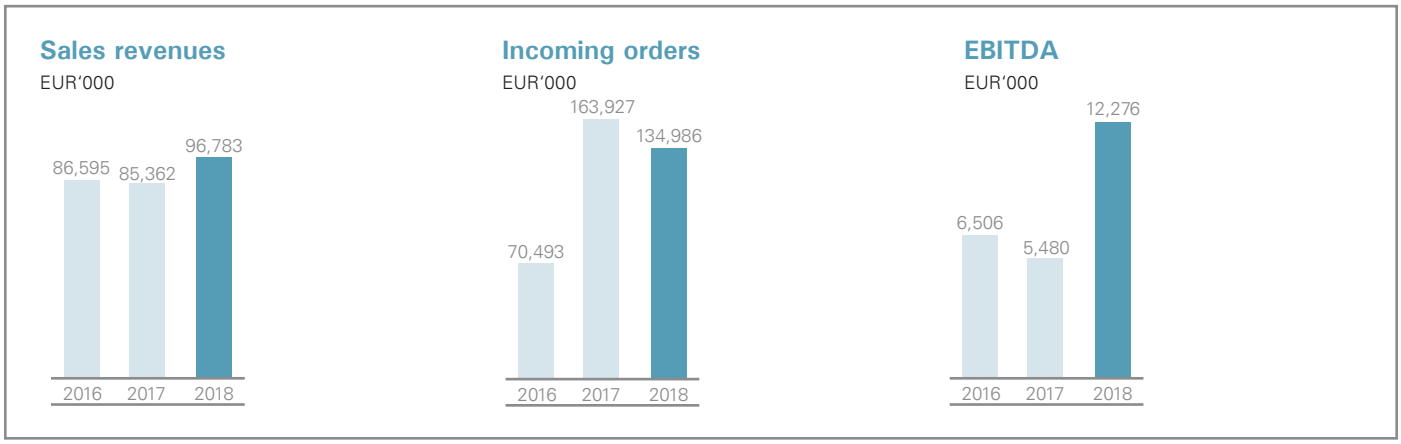
PVA TePla

Be equipped for tomorrow's materials.

Annual Report 2018

IMPORTANT CONSOLIDATED FIGURES AT A GLANCE

EUR´000	2018	2017	2016
Sales revenues	**96,783**	**85,362**	**86,595**
Industrial Systems	37,323	33,257	35,674
Semiconductor Systems	59,460	52,105	50,921
Gross profit	**31,054**	**19,092**	**20,413**
in % sales revenues	32.1	22.4	23.6
R&D expenses	3,438	2,632	2,970
EBITDA	**12,276**	**5,480**	**6,506**
in % sales revenues	12.7	6.4	7.5
Operating result (EBIT)	**9,468**	**3,027**	**3,890**
in % sales revenues	9.8	3.5	4.5
Consolidated net result	**5,968**	**5,593**	**2,931**
in % sales revenues	6.2	6.6	3.4
Total assets	**162,155**	**119,096**	**94,736**
Shareholders' equity	**50,797**	**45,129**	**40,305**
Equity ratio in %	31.3	37.9	42.5
Employees as of 31.12.	**470**	**385**	**377**
Incoming orders	**134,986**	**163,927**	**70,493**
Order backlog	**171,513**	**129,079**	**50,623**
Book-to-bill-ratio	1.39	1.92	0.81
Cash Flow from operating activities	**11,652**	**38,969**	**-4,441**
Net financial position	**37,010**	**29,133**	**-8,902**



PVA TePla AG

AS A VACUUM SPECIALIST FOR HIGH-TEMPERATURE AND PLASMA TREATMENT PROCESSES, PVA TEPLA AG IS ONE OF THE WORLD´S LEADING SYSTEM ENGINEERING COMPANIES IN THE FIELDS OF HARD METAL SINTERING, CRYSTAL GROWING, THE USE OF PLASMA SYSTEMS FOR SURFACE ACTIVATION AND ULTRA-FINE CLEANING AS WELL AS SYSTEMS FOR QUALITY INSPECTION.

INNOVATIVE DEVELOPMENTS

With its systems and services, PVA TePla enables and supports the innovative manufacturing processes and developments of its customers, primarily in the semiconductor, hard metal, electrical/electronic and optical industries – as well as in the energy, photovoltaic and environmental technologies.

INDIVIDUAL SOLUTIONS

The company provides its customers with customized solutions from a single source. These range from technology development through tailor-made design and construction of production facilities right up to an after-sales service that covers all four corners of the globe.

DEVELOPMENT OF NEW APPLICATION FIELDS

Together with its customers, the PVA Group uses tailor-made systems to open up the latest fields of application - be it the next generation of wafers for the semiconductor or photovoltaic industry, metal powder technology, new crystals for the optoelectronic industry or further developments of materials.

Foreword by the Management Board

DEAR SHAREHOLDERS AND BUSINESS PARTNERS,

The PVA Group performed very well in 2018. At EUR 96.8 million (previous year: EUR 85.4 million), consolidated revenue was up 13% on the previous year. In addition, there was a significant increase in earnings with EBITDA rising to EUR 12.3 million – more than double the previous year's figure. The EBITDA margin climbed into double digits, reaching 12.7% (previous year: 6.4%). Earnings before interest and taxes (EBIT) tripled to EUR 9.5 million (previous year: EUR 3.0 million), representing an EBIT margin of 9.8%. The gross result also benefited from the rise in consolidated sales revenues, climbing significantly to EUR 31.1 million (previous year: EUR 19.1 million). This caused the gross margin to strengthen to 32.1%, up from 22.4% in the previous year.

Revenue in the Industrial Systems division climbed by 12% to EUR 37.3 million (previous year: EUR 33.3 million), thus accounting for 39% of Group revenue. Sales revenues in the Semiconductor Systems division rose to EUR 59.5 million in 2018 (previous year: EUR 52.1 million), thus accounting for 61% of the total sales revenues for the PVA Group. Growth was driven primarily by crystal growing systems and metrology systems for the semiconductor industry.

We can also look back on a very successful year for incoming orders across all business units. New orders from current operating business to the tune of EUR 135.0 million were placed in 2018, up significantly on the previous year's figure of EUR 93.9 million (adjusted to take account of a major order (EUR 70 million) in the Semiconductor Systems division). The book-to-bill ratio of 1.4 (previous year: 1.9) reflects revenue potential from new business, including for subsequent periods.

The PVA Group's incoming orders as of the end of December therefore rose by EUR 42.4 million to achieve a record high of EUR 171.5 million, up on the already high previous year figure (EUR 129.1 million). These orders provide revenue visibility until 2020. Expanding capacities in wafer production, vital for the growing microelectronics and high performance electronics industry, is a key driver of growth and established wafer manufacturers and new market players alike are all striving to significantly step up wafer production.

August 2018 marked another major strategic step forward for the PVA Group, when the take-over of SPA Software Entwicklungs GmbH, Coburg - specializing in software and automation in the semiconductor industry - was completed. Collaboration with that acquisition strengthens our presence in software development and automation, key areas enjoying soaring customer demand.

PVA TePla AG's shares enjoyed stable development in 2018, particularly in light of the difficult stock market environment. The share price opened the year at EUR 12.00, climbing to EUR 18.40 by mid-2018. Although it subsequently fell to EUR 12.20 at year-end, this still represented positive performance for the year as a whole – unlike the major indexes. PVA TePla shares also performed well in comparison to its peer group, both at their peak and at the end of the year. Despite the excellent order situation and the company's extremely good economic outlook, PVA TePla's shares were unable to escape the negative sentiment on the wider market. Interest in PVA TePla on the capital markets remains high. In the past fiscal year, two other renowned banks began to observe and cover the company.

The Management Board of PVA TePla is forecasting consolidated revenue in the scale of EUR 125 million and EBITDA in the scale of EUR 15 million for the current fiscal year.

On behalf of our managing directors and all our employees, we would like to thank you, our shareholders, for your trust in and commitment to our company.

Alfred Schopf
Chief Executive Officer

Oliver Höfer
Chief Operating Officer

Report by the Supervisory Board of PVA TePla AG on fiscal year 2018

In fiscal year 2018, the Supervisory Board performed all duties required of it according to the law and the Articles of Association, and continuously monitored the work of the Management Board of PVA TePla AG in addition to advising the Management Board on a regular basis. It critically examined the proposed resolutions of the Management Board and put forward suggestions at the Supervisory Board meetings on the basis of the detailed written and verbal reports of the Management Board. The Management Board regularly, promptly and comprehensively informed the Supervisory Board with regard to key economic figures of the Group and business areas, other fundamental aspects of corporate management and planning, strategy, risk management, and compliance. The Management Board informed the Supervisory Board of a variety of business transactions not requiring approval and discussed them with it. The Supervisory Board was involved in decisions of fundamental importance. The Supervisory Board adopted the resolutions required according to the law or the Articles of Association. This was also done by circulation when necessary. In addition to the meetings and reports, the Chairman of the Supervisory Board and his Supervisory Board colleagues regularly obtained information on the current situation in discussions with the Management Board.

COOPERATION BETWEEN THE SUPERVISORY BOARD AND THE MANAGEMENT BOARD

The meetings of the Supervisory Board were characterized by open and intensive dialog with the Management Board. The Supervisory Board members were able to comprehensively prepare for meetings and resolutions on the basis of the documents made available by the Management Board.

In 2018, the Supervisory Board convened for four ordinary Supervisory Board meetings and held one extraordinary Supervisory Board meeting by telephone conference. All members of the Supervisory Board attended these meetings. No committees were formed due to the size of the Supervisory Board (three members). All matters that would have been addressed by committees were addressed by the full Supervisory Board.

CONFLICTS OF INTEREST

There were no potential conflicts of interest of Management Board and Supervisory Board members requiring immediate disclosure to the Supervisory Board and notification to the Annual General Meeting.

MEETINGS OF THE SUPERVISORY BOARD

The Supervisory Board dealt in depth with the ordering, sales revenues and earnings situation of each of the subsidiaries at all Supervisory Board meetings. The market situation and competitive situation and the opportunities and risks in the product areas were discussed in detail with the Management Board and managing directors. Other topics discussed were the development of personnel of the subsidiaries at management level and the composition of the Management Board.

During the extraordinary Supervisory Board meeting held by telephone conference on January 24, 2018, the Management Board discussed with the members of the Supervisory Board the cooperation agreement with a subsidiary of the Golden Concord Ltd. – Group (GCL) on the provision of technology for the production of crystal growing systems, which was noted and approved. A declaration setting out the objectives and skills profile for the Supervisory Board in accordance with the requirements of the German Corporate Governance Code was also resolved.

At its first ordinary meeting of 2018 on March 23, the Supervisory Board spoke at length about the 2017 consolidated financial statements, the market situation, the business situation and order expectations of the subsidiaries in the current fiscal year. The main items of discussion at the meeting were management matters at individual subsidiaries, including the appointment of a managing director.

At its meeting on June 18/19, 2018, the Supervisory Board intensively discussed the business situation and current projects at each of the subsidiaries as well as M&A projects, particularly the acquisition of SPA Software Entwicklungs GmbH, and issues relating to the General Data Protection Regulation. The Supervisory Board approved the acquisition of SPA Software Entwicklungs GmbH.

At its meeting on September 19, 2018, the Supervisory Board spoke at length about business development, and particularly about developments in sales revenues, incoming orders and the earnings situation of each of the subsidiaries in the current year. The discussion also focused on M&A projects and issues relating to the security of supply of strategically important components. The German Corporate Governance Code and necessary revisions to the declaration of compliance were discussed.

The focus of the Supervisory Board meeting on November 28, 2018 was corporate planning for 2019 to 2021 for the holding company and for the individual subsidiaries.

The Management Board and the managing directors of the subsidiaries with the highest sales revenues reported to the Supervisory Board on matters including comprehensive budget plans for the subsidiaries for the coming years. The individual budgets were adopted.

CORPORATE GOVERNANCE AND DECLARATION OF COMPLIANCE

At the meeting on November 28, 2018, the Management Board and Supervisory Board resolved the declaration of compliance with the German Corporate Governance Code pursuant to Section 161 of the German Stock Corporation Act (AktG). In December 2018, the updated joint declaration of compliance was made permanently available on the company's website at *https://www.pvatepla.com/en/investor-relations/corporate-governance*. Deviations from the Code were discussed intensively between the Management Board and Supervisory Board and justified.
The Management Board reports on corporate governance, including for the Supervisory Board, in accordance with Item 3.10 of the Code on the company's website at: *https://www.pvatepla.com/en/investor-relations/corporate-governance.*

The election of the auditors Ebner Stolz GmbH & Co. KG, Wirtschaftsprüfungsgesellschaft Steuerberatungsgesellschaft to audit the annual financial statements and consolidated financial statements for fiscal year 2018 was proposed to the Annual General Meeting. The Supervisory Board satisfied itself of the independence of the auditor in accordance with Section 107(3) Sentence 2 AktG and obtained and assessed a corresponding declaration of independence. In line with a resolution by the Supervisory Board, the auditor performs only consultancy services for the Group approved by the Supervisory Board. Following approval by the Annual General Meeting, the Supervisory Board issued the mandate to the auditor and set the audit fee. The main focal points of the audits of the annual and consolidated financial statements for 2018 were also coordinated between the Supervisory Board and the auditor.

The self-evaluation was performed on the basis of a detailed questionnaire and interviews, and the review of the efficiency of the Supervisory Board provided for in the German Corporate Governance Code was thus carried out.

DEPENDENT COMPANY REPORT

The Management Board prepared a dependent company report for the reporting year in accordance with Section 312(3) AktG. This report was audited by Ebner Stolz GmbH & Co. KG, Wirtschaftsprüfungsgesellschaft Steuerberatungsgesellschaft and issued with an unqualified audit opinion with the following wording: "In accordance with our duly performed audit and assessment, we confirm that 1) the factual statements in the report are correct and that 2) the amounts paid by the companies with respect to the legal transactions listed in the report were not unduly high."
The dependent company report was submitted to the Supervisory Board, which subjected it and the legal transactions and measures listed therein to an independent review pursuant to Section 314(2) AktG. This did not give rise to any objections. At the meeting on March 26, 2019, the auditor reported on the main findings of the audit.

AUDIT OF THE ANNUAL AND CONSOLIDATED FINANCIAL STATEMENTS

Ebner Stolz GmbH & Co. KG, Wirtschaftsprüfungsgesellschaft Steuerberatungsgesellschaft audited the annual financial statements and consolidated financial statements for the year ended December 31, 2018 and the management report and Group management report for fiscal year 2018 of PVA TePla AG. The auditor found that the present annual and consolidated financial statements were prepared in compliance with the German Commercial Code (HGB) and the International Financial Reporting Standards (IFRS) and accurately reflected the actual net assets, financial position, and results of operations. The annual and consolidated financial statements along with the combined management report and Group management report were issued with an unqualified audit opinion. The financial statements together with the management reports and the respective audit reports by the auditor were sent to each member of the Supervisory Board. The Supervisory Board assessed them and discussed them in detail at the meeting on March 26, 2019. At this meeting, the auditor reported on the main findings of the audit. We examined the annual financial statements, the management report and the auditor's statement on the assessment of the situation by the Management Board as well as the recommendation for the appropriation of retained earnings, the consolidated financial statements and the Group management report. There were no objections. We therefore approve the results of the audit of the financial statements. We approve the annual financial statements and consolidated financial statements prepared by the Management Board. The annual financial statements are thus adopted in accordance with Section 172 Sentence 1 AktG. We are in agreement with the management reports and, in particular, the assessment of the future development of the company. The Supervisory Board endorses the Management Board's proposal to carry over the reported unappropriated surplus to new account.

CHANGES IN THE COMPOSITION OF THE SUPERVISORY BOARD AND THE MANAGEMENT BOARD

There were no changes in the composition of the Supervisory Board and the Management Board in the reporting period.

THANKS

The Supervisory Board wishes to thank the management and all employees for their dedication and hard work in the past fiscal year.

Wettenberg, March 2019

On behalf of the Supervisory Board

Alexander von Witzleben
Chairman of the Supervisory Board of PVA TePla AG

PVA TePla on Capital Markets

EQUITY MARKET - STOCK EXCHANGE

The DAX saw its weakest performance for ten years in 2018, declining by -18.3%. The 2018 stock market year appeared to begin positively, with many investors and analysts anticipating slightly above-average growth accompanied by moderate inflation and low interest rates. The DAX and the Euro Stoxx 50 reached or approached new highs. US equities continued on their growth path into the fall on the back of the booming US economy and rising corporate profits – primarily as a result of tax cuts – whereas investor sentiment in Germany and Europe already deteriorated in the summer. The DAX closed the year down 18.3% compared with the start of the year and 22.3% compared with its high in late January, a situation that can be described as a bear market. At the start of the year, the average forecast according to 32 surveyed banks was that the DAX would close 2018 at 14,000 points.

SLOWDOWN IN GLOBAL ECONOMIC GROWTH

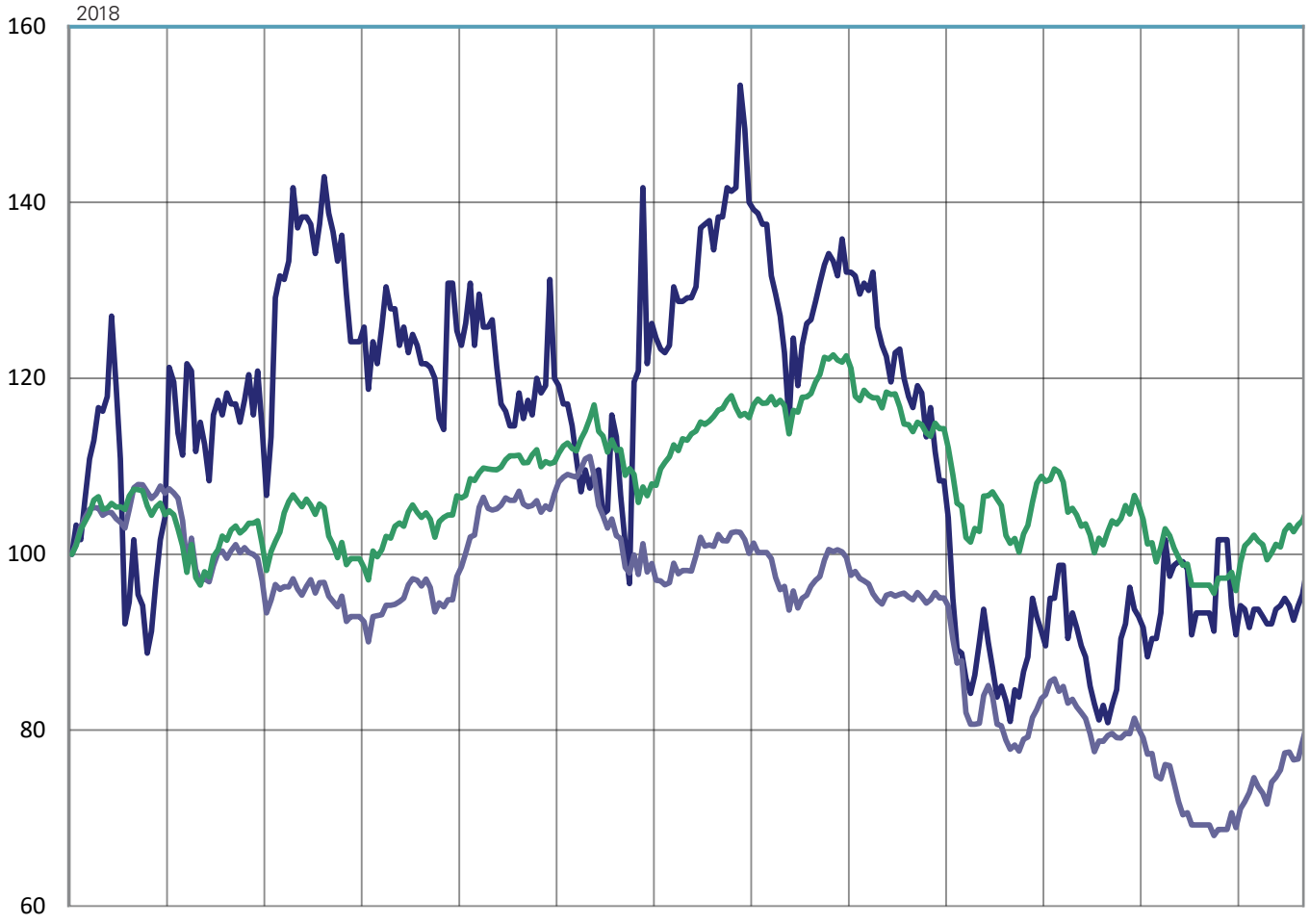
The International Monetary Fund (IMF) sees growing trade conflicts as the main reason for the anticipated end to the economic boom, while the joint fall report by Germany's leading economic research institutes also cites this aspect as the reason for the significant rise in international economic risks compared with the spring report. In terms of the German stock markets, rising tension within Europe also played a significant role – not least the threat of a no-deal Brexit, which increased as the year progressed, as well as political uncertainty in Italy with its high level of debt. Various major German companies were also impacted by negative extraordinary effects, including automotive stocks (e.g. diesel scandal, court-imposed bans on vehicles), Bayer (litigation risk in connection with the Monsanto acquisition) and Deutsche Bank.

PERFORMANCE OF PVA TEPLA'S SHARES

PVA TePla AG's shares enjoyed stable development in 2018, particularly in light of the difficult stock market environment. The share price opened the year at EUR 12.00, climbing to EUR 18.40 by mid-2018. Although it subsequently fell to EUR 12.20 at year-end, this still represented positive performance for the year as a whole – unlike the major indexes. PVA TePla shares also performed well in comparison to its peer group, both at their peak and at the end of the year. Despite the excellent order situation and the company's extremely good economic outlook, PVA TePla's shares were unable to escape the negative sentiment on the wider market. However, many companies on the semiconductor market saw far more substantial share price losses than PVA TePla in the past year.

Interest in PVA TePla on the capital markets remains stable at a high level, with Gustav Froberg from Berenberg Bank and Edwin de Jong from the Dutch bank NIBC initiating analyst coverage during 2018 and in early 2019 respectively. This is also reflected in the higher level of stock market liquidity: The turnover of PVA TePla's shares has increased more than fivefold in the past four years.

Performance of PVA TePla shares January 2018 – January 2019
in % 1-day-interval



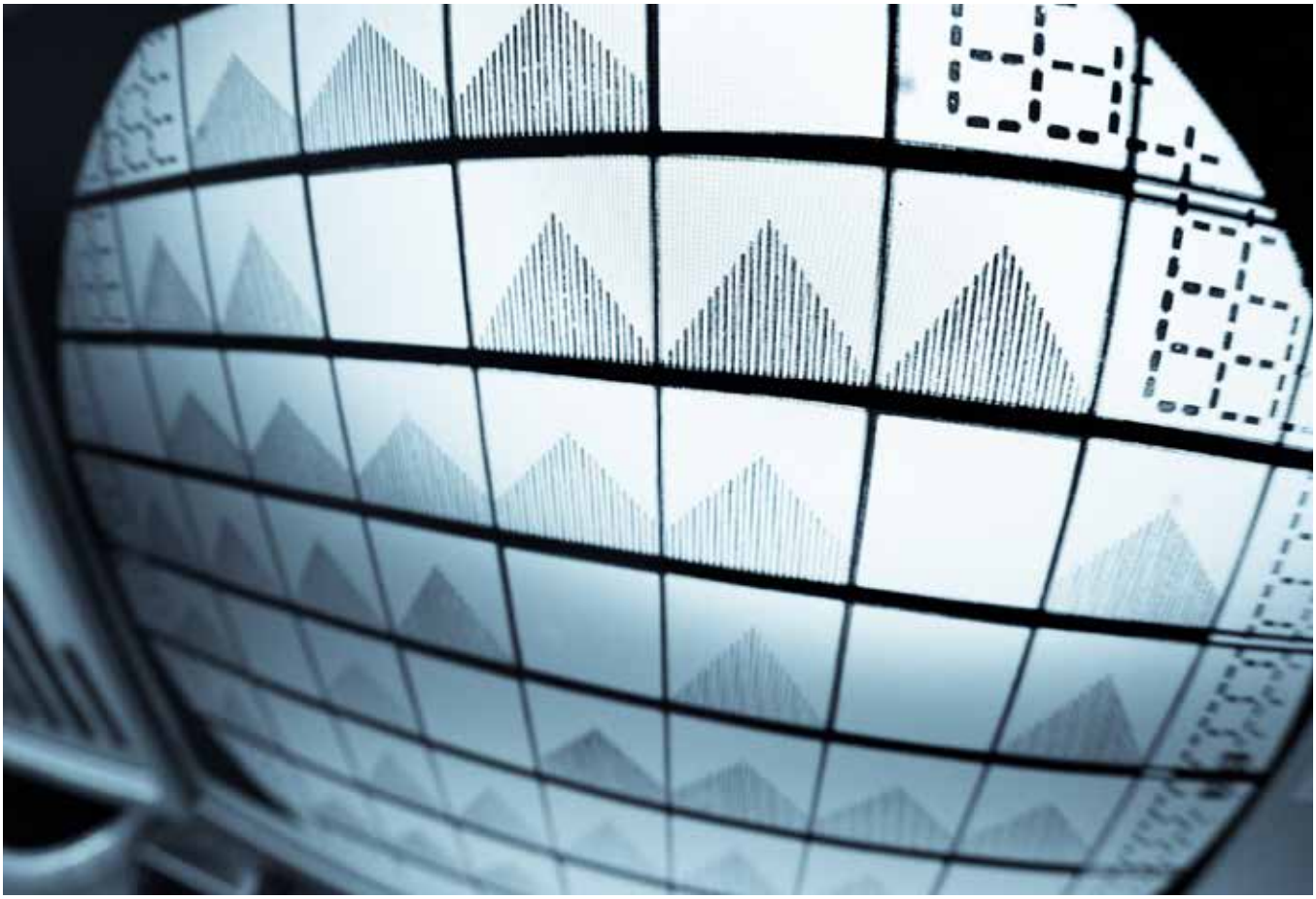
PVA TePla AG
DAXSubs. Advanced Industrial Equipment
Tec All Share

PVA TePla shares key figures		2018	2017
Earnings per share (EPS)	EUR	0.27	0.26
Annual high	EUR	18.40	12.00
Annual low	EUR	9.70	2.15
Closing rate as of Dec. 31	EUR	12.20	12.00
Performance of PVA TePla shares	%	+1.7	+458
Performance of Technology All Share	%	-2.7	+35
Performance of DAXSubs. Advanced Industrial Equipment	%	-31	+68
Number of shares at year-end	Mio.	21.75	21.75
Market capitalization at year-end	Mio. EUR	265	261

Shareholding structure	
Free float	71.0 %
PA Beteiligungsgesellschaft	29.0 %

COMMUNICATION WITH THE CAPITAL MARKETS

The Management Board discussed the business outlook for PVA TePla with institutional investors at roadshows in Europe, North America and Asia and a number of investor conferences. Domestic and foreign investors also visited the company's production sites and learned about the process technology behind the high-tech systems on "field trips". Discussions with institutional and private investors mainly focused on the long-term prospects for the semiconductor market and the operational profitability of PVA TePla's subsidiaries.



GROUP MANAGEMENT REPORT

This financial report comprises the combined Management Report, the consolidated financial statements and the Group Notes. Moreover, the Company Management Declaration available at http://www.pvatepla.com/en/pva-tepla-service/investor-relations/corporate-governance forms an integral part of this combined Management Report.

Group Management Report

1. BASIC PRINCIPLES OF THE GROUP

Business Activities and Business Model

The PVA Group, headquartered in Wettenberg, Germany, is an independent technological leader supplying systems for the production and refinement of high-tech materials which are processed under high temperatures, vacuum, high pressure and in plasma, for example.

Offering **semiconductor systems** for front and back-end production, the PVA Group is a major technology partner and system supplier for the global semiconductor industry and is therefore integrated into the value chains of rapidly growing industries such as microelectronics, high performance electronics and e-mobility. With systems for industrial crystal growing, quality inspection, plasma cleaning systems and related software and process technologies, the Group has a wide range of processes and products for the semiconductor industry at its disposal.

The PVA Group also produces **industrial systems**, in particular vacuum sintering systems for manufacturing structural materials and hard metal tools, graphite cleaning and coating ovens and soldering and diffusion bonding systems.

