Annual report 2018

smart moves

Contents

Bosch in figures

Some **130** engineering locations worldwide

Some **460** subsidiaries and regional companies in more than 60 countries

78.5 billion euros sales revenue in 2018

Roughly **410,000** associates worldwide

5.5 billion euros EBIT in 2018

6.0 billion euros invested in research and development

The Bosch Group

The Bosch Group is a leading global supplier of technology and services. It employs roughly 410,000 associates worldwide (as of December 31, 2018). The company generated sales of 78.5 billion euros in 2018. Its operations are divided into four business sectors: Mobility Solutions, Industrial Technology, Consumer Goods, and Energy and Building Technology. As a leading IoT company, Bosch offers innovative solutions for smart homes, smart cities, connected mobility, and connected manufacturing. It uses its expertise in sensor technology, software, and services, as well as its own IoT cloud, to offer its customers connected, cross-domain solutions from a single source.

The Bosch Group's strategic objective is to create solutions for a connected life. Bosch improves quality of life worldwide with products and services that are innovative and spark enthusiasm. In short, Bosch creates technology that is "Invented for life." The Bosch Group comprises Robert Bosch GmbH and its roughly 460 subsidiary and regional companies in over 60 countries. Including sales and service partners, Bosch's global manufacturing, engineering, and sales network covers nearly every country in the world. The basis for the company's future growth is its innovative strength. At nearly 130 locations across the globe, Bosch employs some 68,700 associates in research and development.

The company was set up in Stuttgart in 1886 by Robert Bosch (1861–1942) as "Workshop for Precision Mechanics and Electrical Engineering." The special ownership structure of Robert Bosch GmbH guarantees the entrepreneurial freedom of the Bosch Group, making it possible for the company to plan over the long term and to undertake significant upfront investments in the safeguarding of its future. Ninety-two percent of the share capital of Robert Bosch GmbH is held by Robert Bosch Stiftung GmbH, a charitable foundation. The majority of voting rights are held by Robert Bosch Industrietreuhand KG, an industrial trust. The entrepreneurial ownership functions are carried out by the trust. The remaining shares are held by the Bosch family and by Robert Bosch GmbH.

Bosch Group **key data**

Figures in millions of euros

	2018	2017[1]
Sales	**78,465**	**78,066**
percentage change from previous year	0.5	6.8
percentage of sales revenue generated outside Germany	79	80
Research and development cost	**5,963**	**7,045**
as a percentage of sales revenue	7.6	9.0
Capital expenditure	**4,946**	**4,345**
as a percentage of depreciation	159	140
Associates		
average for the year	407,485	402,619
as of December 31	409,881	402,166
Total assets	**83,654**	**81,870**
Equity	**39,176**	**37,552**
as a percentage of total assets	47	46
EBIT	5,502	4,944
as a percentage of sales revenue	7.0	6.3
Profit after tax	**3,574**	**3,294**
Unappropriated earnings (dividend of Robert Bosch GmbH)	**242**	**241**

[1] Adjusted for changes in accounting policies

Additional information is available online at **www.bosch.com, www.iot.bosch.com, www.bosch-press.com, www.twitter.com/BoschPresse.**

Bosch Group
business sectors

MOBILITY SOLUTIONS

Powertrain Solutions[1]
Chassis Systems Control
Electrical Drives
Car Multimedia
Automotive Electronics
Automotive Aftermarket
Automotive Steering
Connected Mobility Solutions[1]

Other businesses:
Bosch Engineering GmbH
eBike Systems
ETAS GmbH
ITK Engineering GmbH
Two-Wheeler and Powersports

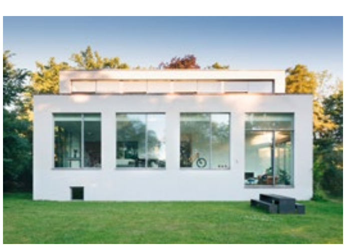
INDUSTRIAL TECHNOLOGY

Drive and Control Technology[2]
Packaging Technology[3]

Other businesses:
Bosch Connected Industry
Robert Bosch Manufacturing Solutions GmbH

CONSUMER GOODS

Power Tools[4]
BSH Hausgeräte GmbH



ENERGY AND BUILDING TECHNOLOGY

Building Technologies[5]
Thermotechnology
Bosch Global Service Solutions

Other businesses:
Robert Bosch Smart Home GmbH

Other businesses not allocated to business sectors:
Bosch Healthcare Solutions GmbH
Bosch Software Innovations GmbH
grow platform GmbH[6]
Robert Bosch Venture Capital GmbH

[1] Created on Jan. 1, 2018
[2] Bosch Rexroth AG (100% Bosch-owned)
[3] Robert Bosch Packaging Technology GmbH
[4] Robert Bosch Power Tools GmbH
[5] Until Feb. 28, 2018, Security Systems
[6] Until May 10, 2018, Robert Bosch Start-up GmbH

Foreword

Dear readers,

At Bosch, we have set ourselves an ambitious goal: we want to shape change. To achieve this, we are driving forward the transformation in our traditional markets, entering new areas of growth, and encouraging our company's strong and meaningful development. Especially in a year like 2018, in which the political and economic mood became more gloomy as the year progressed, this was a challenging task. Nonetheless, we were able to escape most of the negative effects of this, and once again to achieve a high level of earnings. In pursuit of our objectives, we are showing persistence and determination, boosting our innovativeness, and forging new paths in leadership and collaboration. Such future focus has always been a distinctive characteristic of our company. It has allowed us to make a success of many innovations, despite considerable obstacles. And it is what enables us to look ahead with optimism, despite the subdued forecast for the global economy and the contributing geopolitical tensions.

Our objective is clear: we want Bosch to be a leading provider of the mobility of the future and a leading IoT company. For this purpose, we are directing considerable funds into areas with promising growth prospects such as automated driving and electromobility. We are also working on the factories of the future, on user-friendly consumer goods, and on pioneering energy and building technology, all the while adding extra services to our connected products. As a supplier of technology, we are adding enormously to our knowledge in the areas of artificial intelligence and machine learning – not only in order to give our products and processes connectivity, but also to make them "smart," for the benefit of their users. And in all its areas of activity, we are turning Bosch into a learning company. After all, digital expertise will be important throughout the company in the future. Everyone has to play their role here. We are also adapting the way we lead and collaborate to changing requirements. We want to be even more creative, more cooperative, and faster.

The present annual report shows that we made progress toward our objectives in 2018. One milestone was the laying of the foundation stone for our new wafer fab in Dresden, which will help us continue our success story in automotive electronics. The operations we started in the field of e-bikes and motorized two-wheelers just a few years ago are doing very well. Where electromobility and automated driving are concerned, we have established a broad portfolio, and expect to see considerable growth in the years ahead. In industrial technology, we have successfully completed the comprehensive reorganization of our Drive and Control Technology division, and are continuing our program of making it fit for the future. In all our other divisions as well, connectivity is on the advance. We have no shortage of ideas for taking advantage of this trend. "Smart moves," the digital magazine accompanying this annual report, illustrates just a few of them. See for yourself.

It is important for us to act both economically and responsibly, for the good of society and the environment. We want to play our part in climate action by making our use of electricity and other forms of energy CO_2-neutral starting in 2020. To achieve this, we will also be significantly expanding our energy-efficiency measures over the next few years. This year's sustainability report provides more details about our plans in this respect.

We would like to thank our partners for their business and the trust they have placed in us. Our more than 400,000 associates worldwide give their all to take the Bosch Group forward. My board of management colleagues and I would like to express our gratitude for their dedication and hard work. We would also like to thank the employee representatives for their willingness to engage in constructive dialogue – the ongoing transformation of our company always also involves the need to adapt. Finally, we are grateful to the shareholders and the supervisory board for their support.

With best regards,

Dr. Volkmar Denner
Chairman of the board of management

Board of management

01
Dr. Michael Bolle

02
Rolf Najork

03
Dr. Dirk Hoheisel

04
Peter Tyroller

05
Dr. Markus Heyn

06
Uwe Raschke

07
Dr. Christian Fischer

08
Dr. Stefan Hartung

09
Christoph Kübel

10
Dr. Volkmar Denner

11
Prof. Stefan Asenkerschbaumer

Board of management[1]

Dr. Volkmar Denner
Chairman

Corporate responsibilities
- Strategy, Organization, and Business Development
- Communications and Governmental Affairs
- Real Estate and Facilities

Subsidiaries
- Bosch Healthcare Solutions GmbH
- Robert Bosch Venture Capital GmbH

Prof. Stefan Asenkerschbaumer
Deputy chairman

Corporate responsibilities
- Finance, Reporting, and Treasury
- Performance Controlling, Risk Management, Mergers and Acquisitions
- Tax and Customs Duties
- Supply Chain Management
- Global Business Services

Dr. Michael Bolle[2]

Corporate responsibilities
- Research and Advance Engineering
- Technology
- Internet of Things and Digitization
- Information Systems and Services
- Intellectual Property
- Quality Management
- Field Quality Board

Subsidiary
- Bosch Software Innovations GmbH

Christoph Kübel

Corporate responsibilities
- Human Resources, including Senior Executives and Labor Relations
- Legal Services
- Compliance Management
- Internal Auditing, Information Security and Privacy
- Environmental Health and Safety

Peter Tyroller

Regional responsibilities
Asia Pacific, India

Rolf Najork[3]

Industrial Technology business sector

Division
- Drive and Control Technology

Subsidiary
- Robert Bosch Manufacturing Solutions GmbH

Business unit
- Bosch Connected Industry

Dr. Rolf Bulander[4]

Corporate responsibilities
- Mobility Solutions business sector
- Quality

Divisions
- Powertrain Solutions
- Electrical Drives

Dr. Stefan Hartung

Mobility Solutions business sector
- Purchasing Direct Materials Mobility Solutions
- Quality Management Mobility Solutions

Divisions
- Powertrain Solutions
- Electrical Drives
- Packaging Technologies

Dr. Dirk Hoheisel

- Systems Engineering and Technical Strategy Mobility Solutions

Divisions
- Chassis Systems Control
- Car Multimedia
- Automotive Electronics
- Automotive Steering

Business unit
- Two-Wheeler and Powersports

Dr. Markus Heyn

- Sales Original Equipment Mobility Solutions
- Strategy, Marketing and Sales Mobility Solutions
- Progressive Mobility Player Organization

Divisions
- Automotive Aftermarket
- Connected Mobility Solutions

Subsidiaries
- ETAS GmbH
- Bosch Engineering GmbH

Regional responsibilities
- North America, South America

Uwe Raschke

Consumer Goods business sector

Division
- Power Tools

Subsidiary
- BSH Hausgeräte GmbH

Regional responsibilities
Western Europe, middle eastern Europe, Russia, Africa, Middle East

Dr. Christian Fischer[3, 5]

Energy and Building Technology business sector

Divisions
- Building Technologies
- Bosch Global Service Solutions
- Thermotechnology

Subsidiary
- Robert Bosch Smart Home GmbH

Presidents
of the divisions

Manfred Baden
Automotive Aftermarket

Dr. Steffen Berns
Car Multimedia

Henk Becker[3]
Power Tools

Henning von Boxberg
Power Tools[4]
Bosch Global Service Solutions[3]

Dr. Jörg Fischer[4]
Bosch Global Service Solutions

Dr. Uwe Gackstatter
Powertrain Solutions

Uwe Glock
Thermotechnology

Gert van Iperen[6]
Building Technologies[7]

Dr. Rainer Kallenbach
Connected Mobility Solutions

Dr. Stefan König
Packaging Technology

Harald Kröger
Automotive Electronics

Rolf Najork
Drive and Control Technology

Dr. Tanja Rückert[8]
Building Technologies

Stefan Seiberth[9]
Powertrain Solutions

Christian Sobottka
Automotive Steering

Gerhard Johannes Steiger
Chassis Systems Control

Dr. Bernhard Straub
Electrical Drives

[1] The responsibilities of the board of management were reorganized and reassigned effective January 1, 2019.
[2] From July 1, 2018
[3] From January 1, 2019
[4] Until December 31, 2018
[5] Member of the board of management from October 1, 2018
[6] Until July 31, 2018
[7] Until February 28, 2018, Security Systems
[8] From August 1, 2018
[9] Until June 30, 2018

Supervisory board **report**

Ladies and gentlemen,

In 2018, the Bosch Group performed well in an increasingly difficult economic environment. The company also made further progress toward its goal of becoming a leading provider of the mobility of the future and a leading IoT company, while at the same time continuing to pursue its focus strategy.

In our capacity as supervisory board, we monitored the work of the board of management, and offered our advice relating to running the company, to developing Bosch Group strategy, and to individual matters affecting the company. Our work in 2018 involved looking very closely at the transformation in the mobility sphere and the resulting transformation process at Bosch. The board debated the capital-intensive construction of a dedicated automotive battery-cell manufacturing facility at length, ultimately weighing in against it. In the process, we also familiarized ourselves with further aspects of the strategy to make the company a leading electromobility supplier despite this decision. The market development for diesel passenger cars in Europe was a frequent subject of discussion. We also kept ourselves abreast of the company's strategy with regard to automated driving.

As members of the supervisory board, we also carefully examined the planned sale of the company's packaging machinery business. In addition, we looked closely at business developments, the financial and capital expenditure plans, and the details of risk management and internal control systems. The topic of legal compliance continued to be a focal point of the board's work in 2018. A committee formed in the fall of 2015 kept itself informed of the internal investigations prompted by the software manipulation of diesel engine control units, and continuously assessed the risks arising from these issues. The entire supervisory board regularly solicited detailed reports about the findings of the investigations, talks with the authorities, and initial agreements.

We are obliged by law and the statutes to fulfill a number of tasks – an obligation which we fulfilled once more with the utmost care in the 2018 business year. In addition, outside of board meetings, the chairman of the supervisory board was regularly informed by the chairman of the board of management about current developments and significant events in the company. For both us and the board of management, the highest priority is to safeguard the Bosch Group's successful and sustainable development over the long term. In this endeavor, our consultations are open, conscientious, and constructive.

PricewaterhouseCoopers GmbH Wirtschaftsprüfungsgesellschaft audited and issued an unqualified audit opinion on the Robert Bosch GmbH annual financial statements, the Bosch Group consolidated financial statements, and the accompanying management reports as of and for the year ended December 31, 2018. The supervisory board discussed these documents at length and subjected them to its own examination; all members of the supervisory board had access to the auditor's reports. Moreover, at the supervisory board meeting, the auditor reported on the main findings of the audit, which were then discussed in detail. The supervisory board raised no objections, concurred with the results of the audit, and approved the Robert Bosch GmbH annual financial statements and the Bosch Group consolidated financial statements. Following its own review, the supervisory board endorsed the board of management's proposal for the appropriation of net profit.

At the end of March, Urs B. Rinderknecht and Prof. Lars G. Josefsson, who have for many years represented the shareholders on the supervisory board, will be retiring. Their positions will be filled by Peter Spuhler and Martina Koederitz as of April 1, 2019. The supervisory board would like to thank the former members for their dedication, and the two new members for agreeing to play an active role. The supervisory board would also like to thank the board of management and all Bosch Group associates for their hard work and the commitment they have shown to securing the company's successful development.

Stuttgart, March 2019
For the supervisory board

Franz Fehrenbach

Franz Fehrenbach
Chairman

Supervisory board

Franz Fehrenbach
Stuttgart
Chairman
Managing partner of Robert Bosch Industrietreuhand KG
Former chairman of the board of management of Robert Bosch GmbH

Hartwig Geisel
Leinfelden-Echterdingen
Deputy chairman
Member of the works council of the Feuerbach plant, chairman of the central works council of the Mobility Solutions business sector, and deputy chairman of the combined works council of Robert Bosch GmbH

Nadine Boguslawski
Stuttgart
Chief representative (managing director) of the Baden-Württemberg regional directorate of the trade union Industriegewerkschaft Metall

Dr. Christof Bosch
Königsdorf
Spokesperson for the Bosch family

Christian Brunkhorst
Mühltal
Representative of the chairman of Industriegewerkschaft Metall

Prof. Elgar Fleisch
St. Gallen
Professor of information and technology management at the University of St. Gallen and ETH Zurich

Klaus Friedrich
Würzburg
Chairman of the works council of Bosch Rexroth AG, Lohr am Main, chairman of the central works council of Bosch Rexroth AG, and member of the combined works council of Robert Bosch GmbH

Mario Gutmann
Bamberg
Chairman of the works council of the Bamberg plant, and member of the central works council of the Mobility Solutions business sector as well as chairman of the economic committee of the Mobility Solutions business sector

Jörg Hofmann
Esslingen
President of Industriegewerkschaft Metall, Frankfurt am Main

Prof. Lars G. Josefsson
Stockholm
(until March 31, 2019)
Former president and chief executive officer of Vattenfall AB

Prof. Michael Kaschke
Oberkochen
Chairman of the board of management of Carl Zeiss AG

Dieter Klein
Wolfersheim
(until March 23, 2018)
Member of the works council of the Homburg plant

Prof. Renate Köcher
Konstanz
Managing director, Allensbach Institute for Public Opinion Research

Martina Koederitz
Ehningen
(from April 1, 2019)
Global industry managing director of IBM Corporation

Matthias Georg Madelung
Munich
Member of the board of trustees of Robert Bosch Stiftung GmbH

Kerstin Mai
Hildesheim
Chairwoman of the works council of Robert Bosch Car Multimedia GmbH, Hildesheim, and chairwoman of the combined works council of Robert Bosch GmbH

Dr. Wolfgang Malchow
Pliezhausen
Managing partner of Robert Bosch Industrietreuhand KG

Urs B. Rinderknecht
Zurich
(until March 29, 2019)
Former chief executive of UBS AG

Oliver Simon
Dunzweiler
(from March 24, 2018)
Chairman of the works council of the Homburg plant, and member of the central works council of the Mobility Solutions business sector

Karin Solda
Filderstadt
Chairwoman of the works council at the Leinfelden-Echterdingen location and of the central works council of Robert Bosch Power Tools GmbH

Peter Spuhler
Frauenfeld
(from April 1, 2019)
Executive chairman and owner of Stadler Rail AG

Dr. Richard Vogt
Willstätt
Project director, Electrical Drives division, and chairman of the executives committee of Robert Bosch GmbH as well as of the combined executives committee of the Bosch Group in Germany

Prof. Beatrice Weder di Mauro
Singapore
Chair of international macroeconomics at the Johannes Gutenberg University of Mainz

Prof. Hermann Scholl
Stuttgart
Honorary chairman of the Bosch Group

Industrial trust and international advisory committee

Robert Bosch Industrietreuhand KG

GENERAL PARTNERS

Franz Fehrenbach
Stuttgart
Chairman of the shareholders' meeting

Dr. Wolfgang Malchow
Pliezhausen

LIMITED PARTNERS

Prof. Stefan Asenkerschbaumer
Stuttgart

Dr. Christof Bosch
Königsdorf

Dr. Volkmar Denner
Pfullingen

Prof. Elgar Fleisch
St. Gallen
(from April 1, 2019)

Prof. Lino Guzzella
Uster

Dr. Jürgen Hambrecht
Neustadt
(until March 31, 2019)

Prof. Lars G. Josefsson
Stockholm
(until March 31, 2019)

Prof. Renate Köcher
Konstanz

Urs B. Rinderknecht
Zurich
(until March 31, 2019)

Peter Spuhler
Frauenfeld
(from April 1, 2019)

Dr. Eberhard Veit
Göppingen
(from April 1, 2019)

Robert Bosch International Advisory Committee

Franz Fehrenbach
Stuttgart
Chairman

Dott. Alessandro Benetton
Treviso
(until December 31, 2018)

Stephen J. Hadley
Washington

HRH Prince El Hassan bin Talal
Amman

Prof. Ryozo Hayashi
Tokyo

Prof. Lars G. Josefsson
Stockholm
(from April 1, 2019)

Baba N. Kalyani
Pune

Pascal Lamy
Paris

Friedrich Merz
Arnsberg

Prof. Volker Perthes
Berlin

Ingo Plöger
São Paulo

Jing Ulrich
Hong Kong

Prof. Igor Yurgens
Moscow

Highlights
2018

01

January 8

Las Vegas, USA

CES® 2018 Innovation Award

Bosch receives a CES Innovation Award for its BMA400 acceleration sensor. The sensor's longer battery life is a boon for wearables in particular.

02

February 21

Berlin, Germany

New division for connected mobility services

Bosch continues to drive its transformation into a provider of mobility services, and announces the establishment of a new Connected Mobility Solutions division.

February 21

Berlin, Germany

Bosch ConnectedWorld 2018

More than 4,000 Bosch customers, partners, and associates meet to talk about the new technologies and applications being made possible by connectivity. Also on the agenda: new business models and markets. This makes Bosch ConnectedWorld in Berlin one of the world's leading conferences for the internet of things (IoT) and digital transformation. Over the course of 2018, Bosch will sell 52 million web-enabled products.

February 28

Johannesburg, South Africa, and Stuttgart, Germany

Bosch boosts its business in Africa

Bosch Rexroth AG acquires all shares in Hytec Holdings (Pty.) Ltd., in which it has held a 50 percent stake since 2014. Hytec specializes in the marketing of hydraulic and automation solutions, and is the leading company in the field in sub-Saharan Africa.

03

March 21

Stuttgart and Reutlingen, Germany

First e-bikes with ABS

The first production-ready ABS antilock braking system made by Bosch eBike Systems now features in selected bicycle fleets.

April 24

Dresden, Germany

Groundbreaking ceremony for a new wafer fab

Bosch starts its biggest ever single investment: a plot in Dresden covering some 100,000 square meters will be the site of one of the world's most modern wafer fabs, costing more than 1 billion euros.

04

April 25

Stuttgart and Renningen, Germany

Ready for future emissions limits with new Bosch diesel technology

The Bosch CEO Dr. Volkmar Denner presents Bosch technology that already stays within the limits for nitrogen-oxide emissions scheduled to come into force from 2020.

May 30

Braga, Portugal

New technology center

The German chancellor Dr. Angela Merkel and the Portuguese prime minister António Costa, together with the Bosch board of management member Dr. Dirk Hoheisel, inaugurate a technology center for the development of sensors and software functions for automated driving.

05

June 13

The Hague, Netherlands

CLEPA award for pioneering motorcycle technology

The European automotive supplier association CLEPA confers its innovation award in the safety category on Bosch's pioneering radar-based motorcyclist assistance systems.

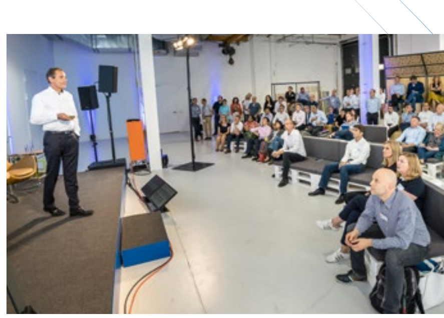
06

June 28

Stuttgart and Ludwigsburg, Germany

Ten years of Bosch venture capital

"Robert Bosch Venture Capital GmbH has been successfully investing in tech startups for a decade now. Its valuable links with the startup scene make a significant contribution to the Bosch culture of innovation, and thus to its agility," says Dr. Volkmar Denner, the Bosch CEO.



July 9

Berlin, Germany

Bosch and NIO enter into strategic partnership

In the presence of the German chancellor Dr. Angela Merkel and the Chinese premier Li Keqiang, Bosch and the electric vehicle manufacturer NIO sign a cooperation agreement focusing on sensors, automated driving, electric motor management, and smart transport systems.

July 20

Ulm, Germany

Bosch manufacturing conference 2018

Some 400 executives and manufacturing experts from across the Bosch world meet to discuss how artificial intelligence can help make better use of the data generated on the internet of things.

07

July 31

Karlsruhe and Plochingen, Germany

Augmented reality for auto mechanics

The Automechanika trade fair honors Bosch with an award for its innovative use of augmented reality to train its technical sales engineers.

08

August 21

Horsham, U.K., and Stuttgart, Germany

Bosch and Ceres Power conclude strategic alliance

Bosch is pushing ahead with the development of fuel cells for new energy systems. For this purpose, it enters into a partnership with the fuel-cell specialist Ceres Power.

09

September 7

Suzhou, China

New R&D center opens

Employing nearly 1,500 associates by the end of 2018, the center's research focuses on mobility solutions and connected manufacturing. This makes Suzhou one of the Bosch Group's largest research and development locations.

September 7

Tianjin, China

"Manufacturing lighthouse" accolade for Bosch plant

The World Economic Forum names the Bosch plant in Wuxi a "beacon" for smart manufacturing. Only nine factories worldwide receive this award. The decisive criterion for the judges is the successful introduction of Industry 4.0 technologies.

September 7

Delhi, India

"Move" mobility summit

At the invitation of the Indian prime minister Narendra Modi, Bosch is helping solve the country's mobility challenges. Bosch engineers in India have developed the world's smallest and lightest two-wheeler ABS especially for the local market.

September 28

Berlin, Germany

Most popular employers: Bosch among the best

The Trendence market research institute asks young graduates in Germany who they would most like to work for. The survey of 18,000 business, engineering, and IT professionals puts Bosch in second place.

10

October 19

Stuttgart-Feuerbach, Germany

IT campus opened

Bosch's global IT activities are now being coordinated at a dedicated competence center. Some 2,000 associates work at the new campus, which was designed to offer "inspiring working conditions" – a concept that has already proved its worth at other Bosch locations.

October 22

Stuttgart, Germany

Reorganization of corporate headquarters

Bosch corporate headquarters is about to go through its biggest ever organizational and cultural transformation. The 40 corporate units that have existed so far will be consolidated into roughly 20. Members of the Bosch board of management present the details at a town hall meeting that is also streamed live.

November 6

Munich, Germany

Award for innovative trade fair presentation

Robert Bosch Hausgeräte GmbH wins the German Design Award 2018 for its “living worlds” concept at the IFA trade fair. Its innovative booth design immerses visitors in five different virtual environments, showing them in an everyday context how Bosch products can offer practical solutions for their needs.

November 8

Stuttgart, Germany, and San José, USA

Trials announced for fully automated, driverless ridesharing service

In the second half of 2019, Bosch and Daimler want to make this app-based service available for selected customers. Part of the city of San José will serve as a proving ground for the automated vehicles.

November 19

Pittsburgh, USA

Machine learning: Bosch to send sensor system to the ISS

Bosch and the aerospace company Astrobotic Technology Inc. want to send the Bosch sensor system SoundSee to the International Space Station in the middle of 2019. They hope the system’s deep audio analytics can further improve the operations of the ISS.

November 19

Hildesheim, Germany

Premiere for curved cockpit display

Bosch announces that it is supplying the first ever curved instrument display for the cockpit of a production vehicle. A new manufacturing process means that the instrument cluster reflects up to four times less sunlight. This adds to the sharpness and contrast of the images displayed.

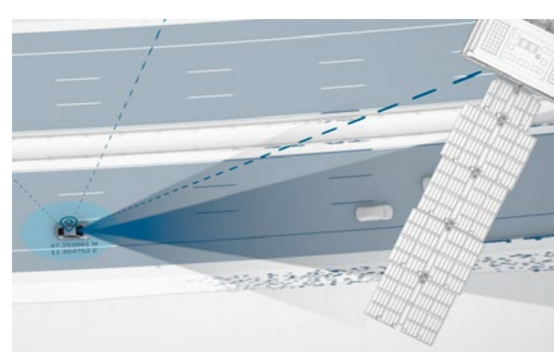
November 27

Stuttgart, Germany

Automated driving: Bosch debuts highly accurate motion and position sensor

Automated vehicles can only drive safely if they know down to the nearest centimeter exactly where they are at any given time. For this purpose, Bosch has developed a proprietary motion and position sensor that includes a high-performance receiver unit for global navigation satellite system (GNSS) signals

11



12

December 5

Salzgitter, Germany

500 million engine control units manufactured

Bosch engine control units have been orchestrating powertrains for 40 years. Worldwide, nearly half the engine control units in new vehicles are made by Bosch.

