

RESEARCH & DEVELOPMENT FOR OUR FUTURE



ANNUAL REPORT

2018



GROUP MANAGEMENT REPORT

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THE YEAR 2018 AT A GLANCE

The Pfeiffer Vacuum Group continued its growth course during the past fiscal year. The more than satisfactory development led to new record figures – both for sales and for the operating profit. The key performance indicators were thus in line with our expectations for 2018.

This applies in particular for **sales**, which reached a new record level: Compared to the previous year, sales increased again noticeably by 12.4% to € 659.7 million. This result was at the upper end of the forecast corridor, which provided for a sales volume of € 640 to € 660 million.

SALES

in € millions



As a result of the positive sales development and a disproportionately low increase in selling and administrative expenses, we achieved a pleasing operating profit of € 95.1 million. Following € 71.4 million in the previous year, this represents an increase of 33.3%. Accordingly, we achieved an **EBIT margin** of 14.4%, which was some 2.2 percentage points higher and was also in line with our expectations.

EBIT MARGIN

in %



With **net income** of € 68.9 million, we succeeded in setting another new record in the Company's history. This represents an increase of 27.9% compared with the previous year.

NET INCOME

in € millions



Overall, these key financial figures for us have further improved noticeably as planned compared with the same period of the previous year.

Equity ratio increased to nearly 60 %

The balance sheet shows the Pfeiffer Vacuum Group's continued sound financial position. The equity base again improved over the previous year.

Equity grew by € 51.3 million from € 320.9 million at the end of 2017 to € 372.2 million on December 31, 2018. The **equity ratio** rose accordingly from 58.0 % to 59.6 % at the end of the reporting period. **Financial liabilities** amounted to € 60.3 million on the reporting date of December 31, 2018 [x SEE NOTE 23](#) and [x SEE NOTE 30](#). This corresponded to only about 10.0 % of the balance sheet total and was offset by cash and cash equivalents of € 108.4 million, which means that the Group continues to be debt-free on a net basis.

The **operating cash flow** declined from € 71.4 million in the previous year to € 62.5 million in the year under review despite the significant improvement in the operating profit. This was due in particular to the growth in inventories and trade accounts receivable in line with business development. With the inventory level, we have created the prerequisites for short lead times and fast reaction times to the needs of our customers.

Overall, the key balance sheet figures for us also developed very positively compared with the previous year's reporting date.

NET DEBT

in € millions



TOTAL EQUITY

in € millions



OPERATING CASH FLOW

in € millions



Investment program initiated with a volume of € 150 million

In March 2018, we approved an **investment program** with a volume of € 150 million, which is to be used primarily for the expansion and modernization of production capacities over the next three years. Funds will also be made available

for research and development and IT to improve operational efficiency and achieve digital transformation.

As part of our ongoing investments, we opened a **new production site** in Cluj, Romania, at the end of September 2018. With 320,000 inhabitants, Romania's second largest city offers excellent working conditions. In addition to components for vacuum pumps, highly efficient processes also run on the 4,300 square meter production area. Besides to the new plant in Romania, capacity was also expanded at the production sites in Asslar (Germany), Annecy (France), and Ho Chi Minh City (Vietnam). In addition, a new office building was opened on October 25, 2018 in Nashua, USA, in the state of New Hampshire. Since then, the North American headquarters for administration, sales, product management, marketing and customer support is located on an area of around 2,500 square meters. The existing building, that was freed up as a result, now houses all service activities and repairs for a major part of Pfeiffer Vacuum's product portfolio.

Numerous **new products** came onto the market during the past financial year: On the occasion of the AICHEMA trade fair in June, various vacuum solutions for the chemical industry were presented, including Roots pumps from the OkaLine ATEX series or the ASM 390 leak detector, which can be used both in serial production and also for maintenance work. In October, Pascal 2021 HW, a two-stage rotary vane pump with the highest steam capacity in its class, was also presented.

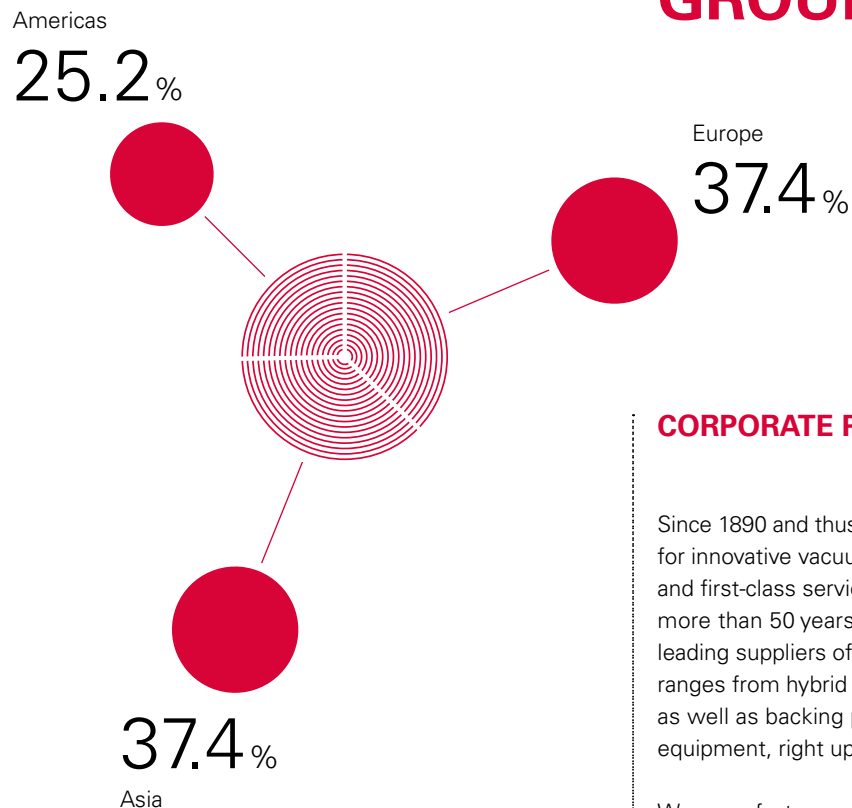
Further growth and significant improvement in operating profit margin planned

Our **growth strategy** envisages average organic sales growth in the high single-digit percentage range per year. At the same time, the EBIT margin is expected to rise to more than 20 percent in the medium term. Pfeiffer Vacuum's strategy is thus clearly focused on further growth. In addition to developing new products, this also includes expanding the Company's global presence. The focus is on selected Asian countries, above all China, which is growing strongly.

We are currently negotiating a **strategic cooperation** with the Busch Group in order to improve our competitive position in the vacuum technology industry. Busch SE, Maulburg, Germany, is the parent company of the Busch Group and holds a majority interest in Pfeiffer Vacuum through a subsidiary and has a complementary product portfolio of vacuum pumps and solutions for the rough vacuum market. This cooperation could lead to cost advantages in various areas of the Company.

In order to implement the growth strategy as rapidly as possible, the Management Board was reshaped and the functions reorganized as of January 1, 2019 (see also the explanations in the section "Corporate Governance Report"). A new position of Chief Operations Officer (COO) was created, with responsibility for the performance, efficiency and flexibility of the global operational infrastructure and processes. The position of COO was filled by an external consultant on an interim basis. At the same time, the search was initiated for a suitable candidate for permanent appointment to this position.

SALES BY REGION



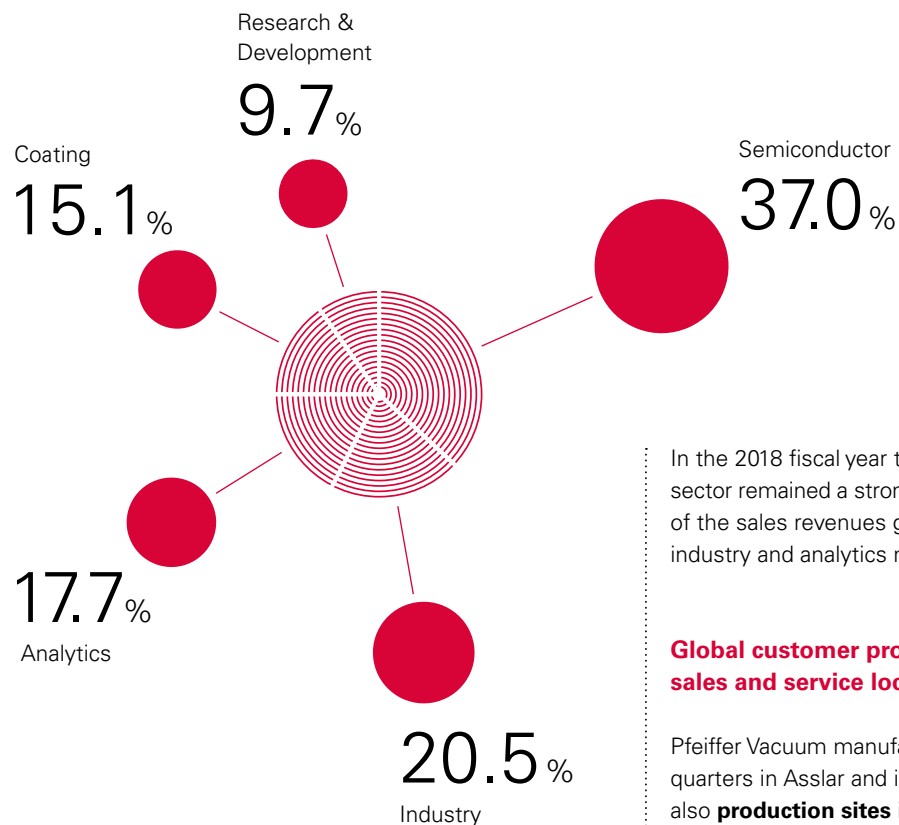
THE PFEIFFER VACUUM GROUP

CORPORATE PROFILE

Since 1890 and thus for more than 125 years, we have stood for innovative vacuum technology, superior quality products and first-class service. Since the invention of the turbopump more than 50 years ago, we have been one of the world's leading suppliers of vacuum solutions. Our product portfolio ranges from hybrid and magnetically levitated turbopumps, as well as backing pumps and measurement and analysis equipment, right up to complex vacuum systems.

We manufacture our high-tech products at eight locations in Europe, Asia and North America. The Group currently has 20 sales and service companies. With their expertise and commitment, our employees meet the requirements of our customers from a wide variety of industries and our sales markets in analytics, industry, research and development, coating and semiconductors.

SALES BY MARKET



In the 2018 fiscal year that has ended, the semiconductor sector remained a strong market for Pfeiffer Vacuum in terms of the sales revenues generated. This was followed by the industry and analytics markets.

Global customer proximity with manufacturing, sales and service locations worldwide

Pfeiffer Vacuum manufactures in Germany, both at its Headquarters in Asslar and in Göttingen. Within Europe, there are also **production sites** in Annecy, France, and Cluj, Romania. In Asia, we are represented by our Asan production site in the Republic of Korea and in Ho Chi Minh City in Vietnam. In the USA, there are production sites in Indianapolis and Yreka. We added the production sites in Vietnam and the USA through acquisitions.

In addition, we are present with **sales and service branches** at more than 20 locations around the globe.

Globally, 3,204 employees (December 31, 2018) are engaged in taking Pfeiffer Vacuum one step forward each day.

Markets and market position

Strong market position in the relevant markets

Products from Pfeiffer Vacuum are employed in numerous branches of industry. Over 14,000 customers trust in the reliability of our products. In terms of the overarching industrial sector, Pfeiffer Vacuum divides these customers into the following markets: semiconductor, industry, analytics, research & development (R&D) and coating. It is not possible to conclusively determine Pfeiffer Vacuum's position in these markets as there is insufficient data available on the size of the overall market and the various market segments. Based on surveys conducted by the Mechanical Engineering Industry Association (VDMA) and the International Statistics on Vacuum Technology (ISVT), as well as our own estimates, we expect to take the leading market position in the analytics and research & development market segments. In addition, our internal analyses show that we also achieve excellent market penetration and a top ranking in the industry, coating and semiconductor market segments in the fields we serve.

LOCATIONS AND WORKFORCE WORLDWIDE

THE AMERICAS

399

Employees

165.9

Sales in € millions



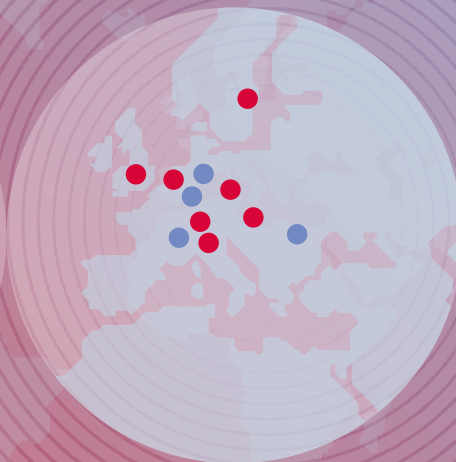
EUROPE AND AFRICA

1,968

Employees

247.0

Sales in € millions



ASIA

837

Employees

246.6

Sales in € millions



TOTAL

3,204

Employees

659.7

Sales in € millions
(incl. € 0.2 millions
Rest of World)

● Production

● Sales and Service

Pfeiffer Vacuum's products and solutions are used in key markets of the future. Already today, many innovative processes, such as in nanotechnology, in the manufacture of LEDs or in research, are inconceivable without the use of vacuum technology. Technological progress resulting from research and development activities in these fields of technology leads to innovative products and manufacturing processes. The dynamic development of people's private and professional communication behavior is leading to ever new applications based on new technologies in the semiconductor industry. The increasing demand for energy combined with the need to conserve resources is changing the way energy is generated. These trends, as well as other social and industrial trends, offer Pfeiffer Vacuum additional sales opportunities. One of our strengths is that we serve all markets and are therefore largely independent of developments in individual market segments.

Broad range of applications for future technologies

Semiconductor

Our vacuum pumps are used in the semiconductor industry for the production of microprocessors and handling systems. Customers primarily use a large number of medium and large backing pumps, but also turbopumps and measurement instruments. With our decontamination systems, chip manufacturers can significantly increase their yield. A key growth driver in the semiconductor industry is the rapid development of communications technology. New applications for vacuum technology are arising in areas such as nanotechnology. Our semiconductor customers are mainly located in Asia, the USA and, to a lesser extent, Europe.

APPLICATION EXAMPLES

Semiconductor	Industry	Analytics	R & D	Coating
Lithography	General applications	Mass spectrometers	Renewable energies	Solar cell technology
Metrology	Electron beam welding	Electron microscopy	Nanotechnology	Display coating (LED, OLED)
CVD (Chemical Vapor Deposition)	Freeze drying	Surface analysis	Particle accelerators	Data storage
PVD (Physical Vapor Deposition)	Vacuum drying	Gas analysis	Space simulation	Glass coating
Etching	Steel degassing	Biotechnology	Plasma physics	Surface protection
Ion implanter	Leak detection	Life science	Materials science	Tool coating

Industry

In this segment, we unite a heterogeneous group of industrial customers who require our vacuum solutions for certain stages of production. Industrial trends such as quality improvements, energy saving and generation, mobility or environmental protection are opening up new fields of application. Examples of applications include metallurgy, tube production and air-conditioning and refrigeration technology. A further field of application is the still young solar thermal technology. The absorber tubes need for this technology are evacuated using our pumping stations and are continuously tested for leaks with our leak detectors. Our customers in the "Industry" segment come primarily from Europe, the USA and, increasingly, also from Asia.

Analytics

Our largest customers in this market are OEM (original equipment manufacturer) customers, i.e. suppliers of industrial systems or analytical instruments. Complex analytical devices such as scanning electron microscopes are primarily used

for industrial quality assurance. This sector is characterized in particular by megatrends in the fields of life science, biotechnology and security. Ever smaller and lighter portable analyzers are needed in environmental technology, security technology or for doping analyses. The analytics industry therefore mostly demands small and medium-sized turbopumps, backing pumps and measurement instruments. Our most important customers for analytics products come from the USA, Japan, the United Kingdom and Germany.

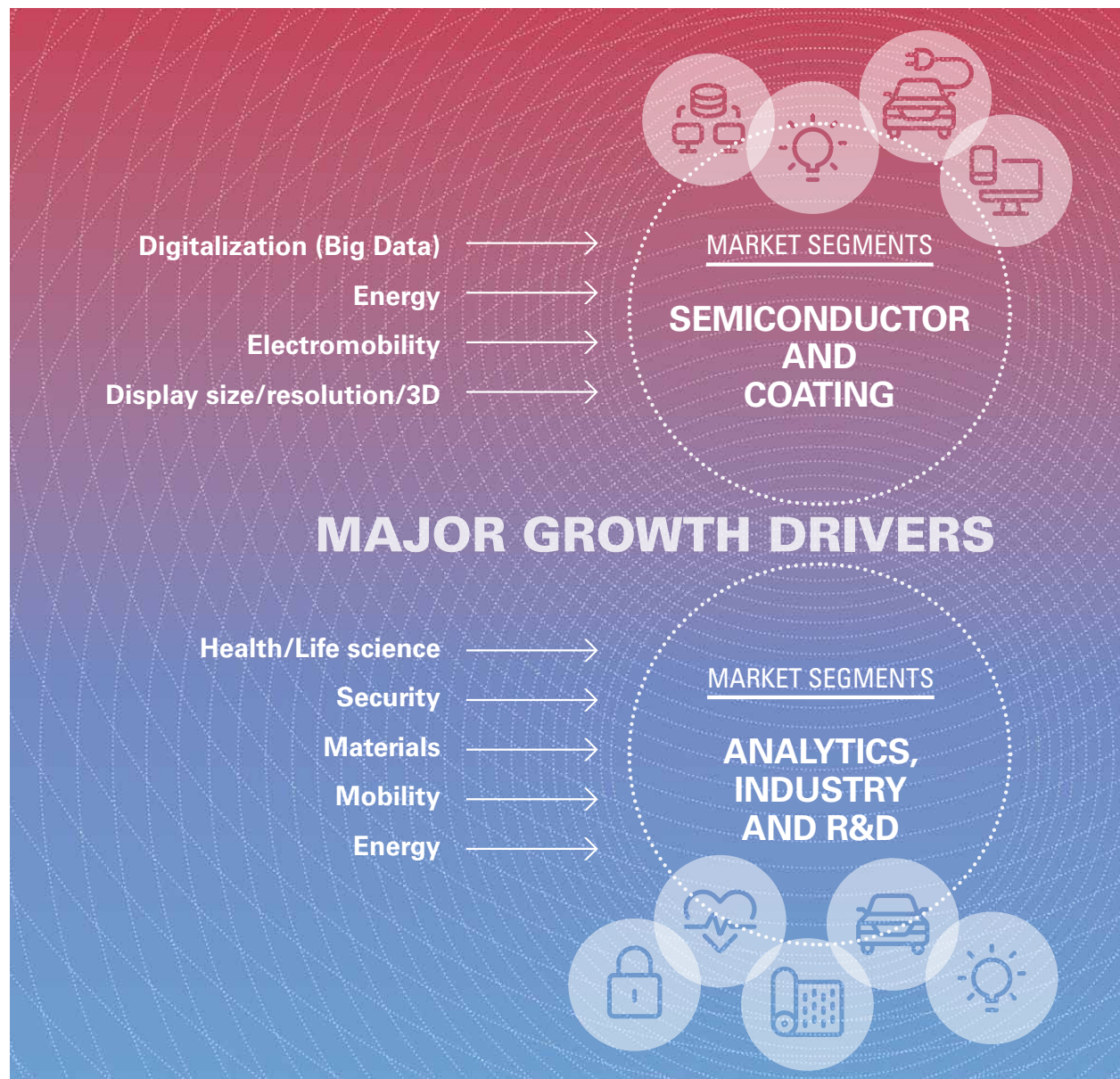
Research & Development

Cooperation with research institutes has a long tradition at Pfeiffer Vacuum. Whether physics or chemistry laboratories at universities, renowned research institutions such as the

Fraunhofer Institute and the Max Planck Institute or large multinational research institutions – they all rely on the quality and reliability of our mass spectrometers, leak detectors or vacuum solutions. In close cooperation with research institutions in Europe, the USA and Asia, new applications are constantly emerging, for example in the field of energy generation or healthcare technology.

