 million/and/or achievement of strategic targets is jeopardized	2
Very likely, if no countermeasures are taken	3	>€2 million and/or achievement of strategic targets is jeopardized and/or compliance with legal requirements and regulations is compromised	3

Principal risks

Principal risks (with a risk factor of three or more), which we will report on below, are defined by the Executive Board as those having an impact on the achievement of the company's goals at the time this report is being prepared and are thus relevant to decision-making for knowledgeable readers. Risks of minor significance are not listed separately.

Strategic risks

Strategic risks include macroeconomic risks, risks from markets and competition, and specific risks from products and technologies.

First Sensor currently assesses macroeconomic risks as "low". However, owing to the large number of influencing factors it is possible that the current volatility in relation to key trade-related decisions and numerous fiscal and economic challenges could lead to a sudden change in the situation. It is not currently possible, therefore, categorically to rule out negative effects on business performance. The company thus monitors risks in this area very closely. For example, a business partner analysis was conducted with reference to Brexit and measures taken to minimize the impact of various scenarios.

The company is recording increasing competitive pressure in relation to markets and competitors as well as products and technologies. However, optical sensor systems is the only sector recording risks that could pose a strategic threat for established products from the First Sensor range. These risks are chiefly countered by the active management of the product portfolio and strategic technology roadmaps that are updated regularly.

As a whole, strategic risks are classified as "medium".

Operating risks

Sales risks, development and technology risks, production risks, quality risks, purchasing and inventory risks, IT risks, and human resources risks are combined under operating risks.

The predominant risk issues in the area of development and technology continue to be manageable capacity bottlenecks as well as quality issues, while IT risks are of minor significance throughout the Group.

The human resources risks faced by the company decreased over the course of the year and are rated as "medium". The measures introduced enabled us successfully to fill numerous vacant positions in key areas of work. Deployment of temporary workers also increased on a demand-led basis, enabling us to reduce periods of high workload for employees and staff turnover. Competition for staff nevertheless remains considerable and intensifies existing risks, particularly in the area of production. In view of this, First Sensor continuously works to boost its attractiveness and prominence as an employer using various approaches, such as management training, prudent wage adjustments, active collective bargaining policies and targeted employer branding.

With regard to purchasing and inventory risks, which are also rated as "medium", First Sensor has been observing a rise in procurement times in certain parts categories for some time now. This also includes electronic components for some key products. The anticipated Brexit has the potential to intensify this situation in individual cases. The company is responding to this with a bundle of short and long-term measures. These include building up safety stocks of critical parts on a needs-oriented basis as well as optimizing contracts with customers and suppliers. However, supply bottlenecks cannot be ruled out in individual cases.

As regards production and sales risks, First Sensor remains confronted with major challenges that are partly influenced by the aforementioned risks and require increased attention at several locations despite the successful expansion of production capacity.

Optimization of the new ERP system introduced at three further locations at the end of 2017/beginning of 2018 therefore continues to commit significant resources in certain areas. The continuing increase in demand from existing customers may lead to longer delivery times. We are continuously reducing these risks through active cooperation with our customers, continued tight-knit incorporation of management and numerous other activities in the aforementioned areas of operating risk. The ongoing targeted insourcing and outsourcing of specific processes continues increasingly to help us react more flexibly to relevant peaks in demand or supply bottlenecks.

The key sales risk is the fact that a total of 20.8% of consolidated sales (previous year: 21.5%) are generated with the three biggest customers, and the biggest customer accounts for 9.5% of sales (previous year: 9.0%). If these customers were to change their order behavior or switch to a different supplier, this may in principle have a significant impact on corporate sales. We consider this risk to be limited overall due to longstanding close relationships with our key customers and supply agreements that generally cover several years. Key market developments are also monitored as part of risk management and the Sales department maintains close dialog with customers so as to manage the relevant risks as far as possible. For these reasons and thanks to its broad positioning the company does not expect the current sales trends in the mobility sector, for example, to have a major impact on the total sales of the Group in the 2019 fiscal year.

Overall, the risks specified above are rated as “medium to high”.

Financial risks

Risks from the accounting process and financial reporting, liquidity and exchange rate risks, working capital risks and insurance and liability risks are combined in the financial risks category.