The PVA Group supplies systems to its customers, purchasing the majority of the components needed from quality-assured subcontractors. This **asset-light business model** kann allows the PVA Group to manage its production capacities flexibly and subject to the order situation and to drive forward its growth while limiting investment and with a comparatively low capital commitment. A small number of parts are manufactured in-house. Within Germany, systems are produced and installed and services (contract processing) are provided at the Wettenberg, Westhausen and Jena sites, as well as at the production plants in Coburg added during the acquisition of SPA Software Entwicklungs GmbH in mid-2018. The production location outside Germany is Corona (United States).

A significant portion of orders are covered by **advance payment agreements** , which are important for the Group's liquidity management. Thanks to this, as well as Group-wide cash clearing, the PVA Group is able to limit short-term debt financing from banks.

Key Market Influences

The PVA Group operates in highly appealing expanding markets. Manufacturing processes in vacuums, at high temperatures, at high pressure and, if required, in plasma, are essential for producing high-tech materials. In the long run, this fosters demand for the company's range of technologies and services.

Expanding capacities in wafer production, vital for the growing microelectronics and high performance electrics industry, are a key driver of growth and established wafer manufacturers and new market players alike are all striving to significantly step up wafer production. The PVA Group has already established itself on the market and so it expects to benefit from this development and bolster sales of silicon crystal growing systems.

The shift in automotive demand towards electric vehicles represents another key opportunity to accelerate growth. According to market projections, silicon carbide (SiC) will increasingly be used for on-board and static charging facilities as the material boasts superior properties to those of silicon. As the only independent supplier of crystal growing systems for SiC, the PVA Group also expects to experience a surge in demand resulting from the expansion of SiC wafer capacities.

Organizational Structure

The PVA Group is divided into two divisions for the purposes of internal management: Industrial Systems and Semiconductor Systems. At the same time, these two segments correspond to the segment requirements according to international accounting standards (IFRS 8).

The Industrial Systems division covers the following fields:

» **Industrial systems:** Structural material technologies for aviation and aerospace, energy technology and hard metal tools

The Semiconductor Systems division covers the following fields:

» **Crystal growing systems:** Structural material technologies for aviation and aerospace, energy technology and hard metal tools Silicon wafer technologies for microelectronics, silicon carbide wafer technologies for high-performance electronics and additional crystal growing technologies for an array of uses

» **Plasma systems:** Structural material technologies for aviation and aerospace, energy technology and hard metal tools Production technologies for micro-electronic-mechanical systems (MEMS) and high-brightness light-emitting diodes (HB LED) as well as technology for the fabrication of ultrathin wafers

» **Analysis systems:** Technologies for non-destructive quality control of wafers and complex semiconductor parts.

The chart provides an overview of the organizational units and how the main subsidiaries are allocated to the divisions:

PVA TePla AG (Holding)

INDUSTRIAL SYSTEMS

PVA Industrial Vacuum Systems GmbH, Wettenberg

PVA Control GmbH, Wettenberg

PVA Löt- und Werkstofftechnik GmbH, Jena

PVA TePla (China) Ltd., Beijing, PR China

SEMICONDUCTOR SYSTEMS

PVA Metrology & Plasma Solutions GmbH, Wettenberg

PVA TePla America Inc., Corona, California, USA

PVA TePla Analytical Systems GmbH, Westhausen

PVA Crystal Growing Systems GmbH, Wettenberg

PVA TePla Singapore Pte. Ltd., Singapore

PVA Vakuum Anlagenbau Jena GmbH, Jena

PVA Semiconductor Systems Xi'an Ltd., Xi'an, PR China

PVA SPA Software Entwicklungs GmbH, Coburg

SPA Software Entwicklungs GmbH, Coburg, was taken over in the reporting year with retrospective effect as of January 1, 2018 and was consolidated for the first time on June 30, 2018. The company was included in the consolidated financial statements for the first time on December 31, 2018. The company, now named PVA SPA Software Entwicklungs GmbH, has been allocated to the Semiconductor Systems division (cf. "Key Developments").

Strategy

The PVA Group's value-based and growth-driven strategy is designed to reap maximum benefits from positive, long-term trends in customer markets by refining its range of technologies on an ongoing basis, bolstering sales efforts in growth markets and consolidating strategic partnerships with suppliers and customers, with the overall objective of achieving well above-average growth compared to the sector as a whole while taking on only limited risk. It also aims to boost profitability in project and service business, maintain capital commitment at an appropriate level using the asset-light business model and to steer the company's net assets, financial position and liquidity situation with a view to the future.

In order to refine the range of technologies in line with customer requirements, research and development focuses on increasing productivity and volumes in the process of manufacturing high-performance materials – including using alternative production technology, refining and automating metrology systems so as to ensure materials can be inspected and production lines monitored even more closely, and seamlessly integrating systems technology and software control into customers' infrastructure as set out in the Industry 4.0 requirements (cf. Research and Development).

Measures including an improved product range and higher-margin project pipelines aim to steadily shore up profitability. In this context, it is important to generate above-average growth in the area of future technologies, in particular in the Semiconductor Systems division.

Corporate Management

The PVA Group uses financial and non-financial indicators to manage the Group on a value and growth oriented basis.

The financial indicators comprise firstly operating figures in the income statement: Consolidated revenue, gross result (gross margin), operating result (EBITDA, EBITDA margin), profit or loss for the period and segment results. Balance sheet indicators such as the equity ratio and liquidity figures such as liquidity, the net financial position and liquidity reserves are also used.

The key financial performance indicators for managing results of operations at the PVA Group level are consolidated sales revenues and the operating result before depreciation and amortization (EBITDA) and the resulting EBITDA margin. These figures are calculated on a monthly basis at segment level and represent an essential internal management tool.

The order situation is determined on a monthly basis using the key figures incoming orders and order backlog at segment and Group level. The additional book-to-bill ratio shows the ratio of incoming orders to sales revenues in a given period. A book-to-bill ratio above 1 indicates that incoming orders are higher than sales revenues, meaning a future increase in sales revenues can be expected. If the book-to-bill ratio is below 1, it means a decline in sales revenues is to be expected.

In addition to monitoring customers' and suppliers' payment targets, the liquidity situation in the PVA TePla Group is managed as a whole by regarding liquidity as a key figure on an ongoing basis. The net financial position, the balance of current and non-current financial liabilities and cash and cash equivalents, is also reported on a quarterly basis. Furthermore, liquidity reserves in the form of credit and guarantee lines are monitored and a rolling cash flow forecast is calculated on a monthly basis. In addition, the Group-wide and segment-related weighted average cost of capital (WACC) and average cost of debt are reviewed on an annual basis.

PVA TePla Group – Performance Figures

Profitability	Orders	Liquidity
Sales revenues	Incoming orders	Net liquidity
Operating result (EBITDA)	Order backlog	
EBITDA margin		

Performance Figures for the business units

Profitability	Orders
Sales revenues of the segment	Incoming orders
Operating result (EBITDA)	Order backlog
EBITDA margin	

Remuneration Report

The following report explains the structure and determination of the remuneration of the Management Board and the Supervisory Board.

REMUNERATION OF THE MANAGEMENT BOARD

For Alfred Schopf, in addition to the fixed salary, a variable salary component based on the consolidated operating result (EBIT) is agreed for the financial year 2018 et seq., which amounts to a maximum of the annual fixed salary. In addition, there is a variable salary component, based on a multi-year assessment basis, based on the share price of PVA TePla AG, which amounts to a maximum of EUR 500 thousand. For Oliver Höfer, in addition to the fixed salary, a variable salary component based on the consolidated operating result (EBIT) for the financial year 2018 et seq. has been agreed, which amounts to a maximum of the annual fixed salary. In addition, there is a variable salary component based on a multi-year assessment basis based on share price of the PVA TePla AG, which amounts to a maximum of EUR 250 thousand.

REMUNERATION OF THE SUPERVISORY BOARD

The remuneration of the members of the Supervisory Board is regulated in § 14 of the Articles of Association of the Company. In accordance with this provision, the remuneration of the Supervisory Board amounted to EUR 100 thousand in the past financial year 2018. No stock options were granted to members of the Management Board and the Supervisory Board in the 2018 financial year.

Disclosures Relevant to the Right to Take Over

The required disclosures related to the right to take over pursuant to Section 315a (1) of the German Commercial Code (HGB) are provided below.

COMPOSITION OF SUBSCRIBED CAPITAL

As of December 31, 2018, the issued share capital of PVA TePla AG consisted of 21,749,988 individual no-par bearer shares with a nominal value of EUR 1.00 each.

RESTRICTIONS WHICH AFFECT VOTING RIGHTS OR THE SALE/TRANSFERABILITY OF SHARES

There are no restrictions of voting rights or the sale/transferability of shares.

SHAREHOLDINGS THAT EXCEED 10% OF VOTING RIGHTS

According to disclosures filed with the company, PA Beteiligungsgesellschaft mbH, Wettenberg held a share of voting rights as of December 31, 2018, above the 10% threshold.

SHARES WITH SPECIAL RIGHTS THAT IMPART THE RIGHT OF CONTROL

There were and are no shares with special rights that impart the right of control.

CONTROL OF VOTING RIGHTS BY EMPLOYEES HOLDING SHARES IN THE COMPANY

There is no control of voting rights by employees holding shares in the company.

APPOINTMENT AND REVOCATION OF MANAGEMENT BOARD MEMBERS

The appointment of PVA TePla AG Management Board members is done in accordance with Section 84 of the German Stock Corporation Act (AktG), and Section 6 (2) of the PVA TePla AG Articles of Incorporation. The following is established therein:

» Article 2: The appointment of members of the Management Board, the revocation of their appointment as well as the concluding, the amendment and the termination of contracts of employment with members of the Management Board are effected by the Supervisory Board. The same applies to the appointment of a member of the Management Board as chairman or as spokesman of the Management Board.

AUTHORITY OF THE MANAGEMENT BOARD TO ISSUE OR REPURCHASE SHARES

As of December 31, 2018, the Management Board is authorized via Annual General Meeting resolution to issue new shares from authorized capital in the amount of EUR 10,874,994.00 by June 20, 2022. Furthermore, the Management Board is authorized via Annual General Meeting resolution to buy back shares amounting to 10% of authorized capital by June 18, 2023.

COMPANY AGREEMENTS CONTINGENT UPON A CHANGE OF CONTROL RESULTING FROM A TAKEOVER BID

The current master agreements with the banks are based on a largely unchanged shareholder structure and, in case of a change in control, calls for renegotiation or, in one case, specifies that the bank has a right to cancellation. The provisions for a publicly funded research and development project also include a special right to cancellation in case of a change in control. There are no other agreements that are contingent upon a change of control as the result of a takeover bid.

CHANGE OF CONTROL PROVISION

In the event of a change of control, Management Board members receive benefits that should not exceed 150% of the severance payment cap (value of two years' remuneration including benefits).

DEPENDENCY REPORT

In 2018, PA Beteiligungsgesellschaft mbH held the majority of votes at the Annual General Meeting of PVA TePla AG. The Management Board of PVA TePla AG therefore prepared a dependency report for fiscal year 2018 pursuant to Section 312 of the AktG.

The 2018 report includes the following final statement by the Management Board: "We declare that according to the information known to us at this time, our company engaged in legal transactions with dependent companies pursuant to Section 312 of the AktG and received appropriate compensation in all cases. The company did not take or fail to take any reportable measures."

RESEARCH AND DEVELOPMENT

The Group-wide costs of research and development increased to EUR 3.4 million (previous year: EUR 2.6 million) in the reporting period. It should be taken into account that products and processes in both PVA TePla Group divisions are further developed and refined almost exclusively as part of customer orders. The expenses incurred for such work are therefore not fully reported under research and development.

SEMICONDUCTOR SYSTEMS DIVISION

Crystal Growing
A project funded by the German Federal Ministry for Economic Affairs and Energy related to **the crystallization of silicon** based on the Czochralski method was successfully completed at the end of the year. The project's objective was to cut costs while simultaneously boosting productivity when manufacturing silicon crystals. Two further projects funded by the Ministry are currently underway in the area of silicon crystallization. These projects focus on further developing system technologies in line with the requirements of Industry 4.0.

As well as enhancing processes, in the area of developing systems and processes for **silicon carbide crystals (SiC)** work is underway on a significantly more cost-effective HF (high frequency) generator based on the latest electronic power components. This aims to strengthen and expand the PVA Group's competitive standing in this growing market segment.

Plasma
The **plasma systems business unit** focused on refining the concept of the "PS 80 HighSpeed" system and preparing for market launch. The aim is to meet customer wishes for higher throughput in the back-end area by means of an adequate plasma system. Another focal point was investigating alternative plasma generation by using a new microwave excitation. Under this process, the magnetron used at present is to be replaced by microwave generation based purely on semiconductor components. These solid-state microwave sources have a longer lifespan and are also more reliable.

Metrology
In the **laser metrology business unit** (stress and fault imaging in semiconductor wafers using lasers), the electro-optical components of the "SIRD" system were subject to extensive optimization. Thanks to the improved signal-to-noise ratio, it is now possible to measure semi-metallic wafers in an industrial environment for the first time - a major development in wafer analysis. After the wafer has been measured, real-time image recognition (similar to face recognition) is used to automatically search for, detect, mark and then numerically evaluate defects in the real data set. When manufacturing microelectronics, it is exceptionally important to automatically detect (SIRD Vision) and quantify even the smallest defects, so that we can meet growing quality expectations.

The **VPD metrology business unit** (vapour phase decomposition) continued to work on concepts for automatically linking systems samples to an external measuring instrument without the need for an integrated analysis system. A new scan engine, which can process very different wafer surfaces without intervening manually, is about to be launched on the market.

In the **Pultrasound metrology business unit**, the emphasis was on developing fully-automated inspection systems for the back-end monitoring of semiconductor chips. Autonomous driving and the requirements imposed by Industry 4.0 demand quicker processor technologies and complex features, and so increasing amounts of programming will be needed for automation. In a similar vein, it will also be increasingly necessary to carry out inspections and monitor production lines closely. Links between systems and customers' IT infrastructure via SECS/GEM communication are becoming increasing complex and facing higher individual requirements. In the 2018 fiscal year, the business unit clearly centered around developing software modules that meet these requirements.

It also focused on adapting ultrasound lenses in line with customer needs. Key milestones have now been reached and so a new production line for these transducers and lenses can now be launched, making it possible to manufacture more units and higher-quality acoustic lenses.

The **optical microscopy business unit**, strengthened by the acquisition of PVA SPA Software Entwicklungs GmbH, made significant headway in developing fully automated image processing routines in the 2018 fiscal year. This means that anomalies in images of wafers, whether these be optical or created by the ultrasound, can now be reliably detected. In addition, an algorithm to localize defects was developed in collaboration with a major optical components manufacturer and a joint patent was filed. Another innovative development was seen in the area of automated checks of wafers mounted on blue tape, which allows the wafers to be automatically labeled within the testing facili-

ty and means that the automated ink systems, which mark defect chips, are now far more precise. This was achieved thanks to the implementation of an automatic, non-linear expansion compensation.

INDUSTRIAL SYSTEMS DIVISION

The reporting year saw further developments relating to **the digitalization of production systems.** For the first time, a machine was presented with its own production control system and this was delivered to customers. A key aspect of the production control system is the concept of production data acquisition (PDA), which provides customers with key figures to manage production such as machine performance, availability, waiting times and buffers. Machine data collection being developed alongside provides the system operator with key machine data such as energy use, heating system figures and key vacuum figures so that they are aware of a system's current operating status on an ongoing basis. PVA Industrial Vacuum Systems GmbH's production control system can also communicate with higher-level systems (OPC/UA Client) without the need for additional hardware via an OPC/UA server that is implemented into the systems as standard. This lays the foundations for initial Industry 4.0 strategies, which will continue to be refined in the next few years.

In the area of hardware, new concepts were also worked on for large

Im Bereich Hardware wurden insbesondere neue Konzepte für große **plasma nitriding pits** with usable space of up to twelve meters high. Here, particular attention was paid to creating a suitable design to improve access to the batches.

ISoldering and materials technologies focused in particular on **process developments in the area of diffusion bonding for** industrial components in vacuums under high mechanical pressure. As well as use-driven research projects, a research and development project funded by the German Federal Ministry for Economic Affairs and Energy was also launched. Supported by cooperation partners in research and industry, the project aims to design a process chain that utilizes the potential of diffusion bonding for innovative, temperature-controlled injection molding tools.

Company Management Declaration

The PVA TePla Group is committed to the recognized standards of good and responsible company management and aligns its management and monitoring in accordance with the requirements of the German Corporate Governance Code (the "Code"). The standards applied are set out in the Company Management Declaration in accordance with Section 289f in connection with Section 315d of the German Commercial Code (Handelsgesetzbuch - HGB). This, together with the remuneration report, are available as part of the corporate governance report on the website of PVA TePla AG in the section "Investor Relations – Corporate Governance" or directly under the following link: *https://www.pvatepla.com/en/investor-relations/corporate-governance/*. The remuneration report describes the basics of the remuneration system pursuant to Section 315a (2) of the German Commercial Code and also forms an integral part of the 2018 consolidated financial statements of the PVA TePla Group.

2. ECONOMIC REPORT

Macroeconomic and Sector Environment

MACROECONOMIC ENVIRONMENT

The world economy slowed slightly in 2018, with economic sentiment turning particularly gloomy in the second half of the year. The International Monetary Fund estimates inflation-adjusted global growth for 2018 as a whole at 3.7% (previous year: 3.7%). Regional discrepancies became more pronounced, with the pace of growth picking up in the US on the back of strong fiscal stimuli while the economy in the eurozone and in Japan experienced a marked downturn. Growth also flagged somewhat in China. Global trade rose by 4.0%, significantly weaker than in the previous year.

Global industrial production expanded considerably in the first quarter of 2018, although growth rates then dropped off substantially. In 2018, the global mechanical engineering industry saw revenue increase by around 3% after adjusting for inflation.

- Momentum in the **Eurozone** waned in the first six months of 2018 and growth in the second half was again subdued. The dip primarily reflects a sharp decline in automotive production driven by the introduction of new emissions regulations and which is partially temporary in nature. Nonetheless, a stagnating labor market - with unemployment unchanged at 8.1% - also indicates that the economy is flagging. GDP grew by 2.0% in 2018, down from 2.5% in 2017.
- The **German** German economcontracted in the third quarter of 2018 for the first time since 2015 and was followed by zero growth in Q4. This weak performance was precipitated by problems in the automotive industry, sluggish exports, lower private consumption and stagnating public spending. GDP growth fell to 1.4%, down from 2.2% in 2017.
- The **US economy** is still enjoying the boom that is now about to enter its tenth year. Growing by 2.9% (previous year: 2.3%), total economic output ramped up this year. A steady climb in employment levels and rising income will shore up private consumption in the forecast period, with business investment looking set to remain buoyant for the time being in light of tax incentives and good capacity utilization.
- Economic momentum in **Japan** schwächte cooled off noticeably in the second half of 2018. Both domestic and foreign demand declined and exports slumped. GDP growth fell to just 0.8%, down from 1.8% in 2017.
- GDP growth in **China** slowed to 6.6% in 2018, after ex panding 6.9% in 2017. This leveling off of economic growth is in step with government objectives to steer towards more socially and environmentally sustainable development. Given that debt has climbed sharply in the last few years, economic policy focused on curbing lending and preventing real estate markets in major cities from overheating. Tax cuts and government spending programs announced for 2019 do not signal any fundamental about-turn in economic policy as they are designed primarily to cushion the feared impact of US tariffs. Nonetheless, the recent shift back towards more expansive economic policy makes it clear that the government will brace itself against any significant, unwelcome economic slowdown.

SECTOR ENVIRONMENT

The PVA TePla Group saw extremely positive development in the markets of particular relevance to the Group in the past fiscal year. Investments in the semiconductor market increased substantially. There were further capacity increases in the hard metal market, in particular in Europe.

- According to figures from the German Mechanical Engineering and Plant Manufacturing Association (VDMA), the global mechanical engineering industry saw revenue rise for the second time in a row in 2018, picking up by around 3% after adjusting for inflation. Mechanical engineering performed especially well in the US, Germany and Japan. In the US, tax reforms passed towards the end of 2017 bolstered investment. Investment in industrial equipment enjoyed dynamic growth in most EU countries, with high capacity utilization in many places. At the same time, mechanical engineering continued to benefit from the trend towards digitalization and new processing technologies.
- The industry association SEMI put global revenue in the semiconductor equipment market at USD 62.1 billion in 2018, a record high. Nevertheless, growth - at 9.7% - still fell short of the exceptionally strong previous year figure of around 37%. All areas of semiconductor equipment reported considerable growth, with testing and inspection systems taking the top spot with growth of 15.6%.

Business and Financial Performance

KEY DEVELOPMENTS

For some contracts with customers, the initial application of IFRS 15 "Revenue from Contracts with Customers" in the 2018 fiscal year led to not insignificant shifts between periods for revenue to be recognized in the Group income statement in comparison to previous revenue recognition. As of January 1, 2018, the PVA Group implemented IFRS 15 using the modified retrospective method. The new accounting policies were applied to both new and existing contracts that had not yet been met at the time of initial

application. In accordance with the modified retrospective method, the comparative information was not restated. The comparative information (fiscal year 2017) is therefore presented in line with the previous regulations of IAS 11/ IAS 18 and so comparability between the reporting period (fiscal year 2018) and previous year figures is significantly limited.

IFRS 15 Effects Consolidated income statement EUR'000	Jan. 01 - Dec. 31, 2018 (as reported)	Adjustment effect IFRS 15	Jan. 01 - Dec. 31, 2018 (without IFRS 15)
Sales revenues	96,783	18,124	114,907
Cost of sales	-65,729	-12,909	-78,638
EBIT	9,468	5,215	14,683
EBITDA	12,276	5,215	17,491

For further information, it is referred to the explanations and transition tables in note 2 of the notes to the consolidated financial statements.

The PVA Group expanded its technology portfolio in fiscal year 2018 by way of a major strategic acquisition. In addition, the existing syndicated loan contract was extended and expanded, securing stable funding for future growth.

The PVA TePla AG took over SPA Software Entwicklungs GmbH, headquartered in Coburg, in the middle of the year with retroactive effect from January 1, 2018. The company has since been renamed PVA SPA Software Entwicklungs GmbH. The new Group company specializes in areas including software programs for automating production systems, including image capturing and analysis, – known as SECS/GEM integration – in the semiconductor industry. In addition, turnkey systems are supplied for high-precision measurement. The acquisition allows the PVA Group to integrate its products into customers' existing semiconductor processes far more quickly and flexibly and to better meet customers' automation and standardization requirements.

In March 2018, PVA TePla AG concluded a technology cooperation agreement with Xuzhou Jingrui Semiconductor Equipment Technology Co., Ltd., China, a Golden Concord Ltd. Group company (CLC). The agreement sets out the provision of technologies to produce crystal growing systems and technological support by PVA Group experts. It explicitly excludes plants' process zones. The agreement does not allow technology to be shared outside the GCL Group. Systems may be produced only for own use. The agreement does not in any way restrict the PVA Group from selling its own systems on global markets. Technologies and technological support were largely provided in the reporting year and were recognized through profit or loss. The supply of different types of crystal growing systems was also agreed at the same time. Negotiations regarding additional supplies of measuring, analysis and plasma systems were still not completed at the time of preparing this Group Management Report.

In October 2018, the subsidiary PVA Crystal Growing Systems GmbH entered into a long-term framework agreement with an Asian customer to deliver crystal growing systems for 300 mm wafers in four batches. Order intake of the first batch – worth around EUR 28 million – was made in the first quarter of 2019. Delivery of the crystal growing systems will start in May 2020. The entire project is set to be completed in 2023.

The syndicated loan agreement signed in March 2018 for a mixed line of EUR 12.0 million (cash and guarantee line), EUR 68.0 million in guarantee lines, as well as an option to increase further guarantee lines by up to EUR 35 million and cash lines by up to EUR 10 million with a term of 36 months, renewable for another 24 months, gives the PVA TePla Group the financial leeway necessary to secure solid funding for future growth (cf. financial position and net assets). The option was already taken to extend by another 12 months in the first quarter of 2019.

SUMMARY ASSESSMENT OF ECONOMIC DEVELOPMENT

PVA TePla has enjoyed a good fiscal year. With revenue of EUR 96.8 million and EBITDA of EUR 12.3 million, the Group outperformed both the previous year figures and the

2018 guidance. The gross margin increased to 32.3%. The second half of the year played a particularly important role in the strong revenue and earnings performance, which was also significantly influenced by the licensing agreement described above.

The incoming order situation in the past year progressed extremely positively in almost all business units. Incoming orders from current operating business rose markedly thanks to the excellent upturn in vacuum heat treatment plants and metrology systems. The record order backlog at the Group – amounting to EUR 171.5 million as of the end of 2018, a year-on-year increase of over EUR 42 million – will have an impact on revenue until 2021.

COMPARISON OF RESULTS OF OPERATIONS WITH FORECAST FOR 2018

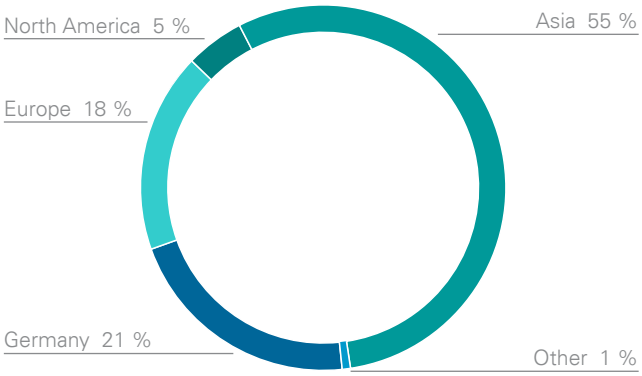
For fiscal year 2018, the PVA Group expected consolidated sales revenues on the scale of EUR 94 million and an operating result (EBITDA) of EUR 11.0 million. This projection already took into account positive effects from the cooperation agreement signed in March 2018. The Group outperformed the forecast with consolidated sales revenues of EUR 96.8 million and EBITDA of EUR 12.3 million, equivalent to a margin of 12.7%.

SALES REVENUES

Regional Revenues
The PVA Group generated consolidated sales revenues of EUR 96.8 million (previous year: EUR 85.4 million), up 13% year on year.

Germany accounted for 21% of consolidated sales revenues (previous year: 26%). The Asian market continued to be very important, with the region accounting for 55% of total sales revenues (previous year: 43%). A total of 18% (previous year: 22%) of sales revenues were generated in other European countries. North America accounted for 5% (previous year: 8%) of total sales revenues. Other regions contributed 1% to total sales revenues, as in the previous year.

Consolidated Sales Revenues by Region



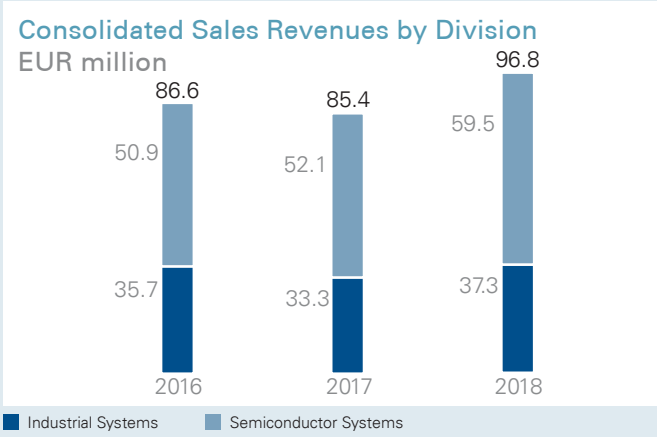
It should be noted as regards revenue recognition in 2018 that IFRS 15 no longer allows revenue from ongoing contracts to be recognized over a period of time using the PoC method to the original extent. Had the previous accounting requirements for recognizing revenue in accordance with IAS 11 and IAS 18 been applied as of December 31, a further EUR 18.1 million in revenue would have been recognized.