Coating

Without vacuum, many things that are used in daily life could not be produced in the desired quality. The anti-reflective coatings on eyeglass lenses, the production of flat screens, the coating of Blu-ray discs or high-quality bathroom fittings, as well as solar cells or architectural glass are all produced in vacuum chambers, for example. High-quality tools are coated and hardened under vacuum to make them even more durable. Systems for generating renewable energy are among the megatrends that promise further growth. The coating industry mainly requires medium and large backing pumps and turbopumps, but also measurement equipment and complete vacuum systems. Customers who use our coating technology come from all industrial nations around the globe.



COMPANY STRATEGY

Innovation as the basis for growth: Market share shall rise to over 20 percent

Pfeiffer Vacuum develops, produces and markets high-quality and technologically sophisticated vacuum solutions. Reliability, durability and performance are attributes that our customers associate with all products from the Pfeiffer Vacuum Group. The Company sees itself as a quality market leader and has a long-term strategic goal to sell its products through quality, not price. This sales strategy also includes emphasizing the long-term cost advantages over the life of a Pfeiffer Vacuum product (the total cost of ownership) for customers. These advantages result, among other things, from lower maintenance and repair costs, longer service lives and lower energy consumption in comparison with rival products.

Pfeiffer Vacuum's mission statement remains to always be close to its customers. With a worldwide presence, we live up to this claim and ensure that our customers are always the focus of our actions.

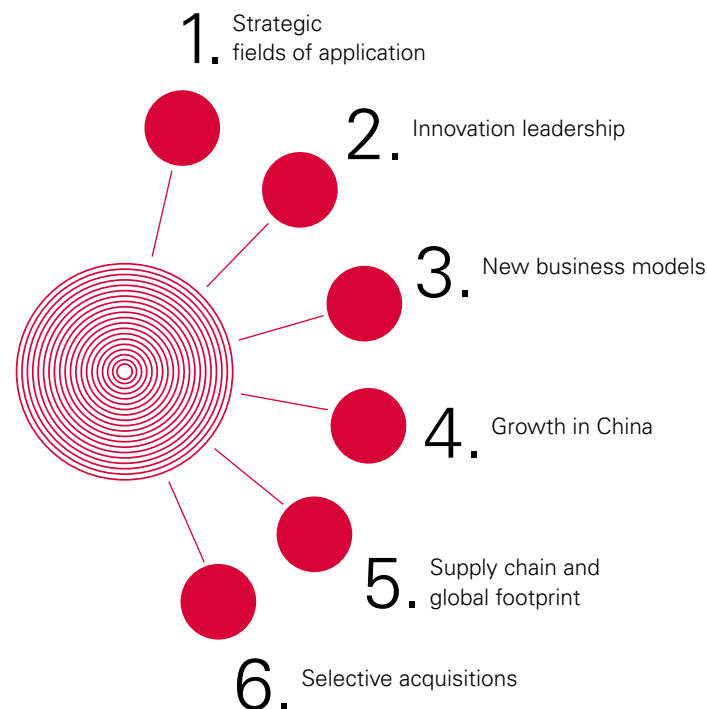
Pfeiffer Vacuum has set itself the goal of expanding its market share from currently around 13 percent to over 20 percent and significantly strengthening its position as number two in the global vacuum industry. The market position is to be strengthened on the basis of innovation leadership and growth with new products, new solutions and a broader range of services.

Pfeiffer Vacuum's strategy is clearly focused on further growth. In this context, the global presence of the Company is to be expanded. The focus is clearly on selected Asian countries, and particularly, above all, on China with its exceptionally high growth rates.

The Company's management is convinced that all market segments of Pfeiffer Vacuum – Semiconductor, Coating, Analytics, Industry and Research & Development – will benefit from the megatrends today and in the future. In the fields of semiconductors and coatings, these trends include digitization, the expansion of renewable energies, electro mobility

STRATEGIC FOCUS PFEIFFER VACUUM

Six elements characterize
Pfeiffer Vacuum's growth
strategy



and the ever larger high-resolution displays. The rapid developments in the life science industry, nanotechnology and the security industry offer additional growth opportunities for the market segments Analytics, Industry and Research & Development.

The various market segments of Pfeiffer Vacuum will benefit in particular from a number of megatrends.

Extensive growth investments in the next three years

To further drive Pfeiffer Vacuum's dynamic development, the Management Board launched a € 150 million investment program for the next three years during the first quarter of 2018. The funds will be used for the expansion and modernization of production capacities. In addition, expenditure on new research and development and IT projects will be increased over the next three to five years. The primary goal is to improve operational efficiency and achieve digital transformation. The measures introduced are expected to increase the EBIT margin to over 20 percent in the medium term

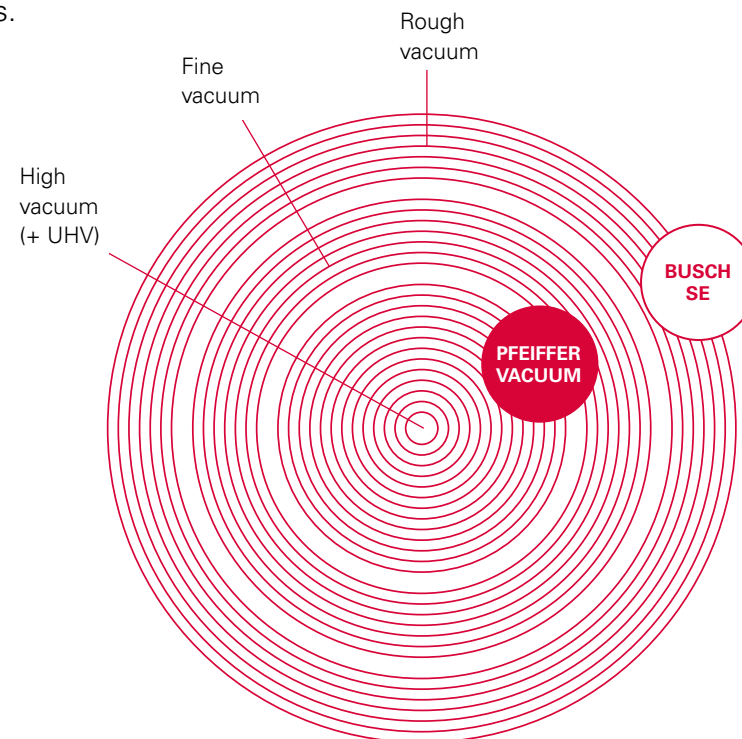
✕ [SEE OUTLOOK PAGE 74.](#)

A complementary measure to improve the competitive position in the vacuum technology industry is the targeted strategic cooperation with the Busch Group. The Busch Group in Maulburg, Germany, holds a majority interest in Pfeiffer Vacuum through a subsidiary and has a complementary product portfolio of vacuum pumps and solutions for the rough vacuum market. The cooperation would enable both companies to leverage synergies in the central areas of purchasing, sales and services, IT and research and development.

Pfeiffer Vacuum and the Busch Group complement each other in terms of their market position.

POSITIONING/CLASSIFICATION PFEIFFER VACUUM AND BUSCH

Pfeiffer Vacuum and Busch have different target markets and a complementary product portfolio – a cooperation is thus a great opportunity to realize growth and gain access to new markets.



MANAGEMENT SYSTEM

Tight control through annual sales and profitability targets

The Management Board of Pfeiffer Vacuum Technology AG assumes responsibility for the strategic leadership of the Corporate Group.

All companies are managed by Group Headquarters in Asslar by setting annual sales and profitability targets (management by objectives). The Group companies were assigned to the “Semiconductor & Coating” or “Analytics & Industry” business units in accordance with the focus of their operations and the market potential. They are thus directly subordinated to the respective business unit, while their comprehensive regional responsibility for all market segments continues to apply as before. All subsidiaries in the Group therefore continue to have their self-directed management and essentially make their own decisions within central guidelines on how to attain the targets defined by Corporate Headquarters (sales, operating profit and operating profit margin as well as earnings before taxes). The supervisory bodies of the subsidiaries, including the members of the Management Board of Pfeiffer Vacuum Technology AG, the heads of the business units and the Headquarters in Asslar must be involved in major decisions.

Target achievement is attained through detailed target/actual comparisons and variance analyses as part of the monthly reporting system, which is supplemented by market information.

This ensures that undesirable developments can be identified and corrected at an early stage. In addition, monthly conference calls and physical-presence conferences with the management of the operating subsidiaries ensure that all business development issues are discussed. In addition, face-to-face meetings are held by Group management with staff at the local site.

For countries in which Pfeiffer Vacuum is not represented directly through a subsidiary, sales targets are agreed with the local sales partner. Here, too, the achievement of sales targets is measured by target/actual comparisons. A further steering instrument is the variable remuneration of the local management and the sales staff of the foreign subsidiaries. This sensitizes employees to cost structures, and thus to the long-term success of the Company, even if they do not work in areas of the Company which have a direct influence on sales.

In order to implement the individual areas of the strategy outlined above and the associated goals more quickly and with greater focus, a new division of responsibilities within the Management Board was decided with effect from January 1, 2019. The Management Board and Supervisory Board have decided that the Company will be organized in future

✕ [SEE ALSO PAGE 78.](#)

GROUP STRUCTURE

Pfeiffer Vacuum – global presence

As of December 31, 2018, the Pfeiffer Vacuum Group still comprised a total of 32 companies.

Central roles in the Corporate Group are assumed by Pfeiffer Vacuum GmbH, Asslar, Germany, and Pfeiffer Vacuum SAS, Annecy, France. Pfeiffer Vacuum GmbH is responsible for the development and production of all Pfeiffer Vacuum products, as well as for sales in Germany, and central investment management for the Group. This company had a total of 808 employees as of December 31, 2018 (December 31, 2017: 728). To a certain extent, Pfeiffer Vacuum SAS is the French counterpart to Pfeiffer Vacuum GmbH. The company employed 718 people at year-end (December 31, 2017: 667), is the central development and production facility for adixen products and is responsible for sales in France. With a total of 1,526 employees, these two companies employ almost half of the Group’s workforce (3,204 at the end of 2018).

As further Group companies with their own production facilities, Pfeiffer Vacuum Components & Solutions GmbH, Pfeiffer Vacuum Semi Korea Ltd., Pfeiffer Vacuum Romania S.r.l., Nor-Cal Products, Inc. and Advanced Test Concepts, LLC., as well as Nor-Cal Products Viet Nam Co., Ltd., are entrusted with the manufacture and assembly of their own products.

The other Group companies are legally independent corporations that perform sales and service tasks. In legal terms, all companies are essentially organized in a legal form comparable to the German limited liability company (GmbH).

The complete structure of the Group as of December 31, 2018 is as follows:

THE PFEIFFER VACUUM CORPORATE GROUP AS OF DECEMBER 31, 2018

	Headquarters	Share (in %)
Pfeiffer Vacuum Technology AG	Germany	
Pfeiffer Vacuum GmbH	Germany	100.0
Pfeiffer Vacuum Austria GmbH	Austria	100.0
Pfeiffer Vacuum (Schweiz) AG	Switzerland	99.4
Pfeiffer Vacuum (Shanghai) Co., Ltd.	China	100.0
Pfeiffer Vacuum (India) Private Ltd.	India	27.0 ¹
Pfeiffer Vacuum Ltd.	Great Britain	100.0
Pfeiffer Vacuum Scandinavia AB	Sweden	100.0
Pfeiffer Vacuum Singapore Pte. Ltd.	Singapore	100.0
Pfeiffer Vacuum Taiwan Corporation Ltd.	Taiwan	100.0
Pfeiffer Vacuum Benelux B.V.	The Netherlands	100.0
Pfeiffer Vacuum (Xi'an) Co., Ltd.	China	100.0
Pfeiffer Vacuum Malaysia SDN. BHD.	Malaysia	100.0
Pfeiffer Vacuum Inc.	USA	100.0
Advanced Test Concepts, LLC.	USA	100.0
Nor-Cal Products Holdings, Inc.	USA	100.0
Nor-Cal Products, Inc.	USA	100.0
Nor-Cal Products Viet Nam Co., Ltd.	Vietnam	100.0
Nor-Cal Products Europe Ltd.	Great Britain	100.0
Nor-Cal Products Korea Co., Ltd.	Republic of Korea	100.0
Nor-Cal Products Asia Pacific Pte. Ltd.	Singapore	100.0
Pfeiffer Vacuum California Realty Holdings, LLC.	USA	100.0
Pfeiffer Vacuum Indiana Realty Holdings, LLC.	USA	100.0
Pfeiffer Vacuum New Hampshire Realty Holdings, LLC.	USA	100.0
Pfeiffer Vacuum Holding B.V.	The Netherlands	100.0
Pfeiffer Vacuum Italia S.p.A.	Italy	100.0
Pfeiffer Vacuum (India) Private Ltd.	India	73.0 ¹
Pfeiffer Vacuum Korea Ltd.	Republic of Korea	75.5 ¹
Pfeiffer Vacuum Components & Solutions GmbH	Germany	100.0
Pfeiffer Vacuum SAS	France	100.0
Pfeiffer Vacuum Romania S. r. l.	Romania	100.0
Pfeiffer Vacuum Semi Korea, Ltd.	Republic of Korea	100.0
Pfeiffer Vacuum Korea Ltd.	Republic of Korea	24.5 ¹
Dreebit GmbH	Germany	100.0

¹ Group shareholding in total 100.0%



RESEARCH AND DEVELOPMENT

Our claim: technological leadership

As a technology leader in the vacuum industry, our primary goal is to offer our customers innovative products and solutions with the highest process efficiency. Our innovative strength is the decisive key to our future business success. In addition to its own research and development (R&D) activities at three locations worldwide, Pfeiffer Vacuum works closely with customers and suppliers on projects to jointly advance new technologies to market maturity at an early stage. In addition, we have an established network with various national and international universities and research institutions.

The core topics of Pfeiffer Vacuum's R&D are derived from the needs of our customers, most of whom operate globally and in very different markets in some cases. They can be assigned to megatrends such as energy, healthcare and the environment, and frequently concern the fields Industry 4.0, the internet of things, digitization and predictive maintenance.

Important R&D projects in the 2018 fiscal year were aimed at supplementing the portfolio of missing product groups and renewing existing ones. In the OEM business, we were able to win new lines from important customers with our customer-specific pumps and increase the volume of existing lines.

Our claim to be a technology leader is supported by the fact that a good 10 % of our employees are active in engineering and engineering-related activities for us. Of these, again 214 employees could be assigned to R&D in 2018. As a result of its R&D activities, Pfeiffer Vacuum filed a total of 55 (previous year: 75) new patent applications in fiscal 2018.

In the 2018 fiscal year, research and development expenses amounted to € 28.7 million (previous year: € 27.8 million). The R&D ratio of 4.3 % was slightly below the previous year's level (4.7 %) due to the very good sales development

[x SEE ALSO PAGE 57.](#)

BUSINESS REPORT

OVERALL ECONOMIC AND INDUSTRY-SPECIFIC DEVELOPMENT

Overall economic development

Global economy losing some momentum

The global economy continued its upswing in 2018. However, growth was somewhat lower than in the previous year. According to the latest estimates of the International Monetary Fund (IMF), the global economy grew by 3.7 % in 2018, slightly below the level of the previous year (2017: 3.8 %). For the emerging and developing countries, the IMF expects the economy to grow by 4.6 % (previous year: 4.7 %). With regard to the industrial nations, the experts assume that the year 2018 will end with an increase in the gross domestic product of 2.3 % (previous year: 2.4 %).



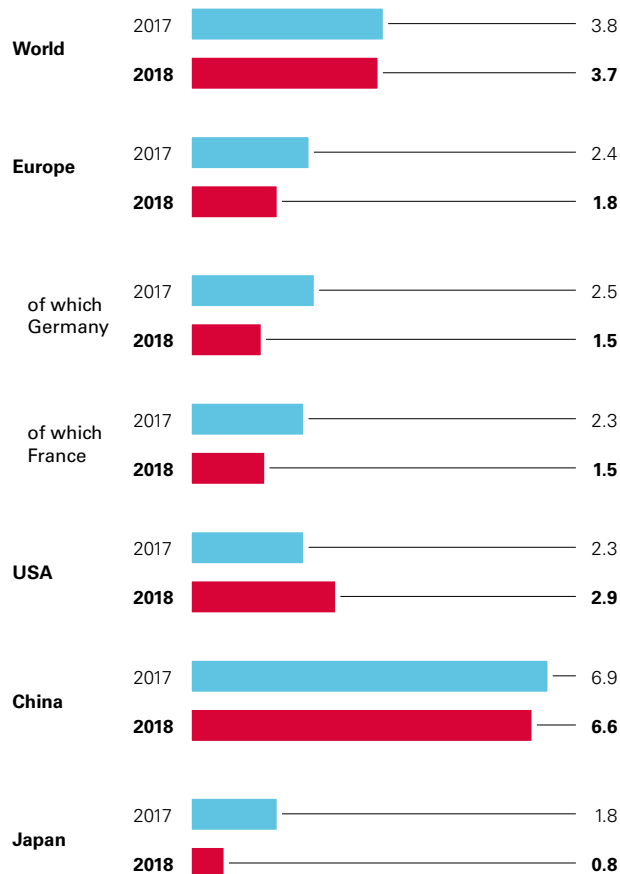
Europe

In view of weaker developments in some eurozone countries during the second half of 2018, the IMF has revised its original forecasts for the past year downwards. Overall, economic output in Europe rose by 1.8 % (2017: 2.4 %).