At First Sensor, derivative financial instruments are solely used for hedging interest rate and exchange rate risks and are subject to strict internal requirements. Interest rate swaps existed in the 2018 fiscal year to hedge interest rate risks in connection with the promissory note loans issued. Detailed information can also be found in item 33 of the notes to the consolidated financial statements. The default risk arising from the financial instruments is countered by ensuring that they are concluded solely with banks with a good to very good credit rating. The exchange rate risks, financial liabilities and financial assets are regularly reported to the Executive Board and are subject to a check.

In the area of intangible assets, First Sensor has internally generated intangible assets (€6.1 million) and goodwill of €29.8 million. These are tested for impairment on a regular basis (see notes for details). With respect to own work capitalized, risks primarily relate to the possibility that development projects may not reach market maturity and the forecast income therefore may not be generated. If the economic environment were to deteriorate significantly and/or the reference interest rate to rise substantially, the risk of impairment losses on goodwill could generally increase. The first signs of economic slowdown have been observed and there is the risk that this could generally affect business performance in the coming year. The Executive Board took account of this as far as possible when formulating its sales forecast and guidance for 2019. However, in the opinion of the Executive Board there is currently no significant risk of impairment losses in this connection.

Due to the internal control system, the risk profile for financial risks continued to decrease overall in 2018. The ongoing centralization of financial accounting and the associated standardization of processes and responsibilities are further reducing process-related risks. At Group level, the solid balance sheet ratios and the comfortable financial resources position result in a low liquidity risk. Exchange rate risks that are not already offset by a natural hedge are hedged to an appropriate extent and by instruments customary on the market. These instruments are selected on the basis of the forecast net exposure and the company’s ability to bear risks. Errors cannot be completely ruled out here. Careful working capital management and hedging on the basis of accounting measures reduce the risk situation. In this context, First Sensor’s insurance portfolio also underwent a critical appraisal and some insurance policies, including for product liability and aerospace insurance, were subsequently extended.

The aforementioned risks thus continue to be rated as “low”.

Accounting-related internal control system

The goal of the accounting-related internal control system is to ensure reliable and transparent financial reporting as part of the general ICS at First Sensor AG. In order to achieve this goal, First Sensor implemented appropriate structures, processes, and checks. These aim to ensure that the results of the accounting process are free of errors and available on schedule. Secondarily, the ICS also serves to help ensure efficient management, to safeguard assets, and to prevent or detect criminal offenses and errors. Consequently, all Group companies and operational business processes that generate significant information for the preparation of the consolidated financial statements are included in the ICS.

The accounting-related ICS is developed by the Executive Board and its effectiveness is monitored by the Supervisory Board. It consists of different elements, including guidelines and procedural instructions, such as the Group Financial Manual, the Accounting Manual, the Financial Risk Management Directive or the Approval and Signature Directive. These are supplemented by other general procedural instructions on topics such as the calculation of production-related costs or intercompany charges. These ICS components are accompanied by further checks which examine and validate data relevant to the financial statements at different points. By implementing such checks we are ensuring with the greatest possible certainty that the (consolidated) financial statements are prepared in accordance with the regulations. This includes monthly standardized controlling reports of all Group companies and locations supplemented with target-actual deviation analyses with recommendations for action by Corporate Controlling and monthly business review meetings between the location and division officers and the Executive Board. The Group companies prepare their financial statements on a decentralized basis in accordance with the local legal requirements. Uniform reporting structures are ensured by means of standardized notification formats, IT systems, and IT-based consolidation processes. Together with the financial reporting calendar that is applicable throughout the Group, the process of uniform, correct consolidated accounting in accordance with IFRS forms the basis for the process of preparing the financial statements. In addition, significant local financial statements are initially comprehensively internally examined at the end of the fiscal year before being released for the consolidated financial statements. No tasks are performed by external service providers in the context of preparing the consolidated financial statements. In addition to this, random spot checks and plausibility analyses are carried out at location and Group level on a monthly basis, accompanied by compliance audits. Head office also has access to all the accounting systems and bank accounts within the Group at all times. The Executive Board is kept informed regarding the results of these checks on an ongoing basis. The expected accounting results are compared with the actual results during the course of monthly deviation analyses with the business units. This ensures that the Executive Board can decide on measures at an early stage where necessary to ensure our business success is realized as planned.