Robert Bosch Stiftung

Since it was established in 1964, Robert Bosch Stiftung GmbH has been carrying on the company founder's public welfare endeavors. It devotes itself to social challenges and promotes projects whose aim is to develop innovative models for our future. The Stiftung finances its work from the dividend it receives as a shareholder in Robert Bosch GmbH. It is active in the areas of healthcare, science, society, education, and international relations.

Each year, a diverse group of international experts come to the Robert Bosch Academy to work on issues of current global relevance. In 2018, one of the Academy's fellows was the renowned AI researcher Kate Crawford.

Total project grants 2018
Figures in millions of euros

153.04

5.35
Projects by the Berlin liaison office to promote international relations

1.72
Projects of the management board

7.23
Healthcare

6.73
Science

8.50
Society

8.34
Education

9.21
International relations: Americas and Asia

12.58
International relations: Europe and its neighbors

68.00
Capital expenditure for the Robert Bosch Hospital

11.87
Research at institutes and the Robert Bosch Hospital

1.40
Robert Bosch College UWC GmbH

1.22
International Alumni Center gGmbH

5.55
Die Deutsche Schulakademie gGmbH

1.20
Funding for the Otto und Edith Mühlschlegel Stiftung

2.97
Berghof Foundation Trust

1.17
Dependent foundations

Fostering international dialogue – especially in difficult times

In its international work, the Robert Bosch Stiftung develops formats for keeping lines of communication open, also in times that are politically volatile. For instance, in 2018 the Stiftung brought together editors-in-chief and other leading media representatives from China, Germany, and the United States for a press forum in California. The focus was on common challenges faced by all three countries as well as on the areas in which their interests either converge or clash. Alongside current issues such as increasing protectionism, key topics included digitalization and impending technological disruptions.

Over the past few years, the Stiftung has built a multilateral and interdisciplinary community in the shape of the Robert Bosch Academy in Berlin. More than 60 renowned decision-makers and opinion leaders from 36 countries have worked temporarily at the Academy and made contributions to civil life and political dialogue in Germany. These have ranged from government ministers and political advisors to health and sustainability experts to journalists and theater directors. In 2019, to celebrate the fifth anniversary of its establishment, the Robert Bosch Academy plans to host 15 new fellows who will be working on issues of current global relevance.

Research is on the rise in Africa: in Rwanda, the Robert Bosch Stiftung and the African Institute for Mathematical Sciences brought together more than 1,500 African scientists for the Next Einstein Forum 2018, the continent's largest scientific conference to date.

Facilitating integration – combating xenophobia

As part of the continuing debate surrounding migration and integration, the Robert Bosch Stiftung is helping to create a more open society by giving refugees a voice and the chance to engage with their new surroundings. In this respect, the Stiftung's activities in 2018 included a study entitled "Political Participation of Refugees: Bridging the Gaps," which it conducted in cooperation with the International Institute for Democracy and Electoral Assistance. The study's unequivocal conclusion was that refugees want to have a say and to play an active part in their new host countries, both politically and socially. One of the focal points for 2018 in the educational domain was the project "Starke Lehrer – Starke Schüler" (Strong teachers – strong students). It aims to combat xenophobic and anti-democratic attitudes and offers teachers at vocational schools guidance in dealing with students who display extreme right-wing sympathies.

Commitment to science and education – in Germany and around the globe

Since 2006, the Robert Bosch Stiftung has awarded the Deutscher Schulpreis (German school prize) in cooperation with the Heidehof Stiftung. So far, 73 schools have received the award; their innovative concepts have been analyzed by the Deutsche Schulakademie, a subsidiary of the Stiftung. To enable other schools and the general public to benefit from the award-winners' educational approaches, the Robert Bosch Stiftung set up an online platform in 2018. It aims to strengthen and disseminate ideas for good practice in schools.

In the scientific domain, the Next Einstein Forum (NEF) was an important milestone in 2018. The largest-ever African scientific conference, the NEF was held in the Rwandan capital Kigali and attended by more than 1,500 researchers and government representatives from around the world. The goal of this joint initiative of the African Institute for Mathematical Sciences and the Robert Bosch Stiftung was to generate more visibility for top African scientists and to put the continent on the map as a location for science and research.

Initiatives for better healthcare

The growing number of people with chronic and multiple illnesses is one of the greatest challenges faced by the German healthcare system. Against this backdrop, the Robert Bosch Stiftung launched its healthcare-focused "Neustart! Reformwerkstatt für unser Gesundheitswesen" (Reset! Reform workshop for our healthcare system) initiative in 2018. By way of public dialogue events, social policy panel discussions, and "think labs," the initiative kick-started a debate about needed improvements in healthcare. The goal of the initiative is to deliver recommendations for healthcare system reforms in time for the German federal elections in 2021.

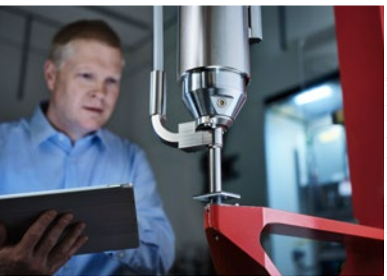
The Robert Bosch Stiftung also counts on research to generate fresh ideas for healthcare. In cooperation with the state of Baden-Württemberg, for example, the Stiftung decided in 2018 to create a chair for naturopathy and integrative medicine. As a result, complementary treatment methods will in the future be a regular feature of the medical curriculum at the University of Tübingen. At the Stiftung-financed Robert Bosch Hospital in Stuttgart, where the new professorship will be based, the benefits of treatments based on both naturopathy and conventional medicine will be researched and used to improve patient care.

Further development of international work

In view of global developments, the Robert Bosch Stiftung decided in 2018 to fundamentally re-examine and strategically realign its promotion of international relations. In parallel to its project work, the Stiftung conducted comprehensive evaluations and began exploring possible new areas of activity, which will be presented to the trustees of the Stiftung for decision in summer 2019.

The following institutions also belong to the Stiftung:
- Robert Bosch Hospital
- Dr. Margarete Fischer-Bosch Institute for Clinical Pharmacology
- Institute for the History of Medicine of the Robert Bosch Stiftung
- Die Deutsche Schulakademie
- UWC Robert Bosch College
- Robert Bosch Centrum für Tumorerkrankungen
- International Alumni Center iac Berlin

Dependent foundations within the Stiftung:
- Otto und Edith Mühlschlegel Stiftung (aging)
- Hans-Walz-Stiftung (research into complementary medicine)
- DVA-Stiftung (Franco-German dialogue)

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Buy a new one
43.0 mm
47.0 mm
BML100PI:
Interactive Projection Module enables highly
virtual touchscreens for smart homes and IoT

smart

mo

Bosch has always been associated with progress. Our aim is to help our customers achieve their goals, and in this way help make our world a little better – with technology that is "Invented for life." This takes bright ideas. Bold decisions. In other words, it takes smart moves.

The digital magazine that accompanies our latest annual report highlights just some of them.
annual-report.bosch.com

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Bosch Group

Group management report

The Bosch Group developed well in fiscal 2018. Despite a weakening economic environment in key markets, and taking considerable exchange-rate burdens into account, sales grew better than forecast. At the same time, developments in the business sectors differed widely during 2018. Against this economic backdrop, the increase in result from operations was gratifying. Bosch's major focus areas for the future include automated driving, electromobility, and the internet of things. It remains the company's goal to become a leading supplier in these areas. The internet of things affects all areas of business, from mobility, industrial technology, and consumer goods, to energy and building technology. With respect to these promising areas, we made a number of important decisions and strengthened our innovative capacity in the reporting year. We also continued our focus strategy, and in particular announced our exit from the packaging-machinery business. We anticipate a further economic slowdown in fiscal 2019 and are also taking precautions to counter major risks, including growing protectionism in world trade, Brexit, and critical levels of debt in many countries. We are therefore cautious in our sales and earnings forecasts. We will continue to gear our business strategy consistently to future requirements, and to make the most of our strategic opportunities.

01

Shareholders of Robert Bosch GmbH

Shareholding

Robert Bosch GmbH
1%

Bosch family
7%

Robert Bosch
Stiftung GmbH
92%

Voting rights

Bosch family
7%

Robert Bosch
Industrietreuhand KG
93%

Group management report

02

Bosch Group business sectors

MOBILITY SOLUTIONS

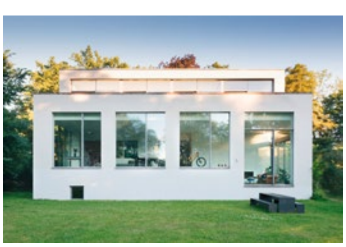
Powertrain Solutions [1]
Chassis Systems Control
Electrical Drives
Car Multimedia
Automotive Electronics
Automotive Aftermarket
Automotive Steering
Connected Mobility Solutions [1]

INDUSTRIAL TECHNOLOGY

Drive and Control Technology [2]
Packaging Technology [3]

CONSUMER GOODS

Power Tools [4]
BSH Hausgeräte GmbH



ENERGY AND BUILDING TECHNOLOGY

Building Technologies [5]
Thermotechnology
Bosch Global Service Solutions

[1] New division from January 1, 2018
[2] Bosch Rexroth AG (100% Bosch-owned)
[3] Robert Bosch Packaging Technology GmbH
[4] Robert Bosch Power Tools GmbH
[5] Until February 28, 2018, Security Systems

Fundamental information about the group

The group

The Bosch Group is a global supplier of technology and services, and generates nearly half its sales outside Europe. It encompasses around 460 fully consolidated subsidiaries and regional companies in more than 60 countries. The parent company is Robert Bosch GmbH, which is headquartered in Stuttgart, Germany. It started out as "Workshop for Precision Mechanics and Electrical Engineering," founded in Stuttgart in 1886 by Robert Bosch (1861–1942). In 1917, the company changed its legal form into that of a stock corporation (Aktiengesellschaft); in 1937, it reorganized as a close corporation, Robert Bosch GmbH. Robert Bosch Stiftung GmbH has been the majority shareholder in Robert Bosch GmbH since 1964.

As a not-for-profit foundation, the Robert Bosch Stiftung has no influence on the strategic or business orientation of the Bosch Group. The voting rights accruing to its share are held by Robert Bosch Industrietreuhand KG, an industrial trust, which performs the entrepreneurial ownership functions. The trust itself owns a capital share of 0.01 percent. Most of the remaining shares and voting rights are held by the founder's descendants. This ownership structure guarantees the Bosch Group's entrepreneurial independence and allows it to plan for the long term.

Organization and competitive environment

With some 410,000 associates worldwide, the Bosch Group's overriding objective is to develop and bring to market solutions that are "Invented for life." It is divided into four business sectors: Mobility Solutions, Industrial Technology, Consumer Goods, and Energy and Building Technology. Reporting is segmented in the same way. All four business sectors are among the leaders in their fields, with all four business sectors facing increasing competition from new suppliers in China, India, and other emerging markets. Moreover, the internet of things is changing the competitive environment in all areas by opening the door to new competitors from the IT and internet domain as well as the service sector, many of whom are using new business models. Moreover, the Bosch Group is increasingly offering connected solutions and services for areas such as mobility, with new business models being developed for this purpose. Despite these general trends, the business sectors' markets and competitive environments vary, in some cases significantly so.

In the case of Mobility Solutions, the Bosch Group has for a long time competed mainly with a small number of major automotive suppliers. Its chief customers have been globally operating automakers and large regional producers, such as in China. However, this market is changing due to increasing electrification, automation, connectivity, and multimodal mobility. As a result, additional suppliers are now entering the market from industries such as consumer electronics, semiconductors, and the services and internet sector. At the same time, end consumers are increasingly important for Bosch, particularly in the field of mobility services. In view of changing needs and substantial upfront investments, it will also be necessary for the company's divisions to cooperate more closely and possibly enter into external partnerships.

In the case of Industrial Technology, the Drive and Control Technology and Packaging Technology divisions operate as suppliers and machinery and systems providers in fairly fragmented markets with many competitors and customers. The nature of these competitors and customers is also changing as a result of increasing connectivity.

In the Consumer Goods business sector, Power Tools and BSH Hausgeräte largely market their products directly to end consumers. These divisions face intense competition from both global and regional providers. In Europe and China, two important markets for BSH Hausgeräte and Power Tools, the commercial landscape is also changing as a result of increasing consolidation in over-the-counter commerce and the growing importance of online commerce.

In Energy and Building Technology, the Building Technologies (formerly Security Systems) and Thermotechnology divisions compete with a small number of international and many regional providers. Connected solutions are making the competitive landscape even more diverse, while the different sectors involved in energy and building technology are converging. The Bosch Global Service Solutions division competes with both large international rivals and smaller local providers in the fragmented business services market.

Corporate governance

The board of management of Robert Bosch GmbH defines the strategy for the entire company and manages the company as a whole. Its responsibilities are set out in the board of management organization chart. The Robert Bosch GmbH supervisory board appoints, monitors, and advises the board of management. In making appointments to the supervisory board, Robert Bosch GmbH is subject to the German "Mitbestimmungsgesetz" (Codetermination Act). In view of the company's size, the supervisory board has 20 members. Ten members are appointed by the shareholders with voting rights. The other ten members are elected by the employee representatives. Robert Bosch Industrietreuhand KG acts as managing partner. In line with the mission handed down in the will of the company founder, Robert Bosch, the trust is responsible for safeguarding the company's long-term existence and, above all, its financial independence. The aim is to guarantee that the company remains independent and able to act at all times.

Owing to German legal requirements, there are targets for the percentage of women members of the supervisory board and board of management by December 31, 2021. The current targets are 20 percent of the supervisory board members of Robert Bosch GmbH, and 10 percent for the board of management of Robert Bosch GmbH. Other targets for Germany for the end of 2021 are 8 percent for the level below the board of management (first management level) and 12 percent for the second management level. At the end of 2018, 7.6 percent had been reached for the first management level (previous year 6.9 percent), while for the second management level the figure was 11.2 percent (previous year 10.2 percent). Globally, the share of women executives across all management levels within the group rose to 16.6 percent (previous year: 16.1 percent). In addition, we are increasingly implementing measures that focus on further increasing the proportion of women in management positions. Our medium-term target is 20 percent.

Business sectors

Mobility Solutions business sector

As an automotive supplier, Bosch is engaged in a very wide range of activities which are organized into different divisions. At the beginning of 2019, corporate functions mainly concerned with the Mobility Solutions business sector were combined to form a separate steering level.

Powertrain Solutions
The new Powertrain Solutions division was formed effective January 1, 2018, in order to develop comprehensive and flexible solutions in powertrain technology, regardless of the energy source. The new division resulted from the merger of the former Gasoline Systems and Diesel Systems divisions. Powertrain Solutions is organized into the three market segments of passenger cars, commercial and off-highway vehicles, and electric vehicles, and thus has a direct customer focus. It offers comprehensive products and solutions for powertrain technology, from gasoline and diesel direct injection to electrified powertrains with battery systems. In the future, this will also include fuel-cell technologies.

Where combustion engines are concerned, Powertrain Solutions is pushing ahead with the further development of innovative, eco-friendly technologies and systems based on gasoline, natural gas, ethanol and, increasingly, synthetic fuels. They include engine management systems, fuel supply modules, fuel injectors and pumps, and ignition systems. For diesel systems, the division is developing even more fuel-efficient and eco-friendly injection systems for applications ranging from passenger cars and commercial vehicles of all kinds to industrial power-generation units. Of great importance in this respect is the common-rail system, which comprises a high-pressure injection pump, a rail, and injectors. The division also provides air management systems such as mass air-flow sensors, electronic diesel control, and exhaust-gas management systems such as Denoxtronic.

In the area of electromobility, Bosch offers solutions for all vehicle types, from motorized two-wheelers to commercial vehicles. The range includes components and systems for gasoline and diesel hybrid vehicles as well as for purely electric vehicles. In the future, it will also encompass vehicles with fuel-cell powertrains. Products range from electric motors, power electronics, battery systems such as our 48-volt battery, battery management systems, and transmission technology to complete e-axles.

Chassis Systems Control

Chassis Systems Control develops and manufactures innovative components, functions, and systems that enable safe, relaxed, dynamic, and automated driving. These include brake actuation products such as vacuum-based and electromechanical brake boosters, as well as brake discs. ABS, TCS, and ESP® electronic braking control systems are an important area of activity. The division also supplies sensors such as speed, steering-angle, and yaw-rate sensors, as well as electronic devices to protect occupants and pedestrians, such as airbag control units and crash sensors. A fast-growing area is that of driver assistance systems. These are based on ultrasonic, radar, and video sensors developed and manufactured by Bosch itself. These enable functions such as radar-assisted ACC adaptive cruise control, predictive emergency braking systems, lane-keeping systems, and parking assistants. Driver assistance systems are being developed into increasingly automated solutions.

Electrical Drives

The Electrical Drives division offers a wide range of innovative and energy-efficient electromechanical components and systems. They include motors and drive systems for convenience features such as window lifters, seat adjustment, and sunroofs, powerful servomotors for electric steering, ABS, ESP®, and other applications in the engine compartment, and front and rear wiper systems including wiper blades. There is also a comprehensive range of products for engine thermal management, including engine cooling modules, pumps, valves for cooling systems, and air-conditioning fan components. Drives and systems for new mobility solutions such as e-bikes and e-scooters complete the portfolio.

Car Multimedia

Car Multimedia develops and supplies infotainment, display, connectivity, and HMI (human-machine interface) solutions for worldwide use in passenger cars, commercial vehicles, buses, two-wheelers, and off-highway vehicles. Convergent cockpit solutions are steadily closing the gap between driver information, infotainment, and communication systems. As well as complete systems and hardware solutions, the division also increasingly offers connected software solutions.

Automotive Electronics

Automotive Electronics develops and manufactures microelectronic components and systems. The product range for automotive applications extends from semiconductors, such as application-specific integrated circuits (ASICs), power semiconductors, and MEMS (microelectromechanical systems) sensors, to control units for systems including body electronics, braking control, and engine management. Automotive Electronics also includes the Bosch eBike Systems business unit, which will become an independent division in 2020, and, in the internet of things domain, the subsidiary Bosch Connected Devices and Solutions GmbH, based in Reutlingen, Germany. In entertainment electronics, Bosch Sensortec GmbH, Kusterdingen, Germany, supplies MEMS sensors for a diverse range of applications.

Automotive Aftermarket

The Automotive Aftermarket division provides the aftermarket and repair shops worldwide with a complete range of technology and solutions related to auto diagnosis and repairs, as well as a wide range of spare parts for vehicles – from new and remanufactured exchange parts to repair solutions. The product portfolio consists of Bosch original-equipment products, as well as aftermarket products and services developed and manufactured in-house or sourced externally. The division also provides testing and repair-shop technology, diagnostics software, service training, and technical information and services. It is also responsible for the concept behind the independent repair-shop franchises Bosch Car Service and AutoCrew.

Automotive Steering

Automotive Steering develops, manufactures, and sells innovative steering systems, steering columns, and steering and gear pumps for passenger cars and commercial vehicles. The product portfolio in the passenger car unit includes the fuel-saving Servolectric® electric power steering system and, for commercial vehicles, the Servotwin® electro-hydraulic steering system as well as rear-axle steering systems. Its steering systems also make automated driving solutions possible.

Connected Mobility Solutions

The new Connected Mobility Solutions division was formed at the start of 2018. It brings together the connected mobility solutions and services that had previously been spread across various units within the Mobility Solutions business sector. Its goal is to offer customers connected solutions from a single source and to further develop the company's platform for connected mobility solutions, the Mobility Cloud Suite. Its digital mobility services include vehicle sharing, ridesharing, and connectivity-based services for car drivers.

Other businesses

The Two-Wheeler and Powersports unit offers safety systems such as ABS and MSC motorcycle stability control, fuel-saving powertrain technology, display instruments, and communications units for two-wheelers. Its product range also includes radar-based assistance systems such as ACC adaptive cruise control. The cross-divisional unit can draw on the worldwide resources of the Mobility Solutions business sector.

The Commercial Vehicles and Off-Road unit works along similar lines. It has cross-divisional responsibility for systems development, product management, and sales in the commercial-vehicle and off-highway business. In order to leverage process synergies, the unit was integrated into the subsidiary Bosch Engineering GmbH, based in Abstatt, Germany, at the beginning of 2019. This company develops a wide range of customized solutions based on the tried and tested technology used in large-scale production. For example, it provides solutions for sports cars and off-highway vehicles, but also for railcars, marine applications, and industrial engines. Bosch's motor racing activities are also based there.

In addition, ITK Engineering GmbH, headquartered in Rülzheim, Germany, which we acquired at the start of 2017, offers customized systems- and software-development services under its own brand, with engineering operations separate from Bosch.

The Bosch companies that form ETAS GmbH, Stuttgart, provide innovative solutions for embedded software systems that are used in the automotive and other industries. The subsidiary ESCRYPT GmbH, Bochum, Germany, develops cybersecurity solutions.

Industrial Technology business sector

This business sector currently comprises two divisions and, since the beginning of 2018, one business unit.

Drive and Control Technology

Our Bosch Rexroth AG subsidiary specializes in drive and control technologies for efficient, powerful, and safe movement in machines and systems of any type and size. The company combines global application experience in the market segments of mobile applications, plant construction and engineering, and factory

automation. With intelligent components, customized systems solutions, and services, Bosch Rexroth creates the conditions for fully connected applications. The division offers its customers hydraulics, electric drives and controls, gear technology, and linear motion and assembly technology, including software and interfaces to the internet of things.

Packaging Technology
The division provides process and packaging solutions for the pharmaceuticals and foodstuffs industries. Its range includes stand-alone machines, systems solutions, and an extensive service portfolio. In 2018, Bosch decided to look for a new owner for this business.

Other businesses
Bosch's in-house provider of assembly systems, the business unit Robert Bosch Manufacturing Solutions GmbH, Stuttgart, develops flexible, scalable plans for assembly systems, customized solutions in the field of testing and process technology, and related services. It remains part of the Bosch Group, having so far been part of the Packaging Technology division.

In addition, the Bosch Connected Industry business unit, which develops software solutions and carries out Industry 4.0 projects for internal and external customers, has been part of the Industrial Technology business sector since the start of 2018.

Consumer Goods business sector

The business sector comprises two divisions.

Power Tools
Robert Bosch Power Tools GmbH is a supplier of power tools, power-tool accessories, and measuring equipment. The division has an extensive product range aimed at professional users in trade and industry, the DIY market, and, increasingly, new target groups such as amateur crafters. The range includes power tools and garden tools. One of the division's focal points is convenient, high-performance cordless tools, and increasingly also web-enabled tools and services. The wide range of accessories includes abrasive systems, drill bits, and saw blades. Precision power tools for DIY users and amateur crafters are sold under the Dremel brand.

BSH Hausgeräte GmbH
The household-appliance manufacturer BSH Hausgeräte GmbH has a product portfolio that ranges from washing machines and tumble dryers through refrigerators and freezers, stoves and ovens, and dishwashers, to small appliances such as vacuum cleaners, coffee makers, and food processors. The household-appliance specialist sells its products under the global Bosch and Siemens brands under license. It also sells under the Gaggenau and Neff brands, as well as local brands such as Balay in Spain and Thermador in the United States, plus label brands such as Viva or Junker. Home Connect is also being added as a brand for the BSH internet of things ecosystem, together with service brands such as the food platform Kitchen Stories.

Energy and Building Technology business sector

As well as the Building Technologies, Thermotechnology, and Bosch Global Service Solutions divisions, the business sector includes the Robert Bosch Smart Home GmbH unit.

Building Technologies

The Building Technologies division (formerly Security Systems) has two areas of business: the global product business for innovative security and communications solutions, and the regional integrator business. The latter offers solutions and customized services for building security, energy efficiency, and building automation in selected countries. Both units focus on commercial applications. The product portfolio encompasses video-surveillance, intrusion-detection, fire-detection, and voice-alarm systems, as well as access-control and professional audio and conference systems.

Thermotechnology

Thermotechnology offers solutions for air conditioning, hot water, and decentralized energy management to customers worldwide. Its areas of business are heating systems and energy management for residential buildings, water heaters, and commercial and industrial heating and air-conditioning systems. The portfolio includes highly efficient technologies such as condensing boilers, solar thermal systems, heat pumps, and combined heat and power generation. The division's products are sold under international and regional brand names such as Bosch, Buderus, Worcester, and Junkers. With a view to functions such as remote diagnosis, web-enabled devices are becoming more and more important.

Bosch Global Service Solutions

The Bosch Global Service Solutions division offers outsourcing for business processes and services, primarily for customers in the automotive, travel, and logistics industries and in information and communications technology.

Robert Bosch Smart Home GmbH

Robert Bosch Smart Home GmbH, Stuttgart, Germany, offers web-enabled, app-controlled products for the home. They include solutions for controlling processes such as the operation of heating, air conditioning, lighting, and shutters, as well as automated room monitoring using interior cameras and fire and motion detectors.

Companies not allocated to business sectors

The Bosch Group's global software and systems unit, Bosch Software Innovations GmbH, Berlin, designs, develops, operates, and markets internet of things and enterprise software and systems solutions worldwide. In particular, it offers smart city technologies and solutions for agriculture, healthcare, and buildings.

The subsidiary Bosch Healthcare Solutions GmbH, Waiblingen, Germany, operates in the medical technology sector, supplying sensors, software, and services. In addition to equipment for therapy management and laboratory diagnostics, the product range includes ceramic components for surgical instruments. In the future, it will also include more services.

The subsidiary grow platform GmbH, based in Ludwigsburg, Germany (postal address, formerly Robert Bosch Start-up GmbH), offers a platform within the Bosch Group for the development and trial of new ideas within lean and agile structures. It provides internal start-ups with access to Bosch's resources and expertise and supports them with business know-how in areas such as controlling, HR, infrastructure, and marketing.

Through Robert Bosch Venture Capital GmbH, Gerlingen, Germany, we invest worldwide in technologies with future potential, such as the internet of things, artificial intelligence, and automated driving. The company provides capital for startups and industry-specific venture capital funds in Europe, the U.S., Israel, and China.

Prospects for the Bosch Group

Fundamental direction

Many of the Bosch Group's business areas are set to change radically. We are responding to this. The internet of things and its accompanying increases in connectivity and automation are presenting a major opportunity for the company as a whole. This connectivity affects all Bosch's areas of business, from mobility solutions through industrial technology, and consumer goods such as household appliances and power tools, to energy and building technology. Another major disruption will come from increasing electrification, especially in automotive technology, but also in industrial technology and energy and building technology.

The starting point for our strategy is the objective of securing the company's future as enshrined in the will of founder Robert Bosch – in other words, ensuring the company's strong and meaningful development and securing its financial independence. We are motivated by the desire to develop products that are "Invented for life," that fascinate, that improve quality of life, and that help conserve natural resources. In this respect, "products" means not only physical products and services, but also, to an increasing extent, the digitally connected, software-based solutions that go with them. For this reason, we are driving forward innovations in both products and business models, entering entirely new business fields, and modifying our organization.

As affirmed in our "We are Bosch" mission statement, one of our strategic focal points is shaping change, taking into account the aspects of connectivity, electrification, automation, energy efficiency, and emerging markets. It is our ambition to play an active part in shaping the far-reaching changes in markets and technology. Apart from shaping change, our strategic focal points are customer focus and excellence.