In the two largest economies of the eurozone, Germany and France, gross domestic product (GDP) increased in each case by 1.5 % (2017: 2.5 % and 2.3 %, respectively). In Italy and Spain, GDP rose by 1.0 % (2017: 1.6 %) and 2.5 % (2017: 3.0 %), respectively. In Germany, declining private consumption, lower industrial production – above all in the automotive industry – and lower external demand were among the factors responsible for the weaker development. Italy was burdened by low domestic demand and high credit costs. France's positive development was overshadowed by the street protests that had been going on for months and the uncertainties in connection with an unregulated withdrawal of Britain from the European Union and led to the pessimistic assessment of the experts at the Monetary Fund.

GROSS DOMESTIC PRODUCT

(real change compared with previous year) in %



¹ Data relating to the previous year may differ from the previous year's report due to statistical revisions.

USA

For the U.S. economy, the IMF expects economic output to rise by 2.9 % in 2018 – an increase of 0.6 % compared with 2017. The already prosperous economy has been given an additional boost by US President Donald Trump's tax reduction package with a volume of US dollar 1.5 trillion. In addition, the progressive dismantling of regulations has stimulated the willingness of companies to invest, thereby increasing investments by 7 % compared to the previous year. Household demand increased by around 3 %. In addition, the sharp rise in the price of oil up till the beginning of October has caused additional euphoria in the energy sector, which is important for the USA.

Asia

In 2018 the strained trade relations with the USA impaired the growth of China, the world's second-largest economy, which grew by 6.6 %, following 6.9 % in the previous year. Japan's economy is expected by the IMF to close 2018 with growth of 0.8 %. IMF experts believe that the Indian economy has considerable growth potential. For 2018, they expect growth of 7.3 % on the subcontinent.

Mechanical engineering and the vacuum industry – Consolidation at a high level

According to the Mechanical Engineering Industry Association (VDMA), Germany-wide production in the mechanical engineering sector in the first nine months of 2018 exceeded the previous year's level by 2.6 % on a price-adjusted basis. Whether the Association's growth forecast of 5.0 % for the year as a whole can still be achieved, however, is not yet certain. The reason for the somewhat weaker development lies in bottlenecks in technical capacities and materials as well as the existing shortage of labor.

However, order intake between the beginning of January and the end of November 2018 rose by 6.0 % compared with the above-average result of the prior-year period. This means that the order books of German mechanical engineering companies remain well filled. Figures for exports of machinery and equipment from Germany for the year as a whole were not available at the time this report was compiled. According to the industry association VDMA and the German Federal Statistical Office, during the first eleven months of 2018 they increased by a nominal 5.3 % compared with the same period of the previous year. The real increase amounted to 4.0 %. Deliveries to other European countries (5.7 %), China (10.5 %) and the USA (7.7 %) increased at an above-average rate. The positive development is likely to have continued over the year as a whole. According to the Federal Statistical Office, the number of people employed in German mechanical engineering rose by 3.7 % year-on-year to around 1,003,000 in November 2018.

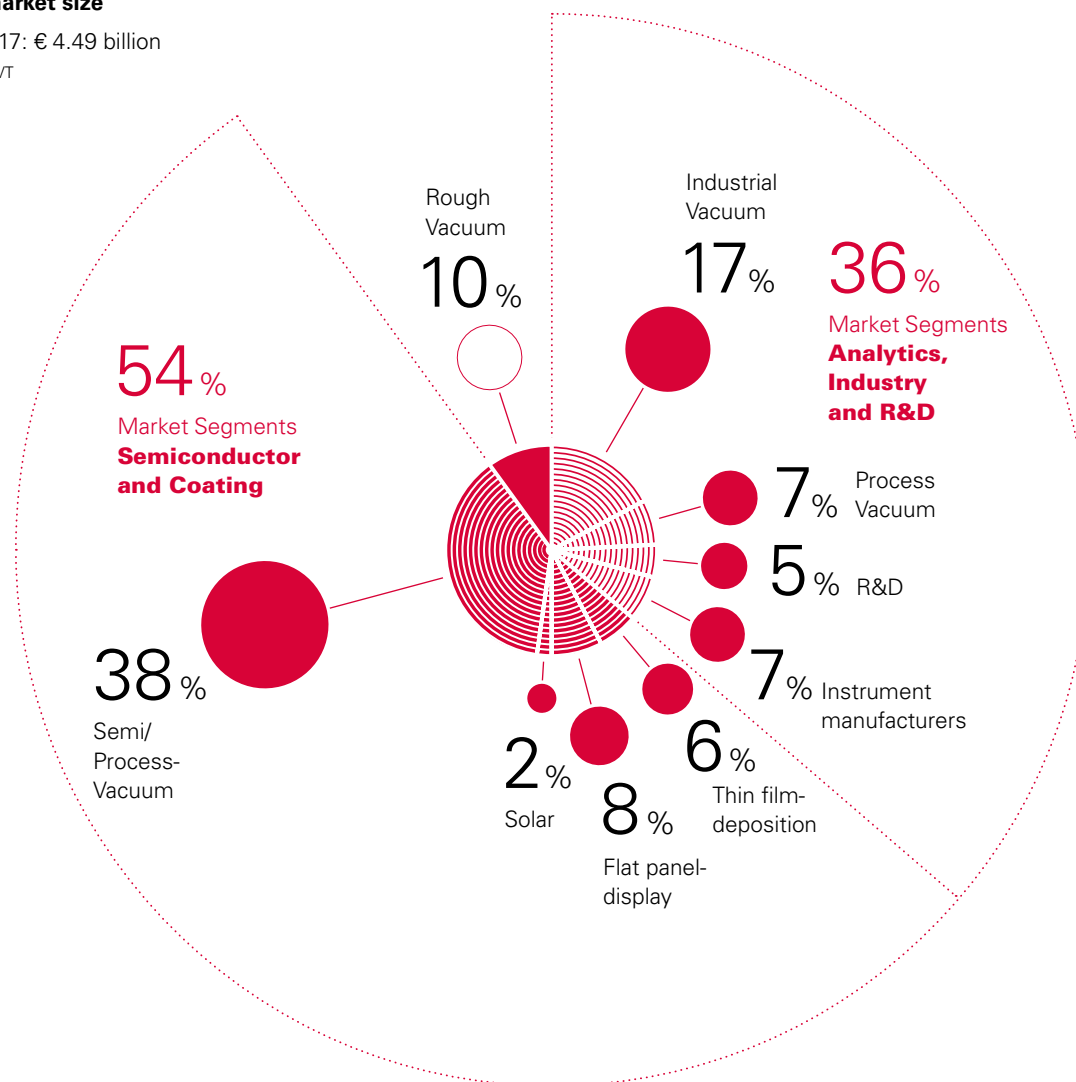
Vacuum technology is used in many branches of industry. Accordingly, the vacuum industry must also be seen against the background of the global economic development. The various market segments of the vacuum industry developed very differently. According to the German Electrical and Electronic Manufacturers' Association (ZVEI), the global semi-

THE VACUUM TECHNOLOGY MARKET

Total market size

12M 2017: € 4.49 billion

Source: ISVT





conductor market will close 2018 with growth of around 15 % and sales of just under US dollar 474 billion. This was due in particular to the sustained high demand for data storage. The largest growth continues to come from Asia. With growth rates of around 8 % and 13 % respectively, the German and European semiconductor markets lagged behind the global market. As in the previous year, the coating and analytics market segments also recorded an overall pleasing development, while research & development and industry largely followed the general economic conditions.

COURSE OF BUSINESS

Against the backdrop of generally positive economic momentum, Pfeiffer Vacuum closed fiscal 2018 with outstanding results. As anticipated in last year's forecast, sales increased noticeably. In addition to the effects of the full consolidation of the companies acquired during 2017, organic growth was also achieved to a greater extent. As a result of a stronger than expected increase in demand towards the end of the fiscal year in particular, the concretization of this forecast with a sales volume of between € 640 and € 660 million, which we recently anticipated, at the lower end of the range, was also slightly exceeded with total sales of € 659.7 million.

As a result of the very pleasing sales development, earnings also developed very satisfactorily and the expected noticeable improvement in earnings was achieved. With an operating profit of € 95.1 million and a resulting operating profit

margin, or EBIT margin, of 14.4 %, the margin forecast specified at the last Annual General Meeting with a range of 14 to 16 % was therefore also met. As a consequence of the unchanged interest rate level and the resulting largely constant financial results compared to the previous year, earnings before taxes also increased noticeably as expected. With the tax ratio rising as expected, net income of € 68.9 million was achieved in 2018 – a record level in the Company's history

A glance at the balance sheet of the Pfeiffer Vacuum Group reveals that Pfeiffer Vacuum's asset position remains fundamentally sound. The Group is debt-free on a net basis and has long reported a high equity ratio, which was further improved in 2018. The very good liquidity situation puts us in a position to take the necessary steps for the successful further development of the Group on our own. We intend to finance the three-year investment program with a total volume of € 150 million of cash flow from operating activities and still distribute a dividend to our shareholders. With a result of € 33.7 million, we have not quite reached the planned investment volume of € 40 million for 2018, mainly due to longer delivery times. Nevertheless, we are remaining committed to our overall planning, as these steps will set the course for a continued successful development in the coming years.

PROFITABILITY, FINANCIAL POSITION, AND LIQUIDITY

Profitability: Sales grew by 12.4% to € 659.7 million

With a sales volume of € 659.7 million in the fiscal year, we achieved an increase by € 72.7 million or 12.4 % from the already very high level of € 587.0 million in the previous year. This development is attributable both to organic growth – primarily in the areas of analytics and coatings- and to growth as a result of company acquisitions. The external growth is primarily due to the full inclusion of Nor-Cal, which was acquired in mid-2017, in the reporting year 2018, which had a positive effect of € 24.9 million on sales when viewed in isolation.

In the following, we explain the sales generated in 2018 by segment, region, product and market. With regard to the sales by segment, it should be noted that the registered office of the company that invoiced the sales is decisive for the allocation of sales. Therefore, the segment-related presentation shows the sales by subsidiaries. In contrast, sales by region include all sales in a specific region, regardless of which company of the Pfeiffer Vacuum Group invoiced the sales. Sales by segment and sales by region differ from each other to a greater or lesser extent. Sales in the Asia segment, for example, differ significantly from those in the Asia region, since the Asia segment contains only the direct sales of our Asian subsidiaries. In contrast, the Asia region also includes sales generated directly by our companies producing outside of Asia with Asian customers, for example, with customers in Japan or China. In terms of sales by segment, sales by



the German company are significantly higher than sales in Germany by region due to direct deliveries to agencies or customers outside Germany. After completing the integration of the companies acquired in the previous year, the delineation of segments was specified in 2018. In order to ensure the comparability of presentation, the previous year's figures were adjusted accordingly.

Sales by segment

Germany

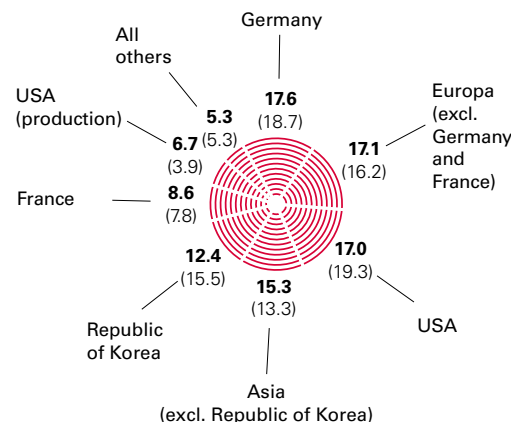
In the year under review, sales in the Germany segment improved significantly again after a very successful 2017. Significant impulses came from Pfeiffer Vacuum GmbH, which in addition to its sales in Germany, also substantially increased business in Japan in the year under review.

Europe (excluding Germany and France)

The basis for the growth in sales achieved in Europe (excluding Germany and France) is broad-based and all companies allocated here showed sales growth. It is important to note the development of the sales companies in Austria and England. Beyond the consequences of a potential negative development in the exchange rate of the pound sterling, we still do not see any negative impact on sales as a result of the U.K. leaving the EU.

SALES BY SEGMENT

in %, (previous year)



USA

After a very successful 2017, the sales achieved by our sales units in the USA in 2018 were only marginally below this high level. In order to increase transparency and due to the different risk structure, we have decided to differentiate between purely distributing and producing companies in the U.S. companies that were still shown aggregated in the previous year. The previous year's figures were adjusted accordingly.

Asia (excluding Republic of Korea)

The development in the Asia segment (excluding Republic of Korea) continues to be characterized by our local sales unit in China, which developed very well in the year under review. Even if all market segments showed growth here, higher momentum in the coating industry must be mentioned here as a major driver. In addition, sales growth in Asia is not limited locally and all sales entities recorded encouraging growth.

SALES BY SEGMENT

	2018	2017	Change	
	in € millions	in € millions	in € millions	in %
Germany	116.0	110.0	6.0	5.4
Europe (excluding Germany and France)	112.8	95.1	17.7	18.7
USA	112.2	113.1	- 0.9	- 0.8
Asia (excluding Republic of Korea)	101.2	78.0	23.2	29.7
Republic of Korea	81.6	91.4	- 9.8	- 10.7
France	57.0	45.6	11.4	25.2
USA (production)	44.5	22.8	21.7	95.0
All others	34.4	31.0	3.4	10.9
Total	659.7	587.0	72.7	12.4



Republic of Korea

The production and sales companies listed in the South Korea segment generally have a strong focus on the semiconductor market. Although the semiconductor industry developed quite positively overall in the 2018 financial year, there was a decline here due to the customer structure in Korea.

France

With an increase of € 11.5 million, sales in France in 2018 also recorded a quite satisfactory development. In addition to the increase in demand in France itself, the foreign business, predominantly in China, which was conducted directly out of France, was a major factor.

USA (production)

Due to the full inclusion of Nor-Cal Products Inc., acquired in the previous year, for the first time in 2018, the development of this segment in 2018 mainly reflected inorganic growth. At the same time, the development here was also slightly negatively impacted by the exchange rate.

All others

Herein those Group companies are summarized which differ from the other segments due to the segment-related characteristics (such as economic conditions, range of functions, product portfolio, sales markets, distribution channels) and thus cannot be assigned to any other segment. Accordingly, this segment has a very heterogeneous composition. The increase of € 3.4 million is therefore characterized by a variety of different factors and largely follows the overall positive development of Pfeiffer Vacuum in the 2018 fiscal year.

Sales by Region: Disproportional growth in the Americas

Europe

In 2018, sales in Europe again developed very satisfactorily. Growth was recorded in all regions, with the development in the Netherlands and Austria being particularly noteworthy.

Additionally, developments in the United Kingdom showed satisfactory growth rates, while only slight improvements were achieved in Sweden and Italy.

Asia

The stable growth path that the Asia region has been pursuing since 2014 continued in 2018. The regional focus changed slightly in 2018. The South Korean region, for example, recorded a slight decline in sales revenues. On the other hand, we achieved double-digit growth rates in all other countries, especially China. In addition to the semiconductor industry, customers from the coating market were also key to this development. Overall, Asia is practically on a par with Europe in terms of its share of total sales.

The Americas

With an increase of 15.4 %, this region recorded the strongest relative improvement in 2018. This was mainly due to the full inclusion of Nor-Cal, in particular, in 2018 since this

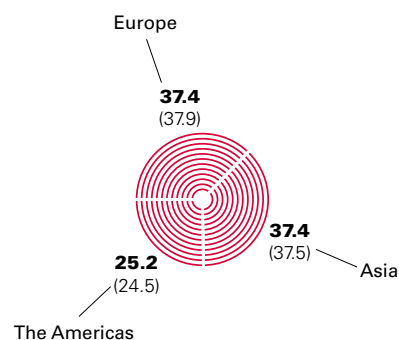
SALES BY REGION

	2018	2017	Change	
	in € millions	in € millions	in € millions	in %
Europe	247.0	222.5	24.5	11.0
Asia	246.6	220.3	26.3	11.9
The Americas	165.9	143.8	22.1	15.4
Rest of World	0.2	0.4	- 0.2	- 38.0
Total	659.7	587.0	72.7	12.4

unit was not acquired until mid-2017. The development of sales in the North and South America region continues to be influenced to a large extent by developments in the USA. In line with the sales development in the Americas, the share of total sales also rose slightly from 24.5 % in the previous year to 25.2 % in 2018.

SALES BY REGION

in %, (previous year)



Sales by Product: Growth trends remain intact

Instruments and components

With another very strong increase of € 33.1 million, the instruments and components product group recorded the largest increase in absolute terms in the past fiscal year. This was due in particular to the acquisition of Nor-Cal, which took full effect in the fiscal year. At the same time, however, we again recorded very pleasing organic growth in 2018 for the products of Pfeiffer Vacuum Components & Solutions GmbH and for leak detectors. With a significantly increased share of 29.4 % of total sales (previous year: 27.4 %), instruments and components developed into the strongest product group.

Turbopumps

The analytics market segment traditionally accounts for the largest share of turbopump sales and in 2018 recorded a renewed increase in demand and larges absolute growth. In

relative terms, however, sales of turbopumps in the coating segment grew more strongly, particularly in China and the USA. Turbopumps continued to be a very important product group in 2018, accounting for 29.1 % of total sales (previous year: 29.5 %), even though this product group fell slightly below the sales volume of instruments and components.