Within the scope of the regular checks of the effectiveness of the system, the existing guidelines and work and procedural instructions of the ICS were supplemented further in fiscal year 2018. This includes the Financial Risk Management Directive, which defines clear premises and limits for the use of financial instruments, for example. This ensures that risks are managed in a more structured way and the efficiency and transparency of financial reporting is further increased. Following the introduction of a new ERP system at three further branches in January 2018, an external process and ICS audit, relating to chosen processes, were also carried out at the company's head office in November to serve as an example. The auditors certify that following the change of system First Sensor continues to have a "largely very well-developed internal control system, resulting in only a minor financial risk". The ongoing development and amendment of the accounting-related ICS contribute to guaranteeing that the accounting is reliable and will also continue to improve. However, even appropriate and functional systems cannot guarantee with absolute certainty that risks will be identified and managed.

Regulatory risks

Regulatory risks include political and legal risks as well as compliance-related risks. The compliance management system is therefore an integral part of Enterprise Risk Management at First Sensor. It contributes to the fact that binding rules at the company are known and that infringements are identified in good time. Reports of risks and infringements may also be given anonymously via an external ombudsman (legal council). In the past fiscal year, one case was reported that led to adequate measures.

Within the area of compliance-related risks the company attributes particular significance to export controls. Therefore, additional process instructions, accompanied by in-depth training, were introduced in the 2018 fiscal year to take account of product and country-specific aspects. Data protection was also placed on a new standardized footing in line with the introduction of the EU General Data Protection Regulation in May 2018.

Based on the reasons above, these risks are classified as "low".

Summary of the risk situation

In the opinion of the Executive Board, the risks to which First Sensor is exposed at the time this report is being prepared and for the current planning period are manageable. The present trade-related and financial uncertainties as well as economic risks and their potential impact on the business activities of the Group are subject to close monitoring. We cannot rule out the possibility that they will affect business performance in 2019 and subsequent years. The Executive Board thus took detailed and appropriate account of these risks when formulating its guidance for 2019. In any event, the Executive Board does not consider the continued existence of the Group to be threatened in any way. Despite the comprehensive analysis of risks, their occurrence cannot be completely ruled out.

Opportunity management system

As is the case with risks, opportunities within the Group are also systematically identified, transparently documented and incorporated in business decisions. They represent possible future developments or events that may lead to a positive deviation from forecasts or targets for the company. As with risks, First Sensor differentiates between opportunities based on whether they are of a strategic, operating, financial or regulatory nature.

Strategic opportunities

First Sensor pursues a buy-and-build strategy. If the strategy for profitable growth identifies attractive targets that lead to an acquisition, this may result in additional impetus for sales and earnings.

Operating opportunities

First Sensor operates in growing markets in which new technologies and digitalization are currently ushering in a new era for industry, medical technology and the automotive industry. This opens up new fields of application such as predictive maintenance, e-health and autonomous driving, for example, which may reach significant market volumes faster than expected and could thus lead to additional sales. This also applies to the use of avalanche photodiodes for LiDAR applications in industry and the automotive sector, for which First Sensor is the market leader.

Many customers have concluded framework agreements with terms of one to two years which guarantee purchase volumes while at the same time also defining purchase variances. As positive purchase variances do not flow into operational planning, this may give rise to opportunities for additional contributions to sales.

In the last fiscal year First Sensor also succeeded in initiating a large number of new business opportunities for developing and producing customer-specific solutions for which sampling has already begun or will shortly begin. A sampling process comprises different phases, although the overall duration varies. Therefore, sampling processes that conclude with an order earlier than planned may contribute to sales as early as in the current year.

First Sensor also continues to work on further increasing production capacity through investments in new machinery, extending shift operations, switching to 6-inch production, and targeted outsourcing. If individual measures are realized faster than planned, this could lead to an increase in monthly production volumes and thus to more sales.