Customer focus means having a precise understanding of customers' needs and using this understanding to find the best possible solutions for products and business models. Excellence in all areas is essential in order to achieve our targets on a lasting basis. We measure ourselves against our best competitors and aim to achieve leading positions in each case. With efficient processes, lean structures, and high productivity, we endeavor to secure and increase the value of the company. A business environment that is changing at an ever faster pace also calls for a high degree of adaptability and greater agility. To achieve this, we are constantly reappraising our understanding of leadership, collaboration, organization, and communication, as well as the models based on these concepts. When putting our strategy into practice, we build on our strengths: the Bosch culture, our high level of innovation and quality, and our broad global presence. Our actions are based on the Bosch values: a clear future and result focus, responsibility and sustainability, initiative and determination, openness and trust, fairness, reliability and credibility, legality, and diversity.

A wealth of opportunities

Changes in markets and technology are opening up a wealth of opportunities for growth in the Bosch Group, particularly with regard to increasing connectivity. This connectivity is made possible by the miniaturization of electronics and ever more powerful sensors, data networks, data storage devices, and computers. More and more products can be inexpensively connected to the internet and equipped with increasing levels of intelligence. In view of our expertise in many product areas, in software and internet technology, and (as a supplier of MEMS sensors) in sensor technology, we believe this offers us huge opportunities. Moreover, we continue to develop our proficiency in the field of artificial intelligence, as we see considerable potential in the design of intelligent, user-friendly products and processes.

In addition to the Industrial Technology and Energy and Building Technology business sectors, automation also affects the Mobility Solutions business sector in particular. As road traffic density continues to grow, partially or indeed highly automated driving can help reduce the number of accidents and improve traffic flow. New types of services and business models offer drivers flexible and convenient mobility.

Where Industrial Technology is concerned, many opportunities arise from the increasing flexibility of production combined with more widespread connectivity. This opens up new ways of enhancing product quality and productivity, of adding functionality, improving resource conservation, and better protecting workers' health and safety. It also opens up potential for new services. In the Consumer Goods and Energy and Building Technology business sectors as well, connectivity and increasingly smart products are creating additional opportunities for growth through new services and business models.

Electrification is of particular importance for Mobility Solutions, our biggest business sector. The key drivers for electrification and electromobility are new emissions standards aimed at complying with climate action targets and improving air quality in cities, as well as falling battery costs. The driving enjoyment offered by electric vehicles is also a contributing factor. Electrification is also playing an increasing role in industrial and building technology. We aim to increase energy efficiency both in our products and in our own value chain. Drivers include the growing demand for energy, ever tighter regulations relating to greenhouse emissions and pollution, and the finite nature of fossil fuels. This will lead to increased demand for energy-efficient products in all business sectors.

The emerging markets of Asia, South America, central and eastern Europe, and Africa are home to the majority of the world's population, with a high demand for goods and services. We are continuing to expand our presence in these regions. There is demand for affordable products that often have to meet special requirements of the local market, such as robustness and ease of repair.

Business targets
Our goal is profitable growth. We want to grow more rapidly than the market in Europe, grow our sales in Asia Pacific and the Americas faster than in other regions, and become more established in Africa. In terms of business sectors, we aim for a balance between Mobility Solutions and our other business sectors. We have also set ourselves the target of an EBIT margin from operations of around 7 percent, derived from benchmark comparisons of operating units, taking into account the upfront investments needed for growth projects and expenditure for the change processes this will involve. The target margin is reviewed regularly in light of the current portfolio. The negative effects on earnings from increased depreciation and amortization as a consequence of the complete takeover of the former joint ventures Automotive Steering and BSH Hausgeräte are not taken into account in the target margin from operations.

Strategy and innovation

Leading role in IoT
Our goal is to become one of the world's leading companies on the internet of things (IoT). Bosch is particularly well placed to leverage its expertise in the world of "things." The IoT also opens up additional business opportunities in the area of services. The goal is to use connected, intelligent solutions to make life easier, more efficient, and safer for as many people as possible. We regard our presence in diverse markets and industries as an advantage, because of the many insights we gain as a result.

One of our key areas of competence is sensor technology. When it comes to MEMS sensors, we have a wealth of expertise that extends far beyond the vehicle. To further expand our market position, we are building a new wafer fab in Dresden, where we will invest a total of around one billion euros. The new site will manufacture chips based on 300-millimeter wafers for the growing number of mobility and IoT applications.

Thanks to increasing electrification and automation, demand for chips in vehicles is expected to rise further over the next few years. One sensor innovation, especially with a view to the IoT, is an intelligent inertial sensor (combining different types of acceleration sensors) with extremely low power consumption. It was developed especially for electronic devices that can be worn on the body, known as wearables. Its high performance was achieved by combining yaw-rate sensor technology used extensively in automotive applications with a significantly improved acceleration sensor. The AIR mobile well-being sensor, a piece of smart-home technology that comes complete with its own app, provides detailed information about air quality, temperature, humidity, brightness, and noise. This information can be used to generate specific recommendations for optimizing the indoor climate.

With the IoT in our sights, we have been steadily expanding our expertise in the areas of software development and product connectivity for the past ten years. We laid the basis for this work by acquiring a number of internet specialists. We also created our own IoT platform (Bosch IoT Suite) and our own IoT cloud (Bosch IoT Cloud). Furthermore, in 2017 we established our own center of competence for artificial intelligence, the Bosch Center for Artificial Intelligence, which we are continuing to expand; as a technology company we aim to become a leader in artificial intelligence methods.

We are making more and more Bosch electronic products web-enabled. We operate on all three levels of connectivity: smart and connected devices, software platforms (Bosch IoT Suite, Bosch IoT Cloud), and applications and services. We do not see our role as being limited to providing smart, web-enabled products, attractive software, or applications for the various markets and industries. We also want to play a major part in shaping key IoT ecosystems. Our business sectors have already created a number of connectivity solutions. Projects range from mobility to smart home solutions, from urban infrastructure connectivity to agriculture, and involve not only products but also manufacturing and logistics processes.

Artificial intelligence for things and processes

Connectivity solutions and business models alone are not enough to realize the IoT. The important thing is to make things intelligent on the basis of connectivity. We therefore see enormous innovation potential for artificial intelligence methods in all our product domains, including our own development, manufacturing, and logistics processes.

One current example is a multifunctional camera that combines conventional image processing algorithms with artificial intelligence methods, and thus provides significant prerequisites for automated driving. The aim is for the vehicle to use this camera to detect pedestrians and predict their behavior. The Bosch SoundSee sensor system predicts machine downtimes and can help reduce maintenance costs and increase productivity. To do so, the SoundSee algorithm analyzes subtle acoustic clues in the characteristic sounds of motors and pumps. We also see commercial applications in manufacturing, buildings, and automotive engineering. In addition, SoundSee technology will be deployed on the International Space Station (ISS) in 2019 to analyze sounds and thereby determine whether machines or individual machine components need to be replaced.

We are also currently working on the use of artificial intelligence in video-based fire detection systems. Security cameras use smart image analysis to detect fires much faster than conventional fire and smoke detection systems. We are also increasingly using artificial intelligence in consumer goods. The latest, web-enabled version of the Indego robotic lawnmower collects and analyzes sensor-based data such as motor currents, acceleration, speed, and orientation each time it is used. Based on this data, algorithms for improving obstacle detection are developed and installed on all devices.

IoT activities consolidated

To further strengthen our market presence, we have consolidated our various IoT activities into cross-sector units. At the start of 2018, we brought our connected mobility services and service solutions together under the umbrella of the new Connected Mobility Solutions division. We have combined our software expertise for Industry 4.0 solutions in the Bosch Connected Industry business unit. The newly established Residential IoT unit is dedicated to the connected home. Under the Home Connect brand, it combines all home-related activities from various Bosch divisions (Power Tools, BSH Hausgeräte, Thermotechnology, and Smart Home) and external partners.

Mobility services include, for example, predictive road condition services that provide real-time information about conditions on the road ahead, automated valet parking, wireless data acquisition, over-the-air software updates, and convenience charging services for electromobility. There are also sharing solutions and solutions for combining different modes of transport. Our subsidiary Coup Mobility GmbH, headquartered in Berlin, Germany, provides e-scooters for inner-city use in selected European metropolises. The Automotive Aftermarket division also supports the work of repair shops with its Bosch Connected Repair software. This makes vehicle data available on all PC-based systems following a single sign-on.

In the Industry 4.0 segment, during 2018 we introduced the Nexeed software portfolio, which encompasses software and services for the entire value stream and was developed on the basis of our own broad manufacturing expertise. The Nexeed Production Performance Manager gathers and harmonizes real-time production

and machine data from a variety of sources in the manufacturing environment, gives it a clear structure, and presents it to workers on their mobile devices. Nexeed Track and Trace helps monitor and trace the flow of goods. Sensors fitted to the goods themselves autonomously report their position and condition via the cellular network to the cloud, thus helping to optimize logistics chains. In the smart-home sphere, the subsidiary Bosch Sensortec has premiered a virtual touchscreen for any surface, as a flexible alternative to a static, physical screen.

Especially in the promising area of connectivity, partnerships play an important role. This is the case in both research and the market. Worldwide, we already work with a large number of companies in various industries and a range of research institutions, and have joined strategic alliances. We entered into further partnerships in 2018. For example, in the area of mobility services and automated driving, we acquired a 5 percent stake in There Holding B.V., Rijswijk, Netherlands, which itself holds a stake in Here International B.V., Eindhoven, Netherlands, a global provider of digital maps and location-based services.

Mobility Solutions

In the Mobility Solutions business sector, our goal is to become one of the leading suppliers in the field of electric, automated, and connected driving, and in connected mobility services. At the same time, we are intensifying our efforts to combine different modes of transport. Our vision is to make mobility as emissions-free, stress-free, and accident-free as possible, and at the same time multimodal and personalized. This is the focus of our activities. Particular strategic priorities include transforming the powertrain and expanding our business in the areas of electrification, automated driving, new electrical and electronic architectures for vehicles, accessing adjacent market segments, and developing additional services.

At the same time, the transformation of mobility and the high upfront investments associated with this trend mean that we have to focus our activities. We have completed the divestment of the former Starter Motors and Generators division and the sale of Bosch Mahle Turbo Systems GmbH, a fifty-fifty joint venture for turbochargers based in Stuttgart. In the Automotive Aftermarket division, the repair-shop equipment suppliers Beissbarth GmbH, Munich, Germany, and Sicam SrL, Corregio, Italy, were also sold. In addition, the conventional steering columns business is being restructured with a stronger focus on electric steering systems.

Goal of further reducing emissions

The market environment in the powertrain segment faces major upheavals. We are working worldwide to achieve our long-term goal of making mobility as CO_2-free and emissions-free as possible. Electrical powertrains will thus be increasingly important. We are adapting both our products and our organization accordingly. Since the beginning of 2018, the former Gasoline Systems and Diesel Systems divisions have been united under the umbrella of the Powertrain Solutions division. Our business activities are now focused on customer segments: passenger cars with internal-combustion engines including hybrid models, commercial vehicles including off-highway vehicles, and electric vehicles.

We expect to see a mix of combustion engines and electric vehicles on the road for a long time to come, despite the current debate about diesel-powered passenger cars in particular, and the decline in new diesel vehicle registrations in Europe. This is because existing powertrain concepts can also play an important role in improving air quality and reducing CO_2, especially since the wide-scale adoption of electromobility requires further substantial upfront investments in engineering and infrastructure.

Viable diesel and spark-ignition engines that have hardly any effect on air quality even at inner-city air-pollution hotspots are now within reach. After years of work, Bosch engineers have achieved further advances in diesel technology, with emissions of only 13 milligrams of NOx per kilometer under real driving conditions. This technology allows diesel vehicles to retain their advantages in terms of fuel consumption and CO_2 emissions compared to gasoline engines. In addition, we have launched a project that uses artificial intelligence and data analysis methods to take better account of real driving behavior in system design and application.

We are also working on further emissions-reducing measures for gasoline engines. For example, gasoline direct injection systems can be further improved by varying injection pressures, through injection strategies such as multiple injections, and by including additional exhaust-treatment systems. The main aim here is to further reduce the particulate emissions from gasoline engines. Furthermore, hybridization of the powertrain, for example by using 48-volt technologies, plays a significant role in reducing CO_2 emissions.

Brakes and tires also generate a significant proportion of the particulate emissions caused by road traffic. We are aiming to improve matters in this area as well with an innovative brake disc called the iDisc. The tungsten carbide coating of the iDisc not only reduces brake dust. It is also particularly wear-resistant and long-lasting, and ensures greater safety during successive braking maneuvers. It is suitable for all vehicle types, from electric cars to commercial vehicles.

Progress in electrification

We are also pressing ahead with electrification in powertrain technology. In this endeavor, we are focusing on the development and manufacture of key components of the electrical powertrain, such as the electric motor, power electronics, and battery systems. We will continue to buy in the cells we need for battery systems in hybrid and electric cars and work with cell suppliers to design them. At the start of 2018, therefore, we decided to discontinue our research into current and future cell technologies, the aim of which was to assess the feasibility of in-house cell production. The Stuttgart-based Lithium Energy and Power GmbH & Co. KG joint venture for lithium-ion technology was dissolved in 2018; the U.S. subsidiary Seeo, Inc. based in Hayward, California, which

researches into solid-state technology, is to be wound up in 2019. To continue to develop our expertise in the field of battery cells despite this, we have set up a center of competence.

We have a wide portfolio in the field of electromobility and electrify powertrains for applications ranging from bicycles to commercial vehicles. In this endeavor, we also rely on partnerships. At the end of 2018, we started production of a new 48-volt battery for hybrid vehicles in Wuxi, China. With this, we will be serving the entry-level segment. With a motor, control unit, charger, and display as well as connectivity via an app, the 48-volt system is a standardized and therefore easy-to-integrate drive unit for two-wheelers and small four-wheeled vehicles. We will also begin production of the e-axle in China during 2019. This product integrates a motor, power electronics, and transmission in a single housing. At the beginning of 2019, we also announced we would be taking over EM-motive GmbH, Hildesheim, Germany, the fifty-fifty joint venture we set up with Daimler AG in 2011. The full takeover gives us the opportunity to establish a broad market presence for electric motors.

We are also working on the electrification of commercial vehicles. Our product portfolio covers the entire range of possible applications: from 36-volt drive units for cargo bikes, to electric motors for light commercial vehicles such as the German Post Office's StreetScooters, e-axles for light and heavy vans, and electrified axles for semitrailers that recover energy when braking. In the future, this list will include fuel-cell powertrains for heavy trucks. In collaboration with the Chinese automaker Weichai, we are developing fuel-cell powertrains for commercial vehicles. Together with the U.S. startup Nikola Corporation, based in Salt Lake City, Utah, we are working on an e-axle for heavy trucks with fuel-cell powertrains. Growth areas for electric vehicles also include thermal systems, as the inverter and battery also have to be integrated into the thermal circulation system.

The promising area of automated and connected mobility

A fast-growing area, and a promising one for us, is that of automated and connected mobility. Bosch already offers a broad portfolio, ranging from braking control systems such as ABS, TCS, and ESP®, to driver assistance systems, steering systems, display instruments, infotainment solutions, electrical and electronic architecture, sensors, and services. Our objective is to firmly establish Bosch as a leading provider of automated and connected driving. Our activities in the field of automated driving follow two paths. The first is to go from driver assistance systems for private vehicles to partially and conditional automated driving, or to what are known as automation levels 2 and 3. At level 2, features such as the traffic jam assist or highway assist allow drivers to take their hands off the steering wheel temporarily, but they still have to concentrate fully on the road, because they are responsible for the driving task. Level-3 functions such as the traffic jam pilot and highway pilot allow drivers to engage in permitted secondary activities during the automated journey. Depending on the vehicle manufacturer's design, this might include use of the infotainment system, for example. The jump from level 2 to level 3 is already very large, owing to the complexity and development effort involved. It is also a fundamental shift, since the driving task is temporarily transferred from the human driver to the system.

We launched a new highway assistant in 2018. The system combines the technology of ACC adaptive cruise control, the handling of stop and go traffic, and lane-keeping support. Thanks to the smart combination of functions and optimized longitudinal and lateral guidance during in-lane travel, this Bosch technology enables partially automated level-2 driving both on straight stretches and in bends. Electric power steering plays an important part in making highway assist technology and other driving assistance systems possible.

The second development path is focused on driverless driving in urban areas with vehicles such as robotaxis and roboshuttles for limited applications (automation level 4) and beyond (automation level 5). The technological challenges are much greater than for level-3 freeway applications. Urban traffic involves additional challenges such as cross traffic, pedestrians, and cyclists. Private ownership of vehicles is expected to decline in towns and cities in favor of vehicle-sharing models. The heavy investments needed for fully automated vehicles will make sense if applied to intensively used vehicle fleets. This opens up opportunities for completely new forms of mobility and new kinds of business models. We have been operating a joint project unit with Daimler AG since 2017. The aim is to develop an automated driving system at levels 4 and 5, for use in vehicles such as robotaxis. Our two companies plan to start a pilot project for an automated ridesharing service together with the U.S. city of San José, CA, in the second half of 2019.

Bosch has also developed a sensor that allows automated vehicles to precisely determine their position: the motion and position sensor. It includes a high-performance receiver unit for global navigation satellite system (GNSS) signals, which an automated vehicle needs to determine its absolute position. To meet the needs of automated driving, we can access various providers' correction data and in this way iron out the inaccuracies of satellite-based positioning. It was for this purpose that we established the Sapcorda Services GmbH joint venture in Berlin, Germany, in 2017. Connected and automated vehicles must also be able to communicate easily, both with each other and with their surroundings. With this in mind, we have developed a universal connectivity unit that uses both Wi-Fi and cellular transmission technologies to enable vehicle-to-vehicle and vehicle-to-infrastructure communication. Together with our technology partner SiTime Corporation, based in Santa Clara, CA (USA), we are also working to develop new processes and methods for next-generation MEMS resonators. They enable 5G speeds, longer battery life for IoT devices, and more reliable driver assistance systems.

The growing importance of navigation and driver assistance systems also requires the further development of vehicle cockpits. In this area, we have debuted an innovative curved, freely configurable, high-resolution instrument cluster in the cockpit of a production vehicle. Depending on what the driver wants to see at any given time, it is able to display large-area navigation maps, driver information, and the status of the assistance systems. A new manufacturing process means that the instrument cluster reflects up to four times less sunlight. This adds to the sharpness and contrast of the images displayed.

Developing additional market segments

Part of our strategy is also to expand our business activities into adjacent business areas. We have achieved this with the e-bike. Since launching drive systems for e-bikes in 2010, we have been able to significantly expand our business. Bosch has also introduced ABS for e-bikes. In response to continuing strong growth in the e-bike segment, we plan to set up a separate e-bike division at the beginning of 2020.

We are also expanding the activities of our Two-Wheeler and Powersports unit through a large number of innovations. Bosch has been steadily rolling out its motorcycle ABS technology for all vehicle classes. Ever more countries and regions around the world now mandate the use of this safety system, including India as of 2018. Other innovations include sensor-based assistance systems such as ACC adaptive cruise control, a collision warning system for motorcycles, and a blind-spot warning system that helps motorcyclists change lanes safely. We already offer the radar sensor-based blind-spot warning system and the ultrasound-based blind-spot assistant for passenger cars and trucks. In the future, we will also enhance motorcycle safety digitally by enabling motorcycles and cars to communicate with each other.

The Commercial Vehicles and Off-Road unit is currently working on additional developments outside the powertrain. New products include the a digital mirror camera system to replace side-view mirrors. Designed for use on commercial vehicles, the two large mirrors on the outside of the driver's cab will be replaced by video sensors, thereby reducing drag and fuel consumption. Images are displayed in real time on high-resolution monitors in the driver's cab. Bosch developed the system in partnership with Daimler AG and MEKRA Lang GmbH & Co. KG. Another innovation is a keyless entry system. Freight and commercial-vehicle rental companies can use a smartphone app to flexibly manage access to their vehicles. In addition, the new Progressive Mobility Players unit began operations at the start of 2019. It has cross-divisional sales responsibility for new mobility providers in the field of electromobility, mobility services, and automated mobility, whose requirements differ from those of our traditional automotive customers.

Industrial Technology

Drive and Control Technology focusing on promising areas
Since 2016, the Drive and Control Technology division (Bosch Rexroth) has been engaged in a comprehensive transformation program encompassing everything from strategy to internal structures and corporate culture. This includes greater flexibility and flat hierarchies to more precisely serve the needs of customers, many of whom are small and medium-sized enterprises. In 2018, the transformation was made visible externally in the shape of new branding. As part of its growth strategy, the unit is focusing above all on technological USPs, on leveraging synergies in the market and within the Bosch Group, and on promising new fields. Along with its traditionally strong standing in industrial and particularly mobile hydraulics, Bosch Rexroth is increasingly positioning itself as a provider of Industry 4.0 solutions for the factory of the future based on software, automation, and connectivity.

In industrial hydraulics, Bosch Rexroth is actively shaping the transition from conventional to intelligent and connected hydraulics. This opens up enormous potential for the easy and economical integration of machines and systems into modern industrial environments. Take, for example, the intelligent CytroBox power unit. It has a significantly smaller footprint compared to conventional power units, consumes far less energy and oil, is much quieter, and monitors its operating states independently. Bosch Rexroth is developing new, data-based services with a view to electronifying mobile hydraulics. Wear is detected on the basis of operating and sensor data, and the remaining service life can be determined. This means that downtimes for mobile machines in the field can be avoided, without the preventive servicing that is still the norm today.

Another strategic priority in the area of factory automation is Industry 4.0 and the Bosch Rexroth vision of the fully connected factory of the future. Here, the division intends to take a leading position and be a driver of innovation. Its concept envisages machinery that continuously reconfigures itself to match the order situation. In other words, manufacturing equipment will set itself up flexibly – from single-batch to mass production. The concept also includes autonomous transport systems and collaborative robots. An ultra-fast 5G wireless network will allow information exchange in real time, while comprehensive data acquisition and analysis, also on the basis of artificial intelligence, will detect faults early and thus enhance product quality and productivity.

Bosch Rexroth works with research institutions, IT companies, and partners within the Bosch Group to develop digital twins. These virtual copies of all components, modules, and entire value chains enable end-to-end digital engineering, from the initial idea to the commissioning of a machine and beyond. The digitalization of all technologies, such as linear motion technology, which was previously considered a purely mechanical domain, will unlock new potential for factory operators. Individual components are automatically identified by digital name plates during commissioning. In addition, sensors integrated into the linear motion technology support condition monitoring, that is to say, the monitoring of operating states such as temperature and speed.

Bosch Rexroth continues to systematically expand its expertise in the field of robotics. The APAS collaborative robot extends the portfolio of automatic production assistants. Bosch Rexroth has also taken over two startup teams from the Bosch startup platform grow. Intralogistic Robotics develops software for connectivity and automation solutions in materials handling. Deepfield Robotics develops connected, autonomous machines for sustainable agriculture, with the aim of reducing consumption of pesticides and water. Bosch Rexroth is already strongly represented in the farming sector with mobile hydraulics. Its autonomous agricultural machinery means that its portfolio is being expanded into adjacent segments.

Bosch Rexroth is also strengthening its international presence. In 2018, it acquired all shares in Bosch Rexroth South Africa (RF) (Pty.) Ltd., Johannesburg, South Africa (formerly Hytec Holdings (Pty.) Ltd., Johannesburg, South Africa). It specializes in the marketing of hydraulic and automation solutions. As a first step toward the eventual takeover, Bosch Rexroth had acquired a 50 percent stake in its marketing partner Hytec in 2014.

New prospects for Packaging Technology

After intensively and thoroughly considering all strategic options, we are planning to sell our packaging machinery business. In light of the Bosch Group's need to transform and focus its resources, entrepreneurial and technological synergies within Bosch have not materialized. We firmly believe that our packaging technology operations need to be put on a different footing that will allow them to react more flexibly to the specific requirements of the special-purpose machinery market. Packaging Technology is involved in project business in specialized areas of the packaging industry. It also operates in a competitive environment dominated by small and medium-sized businesses, which puts competitors at a structural advantage.

Packaging Technology has been realigning itself for some time with regard to its customers and future technological requirements. In the foodstuffs business and at division headquarters, this involved a series of further restructuring and relocation measures in 2018. At the same time, its portfolio in the food and pharmaceuticals segments has been redesigned. At the end of 2018, the division opened its first research, development, and testing center for packaging liquid and viscous food products in Königsbrunn, Germany. Examples of improved products include a highly flexible side-loader cartoning machine that pushes and packs items such as cookies sideways into folding cartons, and an entry-level machine – now also offered for lease – for horizontal packing of bars into tubular bags. This solution is particularly suitable for smaller companies that are starting to automate their production.

On the pharmaceuticals side, Packaging Technology has strengthened its position above all in the liquids segment. In 2018, for example, the division premiered a processing system combined with a filling machine for sterile injection solutions. The processing and filling parts of the system exchange data and provide a connected system for future Industry 4.0 applications. For especially safe biopharmaceutical processing and aseptic filling, a customized system has been developed that uses robot technology to offer maximum flexibility in the processing of different packaging materials. Furthermore, newly developed, semi-automated assembly machines based on a modular and scalable platform take account of the trend toward smaller batch sizes. In 2018, the division launched a new laboratory device for continuous production of oral solid dosage forms. This single unit fills, doses, mixes, granulates, dries, and empties various ingredients.

Industry 4.0 solutions also ensure transparent processes. A new browser-based, validatable software solution captures, stores, and visualizes machine data. By capturing machine data, features such as predictive or preventive maintenance and remote services can be designed more effectively. In addition, the division has premiered a new virtual planning tool that quickly converts a two-dimensional sketch into a three-dimensional image of the planned packaging system. With the help of VR controllers, the planning tool allows users to take a virtual walk through the system.

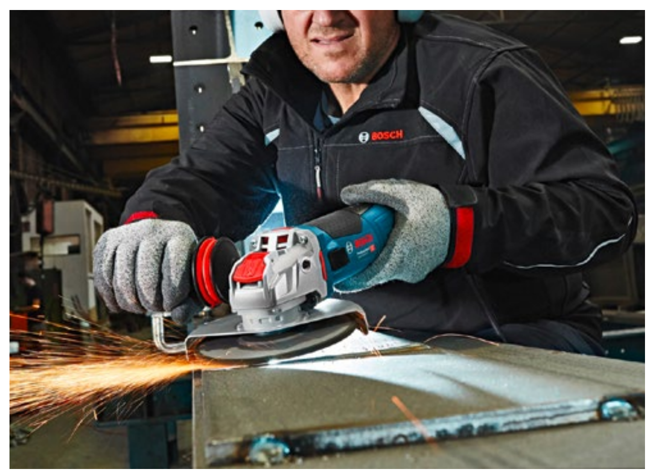
Consumer Goods

Power Tools focuses on innovation and connectivity
The key pillars of the Power Tools strategy are innovativeness, continuing digitalization, strong brands, and expansion of business in emerging markets. To be even more innovative in the future, it is essential to work with users to develop products based on their needs. The intention is that new products should account for an even larger proportion of sales. Expansion of the cordless segment, which is growing strongly for both DIY and professional users, will also contribute to this trend. In addition, the establishment of a digital infrastructure by the PT Digital unit will form the basis for new products and services. In the Home and Garden business unit and the industrial abrasives business of the Accessories unit, we are working hard to improve our competitiveness.

One example of a recent, user-oriented product innovation is the X-Lock system, which makes changing accessories considerably simpler and faster. Changing angle-grinder accessories no longer means applying a lot of force and following many small steps. With the new system, the user simply positions the disk in the X-Lock holder and clicks it into place. Right from the launch, the system came with a range of more than 130 X-Lock accessories. Another new product is a four-blade hammer drill bit with a long-lasting, solid carbide head, manufactured by Bosch using induction diffusion welding technology, in diameters of up to 32 millimeters. Drill bits normally have a maximum diameter of 16 millimeters.