Backing pumps

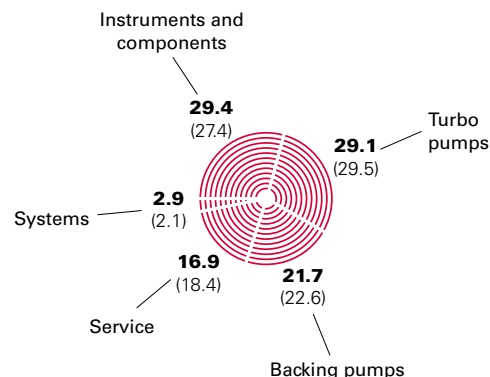
With a sales volume of € 143.4 million, backing pumps continue to contributed to the very balanced overall distribution of sales within the Pfeiffer Vacuum Group. After two good years, however, growth rates in 2018 were less dynamic, but at 8.0 % they are still at a high level. As in the previous year, the regional increase was mainly attributable to the Asian economic region. As a result of the overall disproportionately low increase compared to the development of sales, the share of total sales also declined slightly again from 22.6 % to 21.7 %.

SALES BY PRODUCT

	2018	2017	Change	
	in € millions	in € millions	in € millions	in %
Instruments and components	193.7	160.6	33.1	20.6
Turbopumps	192.1	173.4	18.7	10.8
Backing pumps	143.4	132.8	10.6	8.0
Service	111.6	107.8	3.8	3.5
Systems	18.9	12.4	6.5	52.7
Total	659.7	587.0	72.7	12.4

SALES BY PRODUCT

in %, (previous year)



Service

The installed basis of products from the Pfeiffer Vacuum Group creates a sound foundation for our service activities. The, in part, aggressive and corrosive process conditions under which the pumps are used, particularly in the semiconductor industry, make regular maintenance an absolute necessity. As is often the case in years with good business development in the area of product sales, the increase in service revenue in 2018 was also disproportionately lower than the development of sales revenue. While service revenues stagnated at a comparatively high level in many regions, this product group also recorded significant growth in China, resulting in an overall increase of 3.5 %.

Systems

Sales in this project-driven sector rose from € 12.4 million in the previous year to € 18.9 million in the past fiscal year and are mainly attributable to customers from the semiconductor industry.

Sales by Market: Largest growth momentum in the coatings market

Semiconductor

The semiconductor industry continued to develop dynamically throughout 2018, but recorded the weakening in growth rates expected in the second half of the year. Developments in this market in the past fiscal year were also positively influenced by the full inclusion of Nor-Cal. In regional terms, the increase was thus also influenced in particular by developments in the USA, but satisfactory growth was also recorded in Europe. Sales to semiconductor customers in Asia stag-

nated at a high level, with the aforementioned decline in the Republic of Korea largely offset by improvements in other Asian countries.

Industry

Our most heterogeneous market segment includes a broad spectrum of customers ranging from the automotive and metalworking industries to the food industry. In general, this market is developing largely in line with economic trends and showed a positive development in 2018 with growth of 4.8 %. Due to its heterogeneity, positive and negative trends balanced each other out extremely well, both in individual sectors and regionally.

Analytics

Building on a very good position with our analytical customers, we were again able to significantly increase sales in 2018. Regionally, this development was broadly based, but somewhat more pronounced in Europe than in the USA or in Asia.

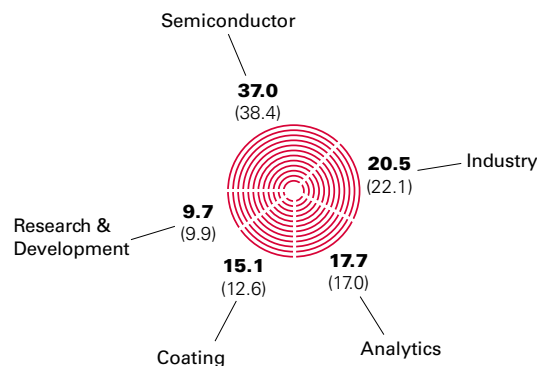
SALES BY MARKET

	2018	2017	Change	
	in € millions	in € millions	in € millions	in %
Semiconductor	243.9	225.4	18.5	8.2
Industry	135.3	129.1	6.2	4.8
Analytics	116.7	100.1	16.6	16.6
Coating	99.6	74.2	25.4	34.2
Research & Development	64.2	58.2	6.0	10.4
Total	659.7	587.0	72.7	12.4

Our customers in this sector use the entire product range, although there is a focus on turbopumps. The development of sales of turbopumps is therefore significantly influenced by this market segment.

SALES BY MARKET

in %, (previous year)



Coating

In both absolute and relative terms, the strongest growth was achieved in the coating market in 2018. The solar industry continued to be of great importance for the coating market in general. After Germany recorded very good development in the previous year, sales here declined in 2018. All other regions, on the other hand, performed very satisfactorily in this market segment. Sales in China almost doubled, and very high growth rates were also achieved in the USA.

Research & Development

At € 64.2 million, sales in the research & development market segment were € 6.0 million higher than in the previous year (€ 58.2 million). Due to the high number of state-owned and partly state-owned research institutes, this segment develops largely independently of economic influences. Also typical is the development within the fiscal year, with a somewhat more restrained start to the year and a stronger fourth quarter, which was also observed in 2018.

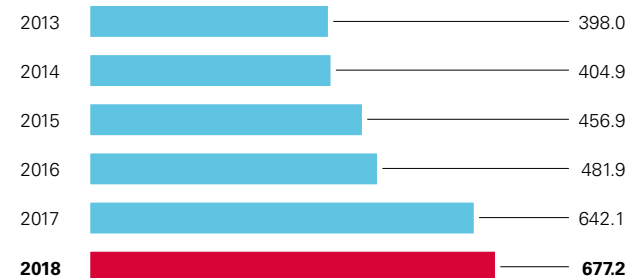
New orders and orders on hand: Book-to-bill ratio at excellent 1.03

After new orders of € 642.1 million in 2017, this figure rose to € 677.2 million in 2018. This corresponds to a significant increase of € 35.1 million or 5.5 %. Against the background of the previous year's value that was strongly influenced by the newly acquired companies, we were quite satisfied with this development in 2018, as growth was recorded in practically all product areas. In the course of the year, after a very strong first half-year, there was a slight easing off in summer, while the concluding fourth quarter again showed improved momentum. According to findings from the first weeks of 2019 so far, this trend is set to continue. The book-to-bill ratio, the ratio between new orders and sales, remained at a very good 1.03 in 2018 after a strong figure of 1.09 in the previous year that was also supported by acquisitions.

The order volume on hand as of December 31, 2018, amounted to € 144.9 million and was thus 13.7 % higher than the previous year's figure of € 127.4 million. As in earlier years, the visibility of orders on the basis of average sales in 2018 remains unchanged at about two months.

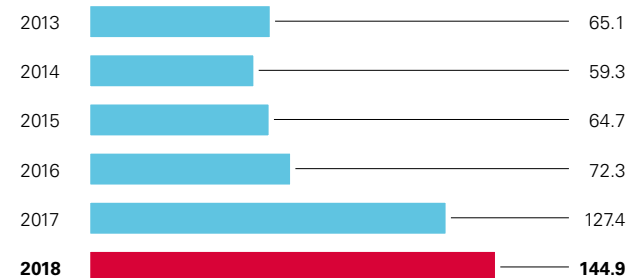
DEVELOPMENT OF ORDER INTAKE

in € millions



DEVELOPMENT OF ORDER BACKLOG

in € millions



Gross profit grows 12.0 % despite negative currency effects

After € 376.9 million in the previous year, the cost of sales in 2018 totaled € 424.5 million, corresponding to an increase of € 47.6 million or 12.6 %. This growth was largely attributable to the increase in sales, which made it possible to exploit economies of scale in 2018. However, the full inclusion of the newly acquired companies in the consolidated financial statements led to a relative increase in the cost of sales, in particular due to the PPA effects. The additional PPA effects included in the cost of sales in 2018 totaled € 3.1 million. Moreover, the change in the customer mix led to an additional increase in the cost of sales. Overall, however, these effects largely offset each other, resulting in only a marginal reduction in the gross margin – the ratio of gross profit to sales revenues. After 35.8 % in the previous year, this figure was currently 35.7 %.

In absolute terms, the gross profit of € 210.0 million in the previous year increased to € 235.2 million in 2018. This corresponds to an increase by € 25.2 million or 12.0 %. In addition to the effects referred to previously from the customer mix, economies of scale and PPA, the stronger euro during the course of the year also had a negative impact on the development of the gross profit and gross margin, as in the previous year.

GROSS PROFIT

in € millions



GROSS MARGIN

in %



Disproportionately low increase in selling and administrative expenses

After € 112.3 million, total selling and administrative expenses in 2018 amounted to € 117.5 million, which represents a slight increase by 4.6 % or € 5.2 million. While administrative and general costs in the previous year were influenced by one-off consultancy costs in connection with the takeover bids and the company acquisitions made, there was virtually no increase here in 2018, even taking into account the full inclusion of the newly acquired companies. Sales and marketing costs rose as a result of the increased business volume. However, the growth of sales and marketing costs was also disproportionately low compared to the increase in sales. All in all, it was possible to achieve positive economies of scale in this

area, and the share of selling and administrative expenses in total sales fell from 19.1 % in the previous year to 17.8 % in fiscal 2018.

Research and development expenses remain at a high level

We are continuously committed to advancing the development of vacuum technology through our own research projects and by consistently fostering teaching and science. We view research and development expenses as an indispensable investment for the future. Accordingly, research and development expenses in 2018 were again higher than in the previous year. Following € 27.8 million in 2017, a total of € 28.7 million was expended here in 2018. Due to the excellent development of sales, the percentage share of research and development costs still amounted to a very strong 4.3 % (previous year: 4.7 %).

Adjusted for subsidies for expenses for research and development services included in other operating income in the amount of € 3.6 million (previous year: € 3.1 million), the net research and development expenses totaled € 25.1 million (previous year: € 24.7 million).

Other operating income and expenses

As in previous years, other operating income and other operating expenses [SEE NOTE 9](#) principally included the Group's foreign exchange gains and losses. The other operating income of € 11.3 million (previous year: € 10.3 million) in addition contained subsidies for expenses of € 3.6 million (previous year: € 3.1 million) and miscellaneous income of € 2.3 million, principally resulting from gains on disposals (previous year: € 1.4 million). In 2018, the other operating expenses of € 5.2 million (previous year: € 8.9 million) also con-

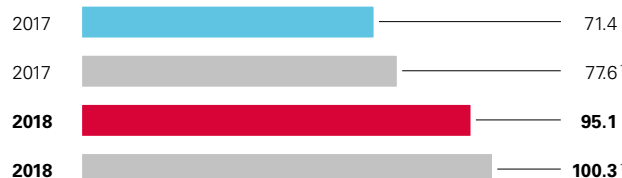
tained virtually only the foreign exchange losses recorded. After € – 3.0 million in the previous year, the net foreign exchange results in 2018 stood at € + 0.8 million.

Operating profit at € 95.1 million achieves new record level

Having already achieved the highest operating result in the Company's long history the previous year, the Company succeeded in increasing this figure again noticeably to € 95.1 million in 2018. After € 71.4 million in the previous year, this represents a very pleasing increase by € 23.7 million or 33.3%. Starting from record sales of € 659.7 million and with a constant gross margin, economies of scale in the selling and administrative expenses as well as an improved currency result contributed in particular to the development. The customer mix had a negative impact on earnings. The operating profit of € 95.1 million corresponded to an operating profit margin or EBIT margin of 14.4 % (previous year: 12.2 %). Adjusted for the additional PPA effects included in the operating profit amounting to € 5.2 million overall, the operating profit for 2018 would have amounted to € 100.3 million overall and resulted in an EBIT margin of 15.2 %.

OPERATING PROFIT

in € millions



¹ without PPA effects

EBIT MARGIN

in %



¹ without PPA effects

With regard to the segments it can be noticed that the large production sites in Germany and France accounted for 47.0 % and 16.7 % and thus the biggest portions of the total operating profit recorded in 2018 (previous year: 43.6 % and 19.4 %, respectively). Moreover, the use of scale economies led to increasing portions of operating profit in Asia (excluding Republic of Korea) and in the USA, where 12.1 % and 6.1 % were recorded (previous year: 7.9 % and 3.7 %, respectively).

With a portion of 9.7 % of the operating profit Europe (excluding Germany and France) remained at the previous year's high level (9.5%) while the decreasing sales in the Republic of Korea caused a decline in the percentage of the Group's operating profit from 15.6% to 6.3%. Despite the earnings development being burdened by PPA effects the segment USA (production) showed significant profitability increases.

OPERATING PROFIT PER EMPLOYEE

in K€



¹ without PPA effects

Considering depreciation and amortization (for tangible and intangible assets) included in operating profit, amounting to € 18.6 million (previous year: € 20.8 million), this resulted in an operating profit before depreciation and amortization (earnings before interest, taxes, depreciation and amortization, EBITDA) of € 113.7 million. After € 92.2 million in the previous year, this also represented a significant increase by € 21.5 million or 23.3%. The operating profit per employee also rose significantly from K€ 25 to K€ 31.

Financial income

As a consequence of persistently low interest rates, the financial income of € – 0.5 million was virtually at the level of the previous year (€ – 0.4 million) [x SEE NOTE 10](#). There were no significant changes in the composition of financial income and financial expenses.

Income taxes – tax ratio rose as expected

As expected, the tax ratio, which was very low in the previous year due to one-off effects in connection with the tax reform in the USA, rose in 2018 to 27.2% (previous year: 24.2%). As a result of the increased relative burden, but also of the significantly higher earnings before taxes in absolute terms, tax expenses rose significantly by € 8.5 million from € 17.2 million to € 25.7 million [x SEE NOTE 24](#).

Net income grew by 27.9%

In a long series of consistently increased after-tax earnings, the € 68.9 million achieved in 2018 represents a provisional high and an increase by € 15.1 million or 27.9 % compared with 2017 (previous year: € 53.8 million). At the same time, the net return on sales, the ratio of net income to sales, rose from 9.2 % in the previous year to 10.4 % in 2018.

INCOME BEFORE TAXES

in € millions



NET INCOME

in € millions



Earnings per share improved significantly to € 6.98

Parallel to the net income, the earnings per share also improved significantly. Following the record value of € 5.46 in the previous year, a figure of € 6.98 was achieved in 2018. There were no changes in the number of shares outstanding [x SEE NOTE 35](#).

EARNINGS PER SHARE

in €



Financial position

Increased volume of business led to higher inventories and trade accounts receivable

In the development of the Pfeiffer Vacuum Group's financial position, two aspects in particular are to be emphasized. On the one hand, the strongly expanded business volume led to an increase in inventories by € 19.8 million [x SEE NOTE 15](#) and in trade receivables by € 12.1 million [x SEE NOTE 16](#) to a total of € 133.2 million and € 92.2 million respectively (previous year: € 113.4 million and € 80.1 million respectively). On the other hand, property, plant and equipment increased net by € 19.2 million to € 126.1 million (previous year: € 106.9 million) [x SEE NOTE 12](#) as a result of the investment program decided in spring 2018. Cash and cash equivalents increased from € 97.4 million at the end of fiscal 2017 to € 108.4 million on December 31, 2018. A detailed analysis of the development of cash and cash equivalents can be found in the section "Liquidity" below [x SEE PAGE 60](#).

Equity increased by € 51.3 million to € 372.2 million

On the liabilities side of the balance sheet, the most significant change compared with the previous year was in equity [x SEE NOTE 19](#). This increased by € 51.3 million from € 320.9 million to € 372.2 million. The increase was primarily due to the net income (€ 68.9 million) generated in the year under review and the dividend payment to the shareholders of Pfeiffer Vacuum Technology AG (€ 19.7 million) as well as the net increase of € 2.1 million in other equity components. The development of other equity components was mainly due to the effects of foreign exchange conversion and the valuation of pension provisions recorded directly in

equity on the balance sheet date. The equity ratio rose from 58.0 % to 59.6 % as a result of the increase in the balance sheet total and a slightly disproportionate increase in equity. The Pfeiffer Vacuum Group has thus been able to further improve its already exceptionally high equity base. The existing financial liabilities [x SEE NOTE 23](#) are below average compared to the balance sheet total and do not limit the Group's financial flexibility. Due to the increase in the volume of business, that has been referred to a number of times, prepayments received/contract liabilities also increased significantly from € 7.7 million to € 16.7 million [x SEE NOTE 26](#) and [x SEE NOTE 27](#). Organic growth was also the main driver for the increase in net working capital by € 33.1 million to € 185.8 million.

Liquidity

After € 71.4 million in 2017, the operating cash flow in fiscal 2018 was recorded at € 62.5 million. This corresponded to a decline of € 8.9 million or 12.4 %. Although earnings before taxes rose significantly year-on-year (+ € 23.6 million), the increase in inventories and receivables also led to a significantly higher cash outflow. As a result of the very good earnings development, income tax payments increased significantly compared to the previous year. On the other hand, the increase in liabilities resulted in only a minimally higher inflow of funds. The cash flow per share fell from € 7.24 in 2017 to € 6.34 in the past fiscal year. The nevertheless unchanged high level of this indicator continues to represent the ability of the Pfeiffer Vacuum Group to generate disproportionately high cash inflows as part of its operating activities.

PFEIFFER VACUUM CONSOLIDATED BALANCE SHEETS (ABSTRACT)

	Dec. 31, 2018	Dec. 31, 2017	Change
	in € millions	in € millions	in € millions
Total non-current assets	268.4	245.1	23.3
Cash and cash equivalents	108.4	97.4	11.0
Other current assets	247.4	210.9	36.5
Total current assets	355.8	308.3	47.5
Total assets	624.2	553.4	70.8
Equity	372.2	320.9	51.3
Total current liabilities	130.9	114.3	16.6
Total non-current liabilities	121.1	118.2	2.9
Total liabilities	252.0	232.5	19.5
Total shareholders' equity and liabilities	624.2	553.4	70.8

CHANGE IN NET WORKING CAPITAL

	Dec. 31, 2018	Dec. 31, 2017	Change
	in € millions	in € millions	in € millions
Inventories	133.2	113.4	19.8
Trade accounts receivable	92.5	80.1	12.4
Trade accounts payable	- 39.9	- 40.8	0.9
Net working capital	185.8	152.7	33.1

CASH FLOW MARGIN

in %



CASH FLOW PER SHARE

in €



As a result of the investment program announced in the spring of 2018, which is to result in a total of € 150 million being invested in the Pfeiffer Vacuum Group in the coming years, capital expenditures in 2018 rose from € 27.7 million to € 33.7 million and were thus the key determinant of the cash outflow from investment activities in this period. Further details on the composition of the investment volume can be found in the section “Capital expenditures and financing” below [SEE PAGE 62](#). Capital expenditure was offset by proceeds from the sale of property, plant and equipment amounting to € 2.2 million (previous year: € 0.2 million), resulting in an overall cash outflow from investment activities of € 31.5 million (previous year: € 102.0 million). In the previous year, net outflows amounting to € 74.6 million from company acquisitions were also recorded in this connection.