Sales Revenues by Division EUR'000	2018	2017
Semiconductor Systems	59,460	52,105
Industrial Systems	37,323	33,256
Total	**96,783**	**85,362**
As at IAS 11 and IAS 18	**114,907**	**85,362**

Changes in Segment Revenue
Sales revenues in the Industrial Systems division climbed by 11% to EUR 37.3 million (previous year: EUR 33.3 million), thus accounting for 39% of Group revenue. Sintering systems for hard metal production accounted for the lion's share of system sales revenues in the Vacuum Systems

business unit. The remaining sales revenues were distributed across the remaining product portfolio, e.g. systems for the vacuum brazing of metals and ceramics, systems for cleaning graphite, and plasma nitriding systems used to harden steel surfaces. Over 40% of sales revenues for Vacuum Systems were generated in Asia in fiscal year 2018.

Sales revenues in the Semiconductor Systems division rose to EUR 59.5 million in 2018 (previous year: EUR 52.1 million), thus accounting for 61% of the total sales revenues for the PVA Group. In particular, growth was propelled by crystal growing systems for the semiconductor industry and metrology systems, which also represented the largest share of revenue generated by the segment. Revenue in the plasma systems business unit was stable.

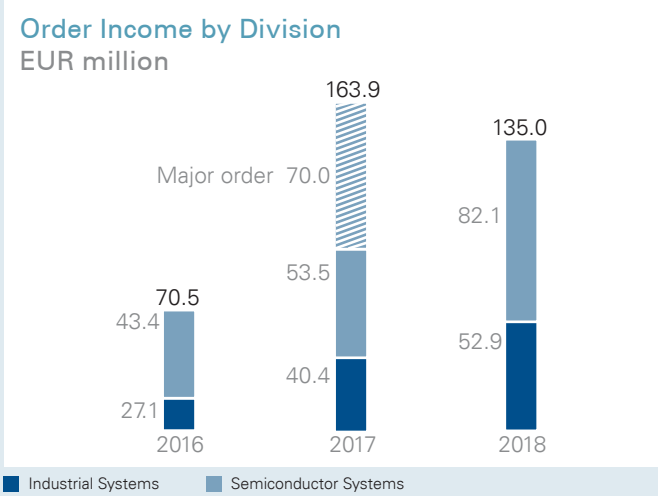


ORDERS

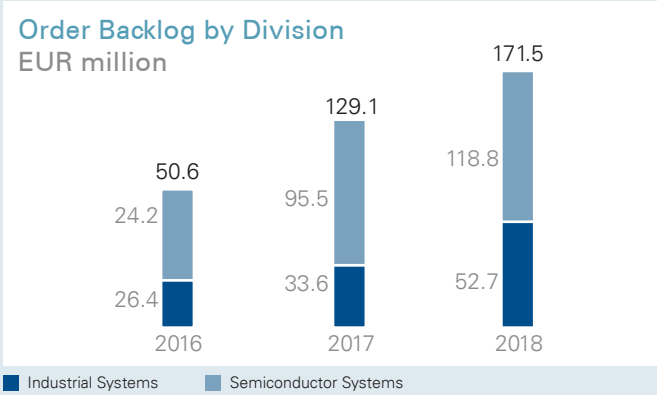
New orders from current operating business to the tune of EUR 135.0 million were placed in the reporting year, up significantly on the previous year's figure of EUR 93.9 million (adjusted to take account of a major order (EUR 70 million) in the Semiconductor Systems division). Including the major order, the order volume amounted to EUR 163.9 million in the previous year. The book-to-bill ratio of 1.4 (previous year: 1.9) reflects revenue potential from new business, including for subsequent periods.

At EUR 52.9 million (previous year: EUR 40.4 million), the Industrial Systems division again received far more incoming orders than in the previous year, thus accounting for just under 40% of incoming orders in the Group. The order situation improved chiefly on the back of a substantial upturn in orders from Europe. Just under 60% of orders for vacuum systems came from outside Germany. Processing systems for the manufacture of hard metal was once again the most important business unit. Moreover, the order volume for large diffusion bonding systems also performed well thanks to a major order from North America.

The Semiconductor Systems division generated incoming orders of EUR 82.1 million (previous year: EUR 123.5 million / EUR 53.5 million after adjusting), thus accounting for around 60% of the Group's incoming orders. Crystal growing systems and metrology systems comprised approximately equal numbers of incoming orders, with metrology systems climbing sharply by around 25% against the same period in 2017.



After deducting the share of revenue generated over a period of time, the PVA TePla Group's order backlog rose by EUR 42.4 million to achieve a record high of EUR 171.5 million, up on the already high previous year figure (EUR 129.1 million). New orders in the 2018 fiscal year relate essentially to normal operating business and do not include any major orders. As of December 31, 2018, the Industrial Systems division had an order backlog of EUR 52.7 million (previous year: EUR 33.6 million), with the figure for the Semiconductor Systems division amounting to EUR 118.8 million (previous year: EUR 95.5 million).



RESULTS OF OPERATIONS

Earnings before interest, taxes, depreciation, and amortization (EBITDA) rose to EUR 12.3 million, more than double of the previous year's result (EUR 5.5 million) and thus 12% higher than the target set out in the 2017 forecast report of EBITDA of EUR 11 million. The cooperation agreement described above made a significant contribution to these earnings. This was offset by significant value adjustments for non-current receivables from asset sales, which had a negative impact on the result in the fiscal year. The EBITDA margin climbed into double digits, reaching 12.7% (previous year: 6.4%). Earnings before interest and taxes (EBIT) tripled to EUR 9.7 million (previous year: EUR 3.0 billion), representing an EBIT margin of 9.8% (previous year: 3.5%). Consolidated net profit for the year came to EUR 6.0 million (previous year: EUR 5.6 million) and so the return on sales after taxes improved to 6.2% (previous year: 6.6%) as a result.

The gross result benefited from the rise in consolidated revenue, climbing significantly to EUR 31.1 million (previous year: EUR 19.1 million). The high gross margin (32.1%, previous year: 22.4%) reflects positive effects from the cooperation agreement as well as improved production capacity at the Jena and Wettenberg sites and a general improvement in margin quality when recognizing revenue from the project portfolio.

At EUR 10.2 million, selling and distributing expenses were up moderately on the previous year (EUR 9.3 million), but grew at a slightly lower rate than revenue. Administrative costs increased to EUR 6.7 million (previous year: EUR 5.1 million). The rise in the administrative cost ratio to 6.9% (previous year: 5.9%) is essentially due to performance-related remuneration effects. Nonetheless, it is still far below the long-term trend. R&D costs of EUR 3.4 million (previous year: EUR 2.6 million) were higher than in the previous year and primarily consisted of development project expenses in the ultrasound measuring systems, crystal growing, plasma and metrology business units. The net balance of other operating expenses and income was EUR -1.3 million (previous year: EUR 1.0 million). Other operating income of EUR 2.1 million (previous year: EUR 2.6 million) predominantly included income from grants in the context of R&D projects (EUR 0.6 million, previous year: EUR 0.7 million), income from exchange rate differences (EUR 0.4 million, previous year: EUR 0.69 million) and income from the release of provisions (EUR 0.3 million, previous year: EUR 0.7 million). Other operating expenses of EUR 3.4 million (previous year: EUR 1.6 million) were significantly higher than in the previous year and resulted primarily from the devaluation of current and non-current trade receivables (EUR 2.1 million, previous year: EUR 0.1 million) and expenses from exchange rate differences (EUR 0.6 million, previous year: EUR 0.7 million).

In the Industrial Systems division, an operating result (EBIT) of EUR 2.1 million (previous year: EUR 0.2 million) was attained. In the Semiconductor Systems division, an operating result (EBIT) of EUR 10.6 million (previous year: EUR 5.2 million) was attained. "Holding costs" amounted to EUR 3.2 million (previous year: EUR 2.4 million).

Operating result (EBIT) EUR´000	2018	2017
Total	9,468	3,027
As at IAS 11 and IAS 18	14,683	3,027

If the previous accounting requirements for recognizing revenue in accordance with IAS 11 and IAS 18 had been applied as of December 31, 2018, a further EUR 5.2 million in profit share would have been recognized.

The net balance of interest income and interest expenses was EUR -0.5 million (previous year: EUR -0.7 million), including EUR -0.2 million due to the discounting of pension provisions and EUR -0.2 million relating to the deferral of payments with an effect on interest as well as incurred expansion costs in the scope of the syndicated loan contract. Earnings before taxes amounted to EUR 9.0 million (previous year: EUR 2.3 million) and consolidated net income to EUR 6.0 million (previous year: EUR 5.6 million). Income tax expense, which totaled EUR 3.0 million (previous year: income of EUR 3.3 million), comprised current tax expenses/tax refunds of EUR -1.0 million (previous year: EUR -0.6 million) and deferred tax expense of EUR -2.1 million (previous year: deferred tax income of EUR 3.9 million).

PROFIT APPROPRIATION

The separate financial statements of PVA TePla AG (according to commercial law regulations) as of December 31, 2018 report a net profit of EUR 5,186 thousand (previous year: net loss EUR 5,487 thousand) and retained earnings of EUR 16,592 thousand (previous year: EUR 11,406 thousand). The Management Board and Supervisory Board propose that the retained earnings reported in the 2018 annual financial statements be carried forward to a new account at the same amount. There were no withdrawals from the share premium or retained earnings.

Financial and Asset Position

FINANCING AND SIGNIFICANT FINANCING MEASURES

The syndicated loan agreement signed in March 2018 for a mixed line of EUR 12.0 million (cash and guarantee line), EUR 68.0 million in guarantee lines, as well as an option to increase further guarantee lines by up to EUR 35 million and cash lines by up to EUR 10 million with a term of 36 months, renewable for another 24 months, gives the PVA TePla Group the financial leeway necessary to secure solid funding for future growth (cf. financial position and net assets). The option was already taken to extend by another 12 months in the first quarter of 2019.

ASSET POSITION

Total assets amounted to EUR 162.2 million as of December 31, 2018, EUR 43.1 million higher than the figure of EUR 119.1 million as of December 31, 2017 (previous year). This was driven mainly by the growth-based rise in inventories, which was due primarily to accounting changes in connection with IFRS 15.

Non-current assets were on par with the previous year at EUR 47.3 million (previous year: EUR 47.6 million). Intangible assets increased to EUR 11.1 million (previous year: EUR 8.6 million). The acquisition of PVA SPA Software Entwicklungs GmbH boosted goodwill by EUR 0.1 million to EUR 7.9 million (previous year: EUR 7.8 million) Goodwill is tested for impairment at least once per year. Other intangible assets also rose thanks to the company acquisition, up EUR 2.4 million at EUR 3.2 million (previous year: EUR 0.8 million). The value of property, plant and equipment remained stable year-on-year at EUR 29.6 million (previous year: EUR 29.4 million). Slightly lower reporting of land and buildings was offset by higher investments in other systems, operating equipment and office equipment. Non-current financial assets declined to EUR 0.1 million (previous year: EUR 1.7 million) due to impairments of EUR 1.9 million. Deferred tax assets were down year on year at EUR 6.5 million (previous year: EUR 7.9 million).

Investments were offset by write-downs of EUR 2.6 million.

Current assets increased by EUR 43.4 million to EUR 114.9 million (previous year: EUR 71.5 million). Primarily as a result of changes associated with the transition to IFRS 15 and the expansion of capacity in conjunction with the major crystal growing systems order, inventories rose from EUR 16.3 million (previous year) to EUR 41.0 million as of the 2018 reporting date. Trade receivables rose from EUR 11.3 million (previous year) to EUR 22.1 million. As part of applying IFRS 15, receivables of EUR 4.2 million (previous year: EUR 6.1 million), which were previously recognized under Future receivables from construction contracts,

were reported under trade receivables in 2018. The increase in cash and cash equivalents from EUR 33.0 million (previous year) to EUR 40.0 million stemmed from the high level of incoming orders and the associated rise in advance payments received.

FINANCIAL POSITION

On the equity and liabilities side of the statement of financial position, non-current liabilities increased slightly to EUR 20.9 million (previous year: EUR 19.7 million), as did the figure reported for pension provisions, which rose to EUR 15.2 million (previous year: EUR 14.9 million). Non-current financial liabilities continued to decrease to EUR 2.3 million (previous year: EUR 3.0 million) due to the scheduled repayment of bank loans. Deferred tax liabilities increased to EUR 2.6 million (previous year: EUR 1.4 million).

Current liabilities climbed substantially from EUR 54.3 million (previous year) to EUR 90.5 million. The main factor behind this is the significantly higher volume of advanced payments received on orders (EUR 64.1 million; previous year: EUR 37.1 million). These were reported under contract liabilities (EUR 72 million) and also include obligations on construction contracts (EUR 8.4 million, previous year: EUR 1.0 million), which were recognized separately last year. Accruals increased to EUR 6.7 million (previous year: EUR 5.1 million). Other current provisions were unchanged at EUR 2.4 million (previous year: EUR 2.4 million). In particular, these include provisions for warranties.

By contrast, current financial liabilities fell to EUR 0.7 million (previous year: EUR 0.9 million) while trade payables rose to EUR 5.6 million (previous year: EUR 3.7 million).

EUR 61.1 million (previous year: EUR 40.9 million) of the guaranteed lines had been utilized as of the reporting date. A credit line secured by land charges was drawn in the amount of EUR 3.0 million as of the reporting date. According to plan, this will be reduced by EUR 333 thousand every six months until December 2022.

Based on the comprehensive consolidated result of EUR 6.2 million (previous year: EUR 4.8 million), equity increased to EUR 50.8 million (previous year: EUR 45.1 million). The equity ratio was 31.3%, down on the previous year's ratio of 37.9% due to far higher total assets.

LIQUIDITY

In 2018, operating cash flow remained positive at EUR 11.7 million (previous year: EUR 39.0 million), a result principally of ongoing good advance payment structures. Operating cash flow fluctuates heavily from one reporting date to the next in the Vacuum Systems and Crystal Growing Systems business units due to the project structure of orders and methods of payment. We receive considerable advance payments at the beginning of a project, which positively influence the net cash flow in case of large orders. Cash flow is negative during order processing, whereas close to the delivery date, the remaining amount due is paid, except for a small residual instalment.

Cash flow from investing activities amounted to EUR -3.8 million (previous year: EUR -0.6 million) as a result of the acquisition of PVA SPA Software Entwicklungs GmbH (EUR -1.6 million) and other investments in property, plant and equipment. Cash flow from financing activities amounted to EUR -0.9 million (previous year: EUR -7.8 million) and includes regularly scheduled repayments of long- and short-term loans of EUR -0.8 million. Interest payments totaled EUR -0.1 million (previous year: EUR -0.2 million). Total cash flow in fiscal year 2018 including exchange rate differences amounted to EUR 7.0 million (previous year: EUR 30.5 million).

The EUR 7.0 million rise in cash to EUR 40.0 million, as well as unutilized credit lines of EUR 15.2 million, mean that the PVA Group had available liquid funds of EUR 55.2 million at its disposal as of the 2018 reporting date.

As of December 31, 2018, the PVA TePla Group reported a positive net financial position (balance of cash and cash equivalents and current and non-current financial liabilities) of EUR 37.0 million (previous year: EUR 29.1 million).

EMPLOYEES

The Group had 470 employees on the balance sheet date (previous year: 385 employees). With 185 employees, headcount in the Industrial Systems division remained al-

most constant at the end of 2018 (previous year: 181), whereas the staff count in the Semiconductor Systems division rose considerably from 169 to 250. This resulted from both the integration of PVA SPA Software Entwicklungs GmbH employees and from the staffing increase required to process the significantly higher order backlog.

The overwhelming majority of employees were based in Germany (422, previous year: 343). There were 24 employees in the US at the end of 2018 (previous year: 22) and another 24 in Asia (previous year: 20). At the end of 2018, 20 members of staff were enrolled in business or commercial training programs.

3. RISK, OPPORTUNITY AND FORECAST REPORT

Forecast Report

The forecast report describes the expected business development of the PVA Group in fiscal year 2019. The statements in this chapter were made on the basis of the current Group portfolio and customers' portfolios and assumptions on future macroeconomic and industry developments. The actual results may, as usual in the project business, deviate substantially from the forecast development, if the underlying assumptions later prove to be incorrect.

The PVA Group is under no obligation to update forward-looking statements or to adjust these to future developments. It assumes no guarantee or liability for ensuring that the business position, net assets, financial position or results of operations actually achieved match the assumptions and estimates.

ANTICIPATED MACROECONOMIC ENVIRONMENT

Despite limited spare capacity and increasing labor market bottlenecks, the International Monetary Fund (IMF) expects the world economy to continue to expand in 2019. Nonetheless, it is anticipated that growth will level out, both in advanced economies and in emerging markets. Forecasts indicate overall global growth of 3.5%, down from 3.7% in 2018.

Eurozone
The IMG is forecasting 1.6% growth, compared to 1.8% in 2018. The export-based manufacturing purchasing managers' index slid to its lowest level in two years. Global demand for exports is at its lowest point since 2016 and recent surveys indicate that business sentiment is flagging in Germany, France and Italy - the EU's strongest economies. The European Central Bank is also anticipating economic momentum to slow and has revised its 2019 GDP projections downwards accordingly.

Germany
The International Monetary Fund (IMF) slashed its forecast for German economic growth to 1.3% this year. Trade disputes with China that began in the US, Italy's budget plans and the UK's upcoming exit from the European Union (Brexit) are particularly hurting sentiment. According to the Kiel Institute for the World Economy (IfW), the pace of employment growth will gradually begin to lose steam this year. The Federation of German Wholesale and Foreign Trade (BGA) expects German exports to grow by up to 3% in 2019.

United States
The US economy looks set to continue its spell of robust growth in the next few quarters, continuing to outperform the long-term trend, albeit at a slightly more moderate pace. Buoyant consumer demand and overall solid investment levels place expected GDP growth at 2.5% for 2019 as a whole. The economic climate is also being bolstered by tax breaks and higher public spending, which are expected to shore up the economy until 2020.

China
After seeing growth of 6.6% this year, China's economy is likely to weaken to around 6% to 6.5% in 2019. The US-China trade conflict and related repercussions pose signi-

ficant risks to exports. Nonetheless, the slowdown on the property market is likely to present the greatest obstacle to growth. An array of economic data, such as the recent drop in land and automotive sales, reinforce this negative picture.

Emerging Markets
Emerging markets and developing countries are expected to see growth of 4.5% this year. Given that a US recession looks less likely, monetary policy is being gradually tightened and the dollar is expected to weaken, liquidity concerns that have troubled emerging markets in recent years seem to have eased. Different regions are at different stages in the economic cycle. Thanks to momentum from Brazil, Latin America looks likely to slowly close the gap. In Asia, on the other hand, growth has peaked and growth is likely to lose steam as China slows down into 2020.

EXPECTED SECTOR DEVELOPMENTS

The VDMA's forecasts put machinery production growth in Germany at around 2%, adjusted for inflation. The US, Chinese and German markets are viewed with cautious optimism for most mechanical engineering companies.

The industry association SEMI expects the global semiconductor market to perform only moderately and anticipates market volume to decline slightly. Nonetheless, this is expected to represent only a brief lull, with growth of almost 20% forecast again for 2020. A dip anticipated for Korea in 2019 is balanced out by stable development in China and a continued upswing in Taiwan and Japan.

EXPECTED BUSINESS AND FINANCIAL PERFORMANCE

The Management Board of PVA TePla is forecasting consolidated sales revenues in the scale of EUR 125 million and EBITDA in the scale of EUR 15.0 million for the current fiscal year.

EXPECTED FINANCIAL AND ASSET POSITION

An upturn in new business is expected to generate a higher volume of advance payments on orders in 2019, too. At the same time, there are plans to reduce inventories as part of project processing. Combined with anticipated positive earnings performance, this should improve operating cash flow. This is offset by a possible rise in investments in sites and potential repayments, and so the PVA Group's liquidity is expected to remain unchanged against the previous year.

Other than the expected increase in advance payments, no material financial changes are planned in comparison to the end of 2018.

Risk and Opportunity Report

The divisions of the PVA Group are exposed to an array of risks that are inextricably linked to corporate activities. Risk is understood to be the possibility of events or activities jeopardizing the ability of the Group or one of its divisions to reach its targets. At the same time, it is also important for the PVA Group to identify opportunities for the company, take advantage of these opportunities and reinforce the Group's competitive position. Risks and opportunities are not offset against one another. Risks and opportunities are presented as follows.

Risks are assessed on the basis of probability of occurrence as either "improbable", "possible" or "probable", as well as in terms of the potential scale of the risk. The valuation of the potential scale refers to the operating result (EBITDA) of the PVA Group.

Assessment of probability of occurrence / Potential scale

Level		Probability of occurrence	
Improbable	0% <	Probability of occurrence	≤ 20%
Possible	20% <	Probability of occurrence	≤ 70%
Probable	70% <	Probability of occurrence	≤ 100%

Level		Potential scale	
Low	EUR 0 <	Scale	< EUR 500 thousand
Moderate	EUR 500 thousand ≤	Scale	< EUR 1.000 thousand
High		Scale	≥ EUR 1.000 thousand

RISK AND OPPORTUNITY STRATEGY

The risk and opportunity strategy is embedded in the corporate strategy and is designed to secure the continuation of the company as a going concern and guarantee its further development. The resulting strategy assesses the risks and opportunities of business activities. In the core activities of the company/the Group, we make a conscious decision to enter into limited and containable risks, if they make appropriate compensation likely or are inevitable. In some cases, we allocate the risks to other parties. This mainly includes concluding suitable insurance policies. This process is conducted in close cooperation with an experienced and specialized insurance broker. It is regularly reviewed for efficiency and optimized where necessary.

Other risks, which are not related to core and support processes, are avoided as far as possible. A "Risk Manual" has been made available to the members of the Management Board and employees, which includes instructions on processes and a catalog of measures to safeguard appropriate and sustainable risk management. The manual details the specific processes involved in risk management. It aims at the completeness of all risk-related activities and measures, i.e. the identification, assessment, controlling, reporting and monitoring of risks. Based on defined risk categories, risks at divisions, operating units as well as central units are identified and assessed according to their likelihood and potential damage.

RISK AND OPPORTUNITY MANAGEMENT

The risk strategy includes the same companies as those included in Group consolidation. Due to the organizational structure, risk management is carried out locally in the PVA TePla AG, in the subsidiaries and business processes. The Management Board members and Managing Directors are therefore responsible for central processes of the risk management system. The main objective of the risk management system is the early recognition of risks, in order to regularly provide the Management Board with up to date information on the current risk situation within the PVA Group. The Management determines the limits for the reporting structure. The duties of those in charge include developing and, where necessary, installing measures to prevent, mitigate and hedge against risks. The main risks as well as the implemented measures are regularly monitored.

The risk reports are regularly compiled and analyzed by central risk management and checked and discussed by the Management Board and Supervisory Board. In addition to regular reporting, a reporting system has been installed within the Group to immediately report the occurrence of unexpected risks. The system also includes an annual risk inventory, in which all of the risks relevant to the Group are reported and their relevance and possible effects are assessed. Measures to reduce identified risks are defined and their implementation is monitored.

The risk management system enables the Management Board to identify material risks at an early stage and to implement countermeasures. The key features of the risk management system described above are applied throughout the Group. As far as processes in financial disclosure are concerned, this means that identified risks are reviewed and assessed, particularly for their potential impact on disclosures in the respective financial reports. The idea is to provide important information at an early stage about potential changes in the fair value of assets and liabilities, possible impairments and important information to assess the necessity of forming and reversing provisions.

The adequacy and efficiency of the risk management system is reviewed on a regular basis at Management Board level and adjusted where necessary.

An auditing firm was appointed to conduct the internal audit as part of a long-standing, established system. The Management and Supervisory Boards agreed a medium-term plan, according to which all divisions of the PVA Group will be systematically audited.

Opportunity management is also an integral part of Group management. The strategy process identifies and assesses the individual areas for opportunity. Just like risks, opportunities are reported and managed locally. Frequent reporting is carried out in order to identify at an early stage whether the market or the competition has developed in such a way or whether there have been occurrences within the Group that make reassessment necessary.

INTERNAL CONTROL AND RISK MANAGEMENT SYSTEM FOR THE GROUP FINANCIAL DISCLOSURE PROCESS

The objective of the methods and measures we have put in place is to secure the assets of the company and enhance operating efficiency. The internal control system that has been implemented is intended to ensure the reliability of accounting and reporting and to ensure compliance with internal rules as well as legal regulations and the Articles of Association. We assure the adequate separation of functions and have also implemented appropriate spans of control. Furthermore, we make sure that responsibilities do not overlap and that tasks, expertise and responsibilities are pooled. We have also integrated controls into the workflows. Key components of these structures and controls include strict compliance with the system of checks and balances for all essential accounting processes, effective and precisely defined access rights for our IT systems, spot checks of employees at all levels by the respective superior, and control over the structural and process organization including the key operational company processes within the scope of our certified quality management system. The essential features of the internal control system described above apply to all functional areas. In the accounting process, the implementation of the structural and process organization controls within the internal control system assures data integrity for the information that flows into financial reporting.

In addition to these controls implemented in the organization, the individual functional areas are also monitored by superiors and, if applicable, the internal audit department. In this case, the internal audit department is responsible for reviewing the functioning and effectiveness of the internal control system. In order to conduct the audit, the internal audit department has comprehensive information and review rights.

Consolidation and the Group accounting process are based on the decentralized preparation of financial statements by each of the Group companies. These financial statements are prepared and submitted according to uniform Group-wide standards and data formats. The central accounting system is connected with the ERP system through numerous interfaces.

The entire process is controlled and verified by the central Group Accounting and Controlling department. Here, the data is also verified with regard to form and content. All of the employees involved in the process receive training at regular intervals. The parts of the internal control system relevant to financial reporting are reviewed in terms of effectiveness by the auditor as part of a risk-oriented approach.

In conclusion, we would like to point out that neither an internal control system nor a risk management system can ensure with absolute certainty that the related objectives will be achieved. Like all discretionary decisions, resolutions to implement suitable systems can also be incorrect in principle. Controls may not be adequate on a case by case basis due to simple errors or mistakes, or changes to environment variables may be recognized too late in spite of corresponding monitoring.

DESCRIPTION OF RISKS AND OPPORTUNITIES

The PVA Group differentiates between business opportunities and risks, operational opportunities and risks, and financial opportunities and risks. These constitute the pivotal areas for the Group. Opportunities and risks do not exist to the same extent in all sub-segments. The following generally provides a net presentation of risks (by measures).

Business Opportunities and Risks

Risks and Opportunities from Sales Markets
The key risk in the markets in which the PVA Group operates is the fluctuation in customers' investment activity, the global economy and political developments in general, and global competitive and price pressures. Statements regarding future developments of individual markets or decisions relating to economic policy in emerging markets cannot be made with sufficient accuracy.

In addition, there are many risks at the level of international politics: these include the North Korea conflict, further developments in relations between the EU and Turkey, Brexit – which remains unresolved at the time of preparing these consolidated financial statements, potential escalation of trade conflicts motivated by protectionism in the US and elsewhere, and the significant tension between Saudi Arabia, Israel and Iran.

The semiconductor business, a key sector for the Semiconductor Systems division, is traditionally highly cyclical in nature. Although the semiconductor industry has enjoyed average annual growth rates well above those of most so-called old-economy industries in recent decades, this average includes periods of both, robust growth and recession. Investments in new silicon wafer capacity, an essential market for the PVA Group, were, in particular, subject to heavy fluctuation in recent years.

In the Industrial Systems division, the focus of business is on hard metal sintering systems, with a high percentage in China. Considerably higher volatility has been registered in this business unit since 2012. The introduction of new technologies leading to the substitution of existing materials could have a lasting effect on markets.

In markets such as hard metal manufacturing, the semiconductor industry and photovoltaics, the PVA Group provides process technologies that will remain a firm part of each respective value chain in the future. In the area of heat treatment systems, new user markets can be developed in the "diffusion bonding" application. Examples of markets in which these types of processes could be used include the aviation industry and molding construction.

In the semiconductor industry, for example, these process technologies could include systems for growing high-purity silicon crystals or silicon carbide crystals for high performance electronics – particularly in e-mobility – or analytical systems for non-destructive quality control in LED or MEMS production. The ongoing reduction of structure widths in chip production will also boost demand for inspection systems for examining chip quality. Major wafer manufacturers have stepped up investments considerably since 2017. The expansion of our own wafer production for the semiconductor industry in China represents a major growth opportunity for the PVA Group and the first orders in 2018 already confirmed this. Silicon carbide for high-performance electronics is vital for a multitude of industries,

including the automotive industry and renewable energies. The PVA Group's systems technologies will bring about major sales opportunities in numerous local markets in the years ahead.