We are also steadily expanding our portfolio of cordless devices. ProCore 18-volt battery systems feature in our high-performance cordless tools for professional use. They are remarkably small and compact, delivering power previously only available with mains power supply units. New products in the DIY and garden segment include a remarkably quiet, high-performance mower and the Fontus low-pressure cleaner for cleaning jobs around the home. Power Tools also systematically makes use of synergy effects with other Bosch units. Examples include the GlassVac window vacuum cleaner, which uses wiper blades from the automotive segment, and KickBack Control, a safety feature for professional tools that uses Bosch sensors to minimize the risk of kickback. One further example is the Easy Prune cordless pruning shears, whose electronic power assist feature makes use of the e-bike principle to cut effortlessly through branches up to 25 millimeters thick.

Examples of connected products include line lasers for the professional market, which come with an app for convenient remote control. Battery level can also be checked by app. In the Services business unit, TrackMyTools is being further developed. This service allows tradespeople to keep track of their tools at all times. The cloud-based system also helps them keep a record of purchase and maintenance receipts, warranty documents, and maintenance intervals.

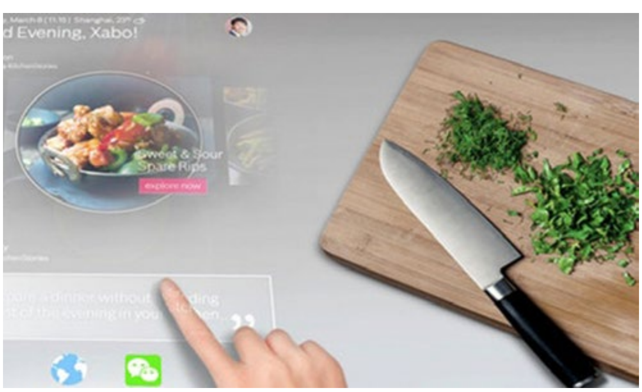


From a regional viewpoint, the division continued to establish its own sales organizations and expand service centers in Africa. For emerging markets, it is also expanding its portfolio of professional devices which are affordable, robust, and easy to maintain.

BSH Hausgeräte is shaping the connected kitchen
BSH Hausgeräte is actively shaping the paradigm shift from the analog to the connected world. In this, our subsidiary is opting for a customer-focused “Hardware+” strategy. As well as innovative household appliances, it is increasingly offering digital and personalized services. Stronger global competition is making innovation and a consistent user focus more important than ever. Recent consumer-oriented innovations include a range of kitchen machines whose outer and inner housings can be selected using an online configurator. In addition, different motor power ratings and attachments as well as a wide range of accessories can be selected. To understand users even better, a center for interdisciplinary working was opened in Munich. It will serve as a pilot for the whole company. Associates from the areas of brand design,

product development, product management, virtual reality, and modeling and prototype construction work there across disciplinary boundaries to develop and test innovations. Consumers can test devices on site or experience them in virtual reality.

One focal point of BSH Hausgeräte is the connected kitchen. In 2018, it further expanded its Home Connect ecosystem, acquiring numerous additional partners worldwide. The idea is that the digital functions of devices connected through Home Connect will be regularly updated throughout their life cycle. At the IFA 2018 trade fair, BSH Hausgeräte presented its PAI (projection and interaction) projector. It can be mounted above the kitchen worktop, from where it projects a virtual user interface onto the work surface. An integrated 3D sensor detects every movement of the hands or fingers, allowing the same kind of touch control of the user interface as with a smartphone or tablet. Since the user interface is only projected as a central control element and as a means of access to the IoT, it cannot be scratched or soiled.



Working with a partner, BSH Hausgeräte also supports startups in the connected kitchens segment. Exclusive accelerator programs will be carried out in the coming years for selected external early-stage startups. The aim is to quickly identify digital business models with potential for success, to promote their further development, and to offer mutual inspiration for the design of connected kitchens. A further step on the road to becoming a Hardware+ company is the BSH Startup Kitchen innovation program, which offers young companies with promising technologies an opportunity for direct cooperation. The aim is to integrate new products and solutions from startups into the BSH innovation process.

BSH Hausgeräte is also developing innovative product ideas of its own. A major challenge for consumers in sub-Saharan Africa without access to electricity is how to store food properly. The FreshBox uses evaporation cooling to store food better and keep it cool longer without electricity.

Energy and Building Technology

In its three divisions, Building Technologies (formerly Security Systems), Thermotechnology, and Bosch Global Service Solutions, the strategy of the Energy and Building Technology business sector has four pillars: solutions for home use, systems for commercial use, solutions and services for the commercial sector, and business processes. The strategy is strongly influenced by the current trends toward electrification – with reduced use of fossil fuels – and distributed power generation, and by the growing importance of the IoT and artificial intelligence. In addition, the Bosch Smart Home unit offers solutions for the home.

Electrification and connectivity in thermotechnology

The growing importance of electrification is particularly noticeable in the field of heating and air-conditioning technology. The Thermotechnology division is pursuing two paths here. The first is to expand its range of integrated solutions in the existing markets for heat pumps, electric hot water solutions, and air-conditioning units. The second is to move into new market segments such as energy management and fuel cell-based energy solutions. In addition, energy-efficient, fossil fuel-fired heating and hot-water solutions are being further developed using a modular system concept with a functional and attractive design, as well as IoT applications and hybrid solutions such as gas-fired boilers combined with heat pumps.

With electric heat pumps, customers increasingly expect a simple installation process and digital support during operation. We are also continuing to expand our range of electrical systems solutions, such as heat pumps combined with controlled domestic ventilation systems or electric heat pumps. The Bosch energy manager helps homeowners efficiently manage energy consumption, generation, and storage between different system components such as heat pumps, power storage units, photovoltaic arrays, and electric vehicles. In addition, we are increasingly supporting engineers with digital service tools. This includes an app that puts engineers directly in contact with Bosch experts if they have questions. The app is part of a digital toolbox which combines all digital tools connected with the servicing and commissioning of heating systems.

In the segment of electrical storage systems, we acquired a stake in ads-tec Energy GmbH, Nürtingen, Germany (currently 39 percent). The activities of our Battery Energy Storage Solutions unit have been discontinued. Distributed, digital, and electrical energy systems will become increasingly important. We are also forging ahead with the development of fuel cells for potential new energy systems. Together with the technology specialist Ceres Power Holdings plc, based in Horsham, U.K., we intend to develop the next stage of solid-oxide fuel-cell (SOFC) technology. This alliance includes a 4 percent equity stake in Ceres Power. Ceres aims to commercialize this technology by entering into mass production with partners, and to use it for grid-based and distributed power generation. The idea is that SOFC systems will be used in cities, factories, and data centers, and also as a power supply for charge spots for electric vehicles.

Building Technologies opts for artificial intelligence

The IoT and artificial intelligence are key elements of the Building Technologies division’s future strategy. This involves data-based service business, data analysis, and new business models. The division has positioned itself as a provider of integrated, cross-domain, and hence customer-focused solutions based on the IoT. For example, Building Technologies is supplying a customized security solution for the Hong Kong-Zhuhai-Macao Bridge and equipping this major project with video surveillance, voice evacuation systems, and intrusion alarms.

The division’s installation business is focusing on complex domains such as smart hospitals. Target groups include not only building owners and operators, but also users. Here, IoT and connectivity enable cross-domain solutions and services in building automation. In the product business, artificial intelligence is used above all in video systems. Demand for integrated person- and object-recognition software in video security solutions is increasing. With this in view, we acquired a stake in the startup Anyvision Interactive Technologies Ltd., Tel Aviv, Israel (current share 7.3 percent), with which we are also cooperating in the areas of sales and technology. Our goal is to further extend our expertise in the field of intelligent, self-learning video algorithms and data analysis.

The Building Technologies division also joined forces with Hanwha Techwin, Milestone Systems, Pelco, and Vivotek Inc. to establish Open Security & Safety Alliance, Inc. The alliance is an unlisted non-profit organization, and has set itself the aim of jointly creating a standardized platform for security solutions. At the same time, Security and Safety Things GmbH, Munich, Germany, was set up as a wholly-owned Bosch subsidiary. The startup works closely with Open Security & Safety Alliance to provide its members with an open, standardized IoT platform for security camera apps.

Expansion of services

In the Bosch Global Service Solutions division, digitalization and automation based on artificial intelligence are also important strategic elements for user-friendly services. The goal is to achieve an optimum combination of human intelligence and technology. Pattern recognition and machine learning, for example, allow service staff to provide additional information and advice during a call. In the mobility sphere, the division also intends to expand and digitalize its breakdown service. To this end, Bosch Global Service Solutions is planning to acquire the startup LAWA Solutions GmbH, Giessen, Germany. The company specializes in cloud-based software products for the automotive industry.

Further development of smart-home solutions

The goal of the Bosch Smart Home unit is to provide users with a sense of well-being and security in their homes, and it is further developing its solutions along these lines. In the future, the motion detectors and noise sensors on the 360° indoor camera and Eyes outdoor camera will make it possible to control lighting automatically. The new Twist central remote control also allows convenient control via Bosch Smart Home – even without a smartphone.

Opening up new areas of business

Our subsidiary company Bosch Healthcare Solutions GmbH, Waiblingen, Germany, offers connected products and increasingly also services in the new business field of healthcare and medical technology. These include diagnostic solutions such as Vivatmo, a system for closely monitoring the treatment of patients with allergic asthma. In future, the Vivatmo me patient device will allow asthma patients to monitor their chronic condition themselves at home. Bosch Healthcare Solutions is also launching Vivalytic, a fully automated platform for molecular diagnostics. It allows infectious diseases to be diagnosed more quickly and easily than is currently the case in hospitals, laboratories, and medical practices that rely on manual tests. The platform combines different analysis methods in a single device and is intended to cover a wide range of different tests. For Vivalytic, moreover, we are planning application services in which we include previously manual third-party molecular diagnostic tests on our platform and automate them.

The company grow platform GmbH is helping to strengthen our startup culture and provide support for internal initiatives. It has already supported a number of startups whose business models are being taken further in the divisions. The business model pursued by grow also includes looking for investors outside the group, if a particular startup's strategic fit proves insufficient.

Through Robert Bosch Venture Capital GmbH, we invest in technology startups around the world. This gives us early access to innovative technologies, including potentially disruptive ones. With its fourth and latest fund, worth 200 million euros, the ten-year-old company invests primarily in projects relating to highly automated driving, artificial intelligence, the IoT, distributed ledger technologies, and mobility solutions that show promise for the future.

Working in the Bosch Group

Transforming our company together
Leadership, cooperation, and qualification are the keys to advancing Bosch's transformation. With this in view, we continue to develop leadership and cooperation. We strongly believe that cooperative leadership, networking among associates, and a culture of feedback based on openness and mutual respect promote innovation and are essential to our future success. This means that transparency and communication have to satisfy high standards. We are also rethinking headquarters to help it fulfill its task of providing the best possible support for business operations. This includes clear structures and fewer interfaces. For example, since the beginning of 2019 the corporate departments have been reporting to four instead of eight members of the board of management. Corporate departments have also been merged. At the same time, corporate service departments have been brought under a single umbrella. Moreover, at the beginning of 2019, corporate tasks concerned solely with the Mobility Solutions business sector were combined to form a separate steering level.

In a world that is changing rapidly and fundamentally, modern and flexible training opportunities play an important role in supporting our associates with lifelong learning and giving them the opportunity to integrate knowledge into their everyday working lives in the best possible way. With this in view, we have established the Bosch Learning Company. An international team brings together people with different perspectives and provides attractive opportunities. Here we focus on three pillars: First, preparing associates for the digital transformation. We aim to give associates practical support in meeting the challenges of transformation, and have developed learning opportunities tailored to their specific needs. Examples include qualifications in the fields of electrification and digitalization. The second pillar is a modern learning architecture with a variety of formats, so that associates can quickly and flexibly take up training opportunities that are specifically tailored to their needs. Here, the range extends from an online learning portal, through classroom training sessions, to learning via smartphone and in self-organized learning groups. Our focus here is not only on individual associates, but also on the continuing development of entire teams. As the third pillar, we aim to create a culture of learning throughout the company. Our goal is to ensure that continuous development of knowledge becomes an integral part of our work culture and routine. In this vein, an internal platform on which associates can publish their own instructive videos has been running since the start of 2019. In 2018 alone, we invested a total of more than 280 million euros in continuing education.

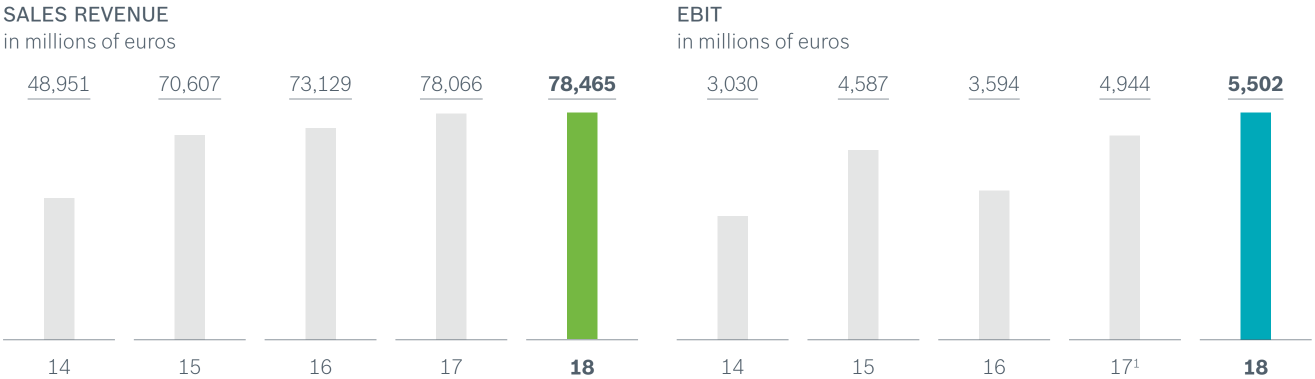
Modern working conditions
It is also important to us that our working conditions support the transformation. In Germany, for example, we concluded a collective wage agreement for innovation with the IG Metall union in 2018. Together with our social partners, we aim to offer flexible working conditions in new units focusing on services, IT, and software. The collective agreement will initially find application in the Connected Mobility Solutions division. Associates are given a high degree of personal responsibility and autonomy. For example, they have flexible working hours, a personal training budget which they can spend as they choose, and numerous models for paid and unpaid leave.

Such mechanisms also increase our attractiveness as an employer. They help us to be perceived as an innovative employer, especially in the competition for talent with internet companies. We have already developed a large number of working time models and are building on these to help associates achieve a satisfactory work-life balance. At the same time, we have completed the expansion of our career websites in 135 countries and established modern formats for personnel recruitment, in which associates describe their day-to-day work in blogs on social networks, thus providing personal insights into our company.

03

Development of sales revenue and EBIT

Bosch Group, 2014–2018



[1] Adjusted figure

Report on economic position

The Bosch Group felt the effects of the slowing economy in markets that are important for the company. In this environment, it developed well. Considering the considerable exchange-rate burdens, the rise in sales to 78.5 billion euros is above the expected range. And at 5.5 billion euros, EBIT from operations surpasses the previous year's 5.3 billion euros, which was already high. Moreover, due to a positive non-recurring effect, reported EBIT was 5.5 billion euros, and significantly above the prior-year level of 4.9 billion euros. The economic slowdown related especially to the important Chinese market and global automotive production. Against this backdrop, our business sectors differed in their development. Industrial Technology was very successful and saw a significant improvement in business performance. The Mobility Solutions and Energy and Building Technology business sectors grew moderately. Sales growth in Consumer Goods was less favorable. All business sectors contributed to the high earnings level.

Controlling system

The Bosch value concept as the basis for control

The Bosch value concept pursues Bosch's core objectives of profitable growth and financial independence. The controlling system combines value creation with value preservation. Particularly for an unlisted company such as Bosch, being able to strengthen and thus maintain profitability over the long term is crucial for financing future growth.

The main control parameters for value creation are sales growth, earnings before taxes and before the financial result (EBIT), and the internal "operating value contribution" indicator. The operating value contribution is calculated analogously to EBIT, but also deducts the imputed cost of capital. Internal reporting is based in principle on International Financial Reporting Standards (IFRS). However, in certain respects, such as recognition of impairment losses, pension provisions, and provisions for losses arising from delivery commitments, internal reporting deviates from external accounting. For the management of operations and the executive incentive program, we adjust for the earnings fluctuations associated with these factors. We secure value by closely tracking cost trends and through liquidity management that includes centralized financial planning.

The central internal reporting tool is a monthly business report, which contains an up-to-date overview of the operating units' performance indicators. It provides a year-on-year comparison and a target-versus-actual comparison of selected performance indicators. The report is based on the business plan, which is embedded into longer-term strategic corporate planning. The planning methods applied focus on developing and carrying out measures designed to achieve the planning targets. It is a top-down planning model that is strongly geared toward targets and measures. External benchmark comparisons form the basis for setting these targets.

The targets derived from the model are also a guide for the value contribution targets. These targets form the basis for the short-term variable portion of specialists' and executives' remuneration, from section-manager level to the board of management. This is known as the Bosch performance bonus. In addition, on the level of senior executives and the board of management, the VALUE program offers a variable bonus program for long-term corporate success, with a time horizon of three years. Performance as measured by the operating value contribution is also used as the basis for this.

Macroeconomic and sector-specific environment

Dampened global business mood

Global economic output grew by around 3.2 percent in 2018, and thus at roughly the same pace as in the previous year, when growth was 3.3 percent. Growth thus exceeded our cautious forecast of 2.6 percent. However, business mood clouded over significantly over the course of 2018, and global growth stood at just 2.8 percent by the end of the year. The advanced economies and emerging markets were equally affected. Reasons included uncertainties due to the trade dispute between the U.S. and China, the Brexit negotiations, the renewed unsatisfactory performance of some euro zone countries, and, in particular, the difficult economic situation in Turkey and Argentina.

Our cautious forecasts for Europe, where economic output rose by only 2.1 percent in 2018, compared with2.6 percent in 2017, were confirmed. At 1.4 percent (previous year: 2.2 percent), Germany's economic growth fell short of expectations. In the eastern European countries, the pace of growth was also slower than in the previous year. Nonetheless, their economic output rose 2.8 percent in 2018, a stronger increase than for the European countries as a whole. At 2.5 percent, the growth rate in the Americas exceeded both the previous year's rate and our expectations. In the U.S., the tax reform had a positive impact on the economy and led to a greater than expected increase in economic output in North America, to 2.8 percent. On the other hand, growth in South America was somewhat weaker year on year, at 1.0 percent. The pace of growth in Asia Pacific also slowed, albeit not quite as strongly as expected, falling to 4.6 percent from 4.8 percent in 2017. This was mainly due to China's weakening economy. There was also lower momentum in Japan. By contrast, India's economic output grew more strongly than in the previous year.

Momentum in our most important market, automotive production, was significantly lower in 2018. We had already expected only moderate growth of 1.5 percent to 99 million vehicles in 2018, following significant growth of 3 percent in the previous year. However, at 97.3 million vehicles, production figures for passenger cars and commercial vehicles were 1.1 percent down on the previous year. A major reason for this was the trend in China, where vehicle production fell for the first time in roughly two decades, declining by 4 percent. On the other hand, contrary to our expectations, production figures in India developed better than in the previous year. However, automotive production also declined in North America by 0.6 percent. In addition, Brexit, the diesel debate, and delays in the introduction of WLTP test procedures meant that growth in the EU-28 countries slowed considerably to minus 1.1 percent, compared with positive growth of 0.8 percent in the previous year. This mainly concerned the passenger-car sector. Global production figures for heavy trucks in 2018 were 4.4 percent up on the previous year, and thus better than anticipated. We had expected production figures to stagnate only. India was a significant driver of this development. Government investment in infrastructure led to growth of 42.5 percent, albeit from a low previous-year level. And while production of heavy trucks fell in China, the development of commercial vehicles on the whole (including light trucks) was positive.

The mechanical engineering sector saw robust growth worldwide in 2018, despite the expected significant decline in growth rates compared with the previous year. The slowdown in momentum affected China and Europe in particular; in the U.S., another important market, mechanical engineering production rose steadily and hence more strongly than originally expected. The positive environment benefited the performance of our Drive and Control Technology division.

As expected, private consumption grew 3 percent in 2018, a similar rate to 2017. It benefited in particular from the relatively good employment situation in advanced economies such as the U.S. and Germany. The temporary rise in the price of oil to over 80 U.S. dollars per barrel proved to be only short-lived. In the U.K., as expected, purchasing propensity decreased as a result of the Brexit negotiations and rising inflation. In China, the economic slowdown meant that private consumption fell short of expectations and recorded one of the lowest growth rates of the past two decades.

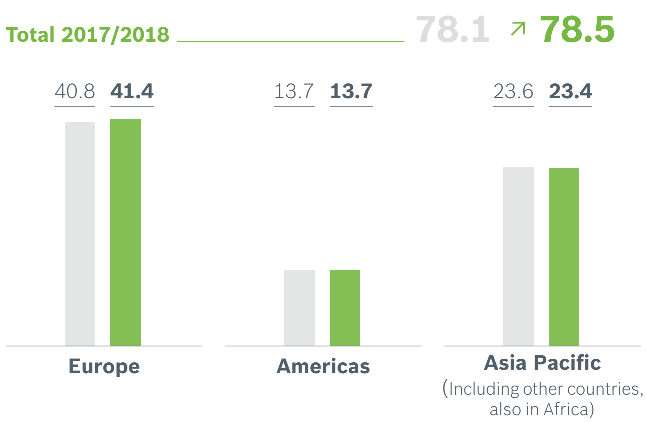
In global construction activity, we had expected a slight fall in the rate of growth. This assumption was confirmed, with activity increasing 2.7 percent. The trend in Europe as a whole was somewhat weaker than expected. While construction activity in the European Union grew at a similar rate to the previous year, it stagnated in the United Kingdom. Construction investment in the Americas developed more favorably than expected. In Asia, it lagged considerably behind the prior-year rate. Slower growth in China and Japan was offset by higher growth in India.

04

Development of sales revenue, 2017–2018

Bosch Group

SALES REVENUE BY REGION
in billions of euros

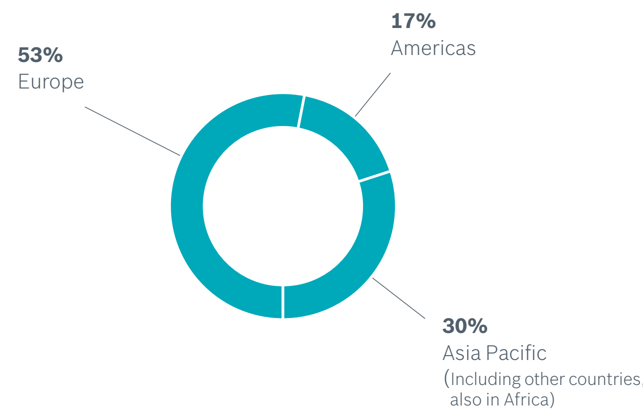


05

Structure of sales revenue, 2018

Bosch Group

SALES REVENUE BY REGION
percentage figures



Business developments

Moderate growth for the Bosch Group

In 2018, the Bosch Group's sales revenue rose to 78.5 billion euros. Year-on-year growth was thus 0.5 percent, and 3.2 percent after adjusting for exchange-rate effects. Despite heavy exchange-rate burdens that exceeded the levels seen in the previous year, growth was thus within the target range of 0 to 2 percent in nominal terms, and above it after adjusting for exchange-rate effects. Our forecast had already taken into account the substantial impact changes in the scope of consolidation would have on sales compared with 2017. However, it did not consider the effects resulting from the mandatory first-time application of the IFRS 15 accounting standard ("Revenue from Contracts with Customers"), which also has an effect on revenue recognition.

Negative exchange-rate effects totaled 2.1 billion euros. In 2018, these were primarily due to the euro's appreciation against the dollar, the Chinese renminbi, and the Turkish lira. The euro's performance against the Indian rupee, the Brazilian real, and the Russian ruble also had a major impact on sales figures. Consolidation effects totaled minus 1.3 billion euros, and mainly relate to the sale of the former Starter Motors and Generators division for roughly 1.4 billion euros. Without consolidation effects, Bosch Group sales rose by a nominal 2.2 percent, or 5.0 percent after adjusting for exchange-rate effects. Here, the first time application of IFRS 15 had a positive sales effect of some 200 million euros on the 2018 figures.

Modest growth in Asia Pacific

Negative exchange-rate effects and the divestment of the Starter Motors and Generators division affected all regions. In Europe, sales were 41.4 billion euros, 1.5 percent up on the previous year, or an exchange rate-adjusted 3.1 percent. Excluding the effect of the sale of the Starter Motors and Generators business, sales increased by 3.3 percent in nominal terms, and an exchange rate-adjusted 4.8 percent. Performance in Germany, Spain, and Portugal was particularly encouraging; in Turkey and the United Kingdom, on the other hand, we felt the effect not only of negative exchange-rate effects, but also of those countries' weak economic performance.

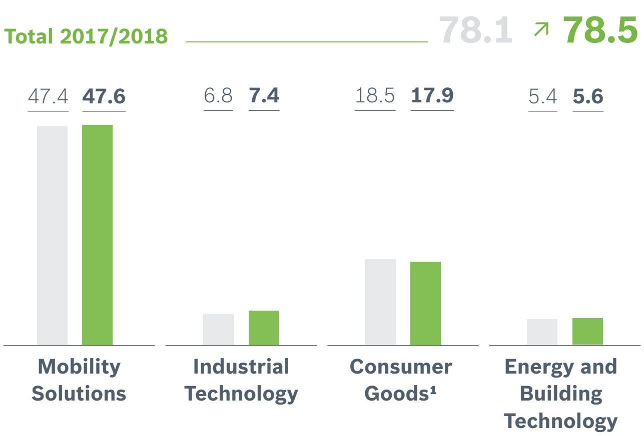
In the Americas, sales came to 13.7 billion euros, 0.2 percent up on the previous year, but increased significantly by 6.3 percent adjusted for exchange-rate effects. After an unsatisfactory performance in the previous year, we increased sales in North America by 1.7 percent to 12.3 billion euros in nominal terms, or by 6.4 percent after adjusting for exchange-rate effects. This was mainly due to the improved performance of the Mobility Solutions business sector owing to the launch of new products, and to positive developments at Industrial Technology. Sales in South America decreased by 11.1 percent in nominal terms to 1.4 billion euros, but after adjusting for exchange-rate effects they rose by 5.9 percent. In the Americas as well, negative consolidation effects owing to the divestment of Starter Motors and Generators were clearly in evidence. Without this effect, sales in North America increased nominally by 2.7 percent, and by an exchange rate-adjusted 7.4 percent. In South America, they decreased by a nominal 6.2 percent. Adjusted for exchange-rate effects, however, these sales increased 11.6 percent.