The dividend payment to the shareholders of Pfeiffer Vacuum Technology AG amounting to € 19.7 million (previous year: € 35.5 million) [SEE NOTE 20](#) was virtually the sole factor for the cash flow from financing activities, which thus resulted in a total cash outflow of € 19.8 million. In the previous year, the incurrence of financial liabilities in the amount of € 70.0 million in connection with the company acquisitions and the repayment of financial liabilities amounting to € 15.2 million were further factors for cash flow from financing activities. In 2017, a total cash inflow of € 19.3 million was therefore recorded.

In 2018, the cash inflow after currency effects totaled € 11.0 million (previous year: cash outflow of € 12.6 million) and led to an 11.3% increase in cash and cash equivalents to € 108.4 million.

At the balance sheet date, Pfeiffer Vacuum also had unused credit lines amounting to € 13.9 million (previous year: € 13.6 million). Free liquidity is invested in interest-bearing financial instruments. A cash management system is in place in the Group companies in Asslar and Annecy to bundle liquidity. Conservative and largely short-term investment vehicles, such as money market or time deposits at financial institutions, dominate where financial investments are concerned. Speculative transactions are not conducted. Both liquidity management as well as steering of the interest-rate change risk are thus primarily handled at Corporate Headquarters, taking into consideration all relevant matters within the corporate Group [SEE NOTE 34](#).

REPRESENTATION OF CASH FLOW FROM OPERATING ACTIVITIES (ABSTRACT)

	2018	2017
	in € millions	in € millions
Earnings before taxes	94.6	71.0
Income taxes paid	- 22.7	- 17.4
Depreciation/amortization	18.6	20.8
Other non-cash income and expenses	0.1	3.0
Effects of changes in assets and liabilities	- 28.1	- 6.0
Net cash provided by operating activities (operating cash flow)	62.5	71.4

Capital expenditures and financing: Strong capital base creates independence

As in previous years, the operating business, capital expenditure and dividend payment were financed solely by the Group's own funds. It is currently planned to finance the three-year, strategy-supporting investment plan approved by the Board of Management and the Supervisory Board, in the years 2018 to 2020 with a total volume of € 150 million, purely from internal funds. In the past, financial liabilities were only taken out to finance major acquisitions, which, at € 60.3 million as of the balance sheet date of December 31, 2018, were exactly at the previous year's level of € 60.3 million. Capital expenditure of € 33.7 million was attributable, among other things, to capacity expansions at the production sites in Asslar (Germany), Annecy (France), Cluj (Romania) and Ho Chi Minh City (Vietnam). In addition, necessary re-investments were made for machinery and plant and equipment. Although the investment volume of € 33.7 million was significantly higher than in the previous year (€ 27.7 million), the actually forecasted capital expenditures of € 40 million were not achieved due to long delivery times for additions and extensions to machinery, among other things. In connection with the three-year investment plan, we refer to the relevant comments in the Outlook.

Allocation of capital expenditures for tangible and intangible assets to the reported segments compared to the previous year is comprised as follows:

CAPITAL EXPENDITURES BY SEGMENT

	2018	2017
	in € millions	in € millions
France	8.0	8.9
Germany	7.3	4.3
USA	5.0	7.0
Asia (excluding Republic of Korea)	2.8	2.0
Republic of Korea	1.9	1.8
Europe (excluding Germany and France)	0.5	0.4
USA (Production)	0.3	0.2
All others	7.9	3.1
Total	33.7	27.7

The balance sheet of the Pfeiffer Vacuum Group has long demonstrated a very sound equity base, which has again improved slightly compared to 2017. The equity ratio rose from 58.0 % at the end of the previous year to 59.6 % and remains above average for the mechanical engineering sector. The ratio of current assets to current liabilities amounted to 272 % (previous year: 261 %) and continued to reflect the further improved financing concept and high credit rating of Pfeiffer Vacuum. The increased capital expenditures of € 33.7 million and a slightly declining depreciation/amortization volume of € 18.6 million in 2018 resulted in a depreciation expense ratio (ratio of capital expenditure to depreciation/amortization) of 181 % compared to 133 % in the previous year.

CURRENT ASSETS RATIO

in %



DEPRECIATION EXPENSE RATIO

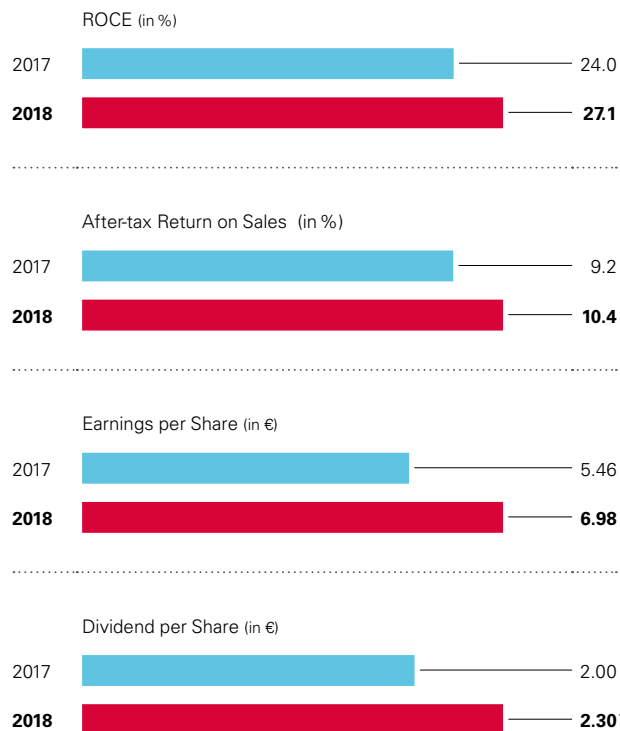
in %



Value Reporting: ROCE increases to 27.1 %

The concept of value-based steering of the Company remains an integral element of the management approach that exists within the Pfeiffer Vacuum Corporate Group. All important decisions at Pfeiffer Vacuum are taken with due consideration of all material financial aspects. The following diagram provides an overview of various financial performance indicators which are important for us. In addition to ROCE (Return On Capital Employed; operating profit relative to the total of fixed assets and working capital) as a parameter for the yield on capital employed, the Company's return on sales, earnings per share, and the paid or proposed dividend are also presented here. Due to the very good business development in 2018 all performance indicators named in this context showed significant improvements compared to the previous year. The Management Board would like to continue to let the shareholders participate in the Company's success. Accordingly, the dividend proposal provides for a dividend of € 2.30 per share. This would correspond to a payout ratio of 33.0 % (previous year: 36.6 %) and a 15 % increase in the dividend [SEE OUTLOOK PAGE 74](#) and [SEE NOTE 20](#).

KEY VALUE REPORTING INDICATORS



¹ Subject to approval by the Supervisory Board and the Annual General Meeting

NON-FINANCIAL PERFORMANCE INDICATORS

Employees

Pfeiffer Vacuum employed a total of 3,204 people at the end of 2018 [SEE NOTE 39](#). This represents an increase of 8.8 % over the previous year's figure of 2,945 employees. This development can be observed in all regions in which Pfeiffer Vacuum operates and results from the expanded business activities as well as preparations for implementing the growth strategy.

COMPOSITION OF WORKFORCE BY REGIONS

	2018	in %	2017	in %
Europe	1,968	61	1,793	61
Asia	837	26	764	26
The Americas	399	13	388	13
Total	3,204	100	2,945	100

Diversity – Pluralism as a strategic goal of personnel recruitment

Pfeiffer Vacuum has a global standing and so unites a multitude of people of different origin under one umbrella brand. Our employees are proud of the successful cooperation between different cultures and nationalities. For several years now, Pfeiffer Vacuum has belonged to the "Diversity Charter", an initiative by the German Federal Government.

The “Diversity Charter” represents a fundamental commitment to fairness and appreciation of people in companies. Of the 3,204 employees, 558 are female and 2,646 are male. Therefore, the proportion of women constitutes 17.4 % of the entire workforce. Vacuum technology is a specific field of mechanical engineering in which there are generally only very few potential young females with adequate training. Nevertheless, it is the firm intention of company policy to increase the proportion of women in this traditionally male-dominated area of work. The French subsidiary of Pfeiffer Vacuum has concluded a formal agreement with all labor unions involved with the specific purpose of promoting women. The Supervisory Board of Pfeiffer Vacuum Technology AG has been under female chairmanship since October 2017. With the appointment of Ms. Nathalie Benedikt as Chief Financial Officer in 2017, the Management Board of Pfeiffer Vacuum has a female quota of 25 %. In its subsidiary companies, however, several management and key positions in the areas of Purchasing, Compliance, IT, Communications, Marketing, Human Resources as well as Sales are occupied by female managers.

Training: Pfeiffer Vacuum offers training in a variety of vocations

The promotion of young talent is of great importance at Pfeiffer Vacuum. At various locations, we offer company apprenticeships for industrial mechanics, in the business administration area, as well as in warehouse logistics. In fiscal 2018, Pfeiffer Vacuum made available a total of 96 apprenticeships worldwide (previous year: 113). In addition to the company apprenticeship, Pfeiffer Vacuum in Germany participates very successfully in the “Studium Plus” project, a dual degree program of the Technical University of Mittelhessen. Furthermore, a partnership exists with the Georg-August University Göttingen in relation to the company apprenticeships. In this

way, we secure our young talent in industrial and mechanical engineering as well as in the area of business informatics. Also, many of our subsidiaries offer temporary internships for graduates and students and/or temporary positions for students who work during their vacation. This enables young people to gain an insight into operational processes and to qualify themselves as potential employees. In cooperation with different schools and universities, we perform guided tours of the Company and present ourselves to the public at career fairs. Mentoring of bachelor and master theses as well as our global trainee program complete our apprenticeship offerings. In France especially, several of our skilled workers give lectures on vacuum technology and corporate governance at universities. In addition, the name recognition that Pfeiffer Vacuum enjoys among natural science graduates due to the presence of its products in research laboratories is not to be underestimated.

Qualifications of skilled workers and executives

The success of Pfeiffer Vacuum is decisively based on the expertise, the loyalty, and the high motivation of our employees. The expert knowledge of our service and sales employees, in particular, plays an important role in cooperation with our customers. They benefit from the many years of experience which our experts can draw upon in relation to physical and chemical reactions of the most diverse molecules and substances under vacuum conditions.

Most projects are developed by our customers together with our Sales and Market teams which, in turn, also consult the relevant experts from the areas of Research & Development as well as Production and Service as necessary. The skilled knowledge of our employees is also of major importance in the manufacture and installation of our products. The ultimate goal is to offer our customers a perfect vacuum solution for their application.

PROFESSIONAL QUALIFICATIONS OF THE WORKFORCE

	2018
Development and Production, Total	1,778
Graduates of universities, colleges, and universities of applied sciences	405
Employees with professional training	945
Employees without professional training	363
Apprentices	65
Administration, Services and Sales, Total	1,426
Graduates of universities, colleges, and universities of applied sciences	796
Employees with professional training	503
Employees without professional training	96
Apprentices	31

Good training and the readiness to adapt to changes in market forces by continuous development are thus the best prerequisites for all employees, regardless of age, in order to secure jobs and sustain professional success. Further training plays a critical role in our Company in all locations. New employees complete an introductory course in the basic principles of Vacuum Technology, while sales and service employees receive advanced training courses about products

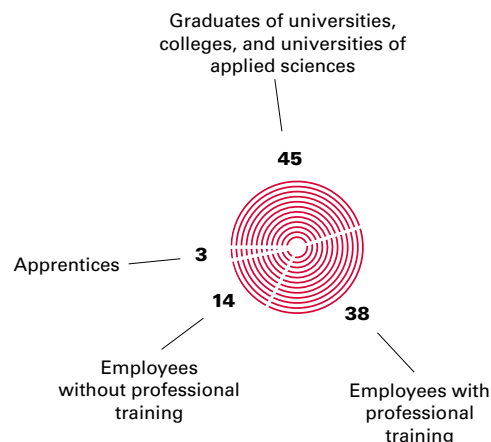
and service measures. Practical programs exist for the qualification of executives, and foremen and group leaders are trained in leadership and management techniques. Furthermore, the Company pays attention to specialized advanced training to transfer technical innovations to the Company. Chinese, German, English or French language courses are offered depending on location and need.

The provision of further training options is generally linked to the local conditions and requirements. For example, the French subsidiary fulfills the relevant statutory requirements with more than twice the expenditure than would be required by law. Here, the focus is on training and further training measures in the area of "quality". The management also operates a software system for competence management of the employees to better identify and implement existing expertise and to be able to match training courses specifically.

The topics of employee development, leadership and work-life balance will play an important strategic role in the coming years. Pfeiffer Vacuum adopted a global human resources strategy (HR strategy) for this purpose for the first time in 2018.

PROPORTIONAL DISTRIBUTION OF PROFESSIONAL QUALIFICATIONS OF ALL EMPLOYEES

in %



Remuneration and incentive schemes

The personnel costs in fiscal 2018 amounted to € 212.0 million compared with € 191.0 million in fiscal 2017 [x SEE NOTE 38](#). The incentive scheme of Pfeiffer Vacuum also differs according to local conditions and customs. The sales personnel basically receive performance-related incentives via a bonus scheme oriented to sales growth and profit. Added to that – depending on the location – are other bonus, incentive or employee participation schemes as well as bonuses for outstanding individual achievements.

AGE STRUCTURE OF THE WORKFORCE

	2018		2017	
		in %		in %
Under 30 years of age	604	19	549	19
30 to 50 years of age	1,687	53	1,620	55
Over 50 years of age	913	28	776	26
Total	3,204	100	2,945	100

Pension scheme

The pension scheme is similarly varied in the individual locations. Apart from a purely public scheme in France funded by the French subsidiary, the worldwide pension scheme includes additional measures and payments into pension funds, the offer of a pension plan and direct insurance with the additional option of deferred compensation [x SEE NOTE 25](#).

Social responsibility

We take our social responsibility towards our employees seriously. We therefore endeavor to ensure that the relevant quota of disabled employees in the various countries is met. We also believe that a family-friendly working environment is very important. Varying from region to region, this includes models for flexible working hours, provision of home office connections, models for re-entering the working world with flexible working hours and job sharing, specifically for young mothers and fathers.



The illness rates in Asslar and Göttingen amounted to 6.3 % and 10.1 %, respectively, compared to the average illness rate of 4.28 % in the statutory health insurance. In Annecy, the illness rate was significantly lower with 3.7 %. The rate of staff fluctuation also differed depending on the geographical location, with a figure of 4.5 % in Asslar in the past fiscal year, and thus slightly lower than in the previous year, and an increase to 6.7 % in Göttingen in the past fiscal year, following a figure of 3.8 % in 2017. In Annecy, the rate of staff fluctuation in the course of 2018 rose to 7.8 %, following a very low level in 2017.

Workplace safety

Issues of workplace safety mainly relate to the production facilities of Pfeiffer Vacuum. In Asslar, there were 15 reported accidents in fiscal 2018 (previous year: 13). This is equivalent to 18.6 accidents per 1,000 employees (previous year: 18.0). With 9 reportable accidents in Göttingen, the ratio amounted to 51.7 accidents per 1,000 employees compared to 31.8 in the prior year. These figures are in relation to the corresponding average of 18.1 for 2017 cited by the German Workers' Compensation Insurance Company (ETEM, figures for 2018 were not yet available). The corresponding ratio for France was 8.4 with 6 reportable accidents (previous year: 16.5).

Non-financial Group report

The Pfeiffer Vacuum Group is subject to EU Directive 2014/95/EU and/or the CSR (Corporate Social Responsibility) Directive Implementation Act of April 11, 2017 on strengthening non-financial reporting.

For the 2018 fiscal year, Pfeiffer Vacuum is thus again publishing a non-financial group report according to §315b, German Commercial Code (HGB), which will be available on [NON-FINANCIAL REPORT 2018](#) from April 30, 2019 onwards.

RISK AND OPPORTUNITIES REPORT

The purpose of entrepreneurialism is to specifically utilize opportunities that have been identified in order to increase the value of the Company. However, this intrinsically involves taking risks. The opportunity and risk management system that we employ serves to optimize the relationship between risks and opportunities with a view to sustainable business success. To assure this, we use and evolve suitable instruments, such as an appropriate handbook and/or a risk inventory, to identify, analyze, assess, and control opportunities and risks. In the following, opportunities and risks are presented on a gross basis.

Risk management system

The Pfeiffer Vacuum risk management system includes all levels of the Corporate Group. The system is described in a risk handbook that is available to all employees and updated on an as-needed basis. Our flat hierarchy and fast communication channels aid in swiftly identifying risks at every level of the Company and using suitable measures to combat them. The risk coordinator monitors the proper implementation of risk management and the full risk inventory. The risk inventory is performed by the department heads at the large production sites and by the managing directors at the remaining subsidiaries. Consolidating all inventories at an aggregate level produces a differentiated overall picture of the Corporate Group's risk position.



During the year, risk inventories are updated if necessary; what we define, in addition to a concrete description of the risks, is the potential quantitative impact on operating profit, the likelihood of occurrence and suitable countermeasures. At year end, a complete risk inventory is made, which is reviewed by both the risk coordinator as well as the Management Board. In addition, we have defined the areas of risk management within the individual market segments and have put in place the necessary processes as well as early-warning and monitoring systems. The monthly Corporate Group reporting system supports the risk management process with a variety of parameters and reports that serve as an essential basis for the Management and Supervisory Boards upon which to regularly deliberate on current business. The monthly meetings of senior executives and monthly conference calls are also firmly established institutions that enable the department heads and our subsidiaries to share information with the Management Board relating to potential risks and how to handle them.

In addition to monthly reporting, our internal controlling system (ICS) helps us to identify risks in daily processes and thus avoid potential errors. The processes reviewed in this connection are first and foremost ones that have a major impact on Pfeiffer Vacuum's financial position. Regularly conducted inspections protect against human error, system errors, and breaches of internal regulations.