Demand for plasma and analytical systems is correlated with trends in semiconductor markets (e.g. MEMS, LED, OLED/PLED, IGBT). Further growth for these products of the PVA Group is expected due to the anticipated growth in the semiconductor market in the medium term and new applications for plasma systems in the semiconductor/life science/industrial sectors. The semiconductor market will see stronger growth in the medium term, driven by the acceleration in connectivity of devices in industry and the private sector (i.e. "Internet of Things, Industry 4.0"). The budget for 2019 also includes moderate estimates in relation to sales revenues from new and further developments with small unit sales forecast.

Economic Risks and Opportunities

The IMF envisages real global economic growth of 3.5% for 2019. Despite this positive outlook, the overall economic situation remains highly uncertain. The implications of current political developments on the world economy – for example the Brexit issue and potential trade sanctions between individual countries – remain uncertain at present. Debt crises in established industrialized countries and emerging markets are rumbling on and may take a heavy toll on the economy. The Chinese market is extremely important to the PVA Group, especially in the area of vacuum systems and crystal growing systems. The slowdown of economic development in China over the past few years and of the correlation between products manufactured using the PVA Group's systems and the expansion of infrastructures means that there is a chance of investment restraint. The sanctions imposed on Russia by the West concern a market that is also of interest to the PVA Group, not least because Russian customers have shown a desire to expand and widen the country's technological basis.

These market and economic risks are reduced by diversifying the range of products and services across different sectors including semiconductors, photovoltaic, tool making and hard metal technology, the production of high-quality metals and ceramics, the automotive and aerospace industries, and the electrical and electronic engineering sectors. The effects of cyclical, foreseeable fluctuations in market volume are primarily offset by increasing or decreasing outsourcing levels, although unexpectedly high demand can give rise to production bottlenecks. The strategy of maintaining a relatively low level of vertical integration allows rapid response in this regard. The PVA Group also provides high-quality contract processing work such as plasma treatment, high-vacuum brazing and heat treatment of components in which greater customer demand has historically been seen in times of generally restrained capital expenditure.

Economic opportunities constitute developments that could cause the growth set out in the forecast report to be exceeded, for example the deescalation of political conflicts, an unexpectedly quick resolution to trade disputes or a favorable Brexit scenario that results in lower market turbulence.

Risks and Opportunities from Technological Developments

The risk of losing orders due to a new, unexpected technology appearing on the market (horizontal entry) or due to new competitors is monitored worldwide and assessed by continuous observation of the latest research and development and published studies specific to the various sectors, and by maintaining dialog with key customers, research institutes and the markets. In addition to ongoing development activities, technological product optimization is further supported by, among other things, an in-house laboratory as well as the operation of in-house service centers in which materials are processed for customers. Here, the company's development department stays abreast of

the latest material quality requirements of customers. The technical complexity of our products and rapid technological advances pose research and development-related risks. Medium and long-term success is dependent on developing marketable products and generating sufficient revenues within appropriate time frames in order to provide adequate cash flow for the group's internal financing. The technical complexity of our products and the high standards demanded by our customers may also give rise to risks that can generate increased warranty-related expenditures.

Projects with particular and unusual technological challenges could entail handling risks. These risks are countered by the introduction of continuous project controlling. If, after thorough consideration of the risks and opportunities, a project does not meet the required risk profile, it may also be canceled.

As a supplier of technologies for the production and processing of materials, parts and components for high-tech industries, where vacuum and high temperature play a key role for production, new areas of application for materials produced using our systems may result in additional demand. New materials requirements may also be introduced that require a new type of system in the PVA Group's specialist fields. In view of climate change, energy savings to slow down the pace of global warming are a priority. New materials which lead to a considerably longer service life of devices and structures especially contribute to energy savings. New materials for lightweight construction also improve energy efficiency. This could significantly improve the opportunities for the Group's process and systems technologies to develop and produce these materials around the world.

Risks from Trade Barriers

As an international Group with a high share of export business, the PVA Group is essentially susceptible to trade barriers or sanctions. Current geopolitical developments mean that there is a trend towards intensification in both of these areas. This relates to Russia in particular, but may also affect other regions, such as the US, depending on political developments. The PVA Group continually reviews the need for export licenses and, in the case of high-risk orders, hedges the political risk through capital goods credit insurance policies as required. A susceptibility to trade barriers will always remain, as contracts with insurance companies are only a limited option when political risks escalate. The PVA Group counters this potential development by operating regional subsidiaries in key markets, meaning that corresponding supply chains can alternatively be set up in the relevant countries and any trade barriers that may arise can be bypassed.

Risk category	Probability of occurrence	Scale	Category of opportunity	Scale
Market risks	Probable	High	Market opportunities	High
Global economic risks	Possible	Moderate		
China economic risks	Possible	High		
Risks from technological developments	Possible	High	Opportunities from technological developments	High
Risks from trade barriers	Possible	High		

Operating Opportunities and Risks

Sales Risks
In some regions, PVA TePla AG's subsidiaries work with commercial companies and depend on their agency activity to a certain extent. By setting up a further subsidiary in China, we have set up sales channels of our own, particularly in the semiconductor sector. In addition, establishment of a further company is being planned. The sales strategy is also regularly reviewed.

Delivery delays may result in penalty risks or extra costs. Stronger project management is intended to reduce delivery delays and further improve lead times.

Risks from Suppliers
The risk of delivery delays and non-delivery is countered by identifying and pre-screening additional suppliers in combination with close monitoring of existing suppliers. Dependence on individual suppliers cannot be ruled out, but is largely limited by having multiple qualified suppliers for key components wherever possible, and diversifying deliveries among them. The risk of supplier failure (e.g. as a result of insolvency) is substantially reduced by considering the supplier's economic situation and the systematic selection and evaluation of alternative suppliers. Care is taken to ensure that all major suppliers have adequate quality management systems and third-party liability insurance coverage in place.

Very high market demand results in production bottlenecks for suppliers, in particular in boiler production. The PVA Group aims to avoid these hold-ups by using additional suppliers. It may also be possible to expand the Group's own value chain.

Capacity Planning Risks
The further rise in the order backlog in the Crystal Growing Systems business unit at the end of fiscal year 2018 caused full utilization of the employees responsible for production there, meaning that production bottlenecks are possible. Through increased collaboration with temporary workers and, possibly, third-party companies as well as staff pooling within the Group, capacity can be used without causing future overcapacity by increasing headcount.

Personnel Risks
The success of the PVA Group primarily depends on its employees and their expertise. However, competition for skilled employees and managers in the industries and regions in which the PVA Group operates is intense. The Group's future success therefore largely depends on its ability to hire, integrate and retain qualified personnel. Strategic personnel planning, for qualified personnel and management level, as well as cooperations with German universities and research institutes are intended to prevent this from happening. Demographic developments are forcing the company to deal with an aging workforce and secure a young generation of qualified specialists and managers. In the case of a higher fluctuation rate, loss of expertise is likely, especially in the areas of engineering and commissioning. This risk is to be prevented by documenting expertise, extending redundancy and holding performance reviews. Should the personnel risk materialize, it is expected to impact the business activities and also the results of the PVA Group depending on the extent of the bottlenecks in personnel.

Risks in Connection with Information Technology
The risk of IT equipment failures and the threat posed by software viruses and other malware (such as so-called Trojans) are reduced through regular and appropriate backups, adopting suitable protective measures against external influences (e.g. constantly updated virus protection systems and firewalls) and maintaining suitable access control systems and password changes. In view of the increased threat of cybercrime and attacks by hackers ("enterprise down"), additional precautions were implemented such as additional training for employees and extra security programs. Despite all precautions, IT problems and the related negative impact on business processes and unauthorized data access cannot be completely ruled out.

Risks from Legal Disputes
At present, there are no legal disputes involving PVA TePla AG or its subsidiaries.

The international business activities of PVA TePla AG and its subsidiaries mean that the companies are exposed to various legal risks. National and international contract drafting and taxation are particularly important areas here. Direct impacts on the result of operations and the net asset situation are possible in these areas. The risk arising from sales and service contracts is essentially minimized through the use of standardized terms and conditions. In the case of special contracts, the wording and content are initially examined in-house, if applicable with the involvement of an external legal advisor. The specialist knowledge required to assess day-to-day business is provided by qualified employees. Product liability risks are covered by corresponding insurance policies.

Risk category	Probability of occurrence	Scale
Sales risks	Probable	High
Risks from suppliers	Probable	High
Personnel risks	Possible	High
Capacity planning risks	Probable	Moderate
Risks in connection with information technology	Possible	High
Legal disputes	Improbable	Low

Financial Opportunities and Risks

Liquidity Risks and Risks from Failing to Meet Loan Commitments
Due to the conclusion of a syndicated loan agreement in March 2018 for a mixed line of EUR 12.0 million (cash and guarantee line), EUR 68.0 million in guarantee lines, as well as an option to increase further guarantee lines by EUR 35 million and cash lines by EUR 10 million with a term of 36 months, PVA TePla AG has a stable financing structure. The option to extend by another 12 months was requested and accepted after the reporting date. PVA TePla AG also has a long-term credit line related to investment property, currently amounting to EUR 3.0 million, which can be utilized for operating funds at any time and decreases half-yearly by EUR 333 thousand. The Group therefore has sufficient credit lines for financing operations, including the expansion of business volume, and sufficient guarantee lines for the provision of advance payment guarantees to customers.

The syndicated loan agreement defines financial covenants for compliance with specific financial indicators. In the event that targets are missed, there is the risk of a financial covenants breach which could lead to the extraordinary right of termination for the lender. Even though there are no indications at the current time of negative deviations from the target and potential financial covenant breaches, there remains a residual risk that, in the event of failing to meet the targets, the credit lines and guaranteed lines could be significantly reduced or completely terminated. Given that the Group has financing alternatives even in this scenario, the Management Board does not believe that the PVA Group is at risk of short- or medium-term insolvency.

Risks from Tax Issues
Because of the volume of major orders from abroad, the complexity of the related tax issues has increased. These particularly include the topics transfer pricing and business between the companies of the PVA Group and VAT, especially on services and tax arrangements for employees who are sent abroad. These topics are handled in close collaboration with tax advisors so that there are no discernible notable risks. However, there are increasing expenses with

respect to these consultations, the internal administration and the implementation of regulations with the associated registrations.

Risk Reporting on the Use of Financial Instruments
Financial instruments arise as part of the PVA Group's core business activities (e.g. trade receivables and payables). Financial instruments are used to finance business activities (e.g. loans from banks) or they result in financial instruments (e.g. investment of excess current liquidity). In addition, derivative financial instruments are utilized to eliminate or limit risks from operating activities (e.g. exchange rate risks) or from financing (e.g. interest rate risks). Financial instruments are not used in isolation without connection to actual business activities. Opportunities and risks in connection with the respective relevant financial instrument categories are presented below (for further information see note 24 of the Group notes).

Trade Receivables:
Liquidity and credit risks involved in financing business operations are reduced, in the case of major orders, by means of customer/supplier financing. A contractual installment payment schedule is negotiated in most cases, starting at an average of 30% minimum due upon receipt of the order for a single system. Collateral arrangements (e.g. letters of credit) are also frequently required to protect against default on receivables, in combination with receivables monitoring.

Other Receivables:
Due to the short-term nature of the items, there is no significant market risk.

Payments in Advance:
The individual Group companies primarily make payments in advance only to suppliers for larger deliveries/major components. On the purchasing side, advance payments are only made in return for a corresponding advance payment guarantee. Such guarantees ensure that the Group does not incur any discernible risks.

Financial Liabilities:
» A detailed description of financial liabilities can be found in note 12 of the Group Notes.

Trade Payables:
» These are short-term items predominantly settled in Euros. Hence, there is no relevant market or credit risk.

Other Liabilities:
Due to the short-term nature of the items, there is no significant market risk.

Interest Rate Hedging:
» Some of the loans to finance new facilities were concluded at variable nominal interest rates and the interest rate was hedged, effectively making these synthetic fixed interest rate loans.
» For more details concerning risks arising from these financial instruments, please refer to the information above on financial liabilities.

Risk category	Probability of occurrence	Scale
Liquidity risks	Improbable	Low
Risks from financial covenants breaches	Improbable	High
Risks from tax issues	Probable	Moderate
Risks from financial liabilities	Improbable	Moderate

GENERAL STATEMENT BY THE MANAGEMENT BOARD

The Management Board of PVA TePla AG is responsible for the risk management of the Group and assesses the Group's risks and opportunities. Their conclusions are summarized as follows:

The Group's fundamental risk profile in fiscal year 2018 did not change compared to 2017. The main risks stem from the market developments mentioned above, the related reticence of our customers to invest, technological developments, the supplier risk and risks from trade barriers. The company is countering this development by continuing to work on increasing its sales activities in markets which will become more attractive in future. Personnel risks, IT security risks, risks from legal disputes and the risks from credit covenant breaches remained unchanged in the last fiscal year. We are not aware of any existential risks.

We consider all other risks to only have low residual risks on account of their low likelihood, their low potential damage or countermeasures that have been taken. The opportunities presented in this report constitute both untapped potential for the PVA Group but also significant challenges. The fundamentally flexible production structure means that PVA Group companies are well equipped to fully capitalize on any opportunities that may arise.

Wettenberg, March 26, 2019

PVA TePla AG
Management Board

Alfred Schopf
Chief Executive Officer

Oliver Höfer
Chief Operating Officer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GROUP FINANCIAL STATEMENTS

Group Financial Statements

CONSOLIDATED BALANCE SHEET

ASSETS EUR´000	Notes	Dec. 31, 2018	Dec. 31, 2017
Non-current assets			
Intangible assets	(4)	**11,027**	**8,585**
Goodwill		7,898	7,808
Other intangible assets		3,174	777
Property, plant and equipment	(5)	**29,581**	**29,427**
Land, property rights and buildings, including buildings on third party land		22,016	22,902
Plant and machinery		3,290	3,310
Other plant and equipment, fixtures and fittings		3,875	2,944
Assets under construction		400	271
Non-current investments	(6)	**110**	**1,739**
Deferred tax assets	(10)	**6,527**	**7,886**
Total non-current assets		**47,290**	**47,637**
Current assets			
Inventories	(7)	**41,002**	**16,334**
Raw materials and operating supplies		13,301	7,335
Work in progress		27,355	8,459
Finished products and goods		346	540
Coming receivables on construction contracts	(8)	**0**	**6,137**
Trade and other receivables	(8)	**33,130**	**15,903**
Trade receivables		22,119	11,280
Payments in advance		7,046	3,865
Other receivables		3,965	758
Tax repayments		**719**	**68**
Cash and cash equivalents	(9)	**40,014**	**33,017**
Total current assets		**114,865**	**71,459**
Total		**162,155**	**119,096**

LIABILITIES AND SHAREHOLDERS' EQUITY EUR´000	Notes	Dec. 31, 2018	Dec. 31, 2017
Shareholders' equity	(11)		
Share capital		21,750	21,750
Revenue reserves		33,349	27,876
Other reserves		-4,218	-4,413
Minority interest		-84	-84
Total shareholders' equity		**50,797**	**45,129**
Non-current liabilities			
Non-current financial liabilities	(12)	2,333	3,001
Other non-current liabilities		259	306
Retirement pension provisions	(13)	15,195	14,887
Other non-current provisions	(14)	520	143
Deferred tax liabilities	(10)	2,583	1,376
Total non-current liabilities		**20,890**	**19,714**
Current liabilities			
Short-term financial liabilities	(12)	670	883
Trade payables		5,560	3,717
Obligations on construction contracts		0	979
Advance payments received on orders	(15)	0	37,050
Contract liabilities	(15)	72,493	0
Accruals	(16)	6,667	5,073
Other short-time liabilities		1,105	3,487
Provisions for taxes		1,588	616
Other short-term provisions	(14)	2,385	2,448
Total current liabilities		**90,468**	**54,253**
Total		**162,155**	**119,096**

CONSOLIDATED INCOME STATEMENT

EUR´000	Notes	Jan. 1 - Dec. 31, 2018	Jan. 1 - Dec. 31, 2017
Sales revenues	(17)	**96,783**	**85,362**
Cost of sales		-65,729	-66,270
Gross profit		**31,054**	**19,092**
Selling and distributing expenses		-10,195	-9,333
General administrative expenses		-6,662	-5,079
Research and development expenses	(19)	-3,438	-2,632
Other operating income	(18)	2,114	2,562
Other operating expenses	(18)	-3,405	-1,583
* thereof impairment losses on financial assets		-2,131	-315
Operating result (EBIT)		**9,468**	**3,027**
Finance revenues		179	257
Finance costs		-658	-945
Financial result and share of profits from associates	(20)	**-479**	**-688**
Net result before tax		**8,989**	**2,339**
Income taxes	(21)	-3,021	3,254
Consolidated net result for the year		**5,968**	**5,593**
of which attributable to			
Shareholders of PVA TePla AG		5,968	5,593
Minority interest		0	0
Earnings per share	(22)		
Earnings per share (basic) in EUR		0.27	0.26
Earnings per share (diluted) in EUR		0.27	0.26

CONSOLIDATED STATEMENT OF COMPREHENSIVE INCOME

EUR´000	Jan. 1 - Dec. 31, 2018	Jan. 1 - Dec. 31, 2017
Consolidated net result for the year	**5,968**	**5,593**
of which attributable to shareholders of PVA TePla AG	5,968	5,593
of which attributable to minority interest	0	0
Other comprehensive income		
Items that may be reclassified to profit or loss		
Currency changes	170	-366
Income taxes	0	0
Changes recognized outside profit or loss (currency changes)	**170**	**-366**
Total of items that may be reclassified to profit or loss	**170**	**-366**
Items that will never reclassified to profit or loss		
Changes in pension provisions	34	-569
Income taxes	-10	165
Changes recognized outside profit or loss (pension provisions)	**24**	**-404**
Total of items that will never reclassified to profit or loss	**24**	**-404**
Total comprehensive income	**6,162**	**4,823**
of which attributable to shareholders of PVA TePla AG	6,162	-4,823
of which attributable to minority interest	0	0

CONSOLIDATED CASH FLOW STATEMENT

EUR´000		Jan. 1 - Dec. 31, 2018	Jan. 1 - Dec. 31, 2017
	Consolidated net result for the year	5,968	5,593
	Adjustments to the consolidated net result for the year for reconciliation to the cash flow operating activities:		
+	Income taxes	3,020	-3,254
-	Finance revenues	-179	-257
+	Finance costs	658	945
=	**Operating result (EBIT)**	**9,468**	**3,027**
+/-	Income tax payments	664	-12
+	Amortization and depreciation	2,809	2,453
-/+	Gains/losses on disposals of non-current assets	2	11
+/-	Other non-cash expenses/income	1,892	276
-/+	Increase/decrease in inventories, trade receivables and other assets	-37,273	6,409
+/-	Increase/decrease in provisions	-319	-298
+/-	Increase/decrease in trade payables and other liabilities	34,411	27,103
=	**Cash flow from operating activities**	**11,654**	**38,969**
-	Cash flow from obtaining control of subsidiaries or other business less aquired cash	-1,633	0
-	Payment of intangible assets and property, plant and equipment	-2,250	-891
+	Interest receipts	44	257
=	**Cash flow from investing activities**	**-3,839**	**-634**
-	Payments from redumption of financial liabilities	-771	-7,641
-	Payment of interest	-90	-163
=	**Cash flow from financing activities**	**-861**	**-7,805**
	Net change in cash and cash equivalents	6,954	30,530
+/-	Effect of exchange rate fluctuations on cash and cash equivalents	43	-27
+	Cash and cash equivalents at the beginning of the period	33,017	2,514
=	**Cash and cash equivlanets at the end of the period**	**40,014**	**33,017**

CONSOLIDATED STATEMENT OF CHANGES IN EQUITY

EUR´000	Shared issues		Revenue reserves	Other reserves		Of which attributable to shareholders of PVA TePla AG	Minority interest	Total shareholders' interest
				Currency exchange	Pension provisions			
	Number							
As at January 1, 2017	21,749,988	21,750	22,282	317	-3,959	40,390	-84	40,306
Total income			5,593	-366	-404	4,823	0	4,823
As at December 31, 2017	21,749,988	21,750	27,875	-49	-4,363	45,213	-84	45,129
As at January 1, 2018	**21,749,988**	**21,750**	**27,875**	**-49**	**-4,363**	**45,213**	**-84**	**45,129**
Adjustment effect IFRS 15*			-494	0	0	-494	0	-494
As at January 1, 2018 (adjusted)	**21,749,988**	**21,750**	**27,381**	**-49**	**-4,363**	**44,719**	**-84**	**44,632**
Total income			5,968	170	24	6,162	0	6,162
As at December 31, 2018	**21,749,988**	**21,750**	**33,349**	**121**	**-4,339**	**50,881**	**-84**	**50,797**

* For further explanation see note 2 of the Notes

Group Notes

A. GENERAL INFORMATION AND ACCOUNTING POLICIES

1. GENERAL INFORMATION

Domicile and Legal Form of the Company
PVA TePla AG, Wettenberg (hereinafter also "PVA TePla AG") is a stock corporation in accordance with German law. The company is entered in the Commercial Register of the Giessen Local Court under HRB 6845. The registered address of the company is 35435 Wettenberg, Germany.

Business Activities
PVA TePla AG and its subsidiaries (hereinafter also "PVA Group") offer their customers systems for the production and refinement of high-quality materials, which are processed for example under high temperature, vacuum, high pressure and in plasma. The market for these systems is closely tied to the latest developments in materials and surface treatment technologies, such as

- silicon wafer technology for microelectronics, silicon carbide wafer technology for high-performance electronics and wafer technology for mono or multicrystalline solar cells in the Crystal Growing Systems business unit
- structural material technologies for aviation and aerospace, energy technology and hard metal tools in the Industrial Systems business unit
- production technologies for micro-electronic-mechanical systems (MEMS) and high-brightness light-emitting diodes (HB LED) as well as technology for the fabrication of ultrathin wafers in the Plasma Systems business unit
- technology for hydrophobic layers on electronic components and for plastics in medical technology in the Coating Systems business unit
- technology for non-destructive quality inspection of wafers using laser light and complex semiconductor components using scanning acoustic microscopy in the Analytical Systems business unit.

High-tech materials and their surfaces will undoubtedly continue to depend on manufacturing processes under vacuum, high temperatures, high pressure and in plasma in the future, and therefore on the product range and technologies of the PVA Group.

With locations in Germany, the USA, China, Taiwan and Singapore, the PVA Group maintains business relationships around the world. The business activities of the Group are divided into two segments: Industrial Systems and Semiconductor Systems. The Group's reporting is also organized according to this structure.

General Principles and Accounting Standards
The consolidated financial statements of the PVA Group for the fiscal year ending December 31, 2018 have been prepared pursuant to Section 315e HGB in accordance with the International Financial Reporting Standards (IFRS) issued by the International Accounting Standards Board (IASB) as they are to be applied in the European Union (EU). All International Financial Reporting Standards (IFRS), International Accounting Standards (IAS) and Interpretations issued by the IFRS Interpretations Committee (IFRS IC) – previously the International Financial Reporting Interpretations Committee (IFRIC) / the Standing Interpretations Committee (SIC) – that had to be applied in fiscal year 2018 were taken into consideration. Furthermore, all statutory disclosure and explanation obligations set out in the German Commercial Code (Handelsgesetzbuch - HGB) that go beyond the IASB's provisions were met, in particular regarding the preparation of a Group management report.

The consolidated financial statements were prepared in accordance with the historical cost principle. This excludes derivative financial instruments measured at fair value.

The fiscal year for PVA TePla AG and its subsidiaries is the calendar year. The income statement has been prepared in accordance with the cost of sales method of presentation.

The PVA Group's consolidated financial statements for the fiscal year from January 1, 2018 to December 31, 2018 were approved by the Management Board of PVA TePla AG and submitted to the Supervisory Board for review and approval on March 26, 2019.

2. CHANGES TO ACCOUNTING POLICIES

New and Updated Standards and Interpretations Adopted for the First Time in Fiscal Year 2018
The accounting policies applied in the PVA Group's consolidated financial statements for the fiscal year 2018 match those used in the previous year (fiscal year 2017). However, the PVA Group also applied the following new and updated Standards and Interpretations adopted in European law by the European Union for the first time in fiscal year 2018:

Standard/ interpretation	Titel	Mandatory application	Adoption by the EU Commission	Effects
IFRS 9	Financial instruments	January 1, 2018	Yes	The explanation is presented below the table
IFRS 15	Revenue from contracts with customers	January 1, 2018	Yes	The explanation is presented below the table
Clarifications to IFRS 15	Revenue from contracts with customers (clarifications to IFRS 15)/Clarifications to revenues from contracts with customers	January 1, 2018	Yes	The explanation is presented below the table
Amend. IFRS 2	Classification and valuation of share-based payment	January 1, 2018	Yes	No relevance
Amend. IFRS 4	Application of IFRS 9 Financial instruments including IFRS 4 insurance policies/contracts	January 1, 2018	Yes	No relevance
Amend. IAS 40	Transfers to and from the portfolio of investment properties	January 1, 2018	Yes	No relevance
Annual improvements to the IFRS cycles 2014-2016	Amendments to IFRS 1, IFRS 12, IAS 28	January 1, 2018 (only IFRS 1 and IAS 28)	Yes	No relevance
IFRIC 22	Foreign Currency Transactions and Advance Consideration	January 1, 2018	Yes	No material

The initial application of **IFRS 9 „Financial Instruments"** in fiscal year 2018 has no material impact on the net assets, financial position, and results of operations of the PVA Group. In compliance with the transitional provisions, comparative information was not restated. Nonetheless, this does not significantly limit overall comparability with previous year figures.

The new provisions for classifying financial assets did not result in any changes to measurement or recognition. The financial assets are allocated to the measurement category "at amortized cost" in accordance with IFRS 9. Only derivative financial instruments continue to be measured at fair value through profit or loss. The initial application of IFRS 9 had no impact on the measurement or recognition of financial liabilities. As of January 1, 2018, the new guidance on classifying and measuring financial instruments had the following effect on financial assets of the PVA Group:

EUR'000	Classification according to IFRS 9	Valuation categories according to IAS 39	Book value according to IFRS 9	Book value according to IAS 39
Financial assets				
Cash / Cash equivalents	Amortized cost	Loans and receivables	33,017	33,017
Trade receivables	Amortized cost	Loans and receivables	11,280*	11,280
Non-current financial assets	Amortized cost	Loans and receivables	1,739	1,739
positive fair values of derivatives (without hedging relationships)	fair value through profit or loss	fair value through profit or loss	23	23

* without adjustment effetcs IFRS 15

The use of the new impairment model resulted in a slight increase in impairment of financial assets from January 1, 2018 onwards and, accordingly, a slight decline in the carrying amount of trade receivables. In the future, expected losses are to be recognized when the financial asset is booked (expected credit loss model). Previously, IAS 39 stipulated that impairment was to be reported if there were objective indications, for example in the event of a receivable that was already past due (incurred loss model). This means that impairments were recognized at a later period under IAS 39 than under the new Standard. The PVA Group applies the simplified approach for trade receivables and measures the impairment in question on an ongoing basis over the entire term. In view of the insignificant adjustment amount resulting from the application of the new impairment model, PVA TePla AG has not made any adjustments to retained earnings as of January 1, 2018 in its consolidated financial statements for fiscal year 2018.

As the PVA Group does not currently apply the hedge accounting provisions in accordance with IAS 39, the changes to hedge accounting do not result in any changes in the transition from IAS 39 to IFRS 9. However, the new accounting standard creates new opportunities for the recognition of hedges as hedging relationships in the balance sheet in future.

The initial application of IFRS 9 "Financial Instruments" in fiscal year 2018 has therefore not resulted in any material impact on the net assets, financial position, and results of operations of the PVA Group. Nonetheless, depending on future agreements and transactions, IFRS 9 could have a material impact on the presentation of the net assets, financial position, and results of operations. As a result of the adoption of IFRS 9, the PVA Group implemented consequential amendments to IAS 1 "Presentation of Financial Statements", according to which impairment from financial assets is recognized in a separate item of the Group income statement. It should also be noted that the initial application of IFRS 9 increased disclosure obligations in the Group Notes.