Growth momentum in Asia Pacific (including other countries, also in Africa) slowed significantly in 2018 due to the economic environment. Sales decreased by 1.1 percent in nominal terms to 23.4 billion euros; after adjusting for exchange-rate effects, the increase in sales was only 1.8 percent. Excluding the divestment of Starter Motors and Generators, sales rose nominally by 1.2 percent,

06

Development of sales revenue, 2017–2018
Bosch Group

SALES REVENUE BY BUSINESS SECTOR
in billions of euros

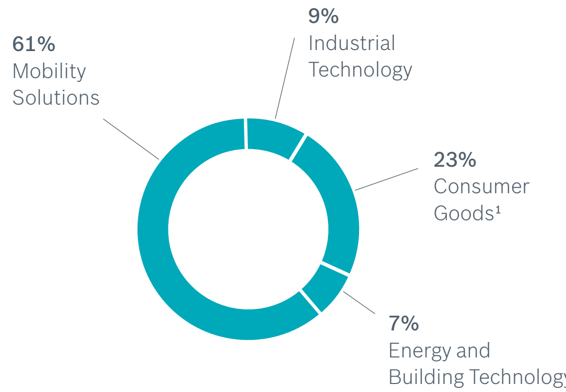


[1] Including other activities

07

Structure of sales revenue, 2018
Bosch Group

SALES REVENUE BY BUSINESS SECTOR
percentage figures



[1] Including other activities

and 4.1 percent after adjusting for exchange-rate effects. China in particular was affected by the subdued trend in Asia Pacific. By contrast, revenues in Japan and India developed positively. We were also able to increase sales in the Asean countries compared with the previous year. In Africa, sales came to 556 million euros, some 23 percent higher than in the previous year. Adjusted for exchange-rate effects they increased by roughly 26 percent. This was above all due to a positive consolidation effect from the full takeover of a former joint venture, now known as Bosch Rexroth South Africa. There were a few minor shifts in the regional sales structure. The share of sales generated in Europe rose by one percentage point to 53 percent, followed by Asia Pacific with 30 percent. The share generated in the Americas fell one point to 17 percent.

Performance varies by segment
The business sectors grew at different rates, and not only because of varying market performance. It should also be noted that negative consolidation effects resulting from the divestment of Starter Motors and Generators impact the Mobility Solutions business sector. Negative exchange-rate effects impacted growth rates most of all in the Consumer Goods business sector. The sales structure by business sector thus changed slightly: Industrial Technology's share increased by one percentage point to 9 percent, while the share of Consumer Goods (including other activities) decreased by one percentage point to 23 percent.

Mobility Solutions grows faster than the market
Mobility Solutions, our largest business sector, posted sales of 47.6 billion euros. While this was only 0.4 percent higher than in the previous year, after adjusting for exchange-rate effects the increase was 2.7 percent. Excluding the divestment of the Starter Motors and Generators division, sales rose by 3.5 percent in nominal terms and by 5.8 percent after adjusting for exchange-rate effects. The negative consolidation effect totaled 1.4 billion euros. The business sector thus held its own well in a shrinking market environment.

In powertrain technology, we felt the effects of declining demand for diesel passenger cars in Europe, delays caused by the introduction of the WLTP test procedure, and the overall decline in the Chinese passenger-car market. These effects were offset by the encouraging performance of the commercial vehicles and off-highway business, electrification activities, and the product areas of exhaust-gas treatment, exhaust sensors, and transmission technology. In the Chassis Systems Control division, demand for modern driver assistance systems continues to grow strongly. We were again successful with active and passive safety systems, such as ABS and ESP®. However, the weak Chinese market also had an impact in this area. Automotive Steering, which increased its sales of electric steering systems for passenger cars in particular, was able to buck this regional trend. The Two-Wheeler and Powersports unit performed very well. In the Electrical Drives division, furthermore, we achieved good growth with our automotive thermal systems and actuators. In the Car Multimedia division, the business performance of display systems was encouraging, while that of infotainment systems was subdued.

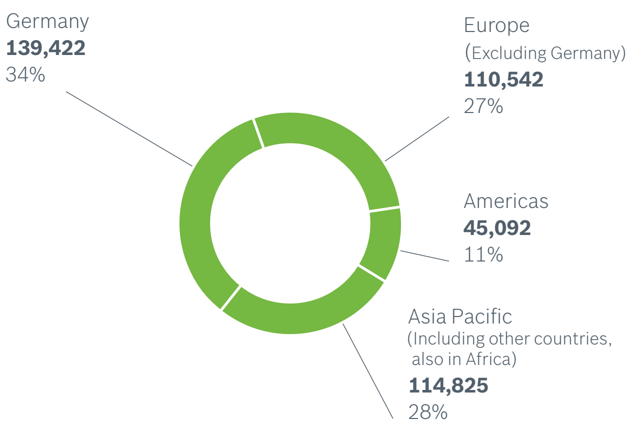
In the Automotive Electronics division, the drive-systems and control-unit business for bicycles with supplementary electric drive was again very successful. Bosch Sensortec also recorded a further strong increase in sales to customers from the consumer electronics segment. The control-unit and sensor business with external customers from the automotive sector also grew significantly. Adjusted for exchange-rate effects, the Automotive Aftermarket division's business picked up particularly in North America, South America, and India. Our software specialists in the ETAS Group and our subsidiary Bosch Engineering increased their

08

Associates
Bosch Group 2018 (year-end figure)

BY REGION

Total **409,881**

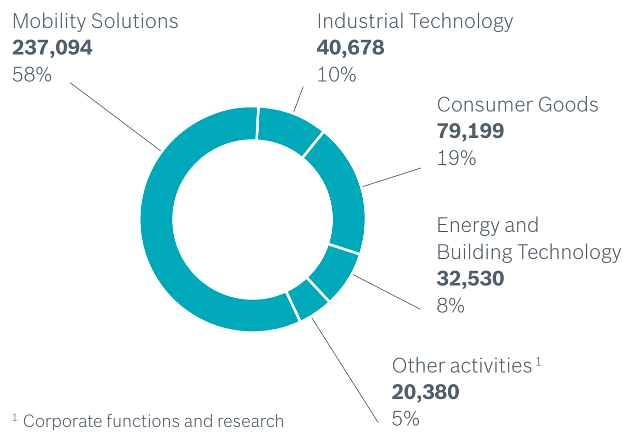


09

Associates
Bosch Group 2018 (year-end figure)

BY BUSINESS SECTOR

Total **409,881**



[1] Corporate functions and research

revenues substantially. ETAS achieved particularly strong growth with its security solutions. The Commercial Vehicles and Off-Road unit, which was integrated into Bosch Engineering at the beginning of 2019, also performed well. The sales of the newly created Connected Mobility Solutions division are still on a low level.

Industrial Technology very successful

Following the challenges of previous years, the Industrial Technology business sector increased its sales by a nominal 10.4 percent to 7.4 billion euros, and even by 13.3 percent when adjusted for exchange-rate effects. Even without the consolidation effect of the full takeover of the former joint venture Bosch Rexroth South Africa, sales rose by 8.8 percent in nominal terms and 11.7 percent after adjusting for exchange-rate effects. Growth was driven by Drive and Control Technology, which also significantly exceeded expectations, while Packaging Technology grew slightly. Drive and Control Technology benefited from very strong demand in the areas of mobile applications and factory automation in 2018. The industrial hydraulics business performed moderately well. The Packaging Technology division's core business of packaging machinery showed an improvement over the previous year, particularly in the pharmaceuticals segment.

Modest performance for Consumer Goods

Having performed well in previous years, the Consumer Goods business sector achieved a moderate sales performance. However, its sales were particularly impacted by negative exchange-rate effects. Sales revenue declined by 3.1 percent to 17.8 billion euros in nominal terms and rose 0.7 percent after adjusting for exchange-rate effects. BSH Hausgeräte was hit even harder than the Power Tools division by both the decline in sales and exchange-rate effects. In 2018, the global market for household appliances declined year on year in euro terms. In China and Turkey in particular, but also in some European countries, market momentum has slowed considerably. Moreover, strong growth in online commerce is leading to higher pressure on margins and increased consolidation of retail trade. The Power Tools division also recorded lower sales in all business areas except measuring tools. As well as exchange-rate effects, a major reason for this was growing price pressure, especially in over-the-counter trading.

Energy and Building Technology grows again

The Energy and Building Technology business sector, which includes the Building Technologies, Thermotechnology, and Bosch Global Service Solutions divisions, increased its revenues by 2.4 percent to 5.6 billion euros, or by 5.1 percent when adjusted for exchange-rate effects. Building Technologies grew significantly on an exchange-rate-adjusted basis, with all its areas of business contributing to this growth. The Thermotechnology division was strongly affected by the weak Turkish lira. After adjusting for exchange-rate effects, growth in Turkey was favorable. Our performance in the core markets of Germany and the United Kingdom was also encouraging. The Bosch Global Service Solutions division again achieved double-digit sales growth in 2018.

Headcount

Further growth worldwide

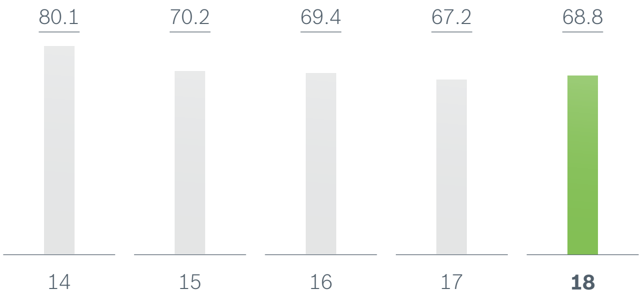
The total number of Bosch Group associates rose on balance by around 7,700 to approximately 409,900 at the end of 2018, compared with 402,200 at the end of 2017. The 2017 figures already took account of the divestment of the Starter Motors and Generators division. In 2018, net consolidation effects increased the headcount by only about 1,200 associates in total. The greatest effect came from the full takeover of the former joint venture Bosch Rexroth

10

Development of CO_2 emissions

Bosch Group, 2014–2018

CO_2 EMISSIONS[1]
Metric tons per million euros value-added[2]



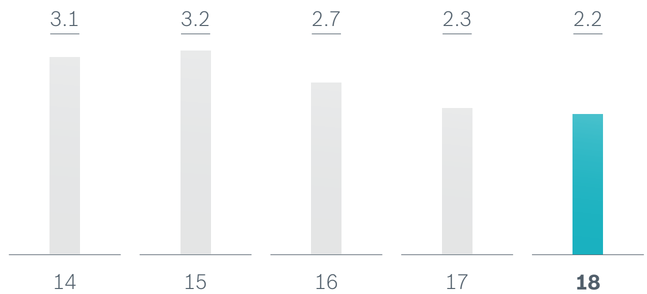
[1] Direct CO_2 emissions from stationary and mobile combustion, indirect CO_2 emissions from procured electricity, district heating and cooling, steam, and volatile CO_2 emissions
[2] Difference between total net sales (third-party sales, intercompany sales, internal deliveries) and planned cost of materials procured externally

11

Development of occupational health and safety

Bosch Group, 2014–2018

ACCIDENTS
per million hours worked[1]



[1] Accidents resulting in one or more days of absence

South Africa. Divestment of business areas had no material impact. After allowing for personnel turnover, new hires increased the total headcount by around 6,500.

The percentage distribution of associates by region remained unchanged compared with the previous year. At the end of 2018, a total of around 250,000 associates were employed by the Bosch Group in Europe, compared with 245,000 at the end of 2017. The number of associates in Germany grew to 139,400, compared with approximately 137,700 one year previously. Over this same period, the number of associates in Asia Pacific including Africa increased to around 114,800 from roughly 112,800, due in particular to the full takeover of Bosch Rexroth South Africa. In Africa, the number of associates in consolidated companies thus reached a total of around 1,800. Headcount in the Americas rose to around 45,100 from 44,300. The number increased in North America by around 1,000 to roughly 35,400 and declined slightly in South America by around 200 to approximately 9,700 associates.

In terms of business sectors, the workforce structure changed only slightly year on year. The Mobility Solutions business sector's share increased slightly, and now stands at 58 percent, while the Consumer Goods business sector's share fell correspondingly to 19 percent.

The workforce in the Mobility Solutions business sector rose to approximately 237,100, compared with 232,000 at the end of 2017. This increase particularly concerned growth areas such as driver assistance systems and automated driving as well as automotive electronics. The number of associates in the Industrial Technology business sector rose slightly to around 40,700 compared with 39,000 at the end of 2017. Additional associates joined the Drive and Control Technology division, above all due to the consolidation of Bosch Rexroth South Africa, while the number of associates in the Packaging Technology division fell slightly. The number of associates in the Consumer Goods business sector declined to around 79,200 compared with 80,200 at the end of 2017. This mainly related to BSH Hausgeräte. The number of associates in the Energy and Building Technology business sector increased to around 32,500 compared with 31,700 the previous year. Most of the headcount increase took place in the rapidly growing Bosch Global Service Solutions division.

Across all units worldwide, the number of associates in research and development grew to around 68,700 compared with 64,400 at the end of the previous year. Apart from Germany, the growth of the global research and development network was especially significant in Asia Pacific. Regions outside Germany now account for 56 percent of associates in research and development, with 37 percent working in Asia Pacific. The number of associates in the corporate sector for research and advance engineering ("Other activities") rose to around 1,400, compared with approximately 1,300 the previous year.

Environmental protection, health and safety

Environmental protection, conservation of resources, and occupational health and safety have always been priorities for Bosch. Robert Bosch GmbH has been a member of the United Nations Global Compact since 2004, and is committed to its ten worldwide principles for responsible corporate governance. For us, technology that is "Invented for life" is also about reducing the environmental impact of our products and manufacturing processes. We have identified three key focal points with regard to environmental protection and accident prevention: combating climate change through

01

Most important items of the statement of income
in millions of euros

	2018	2017[1]
Sales revenue	78,465	78,066
Cost of sales	–51,696	–50,354
Gross profit	**26,769**	**27,712**
Distribution cost and administrative expenses	–15,308	–15,781
Research and development cost	–5,963	–7,045
Other operating income and expenses	18	84
Result from companies included at equity	–14	–26
EBIT	**5,502**	**4,944**
Financial result	–435	–148
Profit before tax	**5,067**	**4,796**
Income tax expenses	–1,493	–1,502
Profit after tax	**3,574**	**3,294**

[1] Adjusted figures

energy efficiency, improving the sustainability of manufacturing through resource conservation, and boosting occupational health and safety. We have defined targets for these, based on the following indicators: relative CO_2 emissions, accident rates, and, as further indicators, relative waste volume and water consumption. These actions are described in greater detail in our sustainability report.

Further efforts relating to CO_2
We place special importance on reducing CO_2 emissions and thus on climate action. We believe that reducing CO_2 emissions is part of our social responsibility. Through the use of intelligent technical solutions, industry can play an important role in this respect. However, energy efficiency is not just a matter of ecological and social objectives; we also see greater efficiency as a competitive advantage. Our aim up to now has been to achieve an improvement of 35 percent relative to value-added from the 2007 benchmark level by 2020. Despite a slight rise in energy consumption in 2018, and thus also in CO_2 emissions, the improvement from the 2007 level stands at 31.1 percent.

Further progress in occupational health and safety
We have also defined a long-term occupational health and safety target for 2020. We intend to cut the Bosch Group accident rate to 1.7 accidents per million hours worked. Safety in day-to-day work is a key concern at all Bosch locations, alongside quality, delivery reliability, and efficiency improvements. With the “Safety Basics” program, we conduct an intensive dialog on this topic between executives and associates. In 2018, we succeeded in further reducing the accident rate to 2.2 accidents per million hours worked, compared with 2.3 the previous year. The total number of workplace accidents in 2018 was 1,567, compared with 1,649 in 2017.

Results of operations

Bosch Group’s result improved
We report EBIT for 2018 of 5.5 billion euros, compared with 4.9 billion euros the previous year. This includes a non-recurring special effect of around 430 million euros due to the changed reporting of the company pension scheme with regard to additional benefits in the event of disability and death. This has a positive effect on all functional-cost categories in the 2018 income statement. The effects of the first-time application of IFRS 15 on result are of subordinate significance.

The Bosch Group’s EBIT from operations also rose to 5.5 billion euros (previous year 5.3 billion euros). In other words, the margin from operations rose slightly to 7.0 percent compared with the prior-year figure of 6.8 percent. In our forecast, we had expected a significant improvement in the EBIT margin from operations. The main reasons for the discrepancy are the weakness of the automotive segment and of the Chinese market, which is important for our company. Tough price competition in the consumer goods sector and significant pressures from raw materials prices also played a role. As in previous years, the calculation of EBIT from operations disregards the earnings impact of higher depreciation and amortization from the remeasurement of assets at Automotive Steering and BSH Hausgeräte, following the complete acquisition of these former joint ventures in 2015. These effects came to around 400 million euros in 2018, and were slightly lower than the previous year. In addition, the above-mentioned non-recurring special effect from changes in the accounting rules for the additional benefits paid by company pension schemes for disability and death does not have any effect on EBIT from operations.

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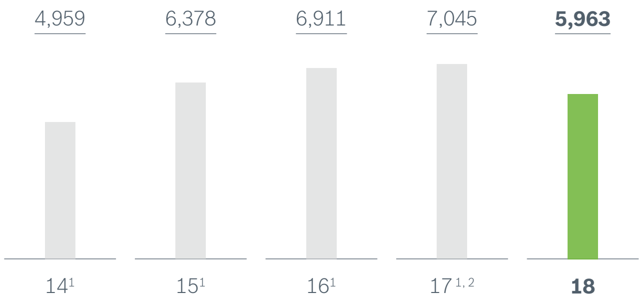
Research and development cost

Bosch Group, 2014–2018

TOTAL EXPENDITURE
in millions of euros

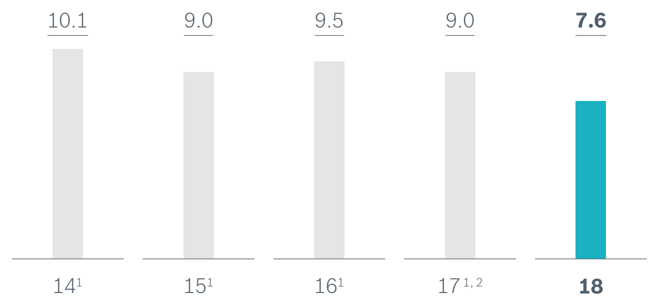


13

Research and development cost

Bosch Group, 2014–2018

TOTAL EXPENDITURE
as a percentage of sales revenue



[1] Including development work charged directly to customers
[2] Adjusted figure

The values given in the 2017 income statement were adjusted to reflect the change in accounting method. Consideration was given to the reclassification of scheduled depreciation of capitalized development cost from the research and development line item to the cost of sales item, as well as to changes in accounting for company old-age provision with respect to additional benefits in the case of disability and death.

Cost of sales grew at a faster rate than sales in 2018. The effects of the first-time application of IFRS 15 have to be considered here. One of the effects of this new standard is that, starting in 2018, development work charged directly to customers is disclosed under cost of sales. The development of cost of sales thus means a lower gross margin than in the previous year. Depreciation was on a par with the previous year, at roughly 3.1 billion euros. Administrative and distribution cost fell year on year.

Research and development cost came to 6.0 billion euros in 2018; research and development intensity was thus 7.6 percent. For the previous year, we disclose an absolute research and development cost of 7.0 billion euros and an R&D intensity of 9.0 percent. The reason for the decrease is the first-time application of IFRS 15. Without this effect, research and development cost rose at a faster rate than sales. In the previous year, our research and development cost still contained development work charged directly to customers, to the tune of 1.6 billion euros.

As a result of the first-time application of IFRS 15, the business sectors' share of development costs has also changed significantly. Nonetheless, the Mobility Solutions business sector again accounted for the largest share in 2018, at 75 percent (previous year 79 percent). Key areas include upfront investments in electrification, driver assistance systems, including automated driving, display and infotainment systems, and sensors. The percentage attributable to the Consumer Goods business sector (including other activities) came to 14 percent, compared to 12 percent the previous year. Industrial Technology and Energy and Building Technology accounted for 7 percent (previous year 5 percent) and 4 percent (as in the previous year) respectively.

The negative financial result amounts to 435 million euros in 2018, compared with a negative balance of 148 million euros the previous year. The main reason for the significant increase in the negative result is the year-on-year drop in income from securities. Profit before tax totaled 5.1 billion euros, corresponding to a margin of 6.5 percent. Both figures were also up significantly year on year. Profit after tax rose to 3.6 billion euros, compared with 3.3 billion euros the previous year.

Our internal control parameter, the operating value contribution, is calculated only for the consolidated group used in internal reporting in 2018. It also improved. The operating value contribution grew to around 1.7 billion euros in 2018, from the comparable figure of roughly 1.6 billion euros in 2017. The fundamental difference between EBIT and the operating value contribution is the imputed 3.6 billion-euro (comparable prior-year figure: 3.5 billion-euro) cost of capital, which reduces the operating value contribution compared with EBIT.

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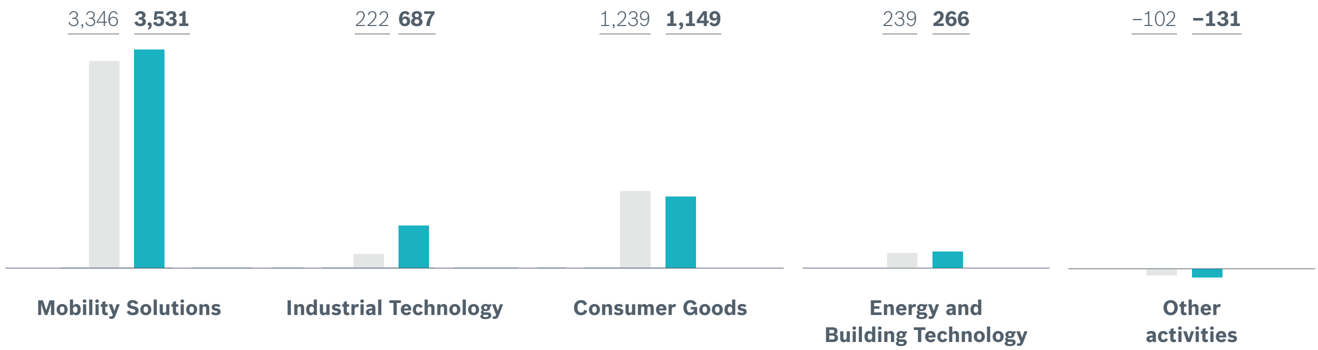
EBIT
Bosch Group, 2017[1]–2018

BY BUSINESS SECTOR
in millions of euros



[1] Adjusted figures

All units play a part in good result
The figures for all segments in 2018 are impacted by the above-mentioned non-recurring special effect due to the changed reporting of the company pension scheme with regard to additional benefits in the event of disability and death. However, this is not considered in the result from operations. As in previous years, moreover, the calculation of EBIT from operations for the Mobility Solutions and Consumer Goods business sectors disregards the earnings impact of higher depreciation and amortization from the remeasurement of assets at Automotive Steering and BSH Hausgeräte, following the complete acquisition of these former joint ventures in 2015.

The greatest improvement in earnings was achieved by the Industrial Technology business sector, which tripled its EBIT to 687 million euros from 222 million euros in the previous year. This was mainly due to the very good sales performance and lower restructuring expenses in the Drive and Control Technology division, but Packaging Technology also improved its earnings position. EBIT from operations also rose considerably to 627 million euros from 222 million euros the previous year. The margin from operations increased to 8.4 percent, compared with 3.3 percent in the previous year.

In Mobility Solutions, our biggest business sector, we increased EBIT to 3.5 billion euros from 3.3 billion euros the previous year. At 3.4 billion euros, EBIT from operations was on a par with the previous year. Despite an increasingly difficult automotive market and heavy upfront investments in projects of future importance, therefore, the business sector achieved a margin from operations of 7.1 percent, following 7.3 percent in 2017.

Despite the drop in its sales, the Consumer Goods business sector was able to achieve a good level of EBIT. However, at 1.1 billion euros, it was slightly below the previous-year level of 1.2 billion euros. The result from operations came to 1.4 billion euros, following 1.5 billion euros in 2017. At 7.8 percent, the margin from operations once again reached a good level (2017: 8.2 percent). The Energy and Building Technology business sector reports an improved EBIT of 266 million euros, compared with 239 million euros the previous year. At 236 million euros, EBIT from operations was on a par with the previous year. The margin from operations fell slightly to 4.2 percent, compared with 4.4 percent in 2017.

Net assets and financial position

Equity ratio further increased
The Bosch Group balance-sheet total as of the 2018 reporting date stood at 83.7 billion euros, exceeding the previous year's level of 81.9 billion euros. Due to the high level of earnings, our equity ratio rose again to 47 percent, from 46 percent the previous year.

On the assets side, our liquidity as reported in the statement of financial position once again came to 16.5 billion euros as of the reporting date. Apart from cash and cash equivalents, liquidity as per the statement of financial position includes marketable securities and bank balances with a term of more than 90 days. The main changes to the balance-sheet structure on the assets side are the increase in property, plant, and equipment as well as inventories. In addition, mention should be made of the first-time statement of contract assets in connection with IFRS 15. Running counter to this is the fall in deferred tax assets.

On the liabilities side, there were significant changes due to an increase in equity as a result of the good earnings situation and to an increase in pension provisions. In addition, contract liabilities in connection with IFRS 15 were stated for the first time. Running counter to this is the fall in other provisions, especially those of a non-current nature.

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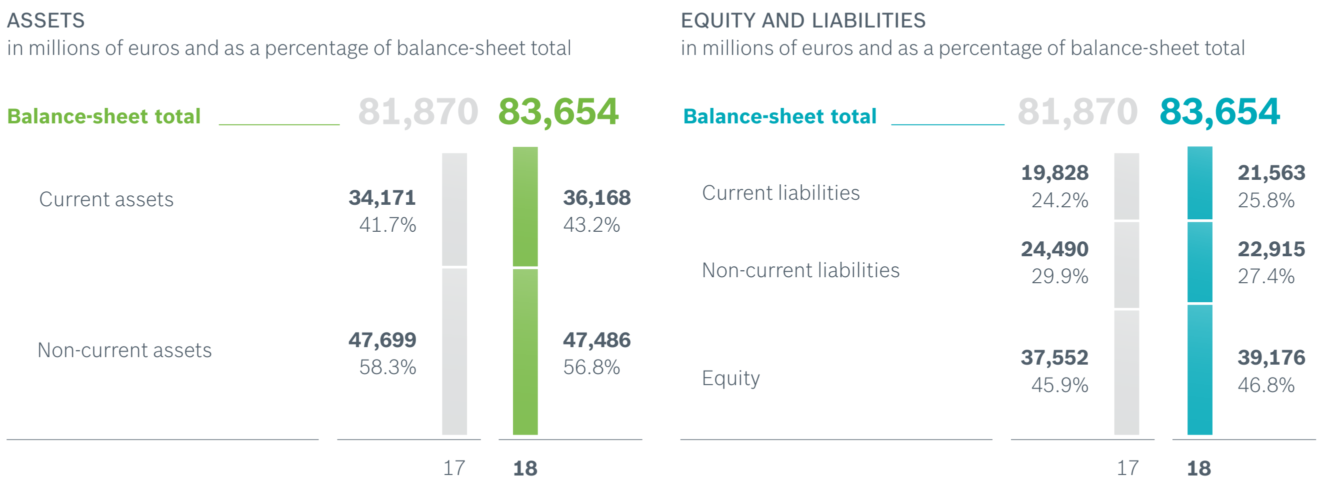
Structure of the statement of financial position

Bosch Group, 2017–2018



Our financing structure therefore remains very sound. Standard & Poor's reaffirmed Robert Bosch GmbH's good long-term rating of AA (with a "stable" outlook). The financial liabilities of the Bosch Group include bonds with a nominal value of 3.3 billion euros. The interest rates are between 1.625 percent and 5.0 percent. The average interest rate has fallen to 2.440 percent from the prior-year rate of 2.463 percent. The bonds' average residual term to maturity remains practically unchanged since the previous year. Most of the existing financial liabilities are denominated in euros. No additional bonds were issued.

Significant rise in capital expenditure

At roughly 4.9 billion euros in 2018, capital expenditure significantly exceeded the prior-year level of 4.3 billion euros. The investment ratio thus rose to 6.3 percent of sales, compared with 5.6 percent in the previous year. As of the reporting date, existing investment commitments as a result of orders already placed totaled roughly 895 million euros, following a previous-year figure of 730 million euros. Thanks to our very good liquidity position, we have ample financial resources at our disposal.