Risk management as it relates to consolidated accounting pursuant to § 315, Sub-Para. 4, German Commercial Code ("HGB")

The purpose of an internal consolidated accounting control system is to ensure adequate certainty by implementing controls that – despite identified risks – enable consolidated financial statements to be prepared in accordance with applicable standards. The Management Board bears overall responsibility for the internal control and risk management system in respect to the consolidated accounting process. All companies included in the Consolidated Financial Statements are covered by a strictly defined management and reporting organization. The principles, the organizational and procedural structures, as well as the processes of the individual control and risk management systems relating to consolidated accounting, are stipulated throughout the entire Corporate Group in guidelines and organizational procedures that are adapted if needed to reflect current external and internal developments. Our internal experts also work together with external counterparts on a case-by-case basis. This enables us to ensure that our accounting is in compliance with IFRS accounting and valuation regulations.

In respect of the consolidated accounting process, we consider those characteristics of the internal control and risk management system to be key that can have a decisive influence on consolidated accounting and on the overall view presented in the Consolidated Financial Statements. In particular, these are the following elements:

- Identification of the major fields of risk and areas of control that are relevant to the consolidated accounting process,
- Monitoring controls for enabling the consolidated accounting process to be supervised by the Management Board,

- Preventive control measures in the finance and accounting systems of the Corporate Group and the companies included in the Consolidated Financial Statements, as well as in operational corporate processes that generate key information for drawing up the Consolidated Financial Statements, including the Management Report for the Corporate Group (including separation of functions),
- Measures that assure proper IT-based processing of facts and data that relate to consolidated accounting.

Opportunity management system

The Pfeiffer Vacuum opportunity management system is closely linked to the risk management system, as many risks also offer opportunities that should be utilized where appropriate. This is why the risks identified in the risk inventory are simultaneously examined with a view to potential opportunities, which produces a correlation. In extensive decision-making processes, we analyze the question of whether the potential opportunities or risks predominate, which means that we only engage in risks that appear to be manageable and are compensated for by the opportunities they offer.

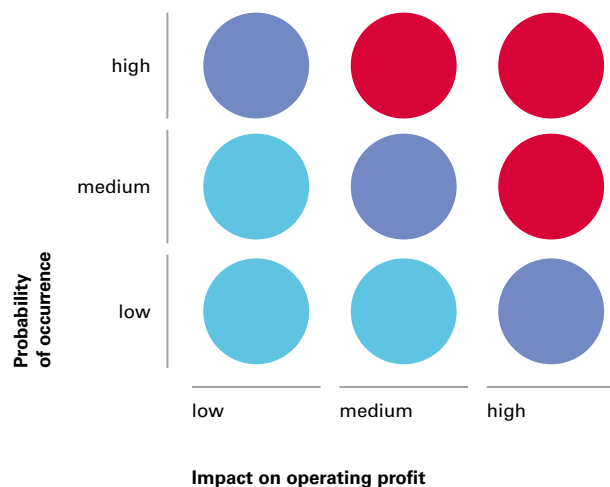
We conduct market and competition analyses in order to be able to explicitly make optimum use of industry and overall economic opportunities. This provides us with a good overview to further broaden our market share by specifically utilizing our potential. Close contact with our customers additionally aids us in identifying trends early on, thus enabling us to actively shape changes in the marketplace.

With variance analyses and development forecasts, our highly refined reporting system also identifies opportunities in our regional structure. Our global sales and marketing network enables us to swiftly and purposefully take advantage of these opportunities.

Risk classification

The risk classification of the risks presented below was effected according to a matrix, taking into consideration the probability of occurrence and the potential impact on the operating profit.

RISK CLASSIFICATION



Risk classification

- low
- medium
- high

RISKS

Overall economy (risk class: low)

As a globally operating Group, we are dependent upon global economic developments. Nor can Pfeiffer Vacuum avoid the effects of a decline in world economic growth, and would have to expect to see a direct impact on our sales and profitability. However, the regional and market segment mix of sales is very balanced at Pfeiffer Vacuum, and its overall structure compensates for revenues in economically weak and economically growing markets and industries. Because it is seldom that all regions and market segments are equally affected by a deteriorating economic development. Despite the overall compensating developments, there may be an impact on the economic success of individual segments. The semiconductor market represents a significant share of sales and Pfeiffer Vacuum is therefore exposed to a greater extent to the fluctuations of this market. Managing the economic risk essentially involves steering capacities and costs. Flexible working time models enable us to swiftly and easily adapt production capacities to reflect the development of the order situation.

Market segments (risk class: medium)

Sales in Pfeiffer Vacuum's individual market segments are closely linked to global economic developments. The research & development market, for example, is dependent upon government spending and focuses in connection with research projects. The semiconductor market follows its own cycles, which offers enormous opportunities during boom phases and involves major risks during phases of weakness. The

coating market is closely linked to developments in the photovoltaic industry and showed improved momentum during the last two years. The heterogeneous industrial market segment follows overall economic trends in its general development. The development work in the product categories goes hand in hand with the trends in the individual market segments. This means that smaller turbopumps and analysis instruments are more likely to be required in the analytical industry, which tends to respond on an early cyclical basis. Large quantities of backing pumps are employed in the semiconductor market, but also in other industries whose developments generally conform to those in mechanical engineering.

In order to combat the risks stemming from dependence upon individual market segments and products, Pfeiffer Vacuum places a great deal of value on its broad-based alignment. At the same time, a disproportionately high share of revenue derives from the semiconductor industry, which presents both an opportunity as well as a risk due to the cyclical nature of this industry's development. Pfeiffer Vacuum's strategy for lowering this risk is to increasingly market products in other industries through our distribution channels, thus lowering the share of total revenues accounted for by the semiconductor industry. Current studies on the semiconductor industry show that this market will grow strongly beyond the cycles.

Acquisition and integration (risk class: low)

The integration of companies into the purchaser's corporate group always poses a special challenge. In order to preclude as far as possible the risk that the expectations which are placed upon the acquisition might not fully materialize, we conduct detailed due diligence reviews in advance of a corporate acquisition. Analyzed in particular in this connection are the legal situation, technical equipment, production plan-



ning, and the current and expected financial position of the Company to be acquired. To minimize legal and financial risks in particular, we draw upon the counsel of reputable law firms and tax advisors with substantial experience of acquisitions on this scale during the period of preparing and realizing the acquisition. Taken as a whole, these measures ensure that all aspects of a corporate acquisition are taken into consideration, and enable conclusions to be drawn regarding the potential synergies that will result from an acquisition. This significantly reduces the risk of unanticipated developments. However, this risk can never be entirely excluded because a successful acquisition depends upon many other additional factors. This also applies for the integration which follows after acquisition.

To restrict integration-related risks, proven Pfeiffer Vacuum guidelines, which ensure structured and successful business operations, are implemented within newly acquired companies. Directly after acquisition, newly acquired companies are also integrated into the reporting system in the Pfeiffer Vacuum Group to allow targeted management of the individual companies. Besides extensive reporting, this also includes monthly conference calls and regular meetings on site in the countries concerned. In addition, the standardized risk management system will be installed at all new Group companies. The risk of intransparency is thus eliminated.

Technology (risk class: medium)

Products and services that do not meet customer expectations lead directly to declining sales, and thus to a loss of market share and reputation. Therefore, the key risk factors

for Pfeiffer Vacuum include a lack of innovative strength and the loss of quality of products and services. We combat these risks through ongoing customer contact and the resulting market intimacy. The information thus obtained about the needs of our customers enables us to develop and offer products that are suited to their demands. This allows us to expand both our competitive position as well as our name recognition. We will continue to combat the risk of a lack of innovation through our development investments. In addition, maintaining high standards of quality is a top priority for us. We received certification to ISO 9001:2008 for the first time in 1995, and this has since been sustained without interruption.

Purchasing and manufacturing (risk class: low)

The risks in the sourcing market occur, in particular, in the form of supply bottlenecks and dependency upon individual vendors. Downtimes are viewed as a key risk from a production standpoint. We primarily combat the risk of supply bottlenecks and vendor dependence by continuously reviewing alternative supplier options. Anticipated market shortages of raw materials, such as steel and aluminum, and the price risks which these entail, are combated through long-term framework contracts. In general, however, it can be said that the effects of changes in the price of raw materials do not have any significant influence on profitability. Business interruption insurance is in force to cover the effects of downtimes resulting from fire, storm or flood damage, for example. Qualified technicians and modern production machinery keep technically related downtimes to a low level. Regular service-

ing and preventive maintenance for our machinery and equipment also help to avoid downtimes.

Human resources (risk class: low)

As a provider of vacuum solutions, i.e. a subset of mechanical engineering, we are dependent upon the high level of education, training and commitment of our employees. We use various measures to combat the risk of losing these people and/or insufficient recruiting possibilities for suitable new talent. An attrition rate that continues to be low documents the acceptance of this on the part of our people.

Information technology (risk class: low)

Because our business processes are mapped by means of software support, Pfeiffer Vacuum's corporate data is subject to a general information technology risk. This includes, first and foremost, the risks of system outages, data losses, virus or hacker attacks that could lead to an interruption of business operations. We keep the risk of data losses to a minimum by performing daily backups of our complete enterprise data. Our enterprise database, in particular, with which manufacturing operations, materials management, order handling, financial and cost accounting are handled, is subject to a high security standard. All files created by our employees within the server environment are also backed up on a daily basis. Our backup tapes are stored in secure, fire-proof locations. The activities of our in-house support team reduce system outages to a low level. The Company also uses



regularly updated virus scanners and modern firewalls to protect its hardware and software against the risk of computer viruses and hacking.

Exchange rates (risk class: low)

As a result of our pronounced international operations and the high percentage of export business that this involves, we are subject to a foreign exchange risk. A distinction must be made with respect to the way foreign exchange risks are controlled; the Company conducts active currency management for all intra-group sales invoiced in U.S. dollars or Korean won. In order to minimize the impact of exchange rates on future sales of this kind, we enter into forward exchange contracts and occasionally forward exchange options for the aforementioned currencies. Moreover, there is a valuation risk in some companies at the close of the fiscal year that stems from intercompany accounts receivable denominated in foreign currencies. Both, gains and losses from realized options and futures contracts, as well as the valuation results stemming from foreign currency accounts receivable, can be controlled to a certain extent. These are reflected in the Consolidated Statements of Income.

In addition to this, the Consolidated Statements of Income also include the income and expenses of non-German subsidiaries that do not report in euros and must therefore first be converted into euros. The line items in the Statements of Income are converted into euros at the annual average exchange rate and then adjusted for intercompany sales and services. Preliminarily leaving selling and general administrative costs out of consideration, the Company's sales are listed in the foreign currency with corresponding manufacturing costs listed predominantly in euros. Sales invoiced in U.S. dollars, for example, are subject to a foreign exchange risk (currency risk) while manufacturing costs are mainly incurred

in euros and are not influenced by exchange rate fluctuations. The magnitude of sales and gross profit are therefore influenced directly by the exchange rate and are externally stipulated and non-hedgeable. A certain degree of compensation for this effect results from the fact that the subsidiaries outside of the eurozone record their own selling and general administrative costs, which change counter to sales (natural hedge). As a function of the development of the euro relative to the respective foreign currency – there can be both positive as well as negative effects on sales and operating profit.

Liquidity position (risk class: low)

The risk of a customer's insolvency always exists, independently of the economic situation (default risk). There are general liquidity risks of being unable to satisfy required payment obligations in a timely manner. The rigorous system of accounts receivable management that has long been practiced at Pfeiffer Vacuum, along with monitoring of our customers' payment patterns, minimizes creditworthiness risks and thus accounts receivable losses. Moreover, our dependence upon individual customers is limited.

The liquidity situation of the Pfeiffer Vacuum Group has been exceptionally good. The financial liabilities which amounted to € 60.3 million (equivalent to a share of 9.7% of the balance sheet total) as of December 31, 2018 were taken on to finance an acquisition [SEE NOTE 23](#). Unchanged from previous years, with liquid assets of € 108.4 million, there exists no debt on a net basis. This means that there is sufficient room for maneuver financially to assure the survival of the Company, even in difficult economic times. Our operative business generates sufficient

liquid assets to enable the Company to continue to grow from within.

Legal risks (risk class: low)

As a result of Pfeiffer Vacuum's international business operations, the Company is subject to a variety of legal risks. National and international contract law and taxation are of particular significance in this connection. These areas can have a direct bearing on the Company's earnings and financial position. Standardized terms and conditions of contract and business are always employed to minimize the risk stemming from contracts entered into for products and services. In the case of special contracts, the contract instrument is first reviewed in-house and then by external legal counsel, if necessary. The expertise required for assessing the Company's daily business is provided by our qualified staff. We draw upon the assistance of external tax advisors in connection with complex issues that relate to national and international taxation. Product liability risks are covered by appropriate insurance. No legal disputes are currently pending whose outcome could have a material impact on the Company's earnings or financial position.

Brexit (risk class: low)

Pfeiffer Vacuum also supplies customers in the United Kingdom through a sales subsidiary in England. Due to the customs formalities that would be required, the withdrawal of the United Kingdom from the European Union (Brexit) would primarily incur longer transportation times, which we could



compensate for by appropriately increasing inventories. Currently, no competitor in the vacuum industry manufactures its products within the United Kingdom, so that even if import duties were levied on the market, there would be no competitive disadvantage. On the procurement side, the Pfeiffer Vacuum Group would be in a position to compensate for extended delivery times and/or higher prices, due to customs duties, for goods procured from the United Kingdom by purchasing from alternative suppliers within the EU. We continue to rate the long-standing currency risk as low, not least because a significant portion of our business is already conducted in euros.

OPPORTUNITIES

Macroeconomic and sector-specific opportunities

The global economic development in the past fiscal year was marked by moderate growth. The Chinese economy recorded growth rates at a higher than average level. Positive growth trends are expected to continue in the United States and Germany, even if not at the comparatively high level of 2018. This will stabilize our position in this region at a good level. Our good position and global presence give us the opportunity to even improve our position in relative terms. The economic cycle phases, particularly the cyclical nature of the semiconductor industry that has been referred to a number of times, are both an opportunity and a risk.

Technology

Through its many years of experience, Pfeiffer Vacuum is highly successful in developing viable, high-quality products and bringing them to market. The foundation for this consists of our close collaboration with our customers in a spirit of trust, which enables us to anticipate their needs and thus gain a head start over our competitors. With innovative products and by steadily broadening our product portfolio, there are opportunities for better satisfying the demands of existing markets and generating opportunities for additional sales volumes by gaining market shares. This enables us to offer our customers a broader spectrum of products. The most recent acquisitions in 2017 have also expanded the product portfolio in the areas of component business, service, and leak detection systems.

Sales

One of the Company's key competitive advantages has always been its lack of dependence upon individual regions, products or markets. We therefore view the expansion of our sales and marketing network as representing an opportunity to increase our market share. The globally active sales teams are interlinked, and uniform Pfeiffer Vacuum sales rules have been put in place. Regular training is also given on the permanently expanding spectrum of products, to enable sales staff to make use of opportunities for increasing sales to existing and prospective customers.

Production and logistics

Through the optimization of our production and logistics processes, we have laid the foundation in recent fiscal years for further improving our profitability. We therefore see this as an opportunity for being even faster in offering high-quality solutions to our customers in future as well. We have rigorously aligned the flows of materials in manufacturing towards our modern logistics processes. Reorganizing and fundamentally modernizing manufacturing operations led to additional productivity gains. As a solutions provider, we focus squarely on the needs of our customers. And through the reorganization of our manufacturing processes, we are now being guided even more by the needs of our customers rather than by rigid planning dictates. Moreover, a cutting-edge warehouse system and a standardized system of product shipping increase efficiency. We are confident that the interplay between these modernization measures will help us to reduce throughput times in the future. Pfeiffer Vacuum has a total of three major production sites in Asslar, Göttingen, and Annecy. Furthermore, as part of the Nor-Cal acquisition, a larger production site in Yreka, USA, has been added. Further production sites are located in Cluj, Romania, Ho Chi Minh City, Vietnam, Indianapolis, USA and Asan, Republic of Korea.

Human resources

The development of viable new products, the on-going improvement of our existing product portfolio, the high level of precision of the production processes, the sale and distribution of our products in a technologically very challenging competitive environment, and the administration of an internationally operating, publicly traded Corporate Group necessitate a highly qualified and motivated workforce. We therefore utilize the opportunity of assuring the long-term loyalty





of the Company's existing talent while simultaneously being an attractive employer for new people. Attractive pay concepts have been in place for years at Pfeiffer Vacuum. We therefore view ourselves as being well equipped to cover our future needs for qualified skilled labor and university graduates in the future and to assure the loyalty of our talent to the Company – both are absolute prerequisites for the successful further development of the Company.

Cooperation with the Busch Group

Pfeiffer Vacuum is currently negotiating a strategic cooperation agreement with Busch SE (Busch Group) in order to cooperate more closely in the future, particularly in the areas of purchasing, sales and service, research & development and IT. The objectives of the planned cooperation are to strengthen the competitive position in the market for vacuum technology, to make better use of the growth opportunities that present themselves and to improve cost structures. Through strategic cooperation with the Busch Group, for example in research and development projects as well as procurement and sales processes, accelerated growth and an improved competitive position could be achieved in the coming years. In terms of the consolidation taking place in the vacuum industry as well, this cooperation would support Pfeiffer Vacuum's goal of positioning itself as a technology leader and strong number two in the global vacuum business. The starting point for the considerations for strategic cooperation is the multitude of similarities between the two companies as international vacuum technology groups, which have a complementary product range with solutions for different target markets. One common objective of the cooperation agreement is to create the conditions for leveraging synergies in the areas of purchasing, sales and service, research &

development and IT. Price advantages could be realized by bundling the purchasing volume. Complementary product and service offerings could optimize the value chain of both companies and expand their market presence. Cooperation in individual research and development projects should lead to greater innovative strength and higher profitability.

General comments on the risk management system and the presentation of the risk and opportunities situation

We are of the opinion that the risk management system is suitable for identifying, analyzing, and quantifying existing risks in order to adequately steer them. Our auditor has reviewed the early risk detection system that is in place in connection with the audit of the Consolidated Financial Statements. This review did not result in any objections. Despite the number of risks disclosed being higher than the number of identified opportunities, Pfeiffer Vacuum considers the allocation of risks and opportunities as balanced overall. This particularly applies as the Group's economic success is based on a broad range of products for various industries. As those industries vary in terms of structure and economic cycles, this diversification contributes to a risk reduction. No risks are identifiable that could endanger the Company's survival, neither for the year covered by this Report nor for the following years.