For some contracts with customers, the initial application of **IFRS 15 „Revenue from Contracts with Customers"** in the 2018 fiscal year led to not insignificant shifts between periods for revenue to be recognized in the Group income statement in comparison to previous revenue recognition. As of January 1, 2018, the PVA Group implemented IFRS 15 using the modified retrospective method. The Standard was applied to both new and existing contracts that had not yet been met at the time of initial application. The PVA Group did not restate the comparative information in accordance with the transitional provisions when applying the modified retrospective method. The comparative information (fiscal year 2017) is therefore presented in line with the previous regulations of IAS 11/IAS 18 and so comparability between the reporting period (fiscal year 2018) and previous year figures is significantly limited.

IFRS 15 replaces the existing provisions on recognizing revenue (including IAS 11 and IAS 18) and sets out a comprehensive framework stating the amount in which revenue is recognized and when it is recognized. IFRS 15 is based on a single, five-step model for recognizing revenue to be

applied to all contracts with customers. After identifying separate performance obligations in individual customer contracts, the subsequent steps set out determining the transaction price for each customer contract and allocating this transaction price to the performance obligations that had previously been separated. After meeting the individual performance obligations in the amount of the transaction price, revenue is recognized either over a period of time or at a point in time.

Using longer-term production processes, the PVA Group offers its customers systems for the production and refinement of high-quality materials, which are for example processed under high temperature, vacuum and under high pressure conditions and in plasma. The initial application of IFRS 15 from the fiscal year 2018 onwards had the following specific implications at the PVA Group:

» In accordance with the previous IAS 11/IAS 18 provisions, the PVA Group reported almost all system sales in the Industrial segment and production of larger crystal growing systems in the Semiconductor segment over the production time as a percentage of work completed (the POC method). From the fiscal year 2018 onwards, the POC method may only be used in accordance with IFRS 15.35c if an asset is created that has no alternative possible use and, in addition, (in the event of an assumed termination of the contract by the customer) where a right to payment for the service already provided exists, including an appropriate profit mark-up, that is enforceable in a court of law. As of the transition date (January 1, 2018), not all customer contracts for which revenue so far had been recognized using the POC method, met the criteria for revenue recognition over a period of time in accordance with IFRS 15. Thus, some customer contracts had instead to be recognized at the point in time when significant risks and rewards are transferred (generally at the time of acceptance). Generally speaking, this led to not insignificant shifts between periods for revenue to be recognized in the Group income statement in comparison to previous revenue recognition.
» On the other hand, the adjustment amounts at the transition date (January 1, 2018) were immaterial due to the accrual of further performance obligations (e.g. due to warranties exceeding the statutory provisions and installation services to be separated as necessary) ("multi-component contracts"). The regulations for recognizing contract costs (costs of contract attainment/fulfilling a contract) did not result in any changes to accounting. There were no significant financing components as of the transition date (January 1, 2018).
» The initial application of IFRS 15 resulted in changes to the presentation of balance sheet items. Under IFRS 15, receivables are recognized if goods or services have been provided or advance payments from customers are due. Rights to consideration from customers may only be recognized as trade receivables if this claim is unconditional. Given this, the gross amounts due from POC contracts ("future receivables from construction contracts"; EUR 6,137 thousand as of January 1, 2018), which were previously presented as separate balance sheet items, will be recognized under "trade receivables" in future, provided the revenue recognition over a period of time criteria in accordance with IFRS 15.35c have been met (and so the POC method is used). Advance payments from customers not yet paid will also be reported under "trade receivables" in future, provided the PVA Group considers that there is a right to payment enforceable in a court of law as of the balance sheet date (EUR 1,780 thousand as of January 1, 2018). In the future, the gross amounts due from POC contracts (EUR 979 thousand as of January 1, 2018) will also be recognized in the new balance sheet item "contract liabilities", as will pre payments from contracts with customers (EUR 37,050 thousand as of January 1, 2018), which were previously reported separately under "advance payments received on orders".
» Finally it should be noted that the initial application of IFRS 15 increased disclosure obligations in the Group Notes. As the PVA Group has not made use of the modified retrospective method and has not restated the previous year figures in accordance with the transitional provisions, the new disclosure obligations under IFRS 15 were not generally applied to comparative infor mation.

The table below summarizes the effects of the initial application of IFRS 15 on the consolidated balance sheet items in question as of January 1, 2018 as described above.

IFRS 15 Effects Consolidated balance sheet EUR'000	Notes	December 31, 2017 (as reported previous year)	Adjustment effect IFRS 15	January 01, 2018
ASSETS				
Work in progress	(7)	8,459	+2,889	11,348
Coming receivables on construction contracts	(8)	6,137	-6,137	0
Trade receivables	(8)	11,280	+5,787	17,067
Total assets		**25,876**	**+2,539**	**28,415**
LIABILITIES AND SHAREHOLDER'S EQUITY				
Revenue reserves		27,876	-494	27,382
Deferred tax liabilities	(21)	1,376	-203	1,173
Obligations on construction contracts	(15)	979	-979	0
Advance payments received on orders	(15)	37,050	-37,050	0
Contract liabilities	(15)	0	+41,265	41,265
Total Shareholder's equity and liabilities		**67,281**	**+2,539**	**69,820**

The tables below summarize the effects of the initial application of IFRS 15 on the consolidated balance sheet items in question as of December 31, 2018 and the Group income statement/statement of comprehensive income for fiscal year 2018.

IFRS 15 Effects Consolidated balance sheet EUR'000	Notes	December 31, 2018 (as reported)	Adjustment effect IFRS 15	December 31, 2018 (without IFRS 15)
ASSETS				
Work in progress	(7)	27,355	-15,823	11,532
Coming receivables on construction contracts	(8)	0	+6,216	6,216
Trade receivables	(8)	22,119	-7,350	14,769
Total assets		**49,474**	**-16,957**	**32,517**
LIABILITIES AND SHAREHOLDER'S EQUITY				
Revenue reserves		33,349	+4,197	37,546
Deferred tax liabilities	(21)	2,583	+1,714	4,297
Obligations on construction contracts	(15)	0	+36,438	36,438
Advance payments received on orders	(15)	0	+13,187	13,187
Contract liabilities	(15)	72,493	-72,493	0
Total Shareholder's equity and liabilities		**108,425**	**-16,957**	**91,468**

IFRS 15 Effects Consolidated income statement EUR'000	Notes	January 01 - December 31, 2018 (as reported)	Adjustment effect IFRS 15	January 01 - December 31, 2018 (without IFRS 15)
Sales revenues	(17)	96,783	+18,124	114,907
Cost of sales		-65,729	-12,909	-78,638
Income taxes	(21)	-3,021	-1,512	-4,533
Consolidated net result for the year		5,968	+3,703	9,671
		0.27		0.44

Standards and Interpretations Mandatorily Applied in Future

The IASB / IFRS IC has issued the following statements that were still not mandatory to apply in fiscal year 2018. The PVA Group does not intend to apply these new / updated Standards and Interpretations early.

Standard/ interpretation	Titel	Mandatory application	Adoption by the EU Commission	Effects
IFRS 16	Leasing	January 1, 2019	Yes	The explanation is presented below the table
Amend. IFRS 9	Prepayment features with negative compensation	January 1, 2019	Yes	No relevance
Amend. IAS 28	Long-term Interests in Associates and Joint Ventures	January 1, 2019	Yes	No relevance
IFRIC 23	Uncertainty over Income Tax Treatments	January 1, 2019	Yes	No material
IFRS 17	Insurance Contracts	January 1, 2021	No	No relevance
Amend. IFRS 3	Definition of a Business	January 1, 2020	No	Effects are currently being analyzed
Amend. to IAS 1 and IAS 8	Definition of Material	January 1, 2020	No	Effects are currently being analyzed
Amend. IAS 19	Employee Benefits: Plan Amendment, Curtailment or Settlement	January 1, 2019	Yes	No material
Annual improvements to the IFRS cycles 2015-2017	Amendments to IFRS 3, IFRS 11, IAS 12 and IAS 23	January 1, 2019	Yes	No material
Conceptual Framework for Financial Reporting	Amendments to References to the Conceptual Framework in IFRS Standards	January 1, 2020	No	Effects are currently being analyzed

IFRS 16 „Leases" must be applied for the first time for reporting periods beginning on or after January 1, 2019. The option to apply this early is not exercised. The PVA Group will therefore apply this new regulation in its consolidated financial statements for the first time in the 2019 fiscal year. IFRS 16 replaces the existing provisions on recognizing leases (including IAS 17 and IFRIC 4) and introduces a uniform accounting model which stipulates that all leases must be recognized in the lessee's balance sheet (the right-of-use model). This means that the previous finance and operating lease classification is no longer relevant for lessees. In the future, lessees will have to recognize assets for the rights-of-use acquired

and corresponding liabilities for the outstanding payment obligations in their balance sheet. Only short-term and low-value leases are exempt from this. Conversely, the classification in accordance with IAS 17 in finance and operating leases will remain in place in future under IFRS 16 for lessors. Therefore, there is no impact on the lessor's balance accounting.

The effects were analyzed as part of a Group-wide project on implementation of the new Standard. As part of its business transactions, the PVA Group is the lessee of property, plant and equipment and lessor in connection with the leasing of its own buildings. At the time of initial application, the initial use of the right-of-use model results in an increase in the PVA Group's balance sheet total due to a rise in lease liabilities and a similarly large increase in fixed assets on account of rights-of-use to be capitalized in the amount of EUR 2.5 million. In the future, write-downs and interest expenses will be recognized in the Group income statement in place of lease expenses. This will cause EBITDA to rise slightly in the next few fiscal years, starting in the 2019 calendar year. Looking at the statement of Group cash flows, the principal portion of lease payments from previous operating leases will reduce cash flow from financing activities in the future, as opposed to cash flow from operating activity. In the future, the interest portion of lease payments will also be reported in cash flow from financing activities. The initial application of IFRS 16 increases disclosure obligations in the Group Notes. As part of the initial application of IFRS 16, the PVA Group applies the modified retrospective transition method, under which rights-of-use and lease liabilities as of January 1, 2019 are booked. The cumulative effects resulting from the transition are recognized directly in equity.

Reporting Currency and Currency Translation

The consolidated financial statements are prepared in Euros (EUR).

Foreign currency transactions are translated into Euro by the Group companies at the current spot exchange rate at the time the transaction first qualifies for recognition. Foreign currency receivables or liabilities recognized as of the end of the reporting period are translated to euro using the spot exchange rate. Any gains or losses from these foreign currency valuations are recognized in profit or loss.

Separate financial statements for subsidiaries outside the eurozone are converted into euro in accordance with the functional currency concept. The functional currency is the local national currency. The translation of assets and liabilities as well as contingent liabilities and other financial obligations is performed at the prevailing rate on the balance sheet date (middle rate). By contrast, income statement items are translated using average exchange rates for the fiscal year, while shareholders' equity is translated at historical rates. Exchange differences resulting from changes to exchange rates across fiscal years are recognized in equity under the balance sheet item "other reserves".

The material exchange rates of countries outside the Eurozone that are included in the consolidated financial statements are as follows:

EUR = 1	Average exchange rate		Exchange rate on the balance sheet date	
	2018	2017	Dec. 31, 2018	Dec. 31, 2017
USA (USD)	1.18149	1.12928	1.1450	1.1993
China (CNY)	7.80735	7.62644	7.8751	7.8044
Denmark (DKK)	7.45318	7.43865	7.4673	7.4449
Singapore (SGD)	1.59285	1.55822	1.5591	1.6024
Taiwan (TWD)	35.55000	34.36600	35.0750	35.5400

Material Management Judgments and Estimate Uncertainties

For the PVA Group's consolidated financial statements, it is necessary to make a limited number of estimates and assumptions which have an impact on the amount and the presentation of recognized assets and liabilities, income and expenses and contingent liabilities. In particular, material management judgments and estimate uncertainties relate to allowances for bad debts (see Note 8), the amount

and certainty of pension provisions (see Note 13) with respect to other provisions (see Note 14.), the measurement of goodwill (see Note 4) and the recognition of deferred tax assets on loss carry-forwards (see Note 21). Management bases its assessment of these judgments and estimate uncertainties on past experience, estimates from experts (e.g. lawyers, rating agencies and associations) and the results of carefully weighing up different scenarios. Changes in the economic situation that deviate from the assumptions applied and that lie beyond the control of management may result in the actual amounts differing from the original estimates. Estimates and assumptions made by the PVA Group are reviewed on an ongoing basis. Nonetheless, they may differ from the actual figures. If the original basis of estimation changes, accounting for the respective balance sheet items will be adjusted with an effect on the income statement.

When recognizing revenue, material judgments are made when determining the date on which the performance obligations are met, when determining the transaction price and when allocating the transaction price to separate performance obligations. Depending on the specific facts and circumstances in the individual case, performance obligations resulting from contracts with the PVA Group's customers in connection with producing systems and providing services are recognized either over a period of time as a percentage of work completed (the POC method) or are recognized for a particular point in time as soon as the goods are delivered or the services are performed. When producing systems for specific customers, a judgment must be made as to whether, in this specific case, an asset is created that has no alternative possible use and, in addition, (in the event of an assumed termination of the contract by the customer) whether there exists a right to payment for the service already provided, including an appropriate profit mark-up, that is enforceable in a court of law. Under the POC method, the method that most reliably measures the percentage of work completed must be determined. The PVA Group uses primarily input-based methods to determine revenue generated from producing systems for specific customers, first and foremost the cost-to-cost method. The degree of completion is determined as the ratio of the costs incurred as of the balance sheet date to the estimated total costs. In the event of multiple performance obligations, the estimated contract consideration is to be allocated to the identified performance obligations on the basis of the respective relative stand-alone selling prices. The PVA Group estimates the stand-alone selling prices using other adequate methods only if the prices of individual goods and services cannot be directly observed on the market. Depending on the specific facts and circumstances in the individual case, the PVA Group uses the following methods in this scenario: The "adjusted market assessment approach", the "expected cost plus a margin approach" and (in the case of certain restrictive requirements) the "residual method". Significant financing components must be taken into account when determining the transaction price, provided there is not more than one year's difference between the time the service is provided and the time of payment. All relevant facts and circumstances relating to the case in question must be assessed when determining whether or not there are any significant financing components in the individual case.

Roundings
The figures in these financial statements may contain rounding differences of +/- one unit (EUR, % etc.) for reasons related to the calculations.

3. CONSOLIDATION

Companies Included in Consolidation
These consolidated financial statements include PVA TePla AG and its subsidiaries over which it exercises control. The Group exercises control when the PVA Group has exposure or rights to variable returns from its involvement with an investee and can also use its power over the investee to influence these returns. It is generally assumed that having a majority of the (direct or indirect) voting rights constitutes control.

The following subsidiaries are included in the consolidated financial statements as of December 31, 2018 on a fully consolidated basis:

Name	Corporate domicile	Ownership interest
PVA TePla AG (parent company)	Wettenberg, Germany	
PVA Control GmbH	Wettenberg, Germany	100 %
PVA Industrial Vacuum Systems GmbH	Wettenberg, Germany	100 %
PVA Löt- und Werkstofftechnik GmbH	Jena, Germany	100 %
PVA TePla (China) Ltd.	Beijing, PR China	100 %
PVA Metrology & Plasma Solutions Taiwan Ltd.	Hsinchu, Taiwan	100 %
PVA Crystal Growing Systems GmbH	Wettenberg, Germany	100 %
PVA Metrology & Plasma Solutions GmbH	Wettenberg, Germany	100 %
PVA TePla America Inc.	Corona / CA, USA	100 %
PVA TePla Analytical Systems GmbH	Westhausen, Germany	100 %
PVA TePla Singapore Pte. Ltd.	Singapore	100 %
PVA Vakuum Anlagenbau Jena GmbH	Jena, Germany	100 %
Xi'an HuaDe CGS Ltd.	Xi'an, PR China	51 %
PVA Semiconductor Systems Xi'an Ltd.	Xi'an, PR China	100 %
PVA SPA Software Entwicklungs GmbH	Coburg, Germany	100 %

Changes to the Companies Included in Consolidation
In July 2018, PVA TePla AG acquired 100 % of shares in SPA Software Entwicklungs GmbH. The company creates and sells software for computer systems and designs and sells analysis systems. The acquisition is a good addition to the PVA Group's software and application development portfolio.

As at June 30, 2018, the fair values of the identifiable assets and liabilities of SPA Software Entwicklungs GmbH, Coburg break down as follows:

EUR'000	June 30, 2018
Assets	
Intangible assets	2,453
Property, plant and equipment	312
Inventories	98
Receivables	870
Cash and cash equivalents	367
Deferred tax assets	80
Other non-current assets	37
Total assets	**4,217**
Liabilities	
Deferred tax liabilities	710
Pension provisions	303
Tax provisions	71
Other provisions	358
Trade payables	359
Financial liabilities	6
Other liabilities	100
Total liabilities	**1,907**
Identifiable net assets (Fair value)	**2,310**
Goodwill from company acquisition	90
Entire consideration (acquisition price)	**2,400**

Significant differences of fair values to carrying amounts relate to the recognition of not yet capitalized intangible assets (EUR 2,448 thousand), mainly due to not yet capitalized software. The purchase price of EUR 2,400 thousand had to be settled with cash and cash equivalents. EUR 2,000 thousand were paid in fiscal year 2018, the remaining EUR 400 thousand will need to be settled in fiscal year 2019. Under consideration of the cash and cash equivalents of EUR 367 thousand acquired, the net cash outflow from the corporate acquisition was EUR 1,633 thousand.

The goodwill (EUR 90 thousand) is a result of anticipated synergies related to the integration of systems sold in our customers' production processes and the acquisition of intangible assets that do not meet the conditions for separate recognition.

The sales contribution from the acquisition of the company for the period from initial consolidation to December 31, 2018 is EUR 1,205 thousand and the profit contribution is EUR 81 thousand. If SPA Software Entwicklungs GmbH had been fully consolidated since January 1, 2018, the sales contribution would have been EUR 3,360 thousand and the profit contribution EUR 41 thousand.

SPA Software Entwicklungs GmbH was renamed to PVA SPA Software Entwicklungs GmbH, Coburg with effect from September 3, 2018.

Beyond that, no further changes have occurred since the 2017 consolidated financial statements.

Principles of Consolidation
The financial statements of the consolidated subsidiaries included in the consolidated financial statements are consistently prepared at the same balance sheet date as the consolidated financial statements (December 31, 2018). The financial statements of PVA TePla AG and its subsidiaries included in the consolidated financial statements are prepared in accordance with standardized recognition and measurement principles. All intragroup assets and liabilities, equity, income, expenses and cash flows relating to transactions between companies included in the consolidated financial statements are eliminated in full as part of consolidation.

Capital is consolidated in accordance with the purchase method. The cost of a business combination is then allocated to the identifiable assets acquired and liabilities and contingent liabilities assumed in accordance with their fair values at the acquisition date. The cost of a company acquisition is measured as the total of consideration transferred, measured by the fair value at the time of acquisition, and the non-controlling interest in the acquired company. If the cost of the investment exceeds the pro rata net fair value of identifiable assets, liabilities and contingent liabilities, this is recognized as goodwill. If the fair value of the net assets acquired exceeds the total consideration assumed, the PVA Group reassesses whether all assets acquired and all liabilities assumed were identified correctly. Furthermore, the PVA Group reviews the procedure used to calculate the amounts. If, after remeasurement, the fair value of the net assets acquired still exceeds the total consideration assumed, the difference is recognized through profit or loss in the Group income statement. Costs incurred as part of a company acquisition are recognized as an expense. Non-controlling interests in the acquired company are measured by the acquired company's corresponding share of identifiable net assets and reported under the item "non-controlling interests" in the PVA Group's consolidated balance sheet. Transactions with non-controlling interests that do not result in a loss of control are recognized through other comprehensive income as equity transactions.

B. NOTES ON THE CONSOLIDATED BALANCE SHEET

4. INTANGIBLE ASSETS

Changes in intangible assets in the reporting period and in the previous year are shown in the consolidated statements of changes in fixed assets for the fiscal years 2018 and 2017.

Intangible assets primarily consist of the proportion of goodwill arising in connection with company acquisitions, which represents the excess of the purchase price over the fair value of the net assets acquired, and of other intangible assets, which primarily comprise software.

Goodwill is allocated to cash-generating units as follows:

Cash Generating Units (CGU)	Dec. 31, 2018	Dec. 31, 2017
PVA TePla Analytical Systems GmbH, Westhausen	4,831	4,831
PVA Crystal Growing Systems GmbH, Wettenberg	2,734	2,734
PVA Metrology & Plasma Solutions GmbH, Wettenberg	193	193
PVA SPA Software Entwicklungs GmbH, Coburg	90	-
PVA Industrial Vacuum Systems GmbH, Wettenberb	50	50
Total	**7,898**	**7,808**

This breakdown of cash-generating units corresponds to the lowest level at which the related goodwill is monitored and managed for internal management purposes.

PVA Industrial Vacuum Systems GmbH is treated as an independent cash-generating unit in the Industrial Systems segment. The goodwill of PlaTeG GmbH was transferred to this company after its merger in the 2015 fiscal year.

Within the Semiconductor Systems segment, impairment tests on goodwill are conducted in four cash-generating units. As in the previous year, this affects PVA TePla Analytical Systems GmbH based in Westhausen. PVA Crystal Growing Systems GmbH, based in Wettenberg, has also been treated as an independent cash-generating unit since 2015. The goodwill of PVA TePla AG was transferred to this company after leasing the business operations. PVA Metrology & Plasma Solutions GmbH, Wettenberg, has also been treated as an independent cash-generating unit since 2015. The goodwill of Munich Metrology GmbH was transferred to this company after the merger in the 2015 fiscal year. PVA SPA Software Entwicklungs GmbH's goodwill was added in the current fiscal year and is since to be treated as an independent cash-generating unit.

The recoverable amount of each cash-generating unit is calculated as its value in use via the discounted cash flow method. Underlying these discounted cash flow calculations are forecasts for each cash-generating unit, which are based on the financial budgets approved by management and also used for internal purposes. The discount rate is based on the segment-specific weighted average cost of capital of the companies (WACC approach) and contains a reasonable risk premium. The parameters market risk and beta have the largest effect on the calculation of impairment. The cost of capital for the units under review was 17.0% (previous year: 11.6% to 13.0%).

Key assumptions for the purpose of determining the value in use of each cash-generating unit by management include assumptions regarding the development of incoming orders, sales revenues, margins, investments and personnel. The values of these parameters are based on past experience as well as foreseeable future developments. The underlying assumptions of key planning indicators (such as sales revenue growth, cash flows, discount rates) reflect past experience and are set according to external information sources. Planning is based on a financial planning horizon of three years. For an impairment test, growth of 1% has been set for cash flow for the following period (previous year: 1%). The underlying USD/EUR exchange rate is 1.1450 (previous year: 1.1993). The cash flow is discounted according to cost of capital approach while taking into account specific tax effects of the segments.

The following assumptions were made for cash generating units with significant goodwill:

For the Analytical Systems business unit, we expect average geometric sales revenue growth (CAGR determination) of 6% (previous year: 6%) (1% in perpetual annuity) in the next three years due to the continued high-level of investments in the semiconductor industry and the further effects of sales activities. In the Crystal Growing Systems business unit, we are anticipating a considerably increased level of sales revenues for 2019 and 2020. This brings the perpetual annuity back down to the current level.

After determination of the recoverable amount of the cash-generating units, it is evident that the vast majority of potential deviations from the material assumptions would not lead to the carrying amounts of the units being higher than the recoverable amounts.

No impairment losses on intangible assets were recognized in fiscal year 2018 or in the previous year.

Presentation of Significant Accounting Policies
Individually acquired intangible assets are measured at cost on initial recognition. The costs of intangible assets acquired as part of a business combination correspond to the fair value at the time of acquisition. In order for internally generated intangible assets to be capitalized, the asset must be expected to provide a future benefit to the PVA Group and it must be possible to reliably calculate the costs.

Development projects are therefore capitalized only if the requirements set out in IAS 38.57 are cumulatively met. Research and development costs that cannot be capitalized are recognized through profit or loss in the period in which they are incurred. If an internally generated intangible asset meets the requirements for recognition, it is measured at production cost at initial recognition. Production costs include all costs directly attributable to the production process and an appropriate share of general production-related overhead costs. Internally generated intangible assets that are not yet complete are subject to an annual impairment test.

After initial recognition, intangible assets are carried at cost less any accumulated depreciation and any accumulated impairment losses. Intangible assets with determinable useful lives are amortized on a straight-line basis over the contractual or estimated useful life. Amortization of intangible assets is allocated to the functional areas utilizing the assets concerned. The useful lives are reviewed annually and, if necessary, adjusted to meet future expectations. The useful lives of intangible assets recognized by the PVA Group range from three to eight years.

Purchased (derivative) goodwill resulting from the capital consolidation of subsidiaries is recognized as an asset in the PVA Group's consolidated balance sheet. Internally generated (original) goodwill, on the other hand, may not be capitalized.

Impairment of Property, Plant and Equipment and Intangible Assets (Including Goodwill)
Property, plant and equipment and intangible assets with a finite useful life are reviewed by the PVA Group at each reporting date to assess whether there are indications of impairment (triggering events). If facts or changed circumstances indicate that the carrying amount of an asset may not be recoverable, the asset is subjected to an impairment test. In addition, an impairment test is conducted at the end of each fiscal year for intangible assets with useful lives that cannot be determined or that are not yet used for operational purposes. This impairment test compares the carrying amount of the asset to be tested with the recoverable amount. The recoverable amount is calculated for each asset on an individual basis or, if this is not possible, for the cash-generating unit (CGU) to which the asset is allocated. If the carrying amount is higher than the recoverable amount, the recoverable amount is written down through profit or loss. Impairment losses are recognized in the item "other operating expenses". If the conditions for an impairment loss on property, plant and equipment or intangible assets with a finite useful life recognized in previous periods no longer apply, the impairment is reversed through profit or loss up to a maximum of amortized cost.

Capitalized goodwill must undergo an impairment test at least once per year, as well as if there are indications that the goodwill may be impaired. The value of goodwill is reviewed using a single-stage process in the cash-generating unit (CGU) to which the goodwill was allocated. This impairment test compares the carrying amount of a cash-generating unit with the recoverable amount. If the carrying amount is higher than the recoverable amount, the recoverable amount is written down through profit or loss. The impairment loss will be allocated to goodwill and higher amounts will, in accordance with specific restrictions, be distributed proportionately between the assets of the cash-generating unit. Impairment losses for goodwill cannot be reversed at a later date if the reasons for impairment in previous periods cease to apply.

5. PROPERTY, PLANT AND EQUIPMENT

Changes in property, plant and equipment in the year under review and in the previous year are shown in the consolidated statements of changes in fixed assets for 2018 and 2017, which are attached as an appendix.

The PVA Group has received financial incentives from various public authorities under government business development programs, including funding for the construction of production facilities. Investment subsidies and tax-free investment contributions received are deducted from the carrying amount of the relevant assets.

Land has been encumbered with a charge in the amount of EUR 18,000 thousand in order to secure the PVA TePla AG loans for the financing of new facilities in Wettenberg. One of these loans is valued at EUR 3,000 thousand (previous year: EUR 3,666 thousand) on the balance sheet date and has a remaining term until January of 2023. As in the previous year, the second loan was not drawn as of the reporting date (EUR 2,667 thousand).

For the land charges mentioned above, an agreement to assign the restitution claim and a non-recurring loan undertaking were concluded between the affected banks within the scope of the syndicated loan contract concluded in August 2015. Therefore the land charges serve as front-ranking collateral under the contractual relationship mentioned above and only second-ranking collateral under the syndicated loan contract. With the conclusion of the syndicated loan contract, an additional land charge of EUR 7.3 million was registered for the Jena location.

There are no other material restrictions on ownership or title in respect of the property, plant and equipment reported.

No write-down losses on property, plant and equipment were recognized in fiscal year 2018 or in the previous year.

Leasing

The PVA Group is the lessee of property, plant and equipment and lessor in connection with the leasing of its own systems and buildings. In fiscal year 2018, as in the previous period, all relevant leases of the PVA Group were treated as operating leases with lease installments expensed as incurred. Financial commitments under rental and lease agreements are presented in Note 26.