Broken down by business sector, investment in the Mobility Solutions business sector rose to around 3.8 billion euros, compared with 3.3 billion euros in the previous year. The focal points of this capital expenditure were gasoline direct injection, electric drive systems and e-axles, continuously variable transmission units, the iBooster, the integrated power brake, e-bikes, and automated driving. In addition, we are building a new wafer fab in Dresden, Germany, and expanding our automotive electronics capacity at our location in Reutlingen, Germany, as well as at other European and international locations. Capital expenditure in Industrial Technology increased to some 233 million euros, compared with 140 million euros the previous year. One focal point was modernization work at our location in Lohr, Germany.

In the Consumer Goods business sector, capital expenditure was 781 million euros, compared with around 800 million euros in the previous year. Important BSH Hausgeräte projects in Poland in 2018 included a new dishwasher factory and capacity enlargement at the tumble dryer factory in Lodz and the further expansion of the Wroclaw location (refrigeration and cooking segment). In Energy and Building Technology, capital investment came to approximately 114 million euros, compared with 120 million euros the previous year. This again mainly concerned cost-reduction and product-renewal projects at manufacturing, engineering, and sales locations.

From a regional viewpoint, we invested around 3.0 billion euros in our European locations, compared with 2.7 billion euros the previous year. Capital expenditure in Germany amounted to roughly 1.8 billion euros, compared with 1.5 billion euros the previous year. This increase relates especially to investments in the future wafer fab in Dresden, camera systems, braking systems, and the expansion and modernization of locations. We also invested heavily in other European locations. In eastern Europe we invested particularly in Hungary, where we are expanding manufacturing for power electronics at the Hatvan location and enlarging the engineering center in Budapest. At the Miskolc location, capacities are being created for power tools in the home and garden segment. We also expanded capacity at other eastern European locations, particularly for exhaust-gas treatment systems in České Budě-ějovice, Czech Republic, and at the automotive electronics location in Cluj, Romania. A focal point in western Europe was the location in Braga, Portugal, which manufactures head-units and automotive display systems, among other things. Apart from these specific cases, capital expenditure was again broadly distributed in 2018.

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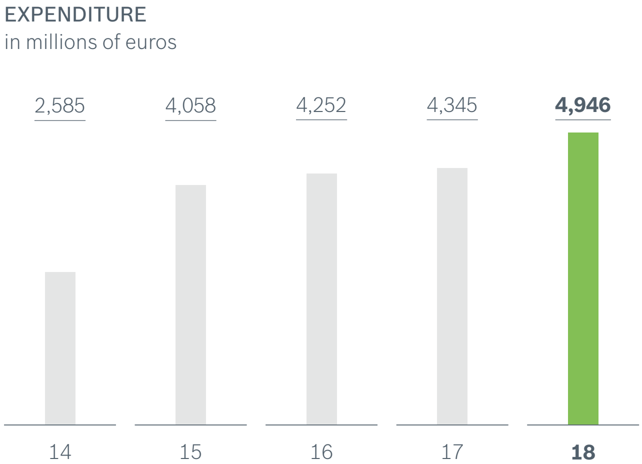
Capital expenditure on property, plant, and equipment

Bosch Group, 2014–2018



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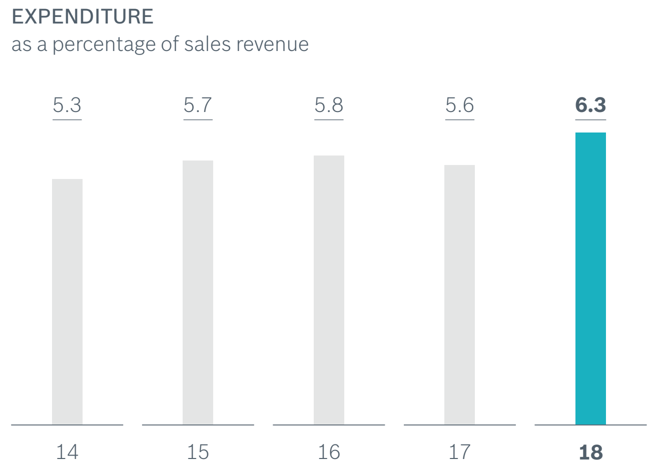
Capital expenditure on property, plant, and equipment

Bosch Group, 2014–2018



We invested 1.4 billion euros in Asia Pacific, compared with 1.2 billion euros the previous year. The main recipient of this was again China, where we expanded capacity for the Mobility Solutions business sector. We also built a new engineering center in Suzhou. Other focuses of investment activity in China include capacity expansion, various new product projects, and our future engineering center in Nanjing. In India, we extended our manufacturing facilities for vehicle components at Bidadi and Naganathapura and our engineering center in Adugodi. Another focal point was Vietnam, where we manufacture push belts for continuously variable transmission units at our Long Thanh site near Ho Chi Minh City.

In North and South America, we invested some 470 million euros, as in the previous year. The Mobility Solutions business sector was responsible for most of this activity. In the U.S., this again included the Charleston, Anderson, and Florence manufacturing sites in South Carolina, as well as a number of locations in Mexico. In Brazil, capital expenditure again mainly related to our Campinas location.

Liquidity

Good liquidity position

The Bosch Group has a strong financial position. In 2018, cash flow came to 7.0 billion euros or 9.0 percent of sales, against prior-year figures of 8.4 billion euros and 10.7 percent of sales. Liquidity at year-end as per the consolidated statement of cash flows (cash and cash equivalents) stood at 4.7 billion euros, compared with 4.5 billion euros the previous year. In addition, financing of 1 billion euros and of 2 billion U.S. dollars was available to Robert Bosch GmbH under its commercial-paper programs.

Cash flows from operating activities rose to 7.3 billion euros, from 6.8 billion euros in the previous year. Cash flows from investing activities amounted to 6.1 billion euros, and thus significantly exceed the previous-year figure of 5.1 billion euros. Cash flows from financing activities disclosed an outflow of 1.0 billion euros in 2018, as opposed to an outflow of 1.7 billion euros the previous year. As in the previous year, no new long-term debts were incurred in 2018.

The Bosch Group has a central financial and currency management system. This is designed to control payment flows to optimum effect and limit the risks of currency exposures at the Bosch Group level. Central financial management also manages our borrowings and investments. Our investment strategy is aimed at broad diversification of shares and interest-bearing securities.

Outlook

Vulnerable economy in light of political risks

There are increasing signs that the global economy will cool further. This is above all due to political tensions, such as the United Kingdom's announcement that it will be leaving the European Union, as well as various trade disputes. Above all, the impending U.S tariffs on automobiles from the EU would involve considerable burdens. Moreover, the slower pace of growth in China is having global economic repercussions. Against this backdrop, our planning assumes global GDP growth of just 2.3 percent in 2019.

In terms of the major economic regions, our expectation is that growth in the Americas will weaken noticeably year on year, returning to less than 2 percent. Europe as a whole will likely also grow significantly less strongly than in the previous year, with GDP forecast to rise 1 percent. Once again, the Asia Pacific economy will

02

Bosch Group, statement of cash flows

in millions of euros

	2018	2017
Cash flow	**7,026**	**8,367**
as a percentage of sales	**9.0**	**10.7**
Liquidity at the beginning of the year (January 1)	4,543	4,753
Cash flows from operating activities	+7,267	+6,799
Cash flows from investing activities	–6,110	–5,129
Cash flows from financing activities	–1,019	–1,653
Other activities	+35	–227
Liquidity at the end of the year (December 31)	**4,716**	**4,543**

grow the fastest. However, at less than 4 percent, the rate of growth will likely be the lowest for more than 10 years. Our planning for China is thus based on a cautious growth forecast of significantly less than 6 percent. This reflects the structural distortions in the economy, such as the extremely high debt levels of state-owned companies, the burdens of the trade conflict with the United States, and corrections to the real-estate markets. But with investments in infrastructure now significantly stronger once again, the slowdown is unlikely to be any steeper. Benefiting from various reforms, India will likely post 6.3 percent growth.

For Europe and the European Union, we expect growth to be weaker than in 2018, at roughly 1 percent. This is primarily due to the U.K., where chronic uncertainty about the Brexit process has already braked the pace of economic growth. If there should be a “hard Brexit,” we expect there to be a recession in the United Kingdom. This development is also dampening economic growth in the euro zone, which is also likely to weaken further to less than 1 percent. The recent exacerbation of the domestic political problems of a number of members states is also a contributing factor here. For example, the need to deal with separatist tendencies in Catalonia is paralyzing the Spanish government. The Italian government is faced with the threat of a further fall in the value of its bonds, also as a result of its current economic policy. In addition, European industry has been especially badly hit by the protectionist developments of the past 12 months. This is also harming the German economy, which will likely grow by less than 1 percent in 2019. In eastern Europe, we expect growth of no more than approximately 0.4 percent. This is especially attributable to Turkey, whose economy is expected to contract, also as a consequence of the sharp depreciation of the lira last year. By contrast, we expect to see moderate expansion of economic output in Russia.

In North America, we expect year-on-year growth to be weaker, at 1.9 percent. The effects of the U.S. tax reform that stimulated growth in 2018 will subside. Developments will be compounded by a more restrictive monetary policy than in recent years and by the consequences of the country’s current protectionist policies, which will also be negative for the U.S. economy. In South America, the gradual recovery will continue, with economic output growing by a good 1 percent. However, momentum will remain weak.

As concerns automotive production, our most important market, unfavorable political and economic conditions mean that our planning is very cautious. For example, we expect the fall in total production of passenger cars and commercial vehicles to continue, with a 3 percent drop to 94.7 million vehicles. Production of heavy trucks is set to fall 5 percent. The further drop in production figures in China and western Europe will likely play a key role in the decrease in total production. We also expect to see a significant slowdown in India. In the Americas, the anticipated decrease in production figures in the U.S. will likely also mean falling volumes in the region as whole. This means that automobile production is expected to contract for the second successive year – the first time this has happened since the financial crisis of 2008–2009 – and to drop below its 2016 level.

Against the backdrop of a weaker economic environment, global mechanical engineering production will also lose momentum. This effect will be noticeable across all regions. The correction will likely be the least severe in Asia, especially as the Chinese government intends to stabilize growth using the traditional tool of additional investment. Irrespective of this, we expect to see continued stimuli from greater demand for Industry 4.0 applications.

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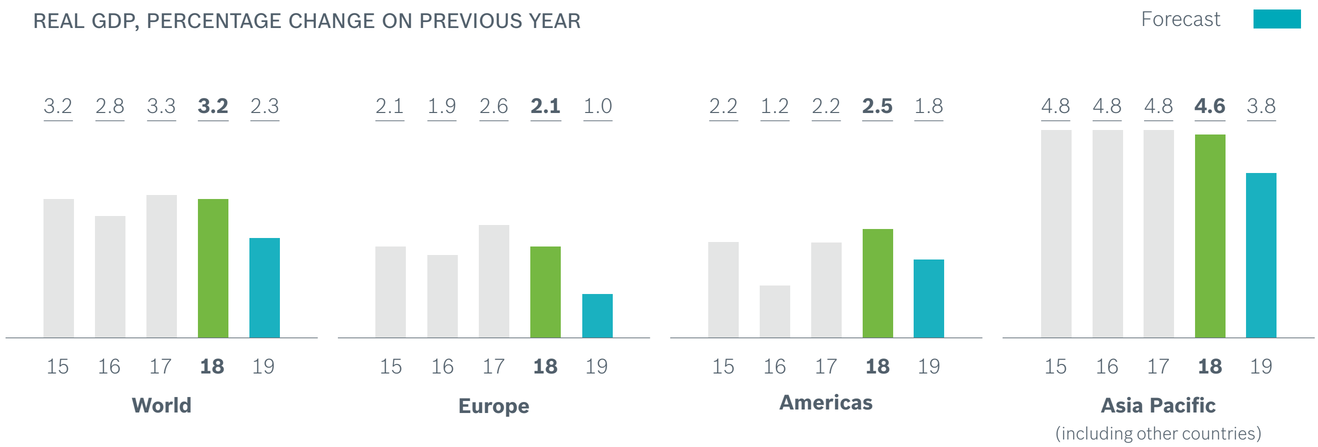
Economic growth by region, 2015–2019

REAL GDP, PERCENTAGE CHANGE ON PREVIOUS YEAR



Some figures changed from 2017 annual report following revisions to prior-year data

We also expect growth in global private consumption to be weaker than in 2018. While the good labor-market situation is stabilizing propensity to consume in the advanced economies of the Americas and Europe, the slowdown in the global economy is dampening willingness to buy. In addition, consumer sentiment in China is gloomy. With respect to the global construction business – another important market – we expect the pace of growth to remain unchanged in 2019. We expect weaker growth in both the U.S. and the European Union. In Asia, by contrast, there are signs of somewhat stronger growth. This is primarily due to China, where the government is hoping that increased investment in infrastructure will stimulate the slowing economy.

Cautious business prospects for 2019

Against the backdrop of the expected economic slowdown, especially in segments such as automotive production and mechanical engineering that are important for Bosch, we expect sales in 2019 to be solely on a par with the previous year, at best slightly higher. This does not take exchange-rate effects into account. This forecast applies equally to the Mobility Solutions, Industrial Technology, and Energy and Building Technology business sectors. Sales in the Consumer Goods business sector will reach their previous-year level at best. The EBIT margin from operations will likely be significantly lower than in the previous year. All business sectors are expected to contribute to the positive overall result. Above all, we expect to see a significant drop in margin in the Mobility Solutions business sector as a result of the decline in automotive production and heavier upfront investments, especially in automated driving and electromobility, as well as in the further transformation of the mobility sector.

Report on opportunities and risks

Opportunities

For further explanations, see the “Prospects for the Bosch Group” section, which describes in detail the opportunities arising from the market environment, our strategy, and our innovations, both for the company as a whole and its business sectors.

Risk report

Comprehensive risk management system

In the Bosch Group, risk management encompasses the entire company, including all operations, functional areas, hierarchical levels, and staff functions. It is thus a core responsibility for all managers on every level of the Bosch Group. As a rule, responsibility for risk management is assumed locally on all group management levels, with certain governance tasks being organized at corporate level.

This means that risks are identified and managed where they arise: in other words, above all in the divisions and regional organizations. The latter are also primarily responsible for introducing measures to reduce or control risks. In addition, corporate departments for areas such as compliance management, legal services, tax, and risk management (the latter having been set up in early 2018), support, direct, and monitor the operating units’ control activities. Internal auditing, which acts as an independent authority and reports directly to the shareholders of Robert Bosch Industrietreuhand KG, is responsible for assessing the appropriateness and effectiveness of the tasks described and, if necessary, for initiating remedial measures.

The new corporate coordinating office for the risk management system, which is part of the corporate controlling department and reports directly to the chief financial officer, has the task of making risk management fit for the growing tasks ahead. One of its tasks is to standardize risk-management reporting and assessment processes. It is responsible for reporting risks to the board of management, shareholders, and supervisory board. As a complementary step, a risk committee was set up at the end of 2018. In the future, its task will include analyzing disruptive technological and strategic risks.

Overall risk assessment

We are not currently aware of any risks, beyond the economic and political risks mentioned in the outlook above, the risks of the business sectors listed in this report, and litigation risks, which could materially affect the net assets, financial position, and results of operations of the Bosch Group in 2019. There are no risk exposures that could jeopardize the Bosch Group's continued existence as a going concern.

Analysis of medium-term risks

We have also widened the scope of our analysis of medium-term risks. For our 2019 business planning, questions about the risks at subsidiary companies, selected corporate sectors and departments, and large regional organizations were for the first time included in the way business sectors were presented. Additional legal risks such as compliance and tax risks were ascertained separately. The number of risks identified was greater than in the previous year, even though we significantly raised the materiality limit. As with previous risk assessments, the indicator we have defined is the accumulated deterioration in EBIT over a four-year period. This is weighted in four categories of probability of occurrence (up to 5 percent, up to 15 percent, up to 30 percent, up to 50 percent). The probability of occurrence categories have also been altered slightly from the previous year. Risks with a probability of occurrence of at least 50 percent are still considered in our annual or interim forecasts. The assessment is based on our current planning.

Of the business sectors, Mobility Solutions shows the highest overall risk potential. At 15 percent, however, the weighted-average probability of occurrence in this business sector is the lowest. The highest probability – 29 percent – is in the Energy and Building Technology business sector. However, the maximum risk potential is the lowest in this business sector.

The appreciable risks in the Mobility Solutions business sector include a significant decline in demand for diesel passenger cars that goes far beyond even the reduction in vehicle registrations seen so far. To limit this risk, we are continuing to make every effort to cultivate a discussion on the subject of diesel technology that is based on facts. In addition, there are signs of a fall in business activity, affecting above all the Powertrain Solutions and Automotive Electronics divisions. We counter these economic and country-specific risks through our broad diversification, both in terms of business sectors and regions. We see a further risk in a changed market position and growing price pressure in the Chinese market. One of the ways we counter this is through the technical innovations in our products.

In the Industrial Technology business sector, the greatest risks relate in particular to the volatility of markets, with a further drop in prices and the possible entry of new competitors, especially from China and the United States, as well as from other industries. We counter these risks with a product portfolio that is tailored specifically to the needs of the market. The Consumer Goods business sector is comparatively seriously affected by risks resulting from political and economic instability. We reduce this risk by extending our regional footprint. In addition, we can observe the ever growing importance of sales over the internet and increasing consolidation of the retail trade, which we are adjusting to. Measures include the consistent expansion of our own internet activities. In addition, the Consumer Goods business sector is exposed to the risk of supply-chain disruption as a result of the growing division of labor within value chains. On the basis of predefined criteria, we regularly audit at-risk suppliers and take appropriate measures to reduce risks. For the Energy and Building Technology business sector, with its strong presence in the U.K., the announced exit from the European Union is a risk, particularly with respect to heating technology.

Other material risks reported in the Bosch Group relate to information technology and data privacy. We combat these risks with a comprehensive IT strategy. This is because a systems failure as a result of external attacks (cyberattacks) or internal error can lead to considerable problems in product development and manufacturing as well as administrative processes, resulting in significant financial losses. We have put in place comprehensive measures, valid throughout the company, to provide organizational and technical protection against system outages, data loss, and data manipulation. In expanding our data protection and IT security organization, we are equipping ourselves for the growing requirements of the European General Data Protection Regulation. At the same time, this expansion makes us less vulnerable to cyberattacks. For the Bosch IoT Cloud, we apply an integrated security concept that we continually update using state-of-the-art technology. We verify its effectiveness with extensive security tests, among other things, and certify it according to an independent information security standard. For our IT infrastructure, a high level of availability is achieved by providing a redundant, location-independent systems architecture.

Other IT risks arise from the use of software-based products and solutions on the internet of things (IoT). In this context, there is a danger of software and data being misused or wrongly used with respect to intellectual property protection or even data privacy in an environment that is becoming ever more complex, especially public cloud environments. To counter these risks, we support our customers through our Bosch IoT Suite service platform and through engineering and advisory services relating to the use of IoT solutions. In addition, liability risks arise in connection with the outage or disruption of complex systems relating to our products and services, such as manufacturing equipment that is a part of Industry 4.0 solutions and components for automated driving. To reduce these risks, we conclude appropriate agreements with our customers on terms of use and limitations on liability.

Legal risks, compliance: The principle of legality is an integral part of Bosch's values. One of the actions we took in 2018 to further develop our compliance organization was to set up a department to coordinate internal investigations. We also increased headcount. To train associates in our product development code, we carried out our biggest ever mandatory classroom-based training program, which was attended by roughly 99,000 associates. In addition, we rolled out a web-based training program to familiarize associates with our Code of Business Conduct, which was revised in 2017. More than 101,000 associates took part in this program in 2018 alone. To check compliance with the product development code, additional audits are also carried out.

Antitrust and legal risks: In the antitrust investigations of automotive suppliers that have been running worldwide for a number of years, the proceedings brought by the European Commission against Bosch were brought to an end by common consent at the end of February 2018, in return for fines totaling 77.2 million euros. In view of potential civil-law risks associated with some of the matters under investigation, Bosch has already conducted talks with customers and expects further talks on the subject of compensation. Bosch was also able to reach fundamental agreements with class-action claimants in Canada. As part of its investigations of suspected antitrust violations in the French market by several household-appliance manufacturers, the French antitrust authority fined the French subsidiary of BSH Hausgeräte 23 million euros in November 2018.

The events concerning the emissions from diesel vehicles made by various automakers and in many countries mean considerable risks for Bosch. Authorities in many countries, also in North America and Europe, are investigating not only Volkswagen, Audi, and Porsche, but also several other automakers. According to press reports, these include Fiat Chrysler and Daimler. As one of the world's leading suppliers of engine control units, Bosch also supplied these automakers with engine control units, including software, for various models. It supplies such components to many other automakers worldwide. The Stuttgart public prosecutor's office has so far conducted several formal investigations of Bosch associates, some of them persons unknown. Bosch is cooperating with the Stuttgart public prosecutor's office and with many other regulatory and criminal investigation authorities worldwide.

With respect to the events concerning various automakers' diesel vehicle emissions, Bosch has been and is a defendant in many class and individual civil-law actions around the world. This relates to the U.S. and Canada, among other countries. In several other countries, actions are also pending or have at least been threatened. In two of the pending class actions in the U.S. relating to Volkswagen, Audi, and Porsche vehicles with 2.0- and 3.0-liter engines sold in the U.S., Bosch reached an agreement with buyers and reseller dealers in 2017 that partly settles the U.S. class actions. This settlement has meanwhile been approved by the competent court. For this, Bosch paid a total of 327.5 million U.S. dollars. In agreeing to this settlement, Bosch neither acknowledges the validity of the claims brought forward, nor does it concede any guilt.

Many civil claimants have rejected the settlement, and are continuing to press their claims individually. In addition, the class action against Bosch by Volkswagen dealers continues. In the U.S., Bosch companies are still defendants in class actions relating to diesel passenger cars made by Daimler, BMW, General Motors, and Ford, together with the respective automaker. In all these proceedings, Bosch is asserting its rights. It cannot be ruled out that further actions will be brought against Bosch in relation to other automakers. The risks that may arise as a result of these pending and threatened actions are severe, and cannot be quantified in some cases. At the beginning of January 2019, moreover, Bosch reached a fundamental civil-law settlement with 50 individual U.S. states and territories, amounting to roughly 100 million U.S. dollars. In the class action concerning Fiat Chrysler vehicles in the United States, Bosch was also able to achieve a settlement involving the payment of roughly 30 million U.S. dollars. However, this is still subject to court approval.

On the basis of the facts relating to antitrust proceedings and engine control units that were available and assessed by the board of management when these financial statements were prepared, the board of management believes that sufficient precautions have been taken in the form of provisions for legal risks. For the various legal risks outlined above, provisions throughout the group amount to some 1.2 billion euros. From the 2018 financial year, the board of management knows of no further legal risks that could, from a present perspective, materially impair the company's net assets, financial position, or results of operations.

Financial risks: The operating business of the Bosch Group is affected by fluctuations in exchange and interest rates. The aim of business policy is to limit these risks. Our strategy of maintaining a strong global presence with local production and worldwide purchasing activities generally reduces currency risks. A foreign exchange balance plan showing net positions per foreign currency is used as the basis for controlling currency risks. If necessary, these risks, including interest-rate risks, are hedged through centralized hedging transactions. Internal regulations and guidelines set down a mandatory framework and define responsibilities relating to payment transactions, investments, and hedging activities. According to our regulations, financial instruments such as forward transactions and interest swaps may only be used in connection with the operating business, financial investments, or financing transactions; speculative transactions are not allowed. Hedging transactions are entered into solely via banks whose creditworthiness is good. Their creditworthiness is constantly monitored, and counterparty credit limits are defined accordingly.

We have extensive financial assets. These are subject above all to interest-rate and exchange-rate risks. We control these risks by means of an investment process geared to our financial exposure. The objective is to secure appropriate, risk-adjusted returns on invested capital. Here, we endeavor to spread our investments as widely as possible. A limit system is used to closely monitor investment risk. Prescribed risk limits for the specific investment categories limit the potential loss. The impact of changes in interest rates on borrowed funds is sharply limited over the short and medium term by balancing the maturities of financial liabilities. Changes in financial assets and liabilities are monitored on an ongoing basis. We identify liquidity risks as part of our liquidity planning. Thanks to our good credit rating and existing financing arrangements, we have good access to external funding.

Bosch Group

Consolidated financial statements

INCOME STATEMENT

for the period from January 1 to December 31, 2018

Figures in millions of euros

	Note	2018	2017[1]
Sales revenue	1)	**78,465**	**78,066**
Cost of sales		–51,696	–50,354
Gross profit		**26,769**	**27,712**
Distribution and administrative cost	2)	–15,308	–15,781
Research and development cost	3)	–5,963	–7,045
Other operating income	4)	2,005	1,788
Other operating expenses	5)	–1,987	–1,704
Result from entities consolidated using the equity method		–14	–26
EBIT		**5,502**	**4,944**
Financial income	6)	1,956	2,264
Financial expenses	6)	–2,391	–2,412
Profit before tax		**5,067**	**4,796**
Income taxes	7)	–1,493	–1,502
Profit after tax		**3,574**	**3,294**
of which attributable to non-controlling interests	8)	527	521
of which attributable to parent company		3,047	2,773

[1] Restated figures; see notes to the consolidated financial statements, “Changes in accounting policies.”

01

STATEMENT OF COMPREHENSIVE INCOME

for the period from January 1 to December 31, 2018

Figures in millions of euros

	2018	2017[1]
Profit after tax	**3,574**	**3,294**
Change in debt instruments, measured at fair value	−151	
of which reclassified to profit or loss	2	
Currency translation of entities outside the euro zone	−83	−1,939
Change from marketable financial instruments		
recognized in other comprehensive income		425
transferred to profit or loss		−97
Items that will be reclassified to profit or loss	**−234**	**−1,611**
Change in equity instruments, measured at fair value	−305	
Remeasurement of pension provisions	−1,408	238
of which write-down of deferred taxes on pension provisions	−1,009	
Items that will not be reclassified to profit or loss	**−1,713**	**238**
Other comprehensive income	**−1,947**	**−1,373**
Comprehensive income	**1,627**	**1,921**
of which attributable to non-controlling interests	504	419
of which attributable to parent company	1,123	1,502

[1] Restated figures; see notes to the consolidated financial statements, “Changes in accounting policies.”

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STATEMENT OF FINANCIAL POSITION

for the year ended December 31, 2018

Assets

Figures in millions of euros

	Note	12/31/2018	12/31/2017[1]
Current assets			
Cash and cash equivalents	10)	4,716	4,543
Trade receivables	11)	14,859	14,970
Other financial assets	12)	2,276	2,006
Contract assets	13)	905	
Income tax receivables		529	521
Other assets	14)	1,868	2,012
Inventories	15)	11,015	10,119
		36,168	**34,171**
Non-current assets			
Financial assets	16)	12,558	12,522
Contract assets	13)	560	
Income tax receivables		164	159
Property, plant, and equipment	17)	20,492	19,129
Intangible assets	18)	10,879	11,663
Investments measured at equity		19	143
Other assets		213	184
Deferred taxes	7)	2,601	3,899
		47,486	**47,699**
Total assets		**83,654**	**81,870**

[1] Restated figures; see notes to the consolidated financial statements, “Changes in accounting policies.”