Unplanned increased sales would always also have a positive impact on profitability due to economies of scale. Furthermore, under the general term of operational excellence First Sensor is working to optimize a host of processes and structures such as reduction of delivery times, further enhancement of production quality and IT-based professionalization of project management. If these projects take effect faster than planned or if the extent of the planned optimizations is significantly exceeded, the earnings forecast could prove to be too low.

Financial opportunities

First Sensor will further improve working capital management through various measures and simplification of processes, for example in the area of receivables management. Additional guidelines that are currently in preparation will enable an even higher level of transparency as regards the company's value streams in the future and further improve the management of profitability.

Regulatory opportunities

As current trade disputes are settled, further as yet unplanned sales opportunities may arise if uncertainties with regard to tariffs and market access are resolved. This relates, in particular, to US-Chinese economic relations as well as those between the EU and the US.

Summary of the opportunity situation

First Sensor is well positioned to systematically take advantage of opportunities in the Group's strategic target markets with its products and internal measures. Although the company is working purposefully to tap into these opportunities, it is generally unlikely that we will be able to achieve peak success here in the short term. We attach great importance to quarterly reporting to enable our shareholders to participate in this progress in a transparent and timely manner.

Takeover Related Disclosures in Accordance With Sections 289a (1) and 315A (1) HGB

1. Composition of subscribed capital

The composition of subscribed capital is presented in section 11 of the notes. All shares grant identical rights in accordance with the AktG (German Stock Corporation Act).

2. Restrictions affecting voting rights or the transfer of shares

The company's Executive Board is not aware of any restrictions affecting voting rights or the transfer of shares. Otherwise only the statutory provisions in accordance with section 136 (1) AktG and trading bans in accordance with Article 19 (11) MAR apply, especially to members of the Executive Board.

3. Direct interests in the company's share capital of more than 10%

Disclosures on direct or indirect interests in the share capital exceeding 10% of the voting rights can be found in section 34 of the Notes.

4. Holders of shares with special rights conferring control powers

There are no shares with special rights, in particular, no shares conferring control powers.

5. Type of voting right control when employees hold an interest in the share capital and do not exercise their controlling rights directly

Employees who hold an interest in the share capital exercise their voting rights directly.

6. Statutory provisions and Articles of Association concerning the nomination and dismissal of executive board members and amendments to the Articles of Association

Statutory provisions apply concerning the nomination and dismissal of executive board members (sections 84 and 85 AktG) and amendments to the Articles of Association (section 179 AktG).

7. Authorization of the Executive Board to issue shares and repurchase shares

The Executive Board is authorized to increase the company's share capital by up to €25,379,150 by issuing up to 5,075,830 new bearer shares (Authorized Capital 2015/I) up to May 27, 2020, with the approval of the Supervisory Board, in one or more transactions.

Furthermore, the Executive Board is authorized to issue convertible or option bonds with a nominal value of up to €90.0 million up to May 23, 2022 and grant their bearers up to 3.8 million shares with an amount in the share capital of up to €19.0 million (Contingent capital 2017/II).

The capital is also conditionally increased for issuing stock options to the Executive Board and managers. Details of the share option plans can be found in section 18 of the notes.

The Executive Board is authorized to acquire treasury shares up to a maximum of 10% of the share capital. No use has been made of this authorization to date.

8. Agreements that are subject to the condition of a change of control

The company has no significant agreements that are subject to the condition of a change of control as a result of a takeover bid.

9. Agreements on compensation in the event of a takeover bid

In the event of a change of control at First Sensor AG, the payment of a cash component limited in amount to the members of the Executive Board is provided if the respective member resigns within one month of the change of control.

Other Declarations

The declaration of compliance pursuant to Article 161 AktG (German Stock Corporation Act) and the declaration of business management pursuant to Article 289a HGB (German Commercial Code) are permanently available in the Investor Relations/Corporate Governance section of the company's website at www.first-sensor.com.

The consolidated management report contains statements relating to the future. The actual results may deviate materially from expectations regarding probable development, if one of the uncertainties mentioned or other uncertainties occur or the assumptions on which the statements are based prove to be inaccurate.

Berlin, March 11, 2019
First Sensor AG

Dr. Dirk Rothweiler
CEO

Dr. Mathias Gollwitzer
CFO