Presentation of Significant Accounting Policies

Property, plant and equipment are carried at historical cost less any accumulated straight-line depreciation and any accumulated write-down losses. Cost in this context includes expenses directly attributable to the acquisition. Subsequent costs are capitalized only if it is probable that this will provide a future benefit to the PVA Group and the costs can be reliably calculated. If the costs of property, plant and equipment assets cover a longer period of time, interest incurred on borrowed capital before completion is capitalized as elements of cost in accordance with the requirements of IAS 23. Pursuant to IAS 20.24, investment subsidies and tax-free investment contributions received are deducted from the carrying amount of the relevant assets. The costs of property, plant and equipment acquired as part of business combinations correspond to the fair value at the time of acquisition.

Depreciation is recognized on a straight-line basis over the expected useful life of the asset; in the case of tenants' fixtures or leasehold improvements, if appropriate, in accordance with the shorter duration of the lease. Depreciation of property, plant and equipment is allocated to the functional areas utilizing the respective assets. Depreciation is conducted according to the following economic useful lives:

	Years
Buildings	25 - 33
Plant and machinery	3 - 20
Other plant and equipment, fixtures and fittings	2 - 14

Expenditure for maintenance and repairs is expensed in the period in which it is incurred. The cost and the related cumulative depreciation are derecognized when property, plant and equipment are scrapped or disposed of, with any

book gains or losses recognized in the income statement under "Other operating income" or "Other operating expenses".

Write-downs of Property, Plant and Equipment
For more information on the write-downs of property, plant and equipment, see the explanations on significant accounting policies in Note 4.

Accounting for Lease Agreements
All agreements under which the right to use an asset for a fixed period of time is transferred in exchange for payment are deemed to be leases. This also applies to agreements where the transfer of such a right is not expressly stated. Lease agreements are classified in accordance with IAS 17, taking into consideration IFRIC 4. These differentiate between finance leases and operating leases. Lease agreements are classified as finance leases if all risks and rewards incidental to ownership are transferred to the lessee.

Lease payments for operating leases are recognized on a straight-line basis over the lease term as an operating expense of the functional area in question in the Group income statement.

6. FINANCIAL ASSETS

Non-current financial assets essentially comprise non-current trade receivables from system sales as part of the ordinary course of business. Likewise, non current financial assets also include trade receivables that are either already due or to be due shortly if, as expected, their realization is not expected within twelve months of the balance sheet. They are measured exclusively at amortized cost. Non-current financial assets are composed as follows:

EUR´000	Dec. 31, 2018	Dec. 31, 2017
Financial assets (gross value)	2,017	1,739
less write-downs	-1,907	0
Net book value	**110**	**1,739**

Write-downs of non-current financial assets was as follows:

EUR´000	2018	2017
Write-downs on January 1	0	0
Currency exchange differences	0	0
Addition	1,907	0
Utilization	0	0
Release	0	0
Write-downs on December 31	**1,907**	**0**

Write-downs of EUR 1,907 thousand recognized in fiscal year 2018 was recognized as part of a special review of default risks for one specific customer contract.

Presentation of Significant Accounting Policies
At initial recognition, a financial asset is allocated to one of the following categories and measured:

» Amortized cost measurement;
» Investments in debt instruments measured at fair value with changes in other comprehensive income;
» Equity investments measured at fair value with changes in other comprehensive income; or
» Fair value measurement through profit or loss.

Classification is based on the entity's business model for managing the financial assets and the contractual cash flow characteristics. If the financial asset is held within a business model whose objective is to collect contractual cash flows and the contractual terms result in cash flows on specific dates that are solely payments of principal and interest on the principal amount outstanding, it is measured at amortized cost. All non-current financial assets at the PVA Group are currently allocated to this measurement category (measurement at amortized cost). Write-downs for debt instruments measured at amortized cost is recog-

nized at the amount equal to the expected credit loss. It is adjusted at each reporting date to take into consideration changes in the financial instrument's credit risk since initial recognition and is generally measured at an amount equal to the lifetime expected credit loss.

A review is carried out on each reporting date to assess whether the credit risk has increased significantly. The credit risk assessment is based on quantitative and qualitative information, such as information on credit default swaps, past experiences and forward-looking assumptions. Forward-looking assumptions comprise sector and country-specific expectations on how credit risk will develop.

The following information and expectations, among other indications, may suggest a significant increase in the credit risk:

» Significant change in the financial instrument's internal or external credit rating;
» An adverse change in business, financial or economic conditions that has a significant impact on the customer's creditworthiness;
» Indications that a customer is facing considerable financial difficulties; or
» Failure to observe payment terms.

Trade receivables, on the other hand, use a simplified model to recognize the expected credit loss, based on an impairment matrix. For more information, see the explanations under Note 8.

Derivative Financial Instruments
The PVA Group occasionally enters into forward exchange contracts to hedge exchange rate risks in connection with sales in foreign currencies (exchange rate hedging). Interest rate hedges are also concluded to hedge interest rate risks for the financing of investments in new buildings. These kind of derivatives are measured at fair value, both on initial recognition and on subsequent measurement. The changes resulting from this are recognized in profit or loss. The PVA Group does not apply the option to designate a hedging relationship (hedge accounting).

Under exchange rate hedging, the measurement effects resulting from changes to exchange rates are recognized at the fair value of the derivative under other operating expenses or other operating income. Conversely, the corresponding changes in the market value of interest rate hedges are reported through profit or loss in the financial result ("finance income" or "finance costs"). All derivative financial instruments with a positive market value are recognized on the balance sheet under "other current receivables" and those with a negative market value are reported under "other current liabilities".

7. INVENTORIES

Inventories in fiscal year 2018 include write-downs of EUR 3,634 thousand (previous year: EUR 4,225 thousand). Write-downs are primarily attributable to typical write-downs for non-marketability and reductions for loss-free valuation.

Presentation of Significant Accounting Policies
Inventories are recognized at cost in accordance with the weighted average cost method or net realizable value, whichever is lower. In accordance with IAS 2, cost includes not only directly attributable costs, but also production and material overheads as well as write-downs. Fixed overheads are taken into account on the basis of the normal capacity utilization of the production facilities. The cost of idle production capacity is recognized in income under "Cost of sales". Write-downs are charged on inventories when their costs exceed the expected net realizable value. The net realizable value is the expected disposal proceeds less any costs which are incurred until the sale.

8. TRADE RECEIVABLES

Trade receivables are composed as follows:

EUR´000	Dec. 31, 2018	Dec. 31, 2017
Gross value:		
Contract assets	7,350	0
Trade receivables concerning product sales and services	15,129	11,609
Subtotal	22,479	11,609
less write-downs	-360	-329
Net book value	**22,119**	**11,280**

The previous year amounts are unchanged and do not account for the corresponding IFRS 15 adjustment effects. Contract assets (POC receivables) recognized for the first time as of January 1, 2018 included outstanding advance payments from customers with legally enforceable payment claims amounting to EUR 3,134 thousand (previous year: EUR 0 thousand) as of the balance sheet date December 31, 2018.

Customized systems to be recognized using the POC method and for which the costs incurred, including shares of profits, exceed the advance payments received, are recognized under contract assets (recognized under the balance sheet item "future receivables from construction contracts" in the previous year). PoC receivables are composed as follows:

EUR´000	Dec. 31, 2018	Dec. 31, 2017
POC-Receivables (Gross value)	12,398	10,297
less advance payments received	-5,048	-4,160
Contract assets (net exposure) (Previous year: „Coming receivables on construction contracts")	**7,350**	**6,137**

Write-downs on trade receivables developed as follows:

EUR´000	2018	2017
Write-downs on January 1	329	348
Addition	224	315
Utilization	-22	-334
Release	-171	0
Write-downs on December 31	**360**	**329**

The following table shows trade receivables that were measured under the simplified approach using an impairment matrix in fiscal year 2018. The amounts do not include impairment relating to credit-impaired trade receivables where default risks were assessed by means of a special review on the basis of the individual case in question.

	Due date by time bands on December 31, 2018				
EUR'000	**not yet due**	**< 30 days**	**30 – 90 days**	**> 90 days**	**Total**
Gross receivables	11,775	7,922	1,504	1,278	22,479
Weighted average failure rate	0.4%	0.5%	0.7%	0.9%	
Impairment	47	40	11	12	110
Net book value	17,728	7,882	1,493	1,266	22,369

Presentation of Significant Accounting Policies
Trade receivables are carried at the fair value of the consideration provided (transaction price) from the time they were incurred. Trade receivables are not discounted as they generally do not contain any significant financing components and are usually due within one year. Trade receivables are subsequently accounted for at amortized cost (less impairment losses). The PVA Group uses a simplified method for calculating expected credit losses in order to determine impairment. The impairment is then calculated using an impairment matrix based on past experience with credit losses and adjusted for future-oriented factors specific to the borrower and the economic conditions. The default risks for credit-impaired trade receivables are subject to a special review on the basis of the individual case. Indications of credit impairment include primarily the likelihood of insolvency and significant financial difficulties of the borrower. Impairment is recognized using an allowance account through profit or loss in the consolidated income statement. If, in subsequent periods, the reasons for impairment no longer apply, impairment losses are reversed through profit or loss up to a maximum of the original cost. Impairment losses on trade receivables and income from reversals of impairment losses are reported on a net basis and recognized separately in the Group income statement.

9. CASH AND CASH EQUIVALENTS

Cash and cash equivalents of EUR 40,014 thousand (previous year: EUR 33,017 thousand) consist of current bank balances and deposits.

Presentation of Significant Accounting Policies
Cash and cash equivalents comprise cash in hand and immediately available bank balances as well as immediately available financial investments that are subject to only insignificant fluctuations in value and, measured from the time of acquisition, have a remaining term not exceeding three months. Cash and cash equivalents are measured at their nominal amount.

10. DEFERRED TAX ASSETS AND DEFERRED TAX LIABILITIES

See the explanations under Note 21 for more information.

11. SHAREHOLDERS' EQUITY

Group equity and the individual components are presented in detail in the Group statement of changes in equity.

Share Capital
As of December 31, 2018, the issued share capital of PVA TePla AG consisted of 21,749,988 individual no-par shares with a nominal value of EUR 1.00 each.

Contingent and Authorized Capital
There was no contingent capital as of December 31, 2018.

At the Annual General Meeting on June 21, 2017, the old authorization of the Management Board to increase the share capital valid until June 30, 2017 was canceled.

At the same time, the Annual General Meeting of PVA TePla AG authorized the Management Board to increase the Company's share capital with approval of the Supervisory Board on one or more occasions during the period until June 20, 2022 by a total of up to EUR 10,874,994 by issuing 10,874,994 new no-par value bearer shares against cash and/or non-cash contributions with shareholders´ subscription rights excluded to the extent permitted by law. No capital increases from this authorized capital were resolved in 2018.

Profit Appropriation
The separate financial statements of PVA TePla AG (according to commercial law regulations) as of December 31, 2018 report a net profit of EUR 5,186 thousand (previous year: net loss EUR 5,486 thousand) and retained earnings of EUR 16,592 thousand (previous year: EUR 11,406 thousand).

The Management Board and Supervisory Board propose that the retained earnings reported in PVA TePla AG's annual financial statements for fiscal year 2018 amounting to EUR 16,592 thousand be carried forward to a new account at the same amount. There were no withdrawals from the share premium or retained earnings.

12. FINANCIAL LIABILITIES

PVA TePla AG has a financing facility in the form of a syndicated loan contract, a mixed line of EUR 12.0 million (cash and guarantee line), a guarantee line of EUR 68.0 million and an increase option for another EUR 35.0 million (guarantee line) and another EUR 10.0 millien (cash line).

Interest is according to EURIBOR with a graduated margin based on the debt ratio. As in the previous year, no cash lines had been drawn and EUR 61.1 million (previous year: EUR 40.9 million) of the guaranteed lines had been utilized as of the reporting date. The syndicated loan agreement defines financial covenants for meeting common financial ratios. These financial covenants were met in both fiscal year 2018 and in the previous period.

Further financing facilities of EUR 2.6 million and EUR 3.0 million are available as working capital financing. As of the balance sheet date, these were not used (previous year: EUR 0.0 million) / were used in the amount of EUR 3.0 million (previous year: EUR 3.6 million) respectively. Of this amount, EUR 2.3 million (previous year: EUR 3.0 million) were recognized in non-current financial liabilities.

Non-current financial liabilities are composed as follows:

EUR´000	Dec. 31, 2018	Dec. 31, 2017
Non-current financial liabilities	3,000	3,767
Portion of non-current financial liabilities due in less than one year	-667	-766
Non-current financial liabilities less current portion	**2,333**	**3,001**

The average weighted interest rate for non-current financial liabilities was 0.53% (previous year: 1.24%). Non-current financial liabilities were reduced to EUR 2,333 thousand (previous year: EUR 3,001 thousand) due to scheduled loan amortization.

The repayment commitments for these non-current financial liabilities are structured as follows:

EUR´000	2018	2017
Due		
Up to 1 month	333	344
Between 1 and 3 months	0	21
Between 3 and 1 year	333	402
Between 1 and 5 years	2,000	2,668
More than 5 years	0	333

The loan for the financing of investments in machinery for the subsidiary PVA Löt- und Werkstofftechnik GmbH, Jena, Germany is secured through the transfer of ownership of the assets to be financed. The carrying amount of this collateral on December 31, 2018 was EUR 328 thousand (previous year: EUR 397 thousand).

Presentation of Significant Accounting Policies
Financial liabilities are classified and measured at amortized cost or at fair value through profit or loss (FVTPL). A financial liability is classified as FVTPL if it is classified as held for trading, is a derivative or is designated as a derivative on initial recognition.

Financial liabilities at FVTPL are measured at fair value and net gains or losses, including interest expenses, are recognized in profit or loss.

In subsequent measurements, other financial liabilities are measured at amortized cost using the effective interest method. Interest expenses and currency translation differences are recognized in profit or loss. Gains or losses from derecognition are also recognized in profit or loss.

13. PENSION PROVISIONS

Provisions for pension obligations are recognized on the basis of pension plans for commitments to pay retirement, invalidity and dependents' benefits. The amount of benefit usually depends on the number of years of service and the salary of the respective employee.

Pension commitments exist at PVA TePla AG, PVA Industrial Vacuum Systems GmbH, PVA Crystal Growing Systems GmbH, PVA Vakuum Anlagenbau Jena GmbH and PVA SPA Software Entwicklungs GmbH, all based in Germany. These comprise exclusively old commitments. New pension commitments are generally no longer granted. There are no pension obligations abroad.

No material plan assets exist to cover future pension obligations within the PVA Group. The resulting residual risks from accounting of pension obligations are related to risks from the change in actuarial parameters, which are shown in the table below. The largest risk is the interest rate; see the separate sensitivity analyses below for more information.

In detail, the calculation is based on the following actuarial premises:

in %	Dec. 31, 2018	Dec. 31, 2017
Income trend	3.00	3.00
Pension trend	1.25	1.25
Staff turnover	1.50	1.50

Biometric parameters have been calculated on the basis of the 2018 G mortality tables issued by Professor Dr. Klaus Heubeck. The measurement of pension obligations is supported by actuarial reports. The interest rate used for calculation at PVA TePla AG for those with vested pension rights and retired persons was 1.74% (previous year: 1.5%), for PVA Industrial Vacuum Systems GmbH 2.02% (previous year: 1.75%), for PVA Crystal Growing Systems GmbH 2.02% (previous year: 1.85%) for PVA Vakuum Anlagenbau Jena GmbH 2.17% (previous year: 1.9%) and for PVA SPA Software Entwicklungs GmbH 2.02% (previous year: 1.75%).

Changes in the present value of future pensions are as follows:

EUR´000	2018	2017
Present value of future pensions on Jan. 1	14,887	14,339
Additions through company acquisition	303	0
Current service expense for services provided by employees in the fiscal year	142	146
Interest expense	238	260
Changes in the estimation of financial reporting	106	0
Pension payments	-447	-427
Actuarial gains (-) and losses (+)	-34	569
Present value of future pensions on Dec. 31	**15,195**	**14,887**

The current service cost is essentially recognized in the cost of sales and in administrative costs.

At the balance sheet date, it can be assumed that EUR 552 thousand (previous year: EUR 475 thousand) will be fulfilled within the next twelve months and EUR 14,643 thousand (previous year: EUR 14,412 thousand) will be fulfilled at a later date (over a very long term for some portions). On December 31, 2018, the weighted average term of defined pension plans was 14.7 years.

Sensitivity Analyses
While keeping to the other assumptions, the changes reasonably assumed possible on the balance sheet date December 31, 2018 would have influenced the defined pension plans as follows, based on actuarial gains and losses:

Effect in EUR'000 on Dec. 31, 2018	Increase	Reduction
Discount rate (0.25% change)	-520	550
Future pension increases (0.25% change)	456	-436

Defined Contribution Plans
Defined contribution plans of relevance to PVA TePla AG take the form of the employer's statutory pension insurance contributions, pension fund contributions and direct insurance contributions. In fiscal year 2018, the corresponding expenditure amounted to EUR 2,156 thousand (previous year: EUR 2,191 thousand).

Presentation of Significant Accounting Policies
Pension provisions relate exclusively to defined benefit plans. The costs for providing these is calculated using the projected unit credit method, under which an actuarial valuation is carried out at each reporting date. Remeasurements, comprising actuarial gains and losses (excluding interest expense), are recognized directly in other comprehensive income. The remeasurements recognized in other comprehensive income are part of other reserves and are no longer reclassified in profit or loss to the Group income statement in subsequent periods. Past service cost is recognized as a personnel expense when the plan amendment occurs.

Interest expense is calculated by multiplying the discount rate by the pension obligation. The defined benefit costs include the service cost (including current service cost, past service cost and any gains or losses from the plan being amended, curtailed or settled) and the interest expense.

The PVA Group reports the service cost in the Group income statement under operating expenses and the interest expense under finance costs. Gains or losses from curtailments or settlements are recognized directly in profit or loss.

Payments for defined contribution plans are recognized in profit or loss as personnel expenses in the functional area in question if the eligible employee has performed the work.

14. OTHER PROVISIONS

Other provisions amount to EUR 2,905 thousand (previous year: EUR 2,591 thousand) and changed during the reporting period as follows:

EUR´000	Jan. 1, 2018	Company acquisition	Utilization	Release	Addition	Dec. 31, 2018
Warranty	1,315	+17	-288	-39	+432	1,437
Subsequent costs	609	0	-559	-50	+96	96
Archiving	47	+5	-5	0	+6	53
Penalties	144	0	-115	-29	0	0
Others	476	+336	-178	-32	+717	1,319
Total	**2,591**	**+358**	**-1,145**	**-150**	**+1,251**	**2,905**

In general, contracts with customers include warranty periods and periods for reporting defects following the completion of the specific projects. These obligations are not considered separate performance obligations and estimates are therefore included in the total contracts costs. If required, amounts are recognized under other provisions in accordance with IAS 37.

Other provisions contain long-term components in the amount of EUR 520 thousand (previous year: EUR 143 thousand). These relate primarily to provisions for archiving as well as non-current payments in connection with long-term performance-based compensation for the Management Board, and are shown separately in the balance sheet. These provisions are not discounted for reasons of materiality. All remaining other provisions are short-term in nature.

Presentation of Significant Accounting Policies
In accordance with IAS 37, a provision is recognized if a PVA Group company has a current (legal or constructive) obligation as a result of past events, it is probable that an outflow of resources embodying economic benefits will be required to settle the obligation and it is possible to reliably estimate the amount of the obligation. The amount to be carried as a provision shall be the best estimate of the expenditure required to settle the present obligations at the balance sheet date. Provisions that will not result in an outflow of resources in the following year are recognized at their discounted settlement amount as of the balance sheet date, taking into account expected cost increases. The present value of a provision is calculated using pre-tax interest rates that take into consideration current market expectations regarding the interest effect and the risks specific to the obligation. In the event of discounting, the increase in provisions over time is recognized as a finance cost.

15. CONTRACT LIABILITIES

Systems produced for specific customers to be recognized using the POC method and for which the advance payments received exceed the contract costs incurred, including the share of profits, (known as POC liabilities), are recognized under contract liabilities. In the previous year, these liabilities were recognized separately under the balance sheet item "Obligations on construction contracts". Advance payments received from customers relating to product sales and services that are not accounted for using the POC method are also recognized under contract liabilities. In the previous year, these advance payments were reported separately under the balance sheet item "Advance payments received on orders". Contract liabilities are composed as follows:

EUR´000	Dec. 31, 2018	Dec. 31, 2017
POC-liabilities	8,374	0
Advance payments received concerning product sales and services	64,119	37,050
Net book value	**72,493**	**37,050**

POC liabilities are composed as follows:

EUR´000	Dec. 31, 2018	Dec. 31, 2017
Advance payments received (progress billing)	16,975	4,688
less contract costs incurred (incl. share of profit)	-8,601	-3,709
Contract liabilities (net exposure) (Previous year: „Obligations on construction conctracts")	**8,374**	**979**

The previous year amounts are unchanged and do not account for the corresponding IFRS 15 adjustment effects.

POC liabilities recognized under the balance sheet item "Contract liabilities" includ outstanding advance payments from customers with legally enforceable payment claims amounting to EUR 3,134 thousand (previous year: EUR 0 thousand) as of the balance sheet date December 31, 2018.

Of the EUR 41,265 thousand of deferred advance customer payments recognized under "Contract liabilities" as of January 1, 2018, EUR 13,405 thousand was recognized as revenue in the 2018 reporting year.

16. ACCRUALS

Accrued liabilities are composed as follows:

EUR´000	Dec. 31, 2018	Dec. 31, 2017
Obligations to employees	3,001	2,662
Obligations to suppliers	3,359	2,122
Other commitments	307	290
Total	**6,667**	**5,073**

All of the reported amounts are short-term in nature.

Presentation of Significant Accounting Policies
The PVA Group recognizes liabilities payable for goods or services received that are neither paid nor invoiced or formally agreed upon by the supplier at the balance sheet date as accrued liabilities. This also includes amounts owed to employees.

C. NOTES ON THE GROUP INCOME STATEMENT

17. SALES REVENUES

The PVA Group principally generates its revenue through the sale of systems. Additional revenue is generated from services and by supplying spare parts (referred to collectively as after-sales service/IP) and services for customers in the Company's own facilities (contract processing).

Contract terms vary depending on the work involved. Average contract terms are listed below, although these may differ for individual contracts:

» Systems: 3 - 18 months
» After-sales service/IP: 1 - 6 weeks
» Contract processing: 1 - 4 weeks

Payment conditions also vary depending on the work involved. Typical payment conditions are listed below, although these may differ for individual contracts:

» Systems:
30-40% when order is received; 50-65% upon delivery; 5-10% upon acceptance
» After-sales service/IP:
100% upon delivery (e.g. spare parts) or 100% when service is provided (e.g. contract processing; repairs)

Sales revenues can be broken down into the following activity areas:

EUR´000	2018	in %	2017	in %
Systems	62,914	65	65,133	76
After-sales / IP	29,093	30	15,081	18
Contract processing	4,105	4	3,872	5
Others	670	1	1,276	1
Total	**96,783**	**100**	**85,362**	**100**

The previous year amounts are unchanged and do not account for the corresponding IFRS 15 adjustment effects.

In terms of the date on which goods and services are transferred, sales revenues can be broken down as follows:

EUR´000	2018	in %	2017	in %
Realization at a point in time	80,564	83	74,589	87
Realization over a period of time	16,219	17	10,773	13
Total	**96,783**	**100**	**85,362**	**100**

The previous year amounts are unchanged and do not account for the corresponding IFRS 15 adjustment effects.

See segment reporting under Note 23 for more information on sales revenues breakdowns.

The results for systems produced for specific customers to be recognized using the POC method are as follows:

EUR´000	Dec. 31, 2018	Dec. 31, 2017
Revenue from customer-specific system production	16,219	10,773
contract costs	-13,422	-9,248
Gains from customer-specific system production	**2,797**	**1,525**

The previous year amounts are unchanged and do not account for the corresponding IFRS 15 adjustment effects.

There were no significant financing components resulting from contracts with customers in fiscal year 2018 or in the previous period.

Performance obligations that had not yet been satisfied as of the balance sheet date are shown below:

	Performance obligations not yet fulfilled as of the balance sheet date	
EUR'000	**expected to be fulfilled in ≤ 12 months**	**expected to be fulfilled in > 12 months**
Overall scope of contractual obligations contracted at December 31, 2018, but not yet (fully) fulfilled	84,129	87,383
Overall scope of contractual obligations contracted at December 31, 2017, but not yet (fully) fulfilled	41,137	87,942

Presentation of Significant Accounting Policies

Sales revenues are measured on the basis of the consideration specified in a contract with a customer that the PVA Group expects to receive and realize when the customer obtains control over the agreed goods and services. Control can be transferred at a particular point in time or over a period of time. The contracts with customers regularly include various performance commitments (products and services), which may be classified as a separate performance obligation and which may subsequently be allocated part of the contract price. Determining whether a product or service is considered a separate performance obligation is, however, associated with discretionary judgements. Performance obligations resulting from contracts with the PVA Group's customers and relating to producing systems are recognized over the production time as a percentage of work completed (POC method) only if an asset is created that has no alternative possible use and, in addition, (in the event of an assumed termination of the contract by the customer) where there exists a right to payment for the service already provided, including an appropriate profit mark-up, that is enforceable in a court of law. Sales revenues are otherwise recognized for a particular point in time as soon as the goods are delivered or the services are performed, the transfer of risk has taken place and no technical risks or specific opposing contractual regulations exist. Income from services is recognized either at a point in time or over a period of time, depending on the specific facts and circumstances for the case in question.

Significant financing components must be taken into account when determining the transaction price, provided there is not more than one year's difference between the time the service is provided and the time of payment.

Under the POC method, revenue is recognized over a period of time as a percentage of work completed. The work performed, including the share in the result, is reported in sales revenues over the production time. The percentage of work completed for a specific project is determined using the method that most accurately measures the services performed, whereby both input and output methods can be consistently applied to similar performance obligations and in similar circumstances. The PVA Group uses primarily input-based methods to determine revenue generated from producing systems for specific customers on a longer-term basis, first and foremost the cost-to-cost method. The degree of com-

pletion is determined as the ratio of the costs incurred as of the balance sheet date to the estimated total costs. Sales revenue recognized using the POC method is reported either under the balance sheet item "Trade receivables" ("contract assets" or "POC receivables") or under the balance sheet item "Contract liabilities" ("POC liabilities"). If the cumulative work (contract costs including share of profits) exceeds the advance payments in an individual case, the construction contracts are recognized as assets under "Contract assets". If the net amount remains negative after deducting the advance payments, this is recognized as a "POC liability" under the balance sheet item "Contract liabilities". Advance payment invoices that have already been issued (but still not paid) are recognized under "trade receivables" and "contract liabilities". Anticipated losses from contracts are taken into account on the basis of identifiable risks and are immediately included in the order result in full. Contract revenue includes revenue from contracts and, in accordance with IFRS 15, contract modifications, i.e. contract amendments and additions. Contract assets and contract liabilities are reported under current assets or current liabilities, as the PVA Group generally realizes these within one year.

18. OTHER OPERATING INCOME / OTHER OPERATING EXPENSES

Other operating income is composed as follows:

EUR´000	2018	2017
Subsidies for research and development projects	574	707
currency exchange gains	425	629
Income of the release of other provisions and accruals	344	741
Remuneration in kind (i.a. company cars)	183	132
Insurance compensation	18	78
Income of the disposal of non-current assets	14	13
Remaining other operating income	556	262
Other operating income	**2,114**	**2,562**

Other operating expenses are composed as follows:

EUR´000	2018	2017
Expenses arising from the creation of impairments	-2,131	-315
currency exchange losses	-642	-712
Losses of the disposal of non-current assets	-16	-24
Remaining other operating expenses	-616	-532
Other operating expenses	**-3,405**	**-1,583**

Presentation of Significant Accounting Policies
All income generated as part of operating activities but without relation to the PVA Group's core business is recognized under other operating income. Other operating income is measured at the fair value of the consideration received / to be received less any rebates and other similar deductions.

All expenses that cannot be clearly allocated to either production, administration or sales are recognized by the PVA Group under other operating expenses. This also includes expenses that are associated only indirectly with ordinary business, provided there is no requirement to allocate these to financing.