Equity and liabilities

Figures in millions of euros

	Note	12/31/2018	12/31/2017[1]
Current liabilities			
Trade payables	19)	7,627	7,421
Other financial liabilities	20)	1,591	1,552
Contract liabilities	21)	1,427	
Income tax liabilities		260	329
Other liabilities	22)	6,229	6,614
Income tax provisions		195	88
Other provisions	22)	4,234	3,824
		21,563	**19,828**
Non-current liabilities			
Financial liabilities	20)	4,652	5,200
Contract liabilities	21)	197	
Other liabilities	22)	183	217
Pension provisions and similar obligations	23)	11,415	10,889
Income tax provisions		566	696
Other provisions	22)	4,111	5,368
Deferred taxes	7)	1,791	2,120
		22,915	**24,490**
Equity	24)		
Issued capital		1,200	1,200
Capital reserve		4,557	4,557
Retained earnings		31,199	29,777
Unappropriated earnings		242	241
Non-controlling interests		1,978	1,777
		39,176	**37,552**
Total equity and liabilities		**83,654**	**81,870**

STATEMENT OF CHANGES IN EQUITY

Figures in millions of euros

			Retained earnings		
	Issued capital	**Capital reserve**	**Earned profit**	**Treasury stock**	**Currency translation**
1/1/2017 as reported	**1,200**	**4,557**	**30,230**	**–62**	**1,275**
Restatement from IAS 8			–101		
1/1/2017	**1,200**	**4,557**	**30,129**	**–62**	**1,275**
Comprehensive income					–1,830
Dividends					
Transfer to retained earnings			2,532		
Other changes					
12/31/2017	**1,200**	**4,557**	**32,661**	**–62**	**–555**
Transitional effects from IFRS 9 and IFRS 15			660		–11
1/1/2018	**1,200**	**4,557**	**33,321**	**–62**	**–566**
Comprehensive income					–57
Dividends					
Transfer to retained earnings			2,805		
Other changes					
12/31/2018	**1,200**	**4,557**	**36,126**	**–62**	**–623**

[1] Comprising the reserve from pension provisions, the non-reclassifiable gain/loss transferred from the reserve from financial instruments on sale, and other changes in equity

	Other comprehensive income					
Financial instruments	Other[1]	Total	Unappropriated earnings	Equity parent company	Equity non-controlling interests	Group equity
946	**−3,849**	**−1,628**	**138**	**34,435**	**1,649**	**36,084**
	101	101				
946	**−3,748**	**−1,527**	**138**	**34,435**	**1,649**	**36,084**
323	236	−1,271	2,773	1,502	419	1,921
			−138	−138	−281	−419
			−2,532			
	−24	−24		−24	−10	−34
1,269	**−3,536**	**−2,822**	**241**	**35,775**	**1,777**	**37,552**
−124		−135		525	6	531
1,145	**−3,536**	**−2,957**	**241**	**36,300**	**1,783**	**38,083**
−459	−1,408	−1,924	3,047	1,123	504	1,627
			−241	−241	−288	−529
			−2,805			
−70	86	16		16	−21	−5
616	**−4,858**	**−4,865**	**242**	**37,198**	**1,978**	**39,176**

STATEMENT OF CASH FLOWS

Figures in millions of euros

	Note 25)	2018	2017[1]
EBIT		5,502	4,944
Depreciation and amortization[2]		4,253	4,292
Decrease in pension provisions and non-current provisions		−1,495	−19
Gains on disposal of non-current assets		−128	−98
Losses on disposal of non-current assets		209	108
Result from investments measured at equity		14	66
Financial income, cash effective		1,187	1,331
Financial expenses, cash effective		−1,366	−1,032
Interest and dividends received		494	460
Interest paid		−225	−220
Paid income taxes		−1,419	−1,465
Cash flow		**7,026**	**8,367**
Increase in inventories		−1,055	−787
Change in receivables and other assets		1,131	−1,771
Change in liabilities		−89	1,284
Change in current provisions		254	−294
Cash flows from operating activities (A)		**7,267**	**6,799**
Acquisition of subsidiaries and other business units			−84
Disposal of subsidiaries and other operating units		48	404
Additions to non-current assets		−5,912	−5,477
Proceeds from disposal of non-current assets		255	303
Purchase of securities		−5,400	−4,768
Disposal of securities		4,899	4,493
Cash flows from investing activities (B)		**−6,110**	**−5,129**
Borrowing		30	211
Repayment of financial liabilities		−520	−1,445
Dividends paid		−529	−419
Cash flows from financing activities (C)		**−1,019**	**−1,653**
Increase in liquidity (A+B+C)		**138**	**17**
Liquidity at the beginning of the period (January 1)		**4,543**	**4,753**
Exchange-rate related change in liquidity		15	−242
Increase in liquidity due to changes in the consolidated group		20	15
Liquidity at the end of the period (December 31)		**4,716**	**4,543**

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[1] Restated figures; see notes to the consolidated financial statements, “Changes in accounting policies.”
[2] After offsetting reversals of impairments of EUR 3 million (previous year: EUR 40 million)

NOTES

Principles and methods

General explanations

The consolidated financial statements of the Bosch Group for the year ended December 31, 2018, have been prepared according to the standards issued by the International Accounting Standards Board (IASB), London. The International Financial Reporting Standards (IFRSs) and the Interpretations of the IFRS Interpretations Committee (IFRS IC) as adopted by the EU at the end of the reporting period have been applied. The previous-year figures have been determined using the same principles.

The consolidated financial statements are in line with the provisions of Sec. 315e HGB [*Handelsgesetzbuch:* German Commercial Code] and Regulation (EC) No 1606/2002 of the European Parliament and of the Council of July 19, 2002, on the application of international accounting standards.

To enhance the clarity and transparency of the consolidated financial statements, individual items of the consolidated income statement and the consolidated statement of financial position have been combined. These items are explained separately in the notes to the consolidated financial statements. The income statement has been prepared using the function of expense method.

The group currency is the euro (EUR). Unless otherwise stated, all figures are in millions of euros (EUR million).

The consolidated financial statements prepared as of December 31, 2018, were authorized for disclosure by the board of management on March 12, 2019. The consolidated financial statements and group management report will be filed with the Federal Gazette [*Bundesanzeiger*] and published there.

New standards, not early adopted

The IASB published IFRS 16 *Leases* on January 13, 2016; the standard was endorsed by the EU on October 31, 2017, and replaces IAS 17 *Leases* and IFRIC 4 *Determining Whether an Arrangement Contains a Lease*.The standard will be applied in the Bosch Group from January 1, 2019, onward. IFRS 16 removes the previous classification of leases either as finance leases or operating leases. Instead, it introduces a single lease accounting model, according to which lessees are required to recognize a right-of-use asset and a lease liability. Accordingly, previously unrecognized leases will in the future have to be recognized in the statement of financial position. For lessors, the standard does not involve any major changes in accounting compared with the previous accounting treatment.

The Bosch Group will apply IFRS 16 for the first time as of January 1, 2019, using the modified retrospective method without restating previous-year figures. Payment obligations existing as of the date of first-time application will be recognized at the present value of the lease liability and a right-of-use asset will be recognized at an equal amount (where appropriate, adjusted for any advance payments made or deferred payments). The exemptions for short-term leases and leases of low-value assets will be applied. For leases that contain non-lease components, the components will not be separated.

In the Bosch Group, existing leases mainly relate to rented properties and buildings and, to a lesser extent, vehicles leased. First-time recognition of these contracts is expected to increase total assets by a volume of around EUR 2 billion. No significant effects are expected on EBIT or the financial result.

Basis of consolidation

Besides Robert Bosch GmbH, the consolidated financial statements include all subsidiaries for which Robert Bosch GmbH fulfills the criteria for control pursuant to IFRS 10 *Consolidated Financial Statements*. These entities are included in the consolidated financial statements from the date on which the Bosch Group obtains control. Conversely, subsidiaries are no longer fully consolidated when control of the entity is lost.

The capital of the companies consolidated in the fiscal year for the first time is consolidated pursuant to IFRS 3 *Business Combinations*, using the acquisition method of accounting. At the time of combination, the cost of the shares acquired is offset against pro-rata revalued equity. Assets, liabilities, and contingent liabilities are carried at fair value. Remaining debit differences are accounted for as goodwill. Any credit differences are recognized with effect on income. Any difference resulting from the purchase of additional non-controlling interests is offset against equity.

Joint ventures as defined by IFRS 11 *Joint Arrangements* are accounted for using the equity method.

Pursuant to IAS 28 *Investments in Associates and Joint Ventures*, investments are included in the consolidated financial statements using the equity method if significant influence can be exercised. At present, no associates have been accounted for using the equity method. On the grounds of materiality, investments in associates are measured at amortized cost.

Within the consolidated group, intercompany profits and losses, sales, expenses, and other income, as well as all receivables and liabilities or provisions, are eliminated. In the case of consolidation measures with an effect on income, the effects for income tax purposes are considered and deferred taxes recognized.

Currency translation

In the separate financial statements of the group companies, all receivables and liabilities denominated in currencies other than the euro are measured at the closing rate, regardless of whether they are hedged or not. Exchange-rate gains and losses from revaluations are recorded in profit or loss.

The financial statements of the consolidated companies outside the euro zone are translated into euros in accordance with IAS 21 *The Effects of Changes in Foreign Exchange Rates*. Assets and liabilities are translated at the closing rate, while equity is translated at historical rates. The line items of the income statement are translated into euros at the annual average exchange rates. Any resulting exchange-rate differences are recorded directly in equity until the disposal of the subsidiaries, and disclosed as a separate line item in equity.

For the most important non-euro currencies of the Bosch Group, the following exchange rates apply:

		Closing rate		Average rate	
	1 EUR =	**12/31/2018**	**12/31/2017**	**2018**	**2017**
Australia	AUD	1.62	1.53	1.58	1.47
Brazil	BRL	4.44	3.97	4.31	3.61
China	CNY	7.88	7.80	7.81	7.63
Czech Republic	CZK	25.72	25.54	25.65	26.33
Hungary	HUF	321.51	310.14	318.87	309.25
India	INR	79.73	76.61	80.74	73.53
Japan	JPY	125.85	135.01	130.41	126.71
Korea	KRW	1,277.93	1,279.61	1,299.15	1,276.74
Poland	PLN	4.30	4.18	4.26	4.26
Russian Federation	RUB	79.72	69.39	74.02	66.02
Switzerland	CHF	1.13	1.17	1.16	1.11
Turkey	TRY	6.06	4.55	5.71	4.12
United Kingdom	GBP	0.89	0.89	0.88	0.88
United States	USD	1.15	1.20	1.18	1.13

Accounting policies

In the 2018 fiscal year, there were changes in accounting policies from the first-time application of IFRS 9 *Financial Instruments* and IFRS 15 *Revenue from Contracts with Customers*. The disclosures required on the effects of first-time application of the new standards are presented in the section "First-time application of amended accounting standards."

Financial instruments
In accordance with IAS 32 *Financial Instruments: Presentation*, a financial instrument is any contract that gives rise to a financial asset of one entity and to a financial liability or equity instrument of another entity.

Financial assets and financial liabilities are recognized in the statement of financial position when the Bosch Group becomes party to the contractual provisions of the financial instrument. This is usually the case on the settlement date. On initial recognition, financial assets and financial liabilities are measured at fair value and classified in accordance with IFRS 9. Unless subsequent measurement is at fair value through profit or loss, directly attributable transaction costs are taken into account on initial recognition. The fair-value option pursuant to IFRS 9 is not exercised. Hedge accounting is not used in the Bosch Group.

On initial recognition, financial assets are classified either as at amortized cost (AC), at fair value through profit or loss (FVPL), or at fair value through other comprehensive income (FVOCI). The classification depends on the business model underlying the financial assets as well as the contractual cash flow characteristics of the asset. Classification is determined by

- ▶ whether the financial asset is held within a business model whose objective is to hold financial assets in order to collect contractual cash flows ("hold" business model), whether the objective is achieved by both collecting contractual cash flows and selling financial assets ("hold and sell" business model), or solely by selling financial assets ("sell" business model), and
- ▶ whether the contractual cash flows are "solely payments of principal and interest" (SPPI).

The business model is determined on the basis of the Bosch Group's corporate management. For this purpose, the financial instruments are grouped together by their underlying business model. The contractual cash flow characteristics are reviewed at the level of the individual financial instrument.

Financial assets whose cash flows are solely payments of principal and interest on the principal amount outstanding and held within the "hold" business model are measured at amortized cost (AC). These are trade receivables, cash and cash equivalents, bank balances, loan receivables, and sundry other financial receivables. These assets are subsequently measured using the effective interest method; impairment gains and losses or gains or losses from the derecognition of assets are recognized in profit or loss.

If the group also intends to collect cash flows from selling financial assets ("hold and sell" business model), the financial assets are measured at fair value through other comprehensive income (with recycling, FVOCI wR). Gains and losses are recorded in other comprehensive income in this case. Cumulative changes in fair value are reclassified to profit or loss when the instruments are sold. Impairment losses are likewise reclassified from other comprehensive income to profit or loss. Interest income is recognized in profit or loss using the effective interest method. Most of the Bosch Group's interest-bearing securities are measured in this category.

Financial assets that do not satisfy the cash flow criterion because there are not solely payments of principal and interest on the principal amount outstanding are measured at fair value through profit or loss (FVPL). Changes in fair value and income from these assets are recognized immediately in profit or loss. This category mainly comprises interests in partnerships, shares in investment funds, certain interest-bearing securities, and derivative financial instruments with a positive market value which are mainly used to limit currency, interest, and commodity risks in accordance with internal risk management.

The group may, at initial recognition, irrevocably designate equity instruments that are not held for trading as measured at fair value through other comprehensive income (no recycling, FVOCI nR) rather than as measured at fair value through profit or loss. In that case, all changes in value are recognized in other comprehensive income. Cumulative changes in value are not reclassified to profit or loss even when the financial asset is sold. Dividend income, however, is recognized in profit or loss. The Bosch Group has decided to apply this option for investments in corporations and for shares reported under securities because this measurement method appropriately presents the net assets and results of operations.

With regard to financial assets (not including equity instruments) that are not measured at fair value through profit or loss, IFRS 9 requires loss allowances to be recognized for any expected credit losses. The extent to which expected losses are recognized is determined based on three levels that differ in terms of whether the credit risk on financial assets has significantly increased since initial recognition. Level 1 includes all financial assets whose credit risk has not increased significantly and whose outstanding payments are up to 30 days past due. In these cases, credit losses are recognized in relation to the probability of a default occurring over the next twelve months. If the borrower's credit risk has increased significantly, the financial instrument is allocated to level 2, and loss allowances are recognized at an amount equal to the expected losses over the lifetime of the financial instrument. A significant increase in credit risk is assumed when agreed payments are more than 30 days past due or information is available about a deterioration in the borrower's financial situation. If there is additional evidence that the financial asset is credit-impaired, it is allocated to level 3. Evidence includes payments more than 90 days past due, observable data about significant financial difficulty of the borrower, a high probability that the borrower will enter bankruptcy, and significant changes in the issuer's technological, economic, regulatory, or market environment.

A simplified loss allowance model applies for trade receivables, contract assets, and lease receivables, according to which a loss allowance is always recognized at the lifetime expected credit losses irrespective of any changes in the credit risk since initial recognition of the financial asset. As a practical expedient, a loss allowance table is used in the Bosch Group for receivables that are not credit-impaired, which determines the expected losses over the remaining term as a flat-rate percentage in relation to the number of days past due. Historical probabilities of default are used as a basis, supplemented by forward-looking parameters of relevance for the credit risk. If there is any information available about financial difficulty of the borrower, the assets are analyzed individually and a loss allowance for credit-impaired receivables is recognized. According to internal group guidelines, the carrying amounts of receivables are generally adjusted via a loss allowance account.

Financial liabilities are generally measured at amortized cost using the effective interest method. In the Bosch Group, this applies to trade payables, bonds, promissory note loans, liabilities to banks, loan liabilities, and other financial liabilities. The main exception to this rule is financial liabilities held for trading, which are measured at fair value through profit or loss. In the Bosch Group, these are derivatives with a negative market value.

When determining the fair value of financial assets and financial liabilities, the input factors of the measurement methods pursuant to IFRS 13 *Fair Value Measurement* are categorized as follows:

- Level 1: Quoted prices (unadjusted) in active markets for identical assets or liabilities that the accounting entity can access at the measurement date,
- Level 2: Inputs other than quoted prices included within level 1 that are observable for the asset or liability, either directly or indirectly,
- Level 3: Inputs that are not based on observable market data.

The fair value of current financial assets and liabilities is assumed to correspond to the carrying amount.

Financial assets are derecognized when the rights to cash flows have expired, e.g. after completion of bankruptcy proceedings or after a court ruling. They are also derecognized when the Bosch Group transfers substantially all risks and rewards from a financial asset. Financial liabilities are derecognized when the obligations specified in the contract have been discharged or canceled or have expired.

Financial assets and financial liabilities are offset and presented as a net amount in the statement of financial position when there is a legal right to offset, and the group either intends to settle on a net basis, or the asset and the liability are settled at the same time.

Until December 31, 2017, financial instruments were recognized and measured in accordance with IAS 39 *Financial Instruments: Recognition and Measurement*. The following measurement categories were applied:

- Loans and receivables: measured at amortized cost; impairments to allow for anticipated credit risks based on past experience were recognized in the form of specific and general bad debt allowances. When determining valuation allowances for the general credit risk, financial assets that could potentially be impaired were grouped together by similar credit risk characteristics and collectively tested for impairment and, if necessary, written down.
- Current and non-current financial liabilities: measured at amortized cost.
- Financial assets and liabilities held for trading: measured at fair value, gains or losses recognized in profit or loss.
- Available-for-sale financial assets: measured at fair value, unrealized gains or losses recognized in other comprehensive income. If impairment losses were necessary, the accumulated net loss was eliminated from equity and disclosed in profit or loss.

As of every reporting date, the carrying amounts of the financial assets which were not measured at fair value through profit or loss were examined for substantial objective indications that an asset may be impaired. Such indications included, for instance, serious financial difficulties suffered by the debtor, the high probability that insolvency proceedings will be instituted against the debtor, the disappearance of an active market for the financial asset, a permanent drop in the fair value of the financial asset below amortized cost, or significant changes in the technological, economic, legal, or market environment of the issuer. A possible impairment loss was given if the fair value of the asset was lower than the carrying amount.

Inventories include raw materials, consumables, and supplies; work in process, finished goods, and merchandise; and prepayments. Inventories are stated at purchase cost or cost of conversion using the average cost method. In addition to direct cost, cost of conversion includes an allocable portion of necessary materials and production overheads as well as production-related depreciation that can be directly allocated to the production process. Appropriate allowance is made for risks associated with holding and selling inventories due to obsolescence. Inventories are written down further when their net realizable value falls below cost.

In the Mobility Solutions business sector, development cost incurred for research and development work separately commissioned and separately charged is recognized as work in process under inventories until the date when control is transferred (revenue recognition at a point in time), and not as research and development cost through profit or loss. This development work in process is generally measured on the same basis as all other work in process, except that no allowances for slow-moving goods or obsolescence are applied.

Property, plant, and equipment are measured at cost less depreciation and, if necessary, impairment losses. Depreciation is charged on a straight-line basis over the economic useful life.

Depreciation is based on the following ranges of useful lives:

	Useful life
Buildings	10–50 years
Plant and equipment	8–11 years
Other equipment, fixtures, and furniture	3–25 years

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In accordance with IAS 36 *Impairment of Assets*, impairment losses are recorded on property, plant, and equipment if the recoverable amount has fallen below their carrying amount. Impairment losses are reversed if the reasons for the impairment loss from previous years no longer apply. Repair costs are recognized in the income statement.

In accordance with IAS 17 *Leases*, leased items of property, plant, and equipment which, from a substance-over-form perspective, are deemed to be purchases of assets with long-term financing (finance leases) are recognized at the time of addition at the lower of the fair value of the leased assets or present value of the minimum lease payments. Depreciation is charged over the economic useful life. If it is uncertain whether title to the leased asset will be transferred, the asset is depreciated over the term of the lease agreement (if shorter than the economic useful life). The finance expense from these leases is disclosed under financial result.

Investment property is measured at depreciated cost in accordance with IAS 40 *Investment Property*.

Government grants are recognized pursuant to IAS 20 *Accounting for Government Grants and Disclosure of Government Assistance* only if it is sufficiently certain that the assistance will be granted and the conditions attached to the assistance are satisfied. Grants related to assets are deducted in order to calculate the carrying amount of the asset. Grants related to income are presented as part of profit or loss in the period in which the related expenses are incurred.

Purchased and internally generated intangible assets are capitalized pursuant to IAS 38 *Intangible Assets* if a future economic benefit will flow to the entity from the use of the asset and the cost of the asset can be reliably determined. These assets are generally carried at cost and amortized using the straight-line method over their economic useful life. As a rule, the useful life is four years. Intangible assets accounted for in the course of business combinations have a useful life of up to 50 years.

Goodwill from business combinations represents the difference between the purchase price on the one hand and the proportionate share of equity at acquisition-date fair value on the other. Goodwill is allocated to the divisions (cash-generating units) and tested annually for impairment. If the carrying amount of a cash-generating unit’s net assets exceeds its recoverable amount, impairment losses are charged in accordance with the requirements of IAS 36. Pursuant to IFRS 1 *First-time Adoption of International Financial Reporting Standards*, goodwill existing as of January 1, 2004 (date of transition), was transferred at the carrying amount in accordance with the provisions of the German Commercial Code. Goodwill is also tested for impairment pursuant to the provisions of IAS 36.

Intangible assets with an indefinite useful life are tested annually for impairment. Intangible assets subject to wear and tear are only tested for impairment if there is any indication that they may be impaired. Impairment losses are recorded in accordance with IAS 36 if the recoverable amount of the asset concerned has fallen below the carrying amount. Impairment losses are reversed if the reasons for the impairment loss from previous years no longer apply.

As a rule, **borrowing costs** are not included in the cost of assets. If they are directly attributable to the acquisition, construction, or production of a qualifying asset they are included in the cost of that asset in accordance with IAS 23 *Borrowing Costs*. Write-downs on capitalized borrowing costs are reported in the cost of sales.

Interests in jointly controlled entities are included in the consolidated financial statements using the equity method. The carrying amount of these interests is subsequently measured in accordance with the change in equity of the jointly controlled entity attributable to the Bosch Group, less any write-offs, where appropriate.

In accordance with IAS 12 *Income Taxes*, **deferred tax assets and liabilities** are recorded for temporary differences between the tax carrying amounts and the carrying amounts in the consolidated statement of financial position unless they arise from the initial recognition of an asset or liability in a transaction that is not a business combination and, at the time of the transaction, affect neither the profit before tax nor the taxable income. Deferred tax assets arising from unused tax losses and tax credits are recognized as an asset only where there is assurance beyond any reasonable doubt that future taxable income would be sufficient to allow the benefit of the loss to be realized. The deferred tax item equals the estimated tax expense or relief in later periods. The tax rate applicable at the time of realization is taken as a basis. Tax implications from profit distributions are generally not considered until the resolution for the appropriation of profits has been adopted. If it is uncertain whether recognized deferred taxes can be realized, they are adjusted accordingly.

Assets and liabilities held for sale are classified as held for sale if their carrying amount will be recovered principally through a sale transaction and the sale is highly likely to be effected. In accordance with IFRS 5 *Non-current Assets Held for Sale and Discontinued Operations*, they are measured at the lower of carrying amount or fair value less costs to sell, unless another standard prescribes a different measurement method.

For **finance leases** under which the Bosch Group is the lessor, a receivable is recognized at the net investment value and disclosed under financial assets. Liabilities from finance leases are disclosed under financial liabilities, at the present value of the future lease payments. Leases under which substantially all risks and rewards incidental to ownership have been transferred to the lessee are classified as finance leases.

Pursuant to IAS 19 *Employee Benefits*, **pension provisions** are recognized using the projected unit credit method, taking estimated future increases in pensions and salaries into account, among other things. The expense from unwinding the discount on pension provisions is reported in the financial result under interest expenses.

Tax provisions pertain to obligations relating to income tax and other taxes. Deferred taxes are disclosed in separate line items of the statement of financial position.

Pursuant to IAS 37 *Provisions, Contingent Liabilities, and Contingent Assets*, **other provisions** are recognized if there is a current obligation from a past event which will probably lead to an outflow of resources embodying economic benefits in the future. In addition, it must be possible to reliably estimate the amount of this outflow. Other provisions are measured at full cost. Provisions due in more than one year are stated at their discounted settlement amount. They are discounted at the capital market interest rate that reflects the risks specific to the liability.

Revenue from contracts with customers is recognized in accordance with IFRS 15 when the customer obtains control of the goods or services, and is thus able to direct the use and obtain substantially all the remaining benefits from the goods or services. This is based on the assumption that there is a contract that creates enforceable rights and obligations; in addition, it must be probable that the Bosch Group will collect the consideration for the goods and services transferred. Revenue is recognized at the amount of the transaction price, i.e. the amount of the consideration that the Bosch Group is expected to collect in exchange for the transfer of goods and services arranged. IFRS 15 sets forth a consistent, five-step model for determining the amount of revenue to be reported, which is generally applicable for all customer contracts.

In the sale of goods, control is typically transferred to the customer on delivery. Invoicing usually takes place at the same time. Revenue from services is mostly recognized once the service has been rendered in its entirety and invoiced. Revenue from royalties is typically recognized over the corresponding term of the contract. For customer-specific products that are allocable to the Mobility Solutions business sector and do not create an asset with an alternative use for the group, revenue is recognized over time; the same applies to plant engineering contracts in the Industrial Technology business sector and the Energy and Building Technology business sector. Revenue is recognized according to the percentage of completion, which can be determined using input or output methods. Output methods recognize revenue on the basis of the value to the customer of the goods or services transferred relative to the remaining goods or services promised under the contract. Input methods recognize revenue on the basis of costs incurred relative to the estimated total costs. Depending on the underlying business model, the Bosch Group uses input methods as well as output methods in determining the percentage of completion.

IFRS 15 requires an entity to present a contract as an asset or a liability based on the relationship between its performance and the customer's payment. Contract assets recognized in the statement of financial position represent the Bosch Group's right to receive consideration for goods or services already transferred to customers. In contrast, contract liabilities are presented when the Bosch Group has already received consideration from customers for goods or services still to be transferred.

A contract asset is also recognized for incremental costs of obtaining a contract if the Bosch Group expects to be able to recover such costs. The contract asset is amortized over the term of the contract on a straight-line basis as a reduction of revenue.

Cost of sales contains the cost of internally manufactured goods sold and the cost price of resold merchandise. The cost of internally manufactured goods sold contains materials and production cost that can be allocated directly, the allocable parts of indirect production overheads, including the depreciation of production equipment and the amortization of other intangible assets, and the write-downs of inventories. Cost of sales also includes development work charged directly to customers and amortization of capitalized development work.

Development cost that cannot be recognized as part of the carrying amount of an asset is released to profit or loss in the period incurred.

Assumptions and estimates

The preparation of consolidated financial statements in accordance with IFRSs requires that assumptions and estimates be made for some line items. These assumptions and estimates have an effect on the amount and disclosure of the assets and liabilities, income and expenses, and contingent liabilities disclosed in the reporting period. Estimates and assumptions concern the following:

The determination of loss allowances on receivables and contract assets is based on estimates and assumptions with respect to the credit standing of individual customers. The measurement of inventories requires assumptions and estimates to be made, including for determining the net realizable value. The discounted future cash flows used as a basis for testing goodwill and other intangible assets for impairment are based on estimates. Assumptions are also made in the determination of the discount rates and growth rates used. The recognition of deferred tax assets is premised on their future recoverability being probable. Consequently, assumptions have to be made regarding future taxable income and the expected timing of the reversal of temporary differences. Further assumptions are required to determine the useful lives of items subject to wear and tear within property, plant, and equipment, and intangible assets. The determination of carrying amounts of investments also involves making assumptions and estimates. Pension provisions and similar obligations are measured using actuarial methods. This requires various assumptions, including with respect to life expectancy, salary trends, and the pension growth rate. The recognition and measurement of other provisions is based on estimates of the amount and probability of future events. To the extent possible, such estimates are based on past experience, and are regularly reviewed and adjusted as necessary.