Rating

Pfeiffer Vacuum Technology AG is not subject to any official rating by Moody's, Standard & Poor's or similar agencies.

SUBSEQUENT EVENTS

There were no significant changes in the Company situation or the sector environment since the beginning of the 2019 fiscal year.

OUTLOOK

General economic development remains robust

The International Monetary Fund (IMF) forecasts global economic growth of 3.5 % for 2019. Compared to the previous year, this represents a decrease of 0.2 percentage points. For 2020, the IMF expects an increase of 3.6 %. In its latest forecast in October 2018, the organization had still expected an increase of 3.7 %. The reduction was mainly due to the unresolved trade conflicts, fluctuations in the financial markets as well as an unregulated exit of Britain from the European Union. These factors could continue to weigh on the global economy.



The IMF expects growth for the eurozone of 1.6 % for 2019. This lowered expectations by 0.3 percentage points compared to October. The forecast decline for Germany was even more pronounced: At 1.3 %, growth forecast is currently 0.6 percentage points below the level of fall 2018. The development is mainly due to the production difficulties in the automotive industry and a decreasing external demand.

After a 2.9 % increase in economic output in 2018, experts believe that the U.S. will see growth of 2.5 % for the current year, but it should weaken further to 1.8 % in 2020. The reasons for the slowdown were, besides the downturn in impulses due to the tax reform introduced by President Trump, the continuing disputes over the national budget and international trade relations.

Slower growth is also predicted for China, the world's second largest economy – although at a higher level: After 6.6 % in 2018, it is expected to rise by 6.2 % annually up to 2020. For the emerging and developing countries as a whole, the IMF still expects a stable economic performance with a growth rate of 4.5 % for 2019, which is expected to rise to 4.9 % the following year.

Mechanical engineering is generally optimistic

The German Mechanical Engineering Industry Association (Verband Deutscher Maschinen- und Anlagenbau – VDMA) assumes that production in this country will rise by 2 % in 2019. Due to various factors of uncertainty for the global economy, including the trade dispute between the USA and China, Brexit and the economic difficulties in Italy, the VDMA economists expect slower global economic growth in

2019, which will also have an effect on Germany. Nevertheless, they expect slightly positive accents from the two most important foreign markets in China and the USA. For domestic business, the experts at the VDMA are also optimistic and expect a slight increase compared to the result for 2018.

This optimistic outlook is not least due to the fact that the visibility of orders in this German sector stands currently at 8.6 months. Many of the existing orders at the end of 2018 therefore reach far into 2019.

The USA remains the industry's most important market. Between January and November 2018, around € 17.7 billion were invested there – an increase of about 7.7 % compared to the previous year. Just short of this is the Chinese market with a volume of € 17.4 billion, which corresponds to an increase of 10.5 %.

The OECD leading indicator points to a slowing growth dynamic. This would also affect the mechanical engineering sector. Especially for the USA and Germany, there were signs of weaker momentum. In November 2018, the leading indicator for the entire OECD area decreased by 0.1 to 99.3 points.

Overall, the forecasts for the mechanical engineering sector point to a cautiously positive development of the order and sales situation, which stands at a high level.

Long-term growth trend of relevant markets intact

Pfeiffer Vacuum structures its customers into the semiconductor, industrial, analytics, research & development and coating markets. Although the **semiconductor** market segment is generally regarded as cyclical, it has experienced a

recovery since 2015, which was accompanied by strong demand. Despite subdued expectations from many manufacturers and OEMs [Original Equipment Manufacturers], 2018 saw further growth rates. Beginning with the third quarter, initial delays in manufacturers and OEM orders continued beyond the fourth quarter. Due to this deterioration, we see a slowdown in growth, but no downturn. We still consider the market dynamics to be intact and expect the delays to be resolved by the second half of 2019 at the latest. There are unchanged good opportunities for the future: Pfeiffer Vacuum strongly believes that the demand for products from the semiconductor industry will generally grow with the increasing complexity of digital innovations and grow above average in almost all areas of daily life, even if this development is typically characterized by a strong cyclical nature.

In the **industry** market segment, order growth is mainly driven by new product developments and materials as well as the general trend towards energy efficiency and resource conservation. Unchanged from previous years, Pfeiffer Vacuum also expects a comparatively stable growth trend in the medium term. For the **analytics** market segment, Pfeiffer Vacuum expects moderate growth from the already high level of the previous year. Analytical instruments are used in research and quality assurance activities in general industry and, particularly, in the semiconductor sector. The **research & development** market segment is dependent on political decisions concerning the funding of projects and research institutions. Here, we also anticipate slight growth in sales in 2019.

The **coating** market segment includes customers in the fields of display (LED, OLED), architectural glass, solar and many other areas of surface finishing. In 2018, demand continued to grow here, even though with decreasing momentum and, based on our estimates, it will stagnate at a high level in 2019.

Overall, we see the market development of the highly differentiated customer markets relevant to Pfeiffer Vacuum as intact over the long term and accompanied by further growth.

Further sales growth expected for 2019

Based on expected annual organic sales growth in the high single-digit percentage range over the period of the three-year investment program, we anticipate sales growth slightly below this average in the 2019 fiscal year.

Medium-term increase in EBIT margin to more than 20%

Following the implementation and realization of the strategic measures adopted in the 2018 financial year, we expect the EBIT margin to increase to more than 20% in the medium term. However, in the short term this implementation will initially weigh on earnings, on the one hand due to the expected increase in operating expenses and, on the other hand, as a result of the increase in amortization amounts. By contrast, we expect initial effects from the strategic partnership with the Busch Group and thus positive effects on margins and earnings. Both aspects cannot yet be conclusively assessed in terms of their earnings impact. Overall, however, we assume that the operating profit margin in 2019 will be similar to the level of 2018, and will at best be slightly above this. Due to the continuing low level of interest rates, we expect the development of earnings before taxes to be largely

in line with the operating profit. The investments currently planned for the 2019 fiscal year as part of the 3-year investment program are likely to be in a range between € 40 and € 60 million, depending on which measures can be implemented in 2019 and which will be realized in the following year. The objectives of the investment program continue to include investments in the expansion and modernization of production capacities, the intensification of research and development, the promotion of Industry 4.0 objectives, and the expansion of the Company's presence in Asia as a whole and China in particular.

Dividend to increase by € 0.30 to € 2.30

Due to the good operating profit and the confidence of the management in the Company's further growth, the Management Board proposes to pay out an increased dividend of € 2.30 per share for the 2018 fiscal year (previous year: € 2.00 per share). With a distribution volume of € 22.7 million, this would result in 33.0% of net profit of the Group being paid out to shareholders [x SEE NOTE 20](#).

DIVIDEND FIGURES

		2018	2017
Payout ratio ¹	in %	33.0	36.6
Dividend per share	in €	2.30 ²	2.00
Dividend yield	in %	2.1 ²	1.3

¹ proposed distribution in comparison to the net income of the respective year

² subject to the approval of the Supervisory Board and the Annual General Meeting

Forward-looking statements

The statements, estimations and other information in this outlook are based upon assumptions relating to the development of the future overall economy and the industry. These assumptions are based on the current status at the time of preparing the Group Management Report. There are risks and uncertainties relating to the probability of the statements and estimations made here, meaning that the actual developments may deviate significantly.

Assuming no major deterioration in global economic development, Pfeiffer Vacuum is convinced that it will be able to further increase sales and earnings in the 2019 fiscal year. All things considered, we are convinced that we are able to achieve these goals on the basis of the three-year investment plan, a new, global organizational structure and the strategic partnership with the Busch Group. However, uncertainties about geopolitical developments and the resulting decline in demand and currency volatility pose a risk to achieve these goals.

OTHER INFORMATION

Takeover-relevant information pursuant to § 315a Sub-Para. 1 of the German Commercial Code ("HGB")

The subscribed capital of Pfeiffer Vacuum Technology AG as of December 31, 2018, remained unchanged at K€ 25,261 and consists of a total of 9,867,659 no-par value shares. There are no different classes of shares currently or previously existent, so all shares have the same rights, in particular the same voting and dividend entitlement rights. Accordingly, the calculated share of the subscribed capital amounts to € 2.56.

As of December 31, 2018, Dr. Karl Busch, Ms. Ayhan Busch, Ms. Ayla Busch, Mr. Sami Busch and Mr. Kaya Busch, all of Germany, according to their own statements, held a total of 50.02 % of the voting rights in the Company (previous year: 38.96 %). No further information is available to us. The shares are held indirectly through Pangea GmbH, Maulburg, Germany, and other independent legal entities belonging to the family-run Busch Group, and are deemed to be held by the persons named. To the best of our knowledge, there were no other shareholders with a holding of more than 10.0 % as of December 31, 2018 and also as of December 31, 2017.

Amendments to the Articles of Association can be adopted by the Annual General Meeting by a simple majority of the voters present at the Annual General Meeting, unless the law requires a larger majority. To the best of our knowledge, there are no restrictions on voting rights or the transfer of shares. According to the Articles of Association of the Company and §§ 84 and 85 of the German Stock Corporation Act ("AktG"), Management Board members are appointed by the Supervisory Board for a maximum of five years. Reappointments or extensions to the term of office are permitted for a maximum of five years in each case.

Through a resolution of the Annual General Meeting on May 23, 2018, the Management Board was authorized to increase the subscribed capital one or more times by € 12,630,602.24 or 4,933,829 shares in exchange for cash and/or contributions in kind (authorized capital). This authorization is valid until May 23, 2023 and requires the approval of the Supervisory Board.

According to the resolution of the Annual General Meeting on May 22, 2014, the Management Board is authorized to issue fractional bonds with option or conversion rights or conversion obligations, profit participation rights or participating bonds (or combinations of these instruments) with an aggregate nominal value of up to € 200,000,000.00 and to grant the holders conversion rights for up to 2,466,914 no-par bearer shares of the Company having a pro-rata amount of the share capital of up to € 6,315,299.84. This authorization is valid until Tuesday, May 21, 2019 and requires the approval of the Supervisory Board.

At the Annual General Meeting on May 21, 2015, the shareholders authorized the Management Board to repurchase treasury shares pursuant to § 71 Sub-Para. 1, No. 8, German Stock Corporation Act ("AktG"). This authorization covers the buyback of a proportionate amount of the Company's share capital of up to € 2,526,120.70 (986,766 shares corresponding to 10 % of the share capital at the time the resolution was adopted), requires the approval of the Supervisory Board and is valid through May 20, 2020. The Corporate Group does not own treasury shares as of December 31, 2018 and 2017.

For information relating to the employment contracts of the members of the Management Board, please refer to the corresponding paragraphs in the compensation report [SEE PAGE 82](#).

There are no further aspects that would require discussion within the context of § 315a Sub-Para. 1, German Commercial Code ("HGB").

CORPORATE GOVERNANCE REPORT AND DECLARATION ON CORPORATE GOVERNANCE

Pfeiffer Vacuum complies with virtually all Code recommendations

On December 5, 2018, the Management and Supervisory Boards of Pfeiffer Vacuum Technology AG submitted the Statement of Compliance for the year 2018 required pursuant to § 161 of the Germany Stock Corporation Act ("AktG"). It was made permanently accessible to shareholders on the Corporation's website (group.pfeiffer-vacuum.com).

Since the submission of the last statement of compliance on January 24, 2018, Pfeiffer Vacuum Technology AG complies with all recommendations of the German Corporate Governance Code, as amended in February 2017, with the following two exceptions:

- The German Corporate Governance Code recommends a deductible for the Supervisory Board's D&O insurance (Paragraph 3.8). The Supervisory Board's actual D&O insurance does not contain a deductible. A deductible would not improve the Supervisory Board's overall motivation and sense of responsibility as the members work for the benefit of the Group.
- The German Corporate Governance Code recommends that a term limit is established for the period on the Supervisory Board (Paragraph 5.4.1). In the financial year 2018, the Supervisory Board has set a specified limit of 15 years for the period of membership on the Supervisory Board. All members of the Supervisory Board fulfil this requirement, with the exception of Mr. Götz Timmerbeil; the Supervisory Board made an exception for him, since he possesses a high level of expertise and many years of knowledge of the Company, which the Supervisory Board would not like to forgo at this point in time and after the resolved changes to the Supervisory Board in the past three years.

Dual management system: Management Board and Supervisory Board

As a stock corporation based in Asslar, Germany, Pfeiffer Vacuum Technology AG is also subject to the provisions of the German Stock Corporation Act ("AktG"). One of the basic principles enshrined in this is the dual management system, which assigns the management of the Company to the Management Board and the appointment, advice and supervision of the Management Board to the Supervisory Board. These two bodies are strictly separated as corporate organs, both in terms of their members and their responsibilities. Both bodies work together closely in the interests of the Company.

Management Board

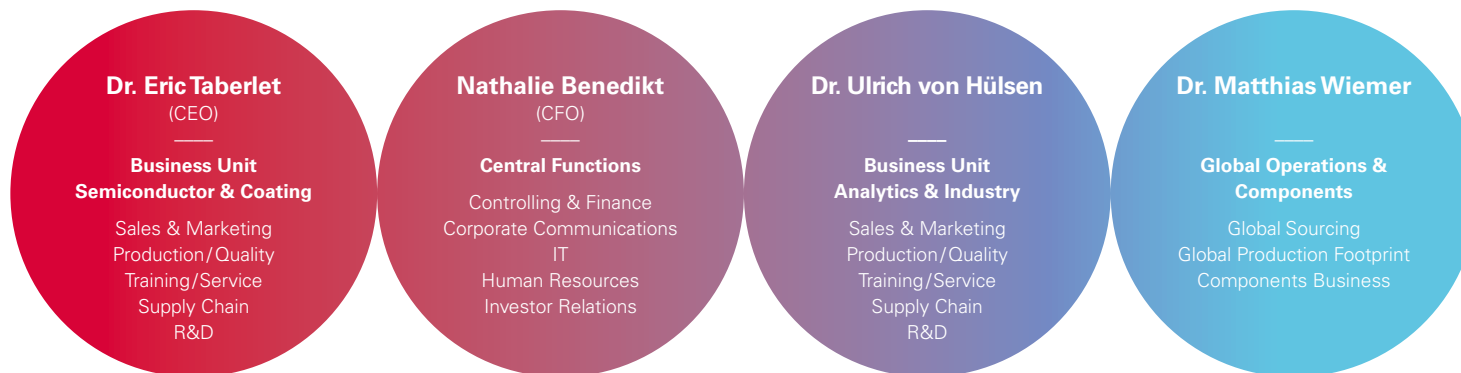
Since November 27, 2017, the Management Board has consisted of

- Dr. Eric Taberlet, Chief Executive Officer (CEO), Diploma in Engineering,
- Nathalie Benedikt, Chief Financial Officer (CFO), Diploma in Business Administration,
- Dr. Ulrich von Hülßen, Diploma in Physics, and
- Dr. Matthias Wiemer, Diploma in Engineering.

The members of the Management Board are responsible for the further development and strategy of the Company. They are also involved in the day-to-day running of the Company and bear operational responsibility.

The responsibilities of the current members of the Management Board were as follows in the 2018 fiscal year:

PFEIFFER VACUUM TECHNOLOGY AG MANAGEMENT BOARD



In order to implement the individual areas of the growth strategy – gaining market share, strengthening the global production and value chain, expanding R&D activities – in a faster and more focused way, it was decided at the beginning of November 2018 to redefine the allocation of responsibili-

ties in the Management Board with effect from January 1, 2019. According to the decision of the Management Board and Supervisory Board, the Company is to be organized in the future according to its global business functions.

Starting January 1, 2019, the new functions of the Board of Management members are as follows:

FUNCTIONS OF THE MANAGEMENT BOARD MEMBERS



CEO = Chief Executive Officer, CSO = Chief Sales Officer,
CTO = Chief Technology Officer, CFO = Chief Financial Officer,
COO = Chief Operations Officer

The COO will be responsible for the performance, efficiency and flexibility of the global operational infrastructure and processes. The position of COO is filled by an external consultant on an interim basis. At the same time, the search was initiated for a suitable candidate for permanent appointment to this position.

Dr. Matthias Wiemer will serve as a member of the Management Board with a remit for special tasks until his contract expires on December 31, 2019.

The four-eyes principle applies in exercising the duties and responsibilities of the Management Board. Major decisions are always made jointly. Personal expenditures, such as travel and entertainment expenses, require the approval of another Management Board member. In addition to close coopera-

tion and reciprocal information on a daily basis, board meetings are held weekly.

The Management Board works exclusively for Pfeiffer Vacuum. In this context, the Management Board members are also members of supervisory organs of various subsidiaries of the Company. They are not members of any regulatory bodies outside the Pfeiffer Vacuum Group.

Supervisory Board

Pursuant to the statutory requirements and the Articles of Association of Pfeiffer Vacuum Technology AG, the Supervisory Board consists of a total of six persons. Four persons represent the shareholders and two persons represent the employees of the Company.

The Supervisory Board members elected by the shareholders Dr. Michael Oltmanns and Dr. Wolfgang Lust resigned from their Supervisory Board mandate with effect from October 25, 2017 and left the Supervisory Board at that time. By decision of the Wetzlar District Court on October 5, 2017, Ayla Busch was legally appointed to the Supervisory Board for the period from October 26, 2017 until the end of the next ordinary Annual General Meeting. Ayla Busch was elected as Chairwoman of the Supervisory Board at the Supervisory Board meeting on October 26, 2017. By resolution of the Wetzlar District Court dated March 19, 2018, Henrik Newerla was legally appointed as a member of the Supervisory Board for the period from March 19, 2018 until the end of the next Annual General Meeting.

Accordingly, new elections to the Supervisory Board took place at the last Annual General Meeting on May 23, 2018. The Annual General Meeting approved the proposal of the Supervisory Board and elected Ayla Busch and Henrik Newerla as full members of the Supervisory Board. In turn, at the constituent meeting of the Supervisory Board on May 23, 2018, Ms. Busch was appointed Chairwoman of the Supervisory Board.

Membership over the course of the year 2018 was as follows:

- Ayla Busch (Chairwoman),
Co-CEO Busch SE, Maulburg
- Götz Timmerbeil (Vice Chairman),
Auditor and Tax Consultant
- Filippo Th. Beck,
Attorney at Law of Swiss Law
- Helmut Bernhardt (Employee Representative),
Development Engineer
- Manfred Gath (Employee Representative),
Chairman of the Employee Council
- Henrik Newerla, Retiree
from March 19, 2018

The Supervisory Board members elected by the shareholders, Götz Timmerbeil and Filippo Th. Beck, were voted during the Annual General Meeting to a term of office of five years in May 2016. The term of office of the subsequently elected Supervisory Board members Ayla Busch and Henrik Newerla also ends on the day of the Annual General Meeting, which resolves on the discharge for the financial year 2020.