19. RESEARCH AND DEVELOPMENT EXPENSES

PVA TePla AG is engaged in high-tech mechanical engineering in single unit and small series production. The continued development of products is closely linked to research into new procedures and processes and the development of new product features. Activities in these two areas partially alternate in the course of a project. Accordingly, the separation of research and development activities, and hence the separation of the respective costs, does not generally offer sufficient information value. Similarly, an estimate of probable benefits is too unreliable in light of the uncertainties in future market trends.

This means that of the conditions specified in IAS 38.57 for the capitalization of development costs, two important criteria are not met. The PVA Group thus does not capitalize any such development costs. Research and development expenses are therefore expensed in the period in which they are incurred.

Renowned research and development institutions work with us to a minor extent under cooperation agreements (service contracts). Provided adequate indication as to the usability of the development results is available and the other IAS 38 conditions are met, internally generated intangible assets are capitalized..

Research and development expenses reported on the income statement amounted to EUR 3,438 thousand in 2018 and EUR 2,632 thousand in 2017. Income from research and development project grants of EUR 574 thousand (previous year: EUR 707 thousand) was recognized separately under "Other operating income" in fiscal year 2018.

20. FINANCIAL RESULT

The financial result comprises the following income and expenses:

in TEUR	2018	2017
Income from derivative financial instruments	135	185
Other interest and income	44	72
Financial income	**179**	**257**

in TEUR	2018	2017
Financial expenses for loans toward credit institutes	-183	-472
Net interest expenses for pension provisions	-238	-260
Expenses from derivative financial instruments	-171	-205
Other interest and similar expenses	-66	-8
Financial expenses	**-658**	**-945**

Presentation of Significant Accounting Policies
The PVA Group recognizes all income and expenses that result from financing activities and are not part of operating activities under finance income / finance costs. Finance income and finance costs are generally recognized through profit or loss on an accrual basis using the effective interest method.

21. INCOME TAXES

Deferred taxes of EUR 10 thousand (previous year: EUR -165 thousand) were recognized directly in equity without affecting the income statement. These are fully attributable to effects recognized in equity for pension provisions.

EUR´000	2018	2017
Actual tax expense	-960	-631
Current tax expenses	-1,015	-633
Prior-period tax charges (-) / income	55	2
Deferred tax expense (-) / income	-2,061	3,885
Credit from tax loss carry-forwards	-1,802	2,889
Other deferred taxes	-259	996
Income taxes	**-3,021**	**3,254**

The following table shows a reconciliation of anticipated tax expense for the 2018 reporting period and for the previous year. Anticipated tax expenses were calculated by multiplying the total tax rate for fiscal year 2018 of 29% (previous year: 29%) by earnings before tax. This tax rate is a combined income tax rate comprising the standard corporation tax of 15% (previous year: 15%) plus a solidarity surcharge of 5.5% (previous year: 5.5%) and an effective trade tax rate of 13.4% (previous year: 13.4%). The difference between the income tax expense anticipated and the figure recognized is shown in the reconciliation below.

	2018		2017	
	EUR'000	in %	EUR'000	in %
Results before taxes	8,989		2,339	
Expected tax charges (-) / income	-2,607	-29	-678	-29
Changes in tax rates for foreign companies	12	0	6	0
Changes in tax rate differences from different trade tax rates	-1	0	1	0
Tax rate changes	32	0	0	0
Increase in taxes due to non-deductible expenses	-707	-8	-188	-8
Tax reductions due to tax-free income	230	3	344	15
Effects concerning deferred tax assets from tax loss carry-forwards	165	2	4,059	174
Prior-period current income tax	55	1	2	0
Other tax effects	200	2	-292	-12
Income taxes	**-3,021**	**-34**	**3,254**	**139**

Deferred taxes were measured after they had been incurred using the tax rate stated above or country-specific tax rates for companies outside Germany. Deferred taxes from differences in tax rates for foreign companies are due to the fact that PVA Group companies outside Germany are subject to different tax rates than companies in Germany.

On the basis of a detailed three-year budget and the secured revenues for the 2019 to 2021 fiscal years, tax loss carry-forwards are reviewed for potential utilization and capitalized using a 29% tax rate.

Deferred taxes relate to the following balance sheet items:

	Dec. 31, 2018		Dec. 31, 2017	
EUR'000	Deferred tax assets	Deferred tax liabilities	Deferred tax assets	Deferred tax liabilities
Non-current Assets	639	791	121	52
Inventories	255	0	71	118
Receivables	0	1,104	0	657
Tax loss carry-forwards	3,712	0	5,583	0
Pension provisions	1,875	0	1,948	0
Other provisions / accruals	24	517	3	290
Others	22	171	160	259
Total	**6,527**	**2,583**	**7,886**	**1,376**
Balance of deferred tax	**3,944**		**6,510**	

On December 31, 2018, the German companies have tax loss carry-forwards of EUR 11,849 thousand (previous year: EUR 18,065 thousand) that apply solely to the subsidiaries PVA Metrology & Plasma Solutions GmbH, Wettenberg, Germany and PVA TePla AG, Wettenberg, Germany. These were fully capitalized.

PVA TePla America Inc. also has loss carry-forwards of USD 5.0 million (USD 4.3 million in federal tax; USD 0.7 million in state tax), which will be utilized gradually starting from 2022 (federal tax) and from 2019 (state tax), unless utilized prior to that date, and can therefore only be used in part according to current plans.

Provided utilization of loss carry-forwards appears likely for 2019 to 2021 based on the current budget, loss carry-forwards were reported in deferred tax assets. Due to volatility and limited visibility the time period was limited to three years. Conversely, loss carry-forwards not expected to be realized until after 2021 were not or no longer recognized.

Given the limited forecast period, loss carry-forwards of EUR 11,849 thousand (previous year: EUR 18,065 thousand) for the German companies and EUR 1,575 thousand (previous year: EUR 2,050 thousand) for PVA TePla America Inc. were regarded as recoverable.

No deferred taxes were recognized for differences between the carrying amounts in IFRS individual statements of financial position and in the tax basis of the investments (outside basis differences) as PVA TePla AG is able to control the timing of the reversal of temporary differences and there are no plans to sell investments indefinitely.

Presentation of Significant Accounting Policies
The PVA Group recognizes taxes levied on taxable income and the change in deferred taxes in individual countries as tax income / tax expenses. Reported income taxes are recognized on the basis of statutory regulations in place or adopted at the end of the reporting period in the amount that is expected to be reimbursed by the taxation authorities or paid to the taxation authorities.

In accordance with IAS 12, deferred taxes are formed for all temporary differences between the carrying amounts in the tax base and those in the IFRS statement of financial position. If the asset is realized or the liability is settled, temporary differences result in amounts for which tax is payable or deductible. Taxable temporary differences result in a deferred tax liability and tax-deductible temporary differences result in the recognition of deferred tax assets. Deferred taxes are also to be recognized on loss carry-forwards, provided these are expected to be used in the future. Accruals or deferrals are made in the amount of the anticipated tax burden or tax relief for the subsequent years on the basis of the tax rate applicable at the time of realization.

The carrying amount of the deferred tax assets is reviewed each year at the balance sheet date and reduced if it is no longer likely that there is sufficient taxable income to realize the asset in full or in part. In the event of a change in tax rates, the effects of this on deferred tax assets and liabilities are taken into consideration in profit or loss. In accordance with IAS 12, deferred tax assets and deferred tax liabilities are not discounted.

Current and deferred taxes are recognized through profit or loss as an expense, unless they relate to items that were recognized directly in equity. In this case, the taxes are also reported directly in equity.

Estimates regarding deferred taxes on loss carry-forwards are highly dependent on how the taxable entity's earnings perform. This means that the actual amounts reported in future periods may differ from the estimates.

22. EARNINGS PER SHARE

Calculation of earnings per share for fiscal years 2018 and 2017:

	2018	2017
Numerator: Consolidated net result for the year before minority interests (EUR´000)	5,968	5,593
Denominator: Weighted number of shares outstanding - basic	21,749,988	21,749,988
Earnings per share (EUR) (undiluted /diluted)	**0.27**	**0.26**

As in the previous year, no options were issued in the current reporting period which would entitle employees, board members or supervisory boards to purchase shares in PVA TePla AG. As a result, there were no dilution effects in regards to earnings per share as of December 31, 2018 in comparison to December 31, 2017.

Presentation of Significant Accounting Policies
Basic earnings per share are calculating by dividing the profit or loss attributable to holders of ordinary shares in the parent entity by the weighted average number of ordinary shares in circulation during the year.

Diluted earnings per share are calculating by dividing the profit attributable to holders of ordinary shares in the parent entity by the weighted average number of ordinary shares in circulation during the year.

D. NOTES ON THE STATEMENT OF GROUP CASH FLOWS

The cash funds in the statement of cash flows correspond to the balance sheet item "Cash and cash equivalents". For more details, see the relevant explanations under Note 9.

Payments for investments in intangible assets and property, plant and equipment only include cash effective acquisitions. In fiscal year 2018, EUR 1.0 million was reclassified from inventories to property, plant and equipment. These items were non cash-effective.

The changes in financial liabilities for which cash flows were, or future cash flows will be, shown in the statement of cash flows as cash flows from financing activities, are as follows:

			Non-cash effective changes			
EUR´000	Dec. 31, 2017	Cash effective changes	Company acquisition	Currency effects	Other	Dec. 31, 2018
Long-term financial liabilities	3,001	-	-	-	-668	2,333
Short-term financial liabilities	883	-771	-	-	+558	670
Total	**3,884**	**-771**	-	-	**-110**	**3,003**

			Non-cash effective changes			
EUR´000	Dec. 31, 2016	Cash effective changes	Company acquisition	Currency effects	Other	Dec. 31, 2017
Long-term financial liabilities	3,768	-	-	-	-767	3,001
Short-term financial liabilities	7,648	-7,642	-	-	+877	883
Total	**11,416**	**-7,642**	-	-	**110**	**3,884**

Presentation of Significant Accounting Policies
Cash flows for the fiscal year are recognized in the Statement of Group Cash Flows in order to present information on the changes in the PVA Group's cash and cash equivalents during the fiscal year. A distinction is drawn between three areas: Operating, investment and financing activities.

Cash flows from operating activities are calculated in accordance with the indirect method by adjusting profit or loss before income taxes to account for transactions of a non-cash nature and transactions associated with investment or financing. As with cash flows from financing activities, cash flows from investment activities are also calculated using the indirect method, i.e. by comparing gross cash payments and gross cash receipts.

E. OTHER NOTES

23. SEGMENT REPORTING

The PVA Group is divided into the divisions Industrial Systems and Semiconductor Systems. Performance is assessed and decisions regarding the assignment of resources to the segments are made on the basis of these PVA Group divisions. The following segment reporting therefore follows the Group's organizational structures on PVA Group's internal management system.

Sales revenue by division (segment revenue) in the current fiscal year 2018 and in the previous year is as follows:

EUR´000	2018		2017	
	External sales revenues	Internal sales revenues	External sales revenues	Internal sales revenues
Segment revenues				
Industrial Systems	37,323	3,245	33,257	1,841
Semiconductor Systems	59,460	813	52,105	556
Consolidated sales revenues	**96,783**	**4,058**	**85,362**	**2,397**

The previous year amounts are unchanged and do not account for the corresponding IFRS 15 adjustment effects.

The operating profit by division (segment profit) for the current fiscal year 2018 and the previous year is as follows:

EUR'000	2018	2017
Operating profit by segment		
Industrial Systems	2,111	174
Semiconductor Systems	10,620	5,212
Holding Costs	-3,224	-2,365
Consolidation	-39	6
Consolidated operating result	**9,468**	**3,027**

The previous year amounts are unchanged and do not account for the corresponding IFRS 15 adjustment effects.

The reconciliation of the segment results (EBIT) to the consolidated net income for the period is as follows:

EUR´000	2018	2017
Consolidated operating profit (EBIT)	9,468	3,027
Financial result	-479	-688
Results before taxes	8,989	2,339
Income taxes	-3,021	3,254
Consolidated net result	**5,968**	**5,593**

In the current fiscal year, essentially non-cash segment expenses in the Semiconductor Systems division were incurred in the amount of EUR 1,907 thousand, resulting from the devaluation of long-term financial assets (previous year: EUR 0 thousand).

Sales revenues can be broken down by region as follows:

EUR´000	2018	in %	2017	in %
Sales revenues by sales region				
Asia	53,411	55	36,576	43
Germany	20,522	21	22,531	26
Europe (excluding Germany)	17,107	18	18,558	22
North America	5,037	5	7,113	8
Others	706	1	584	1
Consolidated revenues	**96,783**	**100**	**85,362**	**100**

In fiscal year 2018, around 10.4% of the sales revenues were generated with the Group's largest customer.

As a matter of principle, transactions involving intersegment sales and revenues are conducted at arm's length conditions.

24. FINANCIAL INSTRUMENTS

This section contains a summary presentation of the Group's financial instruments and derivative financial instruments. Details of the individual categories of financial instruments are provided in the notes on the respective balance sheet and income statement items.

Principles of the Risk Management System

In addition to default risk and liquidity risk, the Company's assets, liabilities and planned transactions are subject to risks from changes in exchange rates and interest rates. The aim of financial risk management is to minimize these risks through ongoing operating and finance-oriented activities. Selected derivative instruments are employed to hedge market price risks, depending on the assessment of the respective risk. Derivative financial instruments are used solely as hedging instruments, meaning that they are not employed for trading or other speculative purposes. The basic details of the financial policy are established annually by the Management Board and monitored by the Supervisory Board. The Management Board is directly responsible for the implementation of the financial policy and ongoing risk management. For more information, refer to the risk and opportunity report in the Group management report.

Categories of Financial Instruments

The carrying amounts by class of financial instruments and the carrying amounts by measurement categories under IFRS 9 as of December 31, 2018 and under IAS 39 as of December 31, 2017 are shown below:

Dec. 31, 2018	Book value for each valuation category				not allocated to any valua-tion category (excluded from the scope of IFRS 7)	Total book values
	Financial assets		Financial liabilities			
EUR´000	carried at fair value through profit / loss	Amortized cost	carried at fair value through profit / loss	Amortized cost		
Non-current assets						
Non-current financial assets	-	110	-	-	-	110
Current assets						
Trade receivables	-	22,119	-	-	-	22,119
Other current receivables	1	-	-	-	3,964	3,965
Cash and cash equivalents	-	40,014	-	-	-	40,014
Non-current liabilities						
Financial liabilities	-	-	-	2,333	-	2,333
Other non-current liabilities	-	-	259	-	-	259
Current liabilities						
Financial liabilities	-	-	-	670	-	670
Trade payables	-	-	-	5,560	-	5,560
contract liabilities	-	-	-	-	72,493	72,493
Other current liabilities	-	-	68	-	1,037	1,105
Total	**1**	**62,243**	**327**	**8,563**	**77,494**	**148,628**

Dec. 31, 2017	Book value for each valuation category				not allocated to any valua-tion category (excluded from the scope of IFRS 7)	Total book values
	Financial assets		Financial liabilities			
EUR´000	carried at fair value through profit / loss	Amortized cost	carried at fair value through profit / loss	Amortized cost		
Non-current assets						
Non-current financial assets	-	1,739	-	-	-	1,739
Current assets						
Coming receivables on construction contracts	-	-	-	-	6,137	6,137
Trade receivables	-	11,280	-	-	-	11,280
Other current receivables	23	-	-	-	735	758
Cash and cash equivalents	-	33,017	-	-	-	33,017
Non-current liabilities						
Financial liabilities	-	-	-	3,001	-	3,001
Other non-current liabilities	-	-	306	-	-	306
Current liabilities						
Financial liabilities	-	-	-	883	-	883
Trade payables	-	-	-	3,717	-	3,717
contract liabilities	-	-	-	-	979	979
Other current liabilities	-	-	156	-	3,331	3,487
Total	**23**	**46,036**	**462**	**7,601**	**11,182**	**65,304**

The carrying amounts in all categories largely correspond to the respective market values. No separate comparison of carrying amounts and market values is provided. PVA TePla AG's financial instruments measured at fair value are allocated to "level 2" in accordance with IFRS 7 at which measurement is based on stock exchange or market prices of similar instruments or on measurement models based on input parameters observable in the market.

The fair values of both, forward exchange contracts and interest hedges, were determined on the basis of discounted expected future cash flows, using market interest rates applicable to the remaining terms of the financial instruments.

The net result of EUR -189 thousand (previous year: EUR -20 thousand) from the financial assets and liabilities measured at fair value through profit or loss comprises changes in the market value of derivative hedging instruments. The change in derivative hedging instruments resulted in measurement changes of EUR 135 thousand (EUR 185 thousand) not impacting cash. All other changes were cash-effective.

The net result from issued loans and receivables recognized at amortized cost amounted to EUR -1,982 thousand (previous year: EUR +243 thousand).

The net gain on financial liabilities recognized at amortized cost includes interest expense of EUR -183 thousand (previous year: EUR -472 thousand).

Credit Risk
The Company is exposed to counterparty default risk as a result of its operating activities and certain financing activities. In the course of ordinary business, supplier credits are granted to a broad range of customers.

The creditworthiness of customers is regularly reviewed. The risk of default is mitigated by credit checks and dunning. In its operating business, outstanding accounts receivables are monitored locally (decentralized) and on an ongoing basis. The Group has control procedures in place to ensure that services are provided only to customers who have proven to be creditworthy in the past and to ensure that the default risk for these transactions remains within acceptable limits. Default risks are taken into account through appropriate impairment losses. For trade receivables, the PVA Group uses a simplified model to recognize the expected credit loss on the basis of an impairment matrix. For the breakdown of receivables and valuation allowances, see Note 8 and Note 6.

Theoretically, the maximum default risk is shown by the carrying amounts of the financial assets recognized in the balance sheet. The PVA Group recognized impairment of EUR 2,131 thousand (previous year: EUR 315 thousand) in the income statement on current and non-current trade receivables to cover known risks in fiscal year 2018. Risks from advance payments are avoided with advance payment bonds. There are no discernible risks from other receivables. As of the reporting date, the PVA Group had no other significant agreements that reduce the maximum exposure to credit risk.

Liquidity Risk
Revolving liquidity planning is performed in order to ensure the Company's solvency and financial flexibility at all times.

To the extent necessary, a liquidity reserve is held in the form of credit facilities and, if required, in cash.

For more information on the maturities of the individual financial liabilities, see the disclosures on the relevant balance sheet items in Note 12. The maturity analysis of the derivative financial liabilities can be found in the sections "Currency risks" and "Interest hedges".

Market Risk
With regard to market price risk, the Company is exposed to currency risks, interest rate risks and other price risks.

Currency Risks
The Company's currency risks primarily result from its operating activities, financing measures and investments. Foreign currency risks with a significant impact on the Group's cash flow are hedged.

Foreign currency risks from operations primarily arise when planned transactions are settled in a currency other than the functional currency (EUR). These planned transactions relate in particular to expected future sales revenues invoiced in US Dollars.

PVA TePla AG, PVA Analytical Systems and PVA MPS GmbH enter into forward exchange contracts to hedge payment obligations. These derivative financial instruments have a term to maturity of up to one year and hedge payment obligations of EUR 2,090 thousand (previous year: EUR 2,669 thousand) as of December 31, 2018. The expected net payments from currency hedging instruments are as follows:

Expected net payments EUR´000	Dec. 31, 2018	Dec. 31, 2017
Up to 1 month	19	1
Between 1 and 3 months	46	4
Between 3 months and 1 year	0	21
Between 1 and 5 years	0	0

FX risks resulting from billing in foreign currencies are essentially hedged through forward exchange contracts. Changes in the exchange rate from foreign currency transactions thus have no significant impact on the result or on equity.

Interest income and expenses from financial instruments at the German companies are recognized in the functional currency (EUR). This means that foreign currency risks can only arise from the financial instruments and assets held by the individual companies outside Germany that would be taken directly to currency reserves in equity.

For this reason, only an equity-based sensitivity analysis is performed.

If the value of the Euro had been 10% higher (lower) compared to the US Dollar on December 31, 2018, the other reserves in equity would have been EUR 278 thousand lower (EUR 339 thousand higher) (December 31, 2017: EUR 234 thousand lower (EUR 286 thousand higher)).

If the value of the Euro had been 10% higher (lower) compared to the other currencies relevant to the Group on December 31, 2018 the other reserves in equity would have been EUR 85 thousand lower (EUR 105 thousand higher) (December 31, 2017: EUR 62 thousand lower (EUR 76 thousand higher)).

Interest Hedges

The Company is mainly subject to interest rate risk in the Eurozone. Taking the existing and planned debt structure into account, the Company uses interest rate derivatives (interest rate swaps) in order to counteract interest rate risks.

In accordance with IFRS 7, interest rate risks are presented using sensitivity analyses. These represent the effects of changes in market interest rates on interest payments, interest income and expenses, other earnings components and, where applicable, shareholders' equity.

Sensitivity analyses in accordance with IFRS 7 were performed for financial derivatives (swaps) not forming part of an effective hedge. If the market interest rate as of December 31, 2018 had been 100 basis points higher, earnings would have increased by EUR 50 thousand (previous year: EUR 80 thousand). If the market interest rate as of December 31, 2018 had been 100 basis points lower, earnings would have decreased by EUR 52 thousand (previous year: EUR 85 thousand).

Interest rate hedges with a total original volume of EUR 11,600 thousand were entered into in order to hedge the interest rate risk for the financing of investments in new buildings at the Wettenberg site. The outstanding balance of these hedging transactions on the reporting date of December 31, 2018 is EUR 3,000 thousand (previous year: EUR 3,666 thousand). The interest hedges have a term to maturity of up to five years. The expected net payments from interest hedging instruments are as follows:

Expected net payments EUR´000	Dec. 31, 2018	Dec. 31, 2017
Up to 1 month	-68	-84
Between 1 and 3 months	0	0
Between 3 months and 1 year	-58	-73
Between 1 and 5 years	-194	-273
More than 5 years	-7	-33

The remaining interest hedging instruments and underlying loans were concluded in 2007 on the basis of the corresponding interest rates. They hedge long-term, flexible financing for new construction at the Wettenberg location.

Effective on March 3, 2014, PVA TePla AG canceled two fixed-interest, mortgaged real estate loans for new construction in Wettenberg totaling EUR 5,684 thousand and combined then into a new loan for EUR 6,000 thousand with a term until December of 2023. The new loan was synchronized with existing interest hedging transactions for a total of EUR 6,000 thousand. However, effectiveness between the new underlying transactions and existing hedging transactions could not be achieved on the reporting date according to IFRS. The negative fair value of these hedging transactions was EUR -327 thousand on December 31, 2018 (previous year: EUR -462 thousand); fair value changes of EUR 135 thousand were recognized in financial expenses through profit or loss in the fiscal year (previous year: EUR 185 thousand) in financial income.

The corresponding contra-entry of the fair values of the interest derivatives as well as the applicable deferred taxes is made in other current and non-current financial liabilities as well as deferred tax assets or liabilities depending on changes in fair value.

Other Price Risks
At December 31, 2018 and December 31, 2017 the Company did not hold any financial instruments that were subject to other notable price risks.

25. CAPITAL MANAGEMENT

The primary objective of the PVA Group's capital management is to ensure the financial flexibility required to reach the defined growth and yield targets, thereby enabling growth in the Company's value. The contents of capital management cover shareholders' equity and the external borrowing necessary to finance the Company's operations. The key indicator for capital management is the equity ratio. Actual management is performed by optimizing yields and setting limits on the commitment of funds. Further objectives of capital management include ensuring the Group's liquidity by agreeing appropriate and sufficient credit lines and maintaining the current ratio of advance payments, as well as optimizing the financial result in order to improve yields.

The capital management of the PVA Group therefore includes the following:

EUR´000	Dec. 31, 2018	Dec. 31, 2017
Shareholders' equity	50,797	45,129
Total assets	**162,155**	**119,096**
Equity ratio	31.3%	37.9%

Equity increased to EUR 50,797 thousand in the 2018 fiscal year (previous year: EUR 45,129 thousand). Due to an increased level of incoming orders, there was a higher level of advance payments received as of December 31, 2018 so that the balance sheet expanded and as a corollary the equity ratio declined.

26. RENTAL AND LEASE AGREEMENTS

The PVA Group is the lessee of property, plant and equipment and lessor in connection with the leasing of its own buildings. All leasing arrangements entered into by the PVA Group are classified as operating leases. There are two main groups of leasing arrangements:

Rent of Buildings
The PVA Group has rented premises for production and administration from third parties at its sites in Munich, Jena, Westhausen, Coburg, Corona/California (USA) and Beijing (China) as well as in Singapore and Xi'an (China). In 2018, the monthly rent was EUR 5 thousand (previous year: EUR 2 thousand) at the Munich site, EUR 5 thousand (previous year: 4 thousand) at the Jena site, EUR 9 thousand (previous year: EUR 9 thousand) at the Westhausen site, EUR 3 thousand (previous year: EUR 0 thousand) at the Coburg site, EUR 10 thousand (previous year: EUR 10 thousand) at the Corona site, EUR 2 thousand (previous year: EUR 2 thousand) at the Beijing site, EUR 1 thousand (previous year: EUR 1 thousand) at the Xi'an site and EUR 8 thousand (previous year: EUR 6 thousand) at the Singapore site.

The relevant rental agreements are standard agreements for the rental of commercial premises. In fiscal year 2018, a total of EUR 459 thousand was paid under these agreements (previous year: EUR 279 thousand). Over the next few years, the minimum commitments can be broken down as follows:

EUR´000	Payments	Present value
Remaining terms		
Up to 1 year	403	395
Between 1 and 5 years	435	413
More than 5 years	0	0

Sublease of Buildings
Lease proceeds of EUR 13 thousand (previous year: EUR 17 thousand) were collected in 2018. Income from leasing over the coming years can be broken down as follows:

EUR´000	Payments	Present value
Remaining terms		
Up to 1 year	13	12
Between 1 and 5 years	0	0
More than 5 years	0	0

Lease of Vehicles
The PVA Group restricts the number of company vehicles to an absolute minimum. As a matter of principle, cars for private use are provided on a priority basis to members of the Management Board and managing directors as well as individual employees with a great deal of external activities. Above and beyond this, fleet vehicles are used for business travel. In 2018, expenditure of EUR 233 thousand was incurred for such leases (previous year: EUR 154 thousand). Over the next few years, the minimum commitments can be broken down as follows:

EUR´000	Payments	Present value
Remaining terms		
Up to 1 year	210	201
Between 1 and 5 years	235	210
More than 5 years	0	0

Other Leases
In addition to the aforementioned leases, the Company has other leases which mainly pertain to operating and office equipment. In fiscal year 2018, expenditure of EUR 89

thousand was incurred for such leases (previous year: EUR 54 thousand). Over the next few years, the minimum commitments can be broken down as follows:

EUR´000	Payments	Present value
Remaining terms		
Up to 1 year	71	68
Between 1 and 5 years	138	121
More than 5 years	16	13

27. CONTINGENT LIABILITIES AND OTHER FINANCIAL COMMITMENTS

Other financial commitments from existing agreements: Other financial commitments from rental and lease agreements are presented in Note 26.

Other financial commitments from master purchase agreements can be broken down as follows:

EUR´000	Payments	Present value
Remaining terms		
Up to 1 year	252	242
Between 1 and 5 years	457	415
More than 5 years	0	0

Other agreements (e.g. maintenance agreements, security services) result in the following other financial commitments:

EUR´000	Payments	Present value
Remaining terms		
Up to 1 year	381	372
Between 1 and 5 years	22	21
More than 5 years	1	1

A discount rate of 2.2% (previous year: 2.8%) has been applied in determining the present value of other financial commitments.

There were no contingent liabilities as of December 31, 2018 or December 31, 2017.

28. ADDITIONAL INFORMATION ON TYPES OF EXPENSE

Cost of Materials

The cost of sales for fiscal years 2018 and 2017 contain expenditure on materials as follows:

EUR´000	2018	2017
Cost of raw materials, consumables and supplies and of goods purchased and held for resales	48,663	36,061
Cost of purchased services	3,903	3,168
Total cost of materials	**52,566**	**39,229**

The materials ratio (cost of materials to total sales revenues) amounted to 54.3% in fiscal year 2018, compared to 46.0% in the previous year.

Personnel Expenses
Personnel expenses for fiscal years 2018 and 2017 are composed as follows:

EUR´000	2018	2017
Wages and salaries	28,584	24,883
Social charges	5,175	4,472
Total personnel expenses	**33,759**	**29,355**

As a proportion of sales, personnel expenses increased in fiscal year 2018 to 34.9% after 34.4% in the previous year. This percentage increase is largely due to new staff as well as increased remuneration of members of the Management Board. Social security contributions in fiscal year 2018 include pension expenses of EUR 368 thousand (previous year: EUR 232 thousand).

The average number of employees for the year was 439 in the reporting period (previous year: EUR 378).

The average number of employees by function has changed compared to the previous year as follows:

Number of employees by function (average for the year)	2018	2017
Administration	56	46
Sales	73	66
Engineering, research and development	81	74
Production and service	229	192
Total number of employees	**439**	**378**

The staff headcount includes 10 temporary employees. There were 10 temporary employees in the previous year.

Amortization and Depreciation
Write-downs on intangible assets and property, plant and equipment are shown in the consolidated statements of changes in fixed assets for the fiscal years 2018 and 2017. No impairment expenses on intangible assets or property, plant and equipment were recognized in fiscal year 2018 or in the previous year.

29. PVA TEPLA AG EXECUTIVE BODIES

The total remuneration of members of the Management Board in the current fiscal year amounted to EUR 1,243 thousand (previous year: EUR 863 thousand. The remuneration of the Management Board members consists of a basic salary not based on performance, other benefits (mainly non-cash benefits from the use of a company car, subsidized contributions to health insurance and contributions to a pension fund) and performance-based, variable remuneration components in the form of bonus payments. The performance-based, variable remuneration component is different for each Management Board member and the amounts are subject to limits.

The following bonus regulations apply to the Chief Executive Officer, Alfred Schopf, and the Chief Operating Officer, Oliver Höfer:

(a) A short-term bonus payment which is calculated as a percentage of consolidated EBIT and which is limited in terms of amount.
(b) A long-term bonus component calculated in line with PVA TePla AG's market capitalization and limited in terms of amount.

On this basis, members of the Management Board received the following remuneration in fiscal year 2018:

EUR´000	Salary	Other benefits	Performance related components Total	Thereof long-term*	Total 2018	Total 2017
Schopf	240	36	427	167	703	420
Höfer	200	15	325	125	540	353
Former members	-	-	-	-	-	90
Total	**440**	**51**	**752**	**292**	**1,243**	**863**

*) Payment of long-term compensation is made after a period of commitment linked to the contract period, taking into account market capitalization.

The values presented above for the performance-based component include amounts granted in 2018 for fiscal year 2017 less the amounts recognized and reported as provisions in fiscal year 2017. Provisions established in 2018 for fiscal year 2018 are also included.

Non-current payments are due in connection with the long-term performance-based compensation mentioned above. All other remuneration listed above is payable over the short term. Employer contributions to pension insurance are not paid. There are no pension commitments for any other current Management Board members.

No real share options were granted to members of the Management Board in fiscal year 2017 or in fiscal year 2018. The contracts for the members of the Management Board foresees settlement payments in the event of the premature termination of activities as member of the Management Board, the amount of which depending on contract of employment is limited up to two years' salary (settlement cap). In the event of change of control and a subsequent premature termination of Management Board activities, the members receive remuneration which should not exceed 150% of the settlement cap.

In fiscal year 2018, EUR 74 thousand was paid to former members of the Management Board as pensions (previous year: EUR 66 thousand). As of the balance sheet date, there was a provision of EUR 2,064 thousand for these pension obligations (previous year: EUR 1,985 thousand).

Supervisory Board

In fiscal year 2018, the Supervisory Board of PVA TePla AG consisted of the following members:

Alexander von Witzleben, Weimar (Chairman)
» Feintool International Holding AG, Lyss (President of the Administration Board)

Member of the following other supervisory bodies:
» VERBIO Vereinigte BioEnergie AG, Leipzig (Chairman of the Supervisory Board)
» KAEFER Isoliertechnik GmbH & Co. KG, Bremen (Member of the Advisory Board)
» Siegwerk Druckfarben AG & Co. KGaA, Siegburg (Member of the Supervisory Board)
» Arbonia AG, Arbon/Switzerland (President of the Advisory Board and CEO)
» Artemis Holding AG, Aarburg/Switzerland (Member of the Advisory Board)

Prof. Dr. Gernot Hebestreit, Leverkusen
(Deputy Chairman)
» Auditor/tax consultant

Member of the following other supervisory bodies:
» Comvis AG, Essen (Deputy Chairman of the Supervisory Board)

Prof. Dr. Markus H. Thoma, Schöffengrund
» Professor of Plasma and Astronautics at the University of Giessen

Member of the following other supervisory bodies:
» Nationales Zentrum für Plasmamedizin e.V. (Member of the Board of Trustees

The remuneration of the Supervisory Board is composed as follows:

EUR´000	Fixed remuneration 2018	Variable remuneration 2018	Fixed remuneration 2017	Variable remuneration 2017
Alexander von Witzleben (chairman)	50	0	50	0
Prof. Dr. Gernot Hebestreit	25	0	25	0
Prof. Dr. Markus H. Thoma	25	0	25	0
Total	**100**	**0**	**100**	**0**

Members who leave the Supervisory Board during the fiscal year receive pro rata remuneration for their period of service.

30. RELATED PARTIES

In particular, transactions with related parties relate to all transactions with companies included in the consolidated financial statements. For information on the volume of these transactions, please see the presentation of sales revenues in the segment reporting under Note 23. This also shows intra-Group revenue. All transactions are handled at arm's length conditions and are eliminated in full when preparing the consolidated financial statements. Therefore, they have no impact on the net assets, financial position and results of operations of the PVA Group.

Related parties include parties that can exercise significant influence over PVA TePla AG. Business relationships existed between PVA TePla AG and the main shareholder Peter Abel in both, the 2018 and the previous fiscal year, in connection with an existing consulting contract. The volume of the business transactions amounted to EUR 357 thousand (previous year: EUR 60 thousand). Furthermore, there are liabilities in the amount of EUR 200 thousand (previous year: EUR 10 thousand).

Information on Management Board and Supervisory Board remuneration can be found under Note 29.

31. AUDIT FEES (SECTION 314 HGB)

Breakdown of auditors' fees recognized as expenses for PVA TePla AG and the other companies of the PVA TePla Group in the 2018 fiscal year and the previous year:

EUR´000	2018	2017
Audit of annual financial statements	243	235
Other assurance or valuation services	0	0
Tax consulting services	0	0
Other services	2	0

Of the aforementioned costs incurred in the 2018 fiscal year, EUR 31 thousand relate to the previous year (previous year: EUR 21 thousand).

32. DECLARATION ON CORPORATE GOVERNANCE IN ACCORDANCE WITH ARTICLE 161 AKTG

The declaration of compliance with the German Corporate Governance Code as required by Section 161 of the German Stock Corporation Act (AktG) was again submitted by the Management Board and the Supervisory Board in the course of the fiscal year.

This declaration forms part of the separate corporate governance report and is permanently accessible to shareholders on the Company's website (www.pvatepla.com) along with the declarations for previous fiscal years.

33. EXEMPTION IN ACCORDANCE WITH SECTION 264(3) HGB

The following companies included in the consolidated financial statements of PVA TePla AG have utilized the exemption pursuant to Section 264 (3) HGB:

- PVA Löt- und Werkstofftechnik GmbH
- PVA Control GmbH
- PVA TePla Analytical Systems GmbH
- PVA Vakuum Anlagenbau Jena GmbH
- PVA Industrial Vacuum Systems GmbH
- PVA Crystal Growing Systems GmbH
- PVA Metrology & Plasma Solutions GmbH
- PVA SPA Software Entwicklungs GmbH

34. SIGNIFICANT POST-BALANCE SHEET DATE EVENTS

There have been no material changes to the company situation or our sector since the beginning of fiscal year 2019. Moreover, we do not currently anticipate any larger changes to the structure, administration or legal form of the Group or in terms of staff.

Wettenberg, March 26, 2019

PVA TePla AG

Alfred Schopf
Chief Executive Officer

Oliver Höfer
Chief Operating Officer


PVA TePla

CONSOLIDATED STATEMENT OF CHANGES IN FIXED ASSETS

as at December 31, 2018

	Acquisition and manufacturing costs						
EUR´000	Jan. 1, 2018	Acquisitions	Additions	Transfers	Disposals	Exchange differences	Balance Dec. 31, 2018
Intangible assets							
1. Goodwill	12,658	90	0	0	0	0	12,748
2. Other intangible assets	5,596	2,453	424	2	19	3	8,459
Total	**18,254**	**2,543**	**424**	**2**	**19**	**3**	**21,207**
Property, plant and equipment							
1. Land, property rights and buildings, including buildings on third party land	33,387	0	72	0	0	4	33,463
2. Plant and machinery	8,907	207	752	0	1,147	70	8,789
3. Other plant and equipment, fixtures and fittings	6,380	105	1,817	15	406	6	7,917
4. Assets under construction	271	0	169	-17	23	0	400
Total	**48,945**	**312**	**2,810**	**-2**	**1,576**	**80**	**50,569**
Total	**67,199**	**2,855**	**3,234**	**0**	**1,595**	**83**	**72,271**

	Accumulated amortization and depreciation						Residual carrying values	
	Balance Jan. 1, 2018	Additions	Transfers	Disposals	Exchange differences	Balance Dec. 31, 2018	Dec. 31, 2018	Dec. 31, 2017
	4,850	0	0	0	0	4,850	7,898	7,808
	4,819	463	0	0	+3	5,285	3,174	777
	9,669	**463**	**0**	**0**	**+3**	**10,135**	**11,072**	**8,585**
	10,485	958	0	0	+4	11,447	22,016	22,902
	5,597	671	2	831	+64	5,499	3,290	3,310
	3,436	717	2	117	+4	4,042	3,875	2.944
	0	0	0	0	0	0	400	271
	19,518	**2,346**	**0**	**948**	**+72**	**20,988**	**29,581**	**29,427**
	29,187	**2,809**	**0**	**948**	**+75**	**31,123**	**40,653**	**38,012**

CONSOLIDATED STATEMENT OF CHANGES IN FIXED ASSETS

as at December 31, 2017

	Acquisition and manufacturing costs						
EUR´000	Jan. 1, 2017	Acquisitions	Additions	Transfers	Disposals	Exchange differences	Balance Dec. 31, 2017
Intangible assets							
1. Goodwill	12,658	0	0	0	0	0	12,658
2. Other intangible assets	5,481	0	87	58	19	-11	5,596
3. Payments in advance	50	0	0	-50	0	0	0
Total	**18,189**	**0**	**87**	**8**	**19**	**-11**	**18,254**
Property, plant and equipment							
1. Land, property rights and buildings, including buildings on third party land	33,380	0	125	2	108	-12	33,387
2. Plant and machinery	9,041	0	382	-296	29	-191	8,907
3. Other plant and equipment, fixtures and fittings	4,393	0	2,093	325	410	-21	6,380
4. Assets under construction	74	0	256	-39	21	0	270
Total	**46,889**	**0**	**2,856**	**-8**	**568**	**-224**	**48,945**
Total	**65,078**	**0**	**2,943**	**0**	**587**	**-235**	**67,199**

	Accumulated amortization and depreciation						Residual carrying values	
	Balance Jan. 1, 2017	Additions	Transfers	Disposals	Exchange differences	Balance Dec. 31, 2017	Dec. 31, 2017	Dec. 31, 2016
	4,850	0	0	0	0	4,850	7,808	7,808
	4,533	310	0	18	-6	4,819	777	949
	0	0	0	0	0	0	0	50
	9,383	**310**	**0**	**18**	**-6**	**9,669**	**8,585**	**8,807**
	9,643	962	0	108	-12	10,485	22,902	23,738
	5,115	678	0	15	-181	5,597	3,310	3,927
	3,350	503	0	405	-12	3,436	2,944	1,043
	0	0	0	0	0	0	271	74
	18,108	**2,143**	**0**	**528**	**-205**	**19,518**	**29,427**	**28,781**
	27,491	**2,453**	**0**	**546**	**-211**	**29,187**	**38,012**	**37,588**

Responsibility Statement

„To the best of our knowledge we assure that in accordance with the applicable reporting principles, the Consolidated Financial Statements give a true and fair view of the net assets, financial position and profit or loss of the Group, and the Group Management Report - which has been combined with the Management Report of PVA TePla AG - gives a true and fair view of the development and performance of the business and the position of the Group, together with a description of the principle opportunities and risks associated with the expected development of the group."

Wettenberg, March 26, 2019

Alfred Schopf
Chief Executive Officer

Oliver Höfer
Chief Operating Officer

Independent Auditor's Report

To PVA TePla AG, Wettenberg

Report on the Audit of the Consolidated Financial Statements and the Group Management Report

Audit Opinions

We have audited the consolidated financial statements of PVA TePla AG, Wettenberg, and its subsidiaries (the Group), comprising the consolidated statement of financial position as at December 31, 2018, the consolidated statement of comprehensive income, the consolidated statement of changes in equity and the consolidated statement of cash flows for the fiscal year from January 1 to December 31, 2018, and the notes to the consolidated financial statements, including a summary of significant accounting policies.

In addition, we audited the Group management report of PVA TePla AG, Wettenberg, for the fiscal year from January 1 to December 31, 2018. We did not audit the contents of the Group's company management declaration published on the company's website, to which reference is made in section 1 of the Group management report, in compliance with German law.

In our opinion, based on the findings of our audit,

- the attached consolidated financial statements comply in all material respects with IFRSs, as adopted by the EU, and the additional requirements of German law pursuant to Section 315e (1) HGB and, in accordance with these requirements, give a true and fair view of the Group's net assets and financial position as of December 31, 2018, and of its results of operations for the fiscal year from January 1 to December 31, 2018, and
- the attached Group management report as a whole presents an accurate view of the Group's position. The Group management report is consistent with the consolidated financial statements, complies with German legal regulations and suitably presents the opportunities and risks of future development. Our audit opinion regarding the management report does not extend to the contents of the Group's company management declaration pursuant to Section 315d HGB published on the company's website, to which reference is made in section 1 of the Group management report.

Pursuant to Section 322 (3) Sentence 1 HGB, we state that our audit has not led to any reservations with regard to the compliance of the consolidated financial statements or the Group management report.

Basis for the Audit Opinions

We conducted our audit of the consolidated financial statements and the Group management report in accordance with Section 317 HGB, the EU Audit Regulation (No. 537/2014; hereinafter "EU-AR"), and German generally accepted standards for the audit of financial statements promulgated by the Institut der Wirtschaftsprüfer (IDW). Our responsibility according to these regulations and standards is described in further detail in the "Responsibility of the Auditor for the Audit of the Consolidated Financial Statements and the Group Management Report" section of our auditor's report. We are independent of the consolidated companies in compliance with the provisions of European law, German commercial law and professional law and have fulfilled our other German professional obligations in compliance with these requirements. In addition, we declare pursuant to Article 10 (2) lit. f) EU-AR that we have provided no prohibited non-audit services referred to in Article 5 (1) EU-AR. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinions regarding the consolidated financial statements and the Group management report.

Key Audit Matters in the Audit of the Consolidated Financial Statements

Key audit matters are such matters that, in our professional judgment, were the most significant in our audit of the consolidated financial statements for the fiscal year from January 1 to December 31, 2018. These matters were considered in connection with our audit of the consolidated financial statements as a whole and the formulation of our audit opinion; we do not provide a separate audit opinion on these matters.

We present the matters that we consider key audit matters below:

1) Revenue recognition
2) Acquisition of SPA Software Entwicklungs GmbH
3) Measurement of work in progress

1) Revenue recognition

a) Risk for the financial statements

In the consolidated financial statements of PVA TePla AG, sales revenues of EUR 96.8 million are reported in the consolidated income statement. From fiscal year 2018 onwards, a period-related revenue recognition (POC-method) of system orders, as previously used according to IAS 11 for a not inconsiderable proportion of orders, may, in accordance with IFRS 15.35 c), only be used if an asset is created, that has no alternative possible use and, in addition, where a right to payment for the service already provided exists, including an appropriate profit mark-up, that is enforceable by law. When using the POC method, the revenue is recognized over a period of time according to the progress of the service. The service rendered, including the prorated result, is recognized as revenues over the period of production in the sales revenues and the production progress is calculated on the basis of the previously recorded order costs in relation to the expected total contract costs (cost-to-cost method).

Furthermore, the contracts with customers regularly contain various performance promises, which may be classified as separate performance obligations and to which a part of the contract price is to be assigned.

The information provided by the company for revenue recognition in accordance with IFRS 15 is contained in sections A. 2) and C. 17) of the notes to the consolidated financial statements.

Determining whether a product or service is regarded as a separate performance obligation and determining the expected cost of the contract as part of the cost-to-cost method is subject to the Management Board's discretion. Furthermore, the individual contractual assessment whether the requirements of IFRS 15.35 c) for the period-related realization of revenue are met, as well as the split of the purchase price to the performance obligations, can lead to necessitating complex assessments by the accounting company. Against this backdrop, we considered these issues as particularly significant for our audit.

b) Audit approach and conclusions

We have performed an assessment of the basic accounting methods for plant types as well as the calculation models used in the context of the period-related revenue recognition using the cost-to-cost method. Furthermore, we paid tribute to legal opinions on contracts or the legal situation in individual countries or examined in random samples on a contractual basis whether there is a legal claim to payment of the services already provided in accordance with IFRS 15.37.

Based on risk-oriented selected samples of multiple-component contracts and the allocations of the proceeds to the individual performance obligations, we have assessed the estimates and assumptions made by the legal representatives in the context of individual case audits.

With regard to the examination of estimates of the expected production costs as part of the cost-to-cost method, we refer to the particularly important audit case 3) Measurement of work in progress.

The performed audit procedures did not lead to any objections with regard to the revenue recognition.

2) Acquisition of SPA Software Entwicklungs GmbH

a) Risk for the financial statements

In July 2018, PVA TePla AG acquired 100% of the shares in SPA Software Entwicklungs GmbH for a purchase price of EUR 2.4 million. The company creates and sells software for computer systems and designs and sells analysis systems.

In our view, the accounting treatment of the acquisition of the company is of particular importance, since the identification of the acquired assets and liabilities, their recognition as well as the valuation are based to a large extent on the estimates and assumptions of the Management Board and the valuation models used are very complex.

The information on the acquisition of the company can be found in the notes to the consolidated financial statements in sections A. 3).

b) Audit approach and conclusions

First, by visiting the company and talking with the management, we gained an overview of the products, customers and specifics of value creation. To examine the allocation of the purchase price to the acquired assets and liabilities, we drew on the expertise of our internal accounting specialists and assessed the assumptions made by the Management Board in the identification and measurement of assets and liabilities. In this context, we discussed the assumptions underlying the valuations with the persons responsible for future developments and used the methodology and calculations to reconstruct the capital costs used, as well as the plausibility of the comparative companies used for this purpose.

We have found no material errors in the valuation methods used or in the calculations and believe that the assumptions made are understandable.

3) Measurement of work in progress

a) Risk for the financial statements

In the consolidated financial statements of PVA TePla AG, Wettenberg, assets of EUR 27.4 million are shown under "Work in progress" in the statement of financial position. They are measured at cost, including production and material overheads. With regard to the calculation of overheads and the expected contract costs and revenue, the measurement of inventories is subject to the management's discretion. Against this backdrop, in light of the significance for the determination of the percentage of completion in connection with period related revenue recognition according to IFRS 15 on the basis of the cost-to-cost method, and due to the size of the amount, the measurement of "work in progress" was particularly significant for our audit.

The company's disclosures on inventory measurement are included in section B.7) of the notes to the consolidated financial statements.

b) Audit approach and conclusions

Initially, we assessed the correct adoption of costs from the upstream systems. We then reviewed the hourly production cost rates and material overhead rates used in the measurement with regard to the costs included in their calculation and any idle capacity costs to be eliminated. In particular, we critically scrutinized and checked the plausibility of the management's assumptions. We examined the parameters including the calculation of hourly rates and overheads to check correct derivation from accounting.

In addition, our audit procedures concentrated on correct measurement of work in progress at the lower of cost or net realizable value. To this end, we audited the sale proceeds with any charges already contractually agreed or with charges for similar assets on a test basis. With regard to the expected contract costs, we evaluated the risk reports, minutes of Management Board and Supervisory Board meetings and contract controlling reports and discussed these matters and estimates with the management and other appointed employees. The forecast quality of the expected costs was additionally assessed on the basis of terminated contracts by comparing expected costs with costs actually incurred on a test basis.

To identify contracts with potential cost increases, mass data analyses of costs were also carried out, taking account of the respective cost types and their expected accumulation over the course of production. Abnormalities were then scrutinized critically and discussed with the employees responsible for the contract.

We found no material errors in the measurement methods or in the calculations and consider the assumptions made to be balanced and appropriate.

Other Information

The legal representatives are responsible for the other information. The other information includes:

- The Group's company management declaration published on the company's website, to which reference is made in section 1 of the Group management report,
- the other parts of the annual report, with the exception of the audited consolidated financial statements and Group management report and our auditor's report, and
- the responsibility statement pursuant to Section 297 (2) Sentence 4 HGB on the consolidated financial statements and the responsibility statement pursuant to Section 315 (1) Sentence 5 HGB on the Group management report.

Our audit opinions regarding the consolidated financial statements and the Group management report do not extend to the other information, and accordingly we provide neither an audit opinion nor any other form of audit conclusion in this regard.

As part of our audit of the consolidated financial statements, we have a responsibility to read the other information and to evaluate whether it

- exhibits material discrepancies with the consolidated financial statements, the Group management report or the knowledge we have obtained during our audit, or
- otherwise seems significantly incorrect.

Responsibility of the Legal Representatives and the Supervisory Board for the Consolidated Financial Statements and the Group Management Report

The legal representatives are responsible for preparing the consolidated financial statements, which in all material respects comply with IFRSs, as adopted by the EU, and the additional requirements of German law pursuant to Section 315e (1) HGB, and for the consolidated financial statements giving a true and fair view of the net assets, financial position and results of operations of the Group in accordance with these requirements. Furthermore, the legal representatives are responsible for the internal controls that they deemed necessary to enable the preparation of consolidated financial statements that are free from material misstatement, whether due to fraud or error.

When preparing the consolidated financial statements, the legal representatives are responsible for assessing the Group's status as a going concern. In addition, they have a responsibility to disclose matters related to the status as a going concern, if relevant. They are also responsible for accounting on the basis of the going concern principle, unless they intend to liquidate the Group or discontinue its business operations, or there is no realistic alternative.

Moreover, the legal representatives are responsible for preparing the Group management report, which as a whole provides an accurate view of the Group's position and is consistent with the consolidated financial statements in all material respects, complies with German legal regulations and suitably presents the opportunities and risks of future development. The legal representatives are also responsible for the arrangements and measures (systems) that they considered necessary to enable the preparation of a Group management report in compliance with applicable German legal regulations and to allow sufficient, suitable evidence to be provided for the statements in the Group management report.

The Supervisory Board is responsible for monitoring the Group's accounting process for the preparation of the consolidated financial statements and the Group management report.

Responsibility of the Auditor for the Audit of the Consolidated Financial Statements and the Group Management Report

Our objective is to obtain reasonable assurance as to whether the consolidated financial statements as a whole are free from material misstatement, whether due to fraud or error, and whether the Group management report as a whole provides an accurate view of the Group's position and is in all material respects consistent with the consolidated financial statements and with the findings of the audit, complies with German legal regulations and suitably presents the opportunities and risks of future development, and to issue an auditor's report containing our audit opinions regarding the consolidated financial statements and the Group management report.

Reasonable assurance is a high level of assurance but not a guarantee that an audit carried out in compliance with Section 317 HGB, the EU-AR and German generally accepted standards for the audit of financial statements promulgated by the Institut der Wirtschaftsprüfer (IDW) will always uncover a material misstatement. Misstatements can result from transgressions or inaccuracies and are deemed material if it could be reasonably expected that they would individually or together influence the financial decisions made by users on the basis of the consolidated financial statements and Group management report.

We exercise due discretion during the audit and maintain a critical attitude. In addition,

- we identify and evaluate the risk of material misstatements, whether due to fraud or error, in the consolidated financial statements and the Group management report, plan and implement audit procedures in response to these risks and obtain audit evidence that is sufficient and appropriate to provide a basis for our audit opinions. The risk that material misstatements are not uncovered is higher in the case of transgressions than in the case of inaccuracies, as transgressions can entail fraudulent collaboration, falsifications, deliberate omissions, misleading depictions or the suspension of internal controls.
- we gain an understanding of the internal control system relevant for the audit of the consolidated financial statements and of the arrangements and measures relevant for the audit of the Group management report in order to plan audit procedures that are appropriate given the circumstances, but not with the aim of providing an audit opinion regarding the effectiveness of these systems.
- we evaluate the appropriateness of the accounting policies used by the legal representatives and the reasonableness of the estimated values presented by the legal representatives and the associated disclosures.
- we draw conclusions about the appropriateness of the going concern principle applied by the legal representatives and, on the basis of the audit evidence obtained, whether there is material uncertainty regarding events or circumstances that could cause significant doubt about the Group's ability to continue as a going concern. If we come to the conclusion that there is material uncertainty, we are obliged to call attention to the associated disclosures in the consolidated financial statements and in the Group management report in the auditor's report or, if these disclosures are inappropriate, to modify our respective audit opinion. We draw our conclusions on the basis of the audit evidence obtained up to the date of our auditor's report. However, future events or circumstances may mean that the Group is no longer a going concern.
- we evaluate the overall presentation, the structure and the content of the consolidated financial statements, including the disclosures, and whether the consolidated financial statements present the underlying transactions and events such that the consolidated financial statements give a true and fair view of the net assets, financial position and results of operations of the Group in accordance with IFRSs, as adopted by the EU, and the additional requirements of German law pursuant to Section 315a (1) HGB.
- we obtain sufficient appropriate audit evidence for the company's accounting information or business activities within the Group in order to provide audit opinions regarding the consolidated financial statements and the Group management report. We are responsible for directing, monitoring and implementing the audit of the consolidated financial statements. We bear sole responsibility for our audit opinions.
- we evaluate the consistency of the Group management report with the consolidated financial statements, its legality and the view it gives of the position of the Group.
- we conduct audit procedures regarding the forward-looking disclosures made by the legal representatives in the Group management report. On the basis of sufficient appropriate audit evidence, we examine the significant assumptions underlying the legal representatives' forward-looking disclosures in particular and evaluate the appropriateness of the derivation of the forward-looking disclosures from these assumptions. We do not provide a separate audit opinion regarding the forward-looking disclosures or the underlying assumptions. There is a considerable, unavoidable risk that future events will differ significantly from the forward-looking disclosures.

Topics for discussion with those responsible for monitoring include the planned scope and scheduling of the audit as well as significant audit findings, including any deficiencies in the internal control system that we find during our audit.

We issue a statement to the monitors to the effect that we have complied with the relevant independence requirements and discuss with them all relationships and other matters that can reasonably be assumed to affect our independence and the safeguards put in place to protect against this.

From among the matters that we have discussed with the monitors, we determine which matters were most significant in the audit of the consolidated financial statements for the current reporting period and are therefore the key audit matters. We describe these matters in the auditor's report, unless laws or other legal provisions preclude their public disclosure.

Other Statutory and Legal Requirements

Other Disclosures Pursuant to Article 10 EU-AR

We were elected as the auditor of the consolidated financial statements by the Annual General Meeting on June 19, 2018. We were engaged by the Supervisory Board on June 19, 2018. We have been the auditor of the consolidated financial statements of PVA TePla AG, Wettenberg, without interruption since fiscal year 2007.

We declare that the audit opinions contained in this auditor's report are consistent with the additional report to the Supervisory Board according to Article 11 EU-AR (audit report).

Responsible Auditor

The auditor responsible for the audit is Mr. Carl-Markus Groß.

Frankfurt/Main, March 26, 2019

Ebner Stolz GmbH & Co. KG
Audit Firm Tax Consulting Firm

Marcus Grzanna Auditor	Carl-Markus Groß Auditor

FINANCIAL CALENDAR

Date		Advise
May 10, 2019	Interim Announcement to the first quarter	
June 26, 2019	Annual Shareholders Meeting	Congress Center Giessen
August 9, 2019	Half-Year Report	
November 8, 2019	Interim Announcement to the third quarter	
November 25-27, 2019	German Equity Forum	Frankfurt

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