For election as Supervisory Board Member, the Nominating Committee submits a nomination suggestion to the Supervisory Board. When selecting the candidates, care is taken to ensure that at all times there are members of the Supervisory Board who possess the requisite expertise, skills, and professional experience and are sufficiently independent. The international activities of the Group and potential conflicts of interest are also taken into account.

For its composition the Supervisory Board has determined the following specific objectives: internationality, avoidance of potential conflicts of interest, independence, temporal availability, age limit, term of membership, occupational diversity. These objectives have been taken into consideration in the past, and this is also intended for future nominations.

No compensations or benefits for personal service rendered, especially consultation and brokerage services, were paid or granted to the members of the Supervisory Board during the period under review. No potential conflicts of interest requiring immediate disclosure to the Supervisory Board arose for Management and Supervisory Board members in fiscal 2018. Finally, the Rules of Procedure for the Management Board provide that the Supervisory Board must grant its approval for significant business transactions.

According to the recommendations of the German Corporate Governance Code, no more than two previous Management Board members hold seats on the Pfeiffer Vacuum Supervisory Board. Furthermore, the Supervisory Board reviews the independence of its members. It has established standards for assessing this independence, which are based on the Code, in particular. According to these principles, the majority of current Supervisory Board members is considered independent, thus assuring independent advice and monitoring of the Management Board.

The establishment of an Audit Committee is a longstanding practice at Pfeiffer Vacuum. As a certified public accountant, the Chairman of the Audit Committee, Götz Timmerbeil, is particularly qualified to bear responsibility for the activities of the Audit Committee, in particular in connection with questions relating to financial accounting, compliance, and the risk management system.

The task of the Nominating Committee is to suggest suitable candidates to the Supervisory Board who can then recommend them for nomination to the Annual General Meeting.

The committee memberships of the Supervisory Board members can be seen in the following overview:

PERSONNEL COMPOSITION OF THE SUPERVISORY BOARD COMMITTEES

	Nominating Committee	Audit Committee	Management Board Committee
Frau Ayla Busch	Chairwoman	Yes	Chairwoman
Götz Timmerbeil	Yes	Chairman	Yes
Filippo Th. Beck	Yes	Yes	Yes
Helmut Bernhardt	—	—	—
Manfred Gath	—	—	—
Henrik Newerla (from March 19, 2018)	—	—	Yes

Additionally, a Management Committee was formed. In the past, the Management Committee has deliberated the personnel matters of the board members in detail before – in accordance with the requirements of the German Corporate Governance Code – being resolved by the full Supervisory Board. The determination of Management Board compensation is thus subject to the provisions of the German Act on the Appropriateness of Management Board Compensation.

The following members exercised further mandates. These are supervisory board mandates unless otherwise indicated:

- Ayla Busch
 - Busch Taiwan Corporation, New Taipei City, Taiwan, Supervisor, until January 17, 2019
 - Busch Clean Air S.A., Pruntrut, Switzerland, Member of the supervisory organ, until December 31, 2018
 - Busch Vakuumenteknik A/S, Ry, Denmark, Member of the supervisory organ, until January 16, 2019
 - Busch Vacuum Israel Ltd., Kiryat Gat, Israel, Director, until December 31, 2018
 - Busch Vacuum India Pvt. Ltd., Manesar, India, Non-Executive Director, until December 31, 2018
 - Busch Consolidated Inc., Virginia Beach, United States, Non-Executive Director, until December 31, 2018
 - Busch Vacuum South Africa (Pty.) Ltd., Johannesburg, South Africa, Non-Executive Director, until December 31, 2018

- Götz Timmerbeil
 - Arena Gummersbach GmbH & Co. KG, Gummersbach (Deputy Chairman)
 - Richard Stein GmbH & Co. KG, Engelskirchen, (Chairman of the Advisory Board), from July 1, 2018
 - VfL Handball Gummersbach GmbH, Gummersbach (Chairman of the Advisory Board), until June 30, 2018
- Filippo Th. Beck
 - Candoria Group, Baar (Switzerland), member of the supervisory organ of Candoria Holding AG, president of the supervisory organ of Progres Holding AG and Sendaya Holding SA (formerly: Candoria Luxembourg Holding SA), Luxembourg;
 - Tenro Group, Bottmingen (Switzerland), member of the supervisory organ of various companies in the group,
 - Biamathea AG, Basel (Switzerland), member of the supervisory organ,
 - Polyterra Liegenschaften AG in liquidation, Küsnacht (Switzerland), member of the supervisory organ and liquidator,
 - Tainn-Immobilien AG, Berne (Switzerland), member of the supervisory organ,
 - Bellavista Services AG, member of the supervisory organ, from April 10, 2018,
 - IKFE Properties I AG, Zurich (Switzerland), president of the supervisory organ, until November 1, 2018

The Company has taken out pecuniary loss liability insurance (so-called D&O insurance) for the members of the Management and Supervisory Boards.



Collaboration between the Management and Supervisory Boards

Close and trustful collaboration between the Management and Supervisory Boards is an essential prerequisite for good corporate governance and serves the good of the Company. Supervisory Board meetings are held at least twice a year in this context, for which the members of the Management Board report in detail on the course of business operations as well as on the implementation of the strategy agreed upon with the Supervisory Board.

If necessary, other executives also explain the current issues in their respective areas of responsibility. If needed, additional special meetings are held. The Management Board reports to the Supervisory Board on the general condition of the Company, including the risk situation, through a monthly reporting system.

Shareholders and Annual General Meeting

The Annual General Meeting is the supreme body of the corporation. At the Annual General Meeting, shareholders may exercise their voting rights themselves, through a proxy of their choice, or a proxy nominated by the Corporation who is bound to act on their instructions. The shareholders make key decisions at the Annual General Meeting about the allocation of profits, amendments to the Articles of Association, or the approval of share repurchase programs. All information and documents essential for the Annual General Meeting will be provided to the shareholders in a timely manner. The agenda and an explanation of the conditions of participation in addition to the shareholders' rights will generally be announced one and a half months before the Annual General Meeting date.

All documents and information for the Annual General Meeting are also available on our website. In addition, it is possible to electronically direct questions to the employees of our Investor Relations Department. Using our financial calendar, which is made public in the Annual Report, in the quarterly reports, and on our website, we inform shareholders and interested parties about key dates, publications, and events throughout the year. In addition, we maintain close ties with our shareholders through our active Investor Relations work. Moreover, it is also possible to contact the Company with questions at any time.



COMPENSATION REPORT

In the following section, the compensation for members of the Management and Supervisory Boards is detailed.

Compensation for the Management Board

Each Management Board member receives an annual fixed salary and benefits in kind, in particular, in the form of company cars are provided.

Each Management Board member continues to receive an annual bonus for the respective financial year depending on the achievement of pre-defined targets (short-term variable compensation). The bonus is K€ 140 when fully achieved and is paid after the Annual General Meeting for the previous year. For 2018, each Management Board member has been assigned three short-term goals corresponding to the respective area of responsibility.

In addition, each Management Board member receives long-term variable compensation depending on the achievement of defined goals during a three-year assessment period. Half of the long-term variable remuneration depends on the development of the Company's EBITDA and the other half on the achievement of a further target set by the Supervisory Board (so-called Key Performance Indicators or KPIs) or, alternatively, several further KPIs pre-defined by the Supervisory Board during a three-year assessment period. The amount of the annual bonuses and the long-term variable compensation are based on the degree to which the targets have been achieved and amount to K€ 160 when the targets have been fully met after three years. The target fulfillment achieved so far was recognized as a provision as of December 31, 2018.

BENEFITS GRANTED

Dr. Eric Taberlet, Chairman of the Management Board (Starting date: November 27, 2017)

	2018	2018		2017
		Minimum value	Maximum value	
		in K€	in K€	in K€
Fixed compensation	251	251	251	27
Fringe benefits	38	38	38	0
Total	289	289	289	27
One-year variable compensation	140	0	140	29
Multi-year variable compensation (from 2018)	53	0	53	0
Total variable compensation	193	0	193	29
Other	0	0	0	0
Total compensation	482	289	482	56
Pension benefits	0	0	0	0
Comprehensive compensation	482	289	482	56

BENEFITS GRANTED

Nathalie Benedikt, Chief Financial Officer (Starting date: November 27, 2017)

	2018	2018		2017
		Minimum value	Maximum value	
		in K€	in K€	in K€
Fixed compensation	220	220	220	20
Fringe benefits	20	20	20	0
Total	240	240	240	20
One-year variable compensation	140	0	140	13
Multi-year variable compensation (from 2018)	53	0	53	0
Total variable compensation	193	0	193	13
Other	0	0	0	0
Total compensation	433	240	433	33
Pension benefits	0	0	0	0
Comprehensive compensation	433	240	433	33

BENEFITS GRANTED

Dr. Ulrich von Hülsen, Member of the Management Board (Starting date: August 1, 2017)	2018	2018		2017
		Minimum value	Maximum value	
		in K€	in K€	in K€
Fixed compensation	220	220	220	92
Fringe benefits	8	8	8	3
Total	228	228	228	95
One-year variable compensation	140	0	140	125
Multi-year variable compensation (from 2018)	53	0	53	0
Total variable compensation	193	0	193	125
Other	0	0	0	0
Total compensation	421	228	421	220
Pension benefits	0	0	0	0
Comprehensive compensation	421	228	421	220

However, the long-term variable remuneration does not become due until two years later, and only in full if the average success of these two subsequent years is at least as high as the average success of the two previous years. If it falls below, the long-term incentive is reduced accordingly. The starting point of the calculation in both cases is an annual target amount, which is allocated for the long-term remuneration for the following three-year period. The payment of the long-term variable remuneration granted in 2018 can therefore be made for the first time after the end of the 2020 fiscal year.

The bonuses for the 2017 fiscal year were granted following a resolution of the Management Board Committee.

The aforementioned compensation is disclosed for the members of the Management Board active in 2018. There were no compensation elements granted or paid in 2018 for Manfred Bender who was dismissed as a member of the Management Board on November 27, 2017. In order to ensure the comparability of presentation of the active Board Member's compensation the previous year's figures with regard to Mr. Bender were adjusted accordingly.

Dr. Matthias Wiemer has received a pension commitment in the unchanged amount of 40% of the last fixed salary. In this context, net pension expenses pursuant to IFRS amounting to K€ 225 were recorded in the income statement in 2018 (previous year: K€ 232).

In addition, there are pension commitments to former Management Board members. The net pension costs of the completed fiscal year attributable to this group of persons amount to K€ 80 (previous year: K€ 327).

BENEFITS GRANTED

Dr. Matthias Wiemer, Member of the Management Board (Starting date: April 1, 2007)	2018	2018		2017
		Minimum value	Maximum value	
		in K€	in K€	in K€
Fixed compensation	350	350	350	290
Fringe benefits	14	14	14	23
Total	364	364	364	313
One-year variable compensation	140	0	140	300
Multi-year variable compensation (from 2018)	53	0	53	0
Total variable compensation	193	0	193	300
Other	0	0	0	0
Total compensation	557	364	557	613
Pension benefits	225	225	225	232
Comprehensive compensation	782	589	782	845

TOTAL BENEFITS GRANTED TO THE MANAGEMENT BOARD

	2018	2017
	in K€	in K€
Fixed compensation	1,041	429
Fringe benefits	80	26
Total	1,121	455
One-year variable compensation	560	467
Multi-year variable compensation (from 2018)	212	0
Total variable compensation	772	467
Other	0	0
Total compensation	1,893	922
Pension benefits	225	232
Comprehensive compensation	2,118	1,154

After K€ 240 was paid into the Pfeiffer Vacuum Trust e.V. in 2017, repatriation totaling K€ 53 was made. The net pension obligation for Management Board members and former Management Board members amounts to K€ 6,869 (previous year: K€ 5,777). Current pensions in 2018 amounted to K€ 371 (previous year: K€ 358).

BENEFITS RECEIVED TO THE COMPENSATION OF THE MANAGEMENT BOARD

	Dr. Eric Taberlet Chairman of the Management Board		Nathalie Benedikt Chief Financial Officer		Dr. Ulrich von Hülsen Member of the Management Board		Dr. Matthias Wiemer Member of the Management Board		Total	
	Starting date: November 27, 2017		Starting date: November 27, 2017		Starting date: August 1, 2017		Starting date: April 1, 2017			
	2018	2017	2018	2017	2018	2017	2018	2017	2018	2017
	in K€	in K€	in K€	in K€	in K€	in K€	in K€	in K€	in K€	in K€
Fixed compensation	278	0	240	0	220	92	350	290	1,088	382
Fringe benefits	38	0	20	0	8	3	14	23	80	26
Total	316	0	260	0	228	95	364	313	1,168	408
One-year variable compensation	29	0	29	0	109	0	300	337	467	337
Multi-year variable compensation (from 2018)	0	0	0	0	0	0	0	0	0	0
Total variable compensation	29	0	29	0	109	0	300	337	467	337
Other	0	0	0	0	0	0	0	0	0	0
Total	345	0	289	0	337	95	664	650	1,635	745
Pension benefits	0	0	0	0	0	0	0	0	0	0
Comprehensive compensation	345	0	289	0	337	95	664	650	1,635	745

Compensation for the Supervisory Board

The members of the Supervisory Board exclusively receive a fixed compensation determined by the Annual General Meeting. On May 24, 2016, the Annual General Meeting approved an increase in the Supervisory Board's compensation from the 2016 fiscal year onwards. If members of the Supervisory Board leave or are newly elected during the fiscal year, their remuneration will be paid on a pro rata temporis basis.

The composition of the remuneration for 2018 and 2017 is as follows:

FIXED COMPENSATION OF THE SUPERVISORY BOARD MEMBERS

	2018	2017
	in K€	in K€
Ayla Busch, Chairwoman of the Supervisory Board (from October 25, 2017)	105	19
Götz Timmerbeil, Deputy Chairman of the Supervisory Board	70	70
Filippo Th. Beck	35	35
Helmut Bernhardt	35	35
Manfred Gath	35	35
Henrik Newerla (from March 19, 2018)	28	—
Dr. Michael Oltmanns (until October 25, 2017)	—	86
Dr. Wolfgang Lust (until October 25, 2017)	—	29
Total	308	309

Proven expenses incurred by the Supervisory Board, such as travel expenses, will be reimbursed.

Negative statement

No further benefits were paid to Management or Supervisory Board members over and above the listed compensation components. In particular, no stock options were granted, no loan entitlements were established, and no liability commitments were pronounced. In addition, no special agreements were made further on in connection with the termination of the activities for the Management or Supervisory Boards or in connection with claw-back claims.

TRANSPARENCY

The claim to provide all target groups promptly with the same information at the same time is a high priority in our corporate communications. One of the ways that this is manifested is that all relevant information is published in German and in English. Shareholders and interested parties can directly obtain information on current developments within the Group on the Internet. All ad-hoc releases by the Pfeiffer Vacuum Technology AG shall be made available on the Company's website. The purchase and sale of Pfeiffer Vacuum shares by members of the Management and Supervisory Boards will be published immediately pursuant to Article 19 of European Regulation No. 596/2014 (Market Abuse Regulation), in Europe and on the Company's website at GROUP.PFEIFFER-VACUUM.COM.

EQUALITY

In January 2018, pursuant to § 111 Sub-Para. 5 of the German Stock Corporation Act ("AktG"), the Supervisory Board determined women's quota of 16.67% for the Supervisory Board and of 25% for the Management Board and a deadline for reaching the targets by December 31, 2020. These quotas are already achieved at the present time.

The provision contained in § 76, Sub-Para. 4, of the German Stock Corporation Act ("AktG"), refers to management levels at Pfeiffer Vacuum Technology AG only. Due to its function as a finance holding, this company only has very few employees and there are no further management levels below the Management Board, thus making it impossible to establish a target figure.

COMPLIANCE

Adherence to all internal rules and legal regulations applicable to Pfeiffer Vacuum Technology AG and its subsidiaries by management and employees (compliance) has long been a goal of the Company as well as an inherent part of our Company culture. This is especially expressed in our Code of Conduct, which applies for all employees. The Management Board is fundamentally committed to these tenets in addition to the "zero tolerance" principle. Our Code of Conduct defines, among other things, integrity and lawful conduct as basic standards and is the basis for the daily work of all employees in our Company. The Code of Conduct, which was updated and supplemented in 2018, is also available outside the Company via the Company's website in all languages that are relevant to the Group's employees. In it, options for employees to report possible violations of the law



in the Corporate Group are described. These are also open to third parties outside of the Company.

Compliance with legal and internal Company regulations is a comprehensive task for which each area of the Company is fundamentally responsible. Committed employees educate themselves further when required and take part in training in order to recognize and address current developments in their respective areas of responsibility. All determined breaches of compliance will be sanctioned accordingly. With external support, an enhancement and adaptation of the Compliance Management System is currently taking place.

ACCOUNTING AND AUDITING

Pursuant to statutory provisions, the Consolidated Financial Statements of Pfeiffer Vacuum and the Quarterly Financial Reports are prepared in accordance with the current International Financial Reporting Standards (IFRS) as applicable in the European Union.

The Annual Financial Statements of Pfeiffer Vacuum Technology AG as the parent corporation are prepared in accordance with the provisions of the German Commercial Code ("HGB"). These Consolidated Financial Statements were audited pursuant to the resolution of the Annual General Meeting on May 23, 2018 by PricewaterhouseCoopers GmbH, Wirtschaftsprüfungsgesellschaft, Frankfurt am Main, Germany. PricewaterhouseCoopers GmbH also audits the Annual Financial Statements of Pfeiffer Vacuum Technology AG as well as the report on relations with affiliated companies.

It was agreed with the auditors that the Chairman of the Audit Committee shall be immediately informed about any reasons for exclusion or prejudice arising during the audit, unless these are eliminated immediately. The auditor must also immediately report all findings and events of importance to the Supervisory Board that arise during the audit. In addition, the auditor must inform the Supervisory Board and note in the audit if the auditor determines facts during the course of the audit that are not compatible with the Statement of Compliance submitted by the Management and Supervisory Boards pursuant to § 161 of the German Stock Corporation Act ("AktG").