First-time application of amended accounting standards

The first-time application of IFRS 9 *Financial Instruments* and IFRS 15 *Revenue from Contracts with Customers* had significant effects on the consolidated financial statements of the Bosch Group as of December 31, 2018. Both standards are applied from January 1, 2018, onward, and effects arising from first-time application are recognized in equity on a cumulative basis at the date of initial application. The previous-year figures are not restated. The table below presents the effects of first-time application of IFRS 9 and IFRS 15 on the consolidated statement of financial position:

Figures in millions of euros

	12/31/2017[1]	IFRS 9	IFRS 15	1/1/2018
Current assets				
Cash and cash equivalents	4,543			4,543
Trade receivables	14,970	90		15,060
Other financial assets	2,006	−6	−10	1,990
Contract assets			787	787
Income tax receivables	521			521
Other assets	2,012			2,012
Inventories	10,119		−135	9,984
	34,171	**84**	**642**	**34,897**
Non-current assets				
Financial assets	12,522	511		13,033
Contract assets			299	299
Income tax receivables	159			159
Property, plant, and equipment	19,129			19,129
Intangible assets	11,663		−275	11,388
Investments measured at equity	143			143
Other assets	184			184
Deferred taxes	3,899	3	−55	3,847
	47,699	**514**	**−31**	**48,182**
Total assets	**81,870**	**598**	**611**	**83,079**

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[1] Restated figures; see section "Changes in accounting policies."

Figures in millions of euros

	12/31/2017[1]	IFRS 9	IFRS 15	1/1/2018
Current liabilities				
Trade payables	7,421			7,421
Other financial liabilities	1,552			1,552
Contract liabilities			1,070	1,070
Income tax liabilities	329			329
Other liabilities	6,614		–520	6,094
Income tax provisions	88			88
Other provisions	3,824		124	3,948
	19,828		**674**	**20,502**
Non-current liabilities				
Financial liabilities	5,200			5,200
Contract liabilities			57	57
Other liabilities	217			217
Pension provisions	10,889			10,889
Income tax provisions	696			696
Other provisions	5,368		14	5,382
Deferred taxes	2,120	27	–94	2,053
	24,490	**27**	**–23**	**24,494**
Equity				
Issued capital	1,200			1,200
Capital reserve	4,557			4,557
Retained earnings	29,777	562	–37	30,302
of which accumulated other comprehensive income	–2,822	–135		–2,957
of which other retained earnings	32,599	697	–37	33,259
Unappropriated earnings	241			241
Non-controlling interests	1,777	9	–3	1,783
	37,552	**571**	**–40**	**38,083**
Total assets	**81,870**	**598**	**611**	**83,079**

[1] Restated figures; see section “Changes in accounting policies.”

IFRS 9 Financial Instruments

A reconciliation of financial assets and liabilities from the IAS 39 measurement categories to the IFRS 9 measurement categories is presented in the table below:

Figures in millions of euros

	Category pursuant to IAS 39	Carrying amount 12/31/2017	Category pursuant to IFRS 9	Carrying amount 1/1/2018
Assets				
Cash and cash equivalents	LaR	4,543	AC	4,543
Trade receivables	LaR	14,970	AC	15,060
Securities	AfS	11,616	FVOCI	8,241
			FVPL	3,375
Investments	AfS	783	FVOCI	1,237
			FVPL	60
	n.a.	280	n.a.	280
Derivative financial assets	FAHfT	288	FVPL	288
Other financial assets	LaR	1,385	AC	1,378
	n.a.	176	n.a.	174
Equity and liabilities				
Trade payables	FLAC	7,421	AC	7,421
Bonds	FLAC	3,349	AC	3,349
Promissory loans	FLAC	1,652	AC	1,652
Derivative financial liabilities	FLHfT	85	FVPL	85
Other financial liabilities	FLAC	1,642	AC	1,642
	n.a.	24	n.a.	24

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LaR	Loans and receivables
AfS	Available for sale
FAHfT/FLHfT	Financial assets/liabilities held for trading
FLAC	Financial liabilities measured at amortized cost
AC	At amortized cost
FVOCI	At fair value through other comprehensive income
FVPL	At fair value through profit or loss
n.a.	Not applicable

The effects arising from applying the IFRS 9 measurement categories to financial assets for the first time are presented in the table below:

Figures in millions of euros

	Note	AC (previously: LaR)	FVPL (previously: FAHfT)	FVOCI (previously: AfS)
12/31/2017 (IAS 39)		**20,898**	**288**	**12,399**
Reclassified from AfS to FVPL	(a)		3,440	−3,440
1/1/2018 (IFRS 9), before remeasurement		**20,898**	**3,728**	**8,959**
Remeasurement	(b)	83	−5	519
1/1/2018 (IFRS 9)		**20,981**	**3,723**	**9,478**

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(a) Quoted and unquoted debt instruments that do not satisfy the cash flow criterion are classified in accordance with IFRS 9 as financial assets at fair value through profit or loss (FVPL); they were previously presented under the category "available-for-sale financial assets (AfS)."

(b) The remeasurement of financial assets measured at amortized cost is based on the loss allowances calculated under IFRS 9. With respect to financial assets measured at fair value through other comprehensive income, the adjustment in the measurement of equity instruments for which there is no active market is presented. These were previously measured at cost, as there was no quoted price in such a market. Under IFRS 9, they are measured at fair value.

In addition, quoted debt instruments and equity instruments not held for trading were reclassified in applying IFRS 9 for the first time from the category "available-for-sale financial assets (AfS)" to the category "at fair value through other comprehensive income (FVOCI)."

All financial liabilities previously reported in the "held for trading" category were reclassified in full to the category "at fair value through profit or loss." No other changes arose in financial liabilities from the first-time application of IFRS 9.

A reconciliation of the IAS 39 valuation allowances to the IFRS 9 loss allowances is presented in the table below:

Figures in millions of euros

	Category pursuant to IAS 39	Loss allowance 12/31/2017	Remeasure-ment	Category pursuant to IFRS 9	Loss allowance 1/1/2018
Trade receivables	LaR	434	−102	AC	332
Loan receivables	LaR	12	1	AC	13
Other financial assets	LaR	6	6	AC	12
Receivables from finance leases	n.a.	3	2	n.a.	5
Contract assets	n.a.		11	n.a.	11

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The reconciliation of loss allowances on trade receivables includes an amount of EUR 12 million which does not qualify as expected credit losses under IFRS 9 and is therefore not reported as a loss allowance. This relates to receivables not accepted by customers that have been taken into account as an adjustment to the respective receivable's nominal amount.

IFRS 15 Revenue from Contracts with Customers

IFRS 15 *Revenue from Contracts with Customers* as endorsed by the EU on September 22, 2016, is applied by the Bosch Group as of January 1, 2018. First-time application is carried out retrospectively exercising the option to recognize cumulative adjustment amounts from first-time application in retained earnings on the date of initial application. IFRS 15 replaces the previous standards IAS 11 *Construction Contracts* and IAS 18 *Revenue* as well as the related interpretations.

The first-time application of IFRS 15 gives rise to the items described in the following being reclassified to contract assets or contract liabilities:

- Incremental costs of obtaining a contract, which the Bosch Group expects to be able to recover, and which were previously reported under intangible assets, are presented as a contract asset in accordance with IFRS 15.
- Obligations for performance invoiced but not yet fulfilled (e.g. assembly, qualification, or validation costs), which were previously reported under other sales-related provisions, are presented as contract liabilities in accordance with IFRS 15.
- Advance payments received from contracts that were previously reported under sundry liabilities are reclassified to contract liabilities in accordance with IFRS 15.

Effects from applying IFRS 15 for the first time relate to the recognition of revenue over time. For materiality reasons, the Bosch Group had previously not recognized revenue according to effective project progress. In connection with the first-time application of IFRS 15, the materiality criteria were reviewed and adjusted.

In addition, there are changes in accounting for research and development work separately commissioned and separately charged to customers. Development cost incurred for research and development work separately commissioned and separately charged is recognized as work in process under inventories until the date when control is transferred, and not as research and development cost through profit or loss as before. If control of the services rendered is transferred to the customer, the cost reimbursements received from the customer are recognized under revenue as before, while the corresponding costs charged are, however, reported under cost of sales instead of research and development cost as before. The development cost recognized as work in process is generally measured on the same basis as all other work in process, except that no allowances for slow-moving goods or obsolescence are applied.

As a result of the item-by-item measurement of development work in process reported under inventories, provisions for losses arising from goods and service obligations are no longer determined collectively for obligations from production and development work separately commissioned and separately charged. Separate calculations are made for both matters instead.

As a result of the item-by-item measurement of development work in process reported under inventories, provisions for losses arising from goods and service obligations are no longer determined collectively for obligations from production and development work separately commissioned and separately charged. Separate calculations are made for both matters instead.

The effects of first-time application of IFRS 15 on the statement of financial position, the income statement, and the statement of cash flows for the 2018 fiscal year are presented below:

Figures in millions of euros

	12/31/2018 as reported	Effects from IFRS 15	12/31/2018 without IFRS 15
Current assets			
Contract assets	905	–905	
Inventories	11,015	141	11,156
Non-current assets			
Contract assets	560	–560	
Intangible assets	10,879	409	11,288
Deferred taxes	2,601	–5	2,596
Current liabilities			
Contract liabilities	1,427	–1,427	
Other liabilities	6,229	602	6,831
Other provisions	4,234	74	4,308
Non-current liabilities			
Contract liabilities	197	–197	
Other provisions	4,111	16	4,127
Equity	39,176	12	39,188

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Figures in millions of euros

	2018 as reported	Effects from IFRS 15	2018 without IFRS 15
Sales revenue	**78,465**	**–206**	**78,259**
Cost of sales	–51,696	1,486	–50,210
Gross profit	**26,769**	**1,280**	**28,049**
Distribution and administrative cost	–15,308	2	–15,306
Research and development cost	–5,963	–1,346	–7,309
Other operating income and expenses	18	4	22
Result from measurement at equity	–14		–14
EBIT	**5,502**	**–60**	**5,442**
Financial result	–435		–435
Profit before tax	**5,067**	**–60**	**5,007**
Income taxes	–1,493	34	–1,459
Profit after tax	**3,574**	**–26**	**3,548**

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In the statement of cash flows for the 2018 fiscal year, the policy applicable prior to IFRS 15 would have resulted in a EUR 141 million higher cash inflow from operating activities and a EUR 141 million higher cash outflow from investing activities, based on EUR 60 million lower EBIT.

Changes in accounting policies

In the fiscal year, it was decided that the additional benefits for Bosch Group associates in Germany in the event of occupational disability or death, which were previously covered by the company pension scheme (*"Bosch bAV Plan,"* also see note on pension provisions and similar obligations), would no longer be reported as post-employment benefits, and thus no longer under pension provisions. From fiscal 2018 onward, they are accounted for as other long-term employee benefits in accordance with IAS 19 and reported under non-current provisions in the personnel area. This leads to a more appropriate presentation of the obligations to Bosch Group associates in Germany and, in turn, to more reliable information on the Bosch Group's net assets. The change in accounting policy means that the effects previously reported in equity from remeasuring the net liability are now recognized under personnel expenses, i.e. in the functional costs for the period. In accordance with IAS 8 *Accounting Policies, Changes in Accounting Estimates, and Errors,* the previous-year figures in the income statement, the statement of comprehensive income, the statement of financial position, the statement of changes in equity, the statement of cash flows, and the notes are restated and presented on a comparable basis.

From the fiscal year 2018 onward, amortization of development costs capitalized in accordance with IAS 38 *Intangible Assets* is presented under cost of sales instead of under research and development cost. The objective of this changed presentation is to enable users of financial statements to assess more appropriately the expenses structured by functional area and thus the Bosch Group's results of operations. The previous-year figures in the income statement and the notes have been restated accordingly.

The line items affected by the change in presentation in the statement of financial position and the income statement are shown in the table below:

Figures in millions of euros

	12/31/2017 before change in presentation	Effects from IAS 8	12/31/2017 after change in presentation	1/1/2017 before change in presentation	Effects from IAS 8	1/1/2017 after change in presentation
Non-current liabilities						
Pension provisions	11,313	–424	10,889	11,841	–414	11,427
Other provisions	4,944	424	5,368	4,937	414	5,351
Equity						
Other comprehensive income	–2,903	81	–2,822	–1,628	101	–1,527
Retained earnings	32,680	–81	32,599	30,168	–101	30,067

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Figures in millions of euros

	2017 before change in presentation	Effects from IAS 8	2017 after change in presentation
Sales revenue	**78,066**		**78,066**
Cost of sales	–50,156	–198	–50,354
Gross profit	**27,910**	**–198**	**27,712**
Distribution and administrative cost	–15,788	7	–15,781
Research and development cost	–7,264	219	–7,045
Other operating income and expenses	84		84
Result from measurement at equity	–26		–26
EBIT	**4,916**	**28**	**4,944**
Financial result	–148		–148
Profit before tax	**4,768**	**28**	**4,796**
Income taxes	–1,494	–8	–1,502
Profit after tax	**3,274**	**20**	**3,294**

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Consolidation

Consolidated group

Robert Bosch GmbH is headquartered in Stuttgart, Germany. The shareholders of Robert Bosch GmbH are Robert Bosch Stiftung GmbH, Stuttgart (92.0 percent of the shares), the Bosch family (7.4 percent of the shares), and Robert Bosch Industrietreuhand KG, Stuttgart, which performs the entrepreneurial ownership functions. Robert Bosch GmbH holds treasury stock equivalent to 0.6 percent of capital.

Besides Robert Bosch GmbH, the consolidated group comprises a further 462 (previous year: 442) fully consolidated companies. The group developed as follows:

	Germany	Outside Germany	Total
Included in consolidation at January 1, 2017	**91**	**351**	**442**
Additions/formations in fiscal year 2017	6	17	23
Disposals/mergers in fiscal year 2017	3	19	22
Included in consolidation at December 31, 2017	**94**	**349**	**443**
Additions/formations in fiscal year 2018	5	22	27
Disposals/mergers in fiscal year 2018	3	4	7
Included in consolidation at December 31, 2018	**96**	**367**	**463**

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The consolidated group includes four special funds, as well as other investments.

In the fiscal year 2018, the following companies were consolidated for the first time:

- AS Guss Beteiligungsgesellschaft mbH, Stuttgart, Germany,
- COBI.Bike GmbH, Frankfurt am Main, Germany,
- DAA Deutsche Auftragsagentur GmbH, Hamburg, Germany,
- Robert Bosch Aftermarket Solutions GmbH, Göttingen, Germany,
- WeWash GmbH, Munich, Germany,
- Albertini Cesare S.p.A., Villasanta, Italy,
- BSH Electrodomesticos S.A.S., Bogotá, Columbia,
- Robert Bosch Morocco S.a.r.l., Casablanca, Morocco,
- Coup Urban Mobility S.L., Madrid, Spain,
- Bosch Rexroth South Africa (RF) (Pty.) Ltd., Johannesburg, South Africa (the subgroup comprises 16 entities).

Due to changes to the consolidated group, sales revenue decreased by EUR 1,322 million, while total assets increased by EUR 88 million. The decrease in sales revenue is mainly attributable to the disposal of the Starter Motors and Generators division as of December 31, 2017.

Condensed financial information on fully consolidated subsidiaries with material non-controlling interests

Figures in millions of euros

	Bosch Automotive Diesel Systems Co., Ltd., Wuxi, China		United Automotive Electronic Systems Co., Ltd., Shanghai, China	
	2018	2017	2018	2017
Current assets	1,284	1,050	1,444	1,478
Non-current assets	358	331	1,423	1,333
Current liabilities	496	477	931	976
Non-current liabilities	45	29	179	185
Sales revenue	2,050	2,051	2,965	2,968
Profit after tax	463	471	452	448
Comprehensive income	453	421	436	345
Cash flows from operating activities	285	279	660	546
Cash flows from investing activities	–59	–27	–277	–201
Cash flows from financing activities	–229	–257	–313	–311
Share of capital attributable to non-controlling interests	34.0%	34.0%	49.0%	49.0%
Profit attributable to non-controlling interests	157	160	221	220
Equity attributable to non-controlling interests	374	298	861	809
Dividends paid to non-controlling interests	78	87	153	136

Figures in millions of euros

	Bosch HUAYU Steering Systems Group, Shanghai, China		Bosch Ltd., Bengaluru, India	
	2018	**2017**	**2018**	**2017**
Current assets	1,132	892	1,136	910
Non-current assets	538	498	890	945
Current liabilities	1,015	812	537	482
Non-current liabilities	35	33	28	26
Sales revenue	1,824	1,609	1,542	1,475
Profit after tax	181	167	196	180
Comprehensive income	175	134	–8	121
Cash flows from operating activities	84	348	225	287
Cash flows from investing activities	–78	–68	–166	–171
Cash flows from financing activities	–65	–84	–46	–83
Share of capital attributable to non-controlling interests	49.0%	49.0%	29.5%	29.5%
Profit attributable to non-controlling interests	89	82	58	53
Equity attributable to non-controlling interests	304	267	431	397
Dividends paid to non-controlling interests	32	28	13	24

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The condensed financial information of the respective entities corresponds to the figures before consolidation entries.

Joint ventures

The following entities are joint ventures in accordance with IFRS 11 and were recognized in the consolidated financial statements as of December 31, 2018, using the equity method in accordance with IAS 28:

- EM-motive GmbH, Hildesheim, Germany (50%),
- KB Wiper Systems Co., Ltd., Daegu, Korea (50%).

The share of capital corresponds to the share of voting rights in each case.

In addition, Robert Bosch GmbH and Daimler AG set up a development joint venture in 2017 in the field of fully automated driving and driverless vehicles.

As of February 28, 2018, the Bosch Group acquired the 50% interest previously held by the other joint-venture partner in Bosch Rexroth South Africa (RF) (Pty.) Ltd. (formerly: Hytec Holdings Pty. Ltd.), Johannesburg, South Africa. The entity and its subsidiaries, which had previously been reported as a joint venture, were thus consolidated in full for the first time in the fiscal year 2018.

Following the announcement by the Bosch Group that it did not intend to set up own production facilities for battery cells due to economic reasons, Lithium Energy and Power GmbH & Co. KG discontinued its operations.

At the end of January 2019, the Bosch Group announced its intention to acquire Daimler AG's 50% interest in EM-motive GmbH. The transaction is to be closed in the fiscal year 2019.

As in the previous year, there were no unrecognized commitments to joint ventures as of the reporting date that could lead to a future outflow of cash or other resources.

Material joint ventures

The fifty-fifty joint venture Bosch Mahle Turbo Systems GmbH & Co. KG, Stuttgart, Germany, was established in 2008 by Robert Bosch GmbH and MAHLE GmbH, Stuttgart. The entity develops and manufactures exhaust-gas turbochargers for gasoline and diesel engines for use in passenger cars and commercial vehicles, and was allocated to the Mobility Solutions business sector. In January 2017, Bosch and MAHLE announced that they planned to sell the joint venture Bosch Mahle Turbo Systems GmbH & Co. KG, Stuttgart. The transaction was closed on March 8, 2018.

The condensed financial information for Bosch Mahle Turbo Systems GmbH & Co. KG, Stuttgart, Germany, for the fiscal year 2017 is presented in the table below; it corresponds with the amounts presented in the joint venture's IFRS financial statements:

Figures in millions of euros

	Bosch Mahle Turbo Systems GmbH & Co. KG, Stuttgart, Germany
	2017
Sales revenue	389
Depreciation and amortization	–35
EBIT	–78
Interest income	0
Interest expenses	–1
Profit/loss before tax	–86
Income taxes	0
Profit/loss after tax	–86
Other comprehensive income	0
Total comprehensive income	–86
Current assets	176
of which cash and cash equivalents	39
Non-current assets	173
Current liabilities	98
of which financial liabilities	0
Non-current liabilities	26
Equity	225
Share of equity attributable to the group	**112**

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Condensed financial information on individually immaterial joint ventures

Figures in millions of euros

	2018	2017
Carrying amount of the investments	19	84
Group share of result after tax	–14	–22
Group share of other comprehensive income of the period		–1
Group share of comprehensive income	–14	–23

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The carrying amount of the interests in the above-mentioned individually immaterial joint ventures corresponds to the proportionate share in these entities' equity.

Discontinued operations

In September 2017, the agreement to sell the joint venture Bosch Mahle Turbo Systems GmbH & Co. KG, Stuttgart, Germany, was signed. The transaction was closed on March 8, 2018. The sale gave rise to an accounting gain of EUR 33 million, which is reported under other operating income.

In February 2018, the Bosch Group announced that it did not intend to set up own production facilities for battery cells due to economic reasons. In this connection, the assets of Seeo Inc., Hayward, United States, were classified as held for sale and measured in accordance with IFRS 5. This led to the complete write-off of goodwill by EUR 37 million and a write-down of intangible assets by EUR 16 million to EUR 1 million.

Plans to sell the packaging technology business belonging to the Industrial Technology business sector were announced in June 2018. This decision affected the pharmaceuticals and food units of the Packaging Technology division. The sale is intended to secure the division's long-term future. As of December 31, 2018, the criteria were not satisfied for classifying the division as a discontinued operation or non-current asset held for sale in accordance with IFRS 5.

Notes to the income statement

01 Sales revenue

Sales revenue amounted to EUR 78,465 million (previous year: EUR 78,066 million). The Mobility Solutions business sector accounted for EUR 47,567 million (previous year: EUR 47,384 million) of this total, the Industrial Technology business sector for EUR 7,443 million (previous year: EUR 6,742 million), the Consumer Goods business sector for EUR 17,812 million (previous year: EUR 18,388 million), and the Energy and Building Technology business sector for EUR 5,569 million (previous year: EUR 5,438 million). Sales revenue that cannot be allocated to the business sectors came to EUR 74 million (previous year: EUR 114 million).

Sales revenue includes an amount of EUR 911 million that had been included in the balance of current contract liabilities at the beginning of the fiscal year.

Of the sales revenue from performance obligations not satisfied in full or in part, as of December 31, 2018, an amount of EUR 54 million is expected to be realized within the next two years and an amount of EUR 18 million after that two-year period ends. These amounts relate to long-term construction contracts.

Sales revenue recognized over time amounts to EUR 42,531 million in the Mobility Solutions business sector, EUR 180 million in the Industrial Technology business sector, and EUR 8 million in the Energy and Building Technology business sector.

The section on segment reporting provides a breakdown of sales revenue by region.

02 Distribution and administrative cost

Figures in millions of euros

	2018	2017
Administrative expenses	4,290	4,509
Distribution cost	11,018	11,272
	15,308	**15,781**

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The distribution cost includes personnel and non-personnel costs, depreciation charged in the distribution function, customer service, logistics, market research, sales promotion, shipping, advertising, and warranty costs.

03 Research and development cost

Research and development cost contains both research cost and development cost that cannot be capitalized. From the fiscal year 2018 onward, amortization of capitalized development work and expenses for development work charged directly to customers are presented under cost of sales instead of under research and development cost. With respect to the change in presentation of amortization of capitalized development work, the previous year's figures have been presented on a comparable basis.

Figures in millions of euros

	2018	2017
Total research and development cost	6,189	7,472
Development cost capitalized in the reporting period	–300	–460
Impairment losses on capitalized development cost	74	33
	5,963	**7,045**

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04 Other operating income

Figures in millions of euros

	2018	2017
Income from exchange-rate fluctuations	915	866
Income from the reversal of loss allowances on receivables and other assets		37
Income from the disposal of non-current assets	95	97
Income from rent and leases	11	12
Income from the reversal of provisions	217	61
Sundry other operating income	767	715
	2,005	**1,788**

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The income from exchange-rate fluctuations is offset by expenses which are disclosed in other operating expenses. These income and expense items contain the effective exchange-rate results and the results from foreign-currency derivatives allocable to the operating business.

Leases are accounted for according to the rules pertaining to operating leases, provided that substantially all the risks and rewards incidental to ownership remain with the Bosch Group as lessor. The assets concerned are recognized in property, plant, and equipment, and the lease payments received, provided they are not disclosed as sales revenue, are recorded in other operating income.

Government grants related to income amounted to EUR 209 million (previous year: EUR 145 million). They are offset against the respective expenses. If there are no such expenses, the grants are disclosed in sundry other operating income.

In the previous year, sundry other operating income contained gains from the sale of SEG Automotive Germany GmbH (formerly: Robert Bosch Starter Motors Generators Holding GmbH), including its subsidiaries, and from the sale of individual business operations of the Bosch Group.

05 Other operating expenses

Figures in millions of euros

	2018	2017
Expenses from exchange-rate fluctuations	1,037	769
Loss allowances on receivables and other assets	34	
Expenses from the disposal of non-current assets	212	102
Other taxes	41	69
Expenses from the recognition of provisions	213	292
Impairment of goodwill	17	55
Sundry other operating expenses	433	417
	1,987	**1,704**

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The expenses from the recognition of provisions include additions to the provisions for legal risks.

06 Financial result

Figures in millions of euros

	2018	2017
Interest and similar income	429	432
Interest and similar expenses	–454	–457
Interest result	**–25**	**–25**
Investment income	62	34
Income from securities	106	214
Expenses from securities	–202	–110
Income from exchange-rate fluctuations	700	684
Expenses from exchange-rate fluctuations	–939	–1,284
Income from derivatives	654	884
Expenses from derivatives	–768	–521
Other income	5	16
Other expenses	–28	–40
Other financial result	**–410**	**–123**
Financial result, total	**–435**	**–148**
of which financial income	1,956	2,264
of which financial expenses	–2,391	–2,412

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The line item “interest and similar income” contains dividend income of EUR 91 million (previous year: EUR 80 million) and income from investment funds of EUR 22 million (previous year: EUR 24 million).

Capitalized borrowing costs of EUR 11 million (previous year: EUR 12 million) were deducted from interest expenses. The underlying borrowing rate is 2.0 percent (previous year: 2.0 percent).

Investment income comprises income from equity investments as well as changes in the fair value of investments measured at fair value through profit or loss.

Income and expenses from securities include the changes in the fair value of securities measured at fair value through profit or loss, gains and losses on the disposal of securities measured at fair value through other comprehensive income, as well as impairment losses and income from the reversal of impairment losses on such securities.

The line items “income/expenses from derivatives” contain transactions to hedge financial assets.

Interest income and expenses are attributable to financial instruments not measured at fair value through profit or loss as follows:

Figures in millions of euros

	2018		2017	
	Interest income	Interest expenses	Interest income	Interest expenses
Financial assets, measured at amortised cost (AC)	117			
Financial assets, measured at fair value through other comprehensive income (FVOCI wR)	180			
Financial liabilities, measured at amortised cost (AC)		174		223
Loans and receivables (LaR)			121	
Available-for-sale financial assets (AfS)			299	
	297	**174**	**420**	**223**

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07 Income taxes

Income taxes are classified according to their origin as follows:

Figures in millions of euros

	2018	2017
Current taxes	1,323	1,291
Deferred taxes	170	211
	1,493	**1,502**

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Deferred taxes are calculated on the basis of the tax rates that apply or are expected to apply given the current legislation in the individual countries at the expected time of realization. The corporate income tax rate for German companies is 15 percent. Taking into account the solidarity surcharge of 5.5 percent and the trade tax levied on profits recorded in Germany, the total tax rate is 29 percent. The tax rates outside Germany range between 9 percent and 35 percent (previous year: between 9 percent and 40 percent).

As of December 31, the deferred tax assets and liabilities presented in the statement of financial position are attributable to the following items:

Figures in millions of euros

	2018		2017	
	Assets	Liabilities	Assets	Liabilities
Receivables, other assets, and inventories	697	471	776	232
Securities, investments	11	176	38	312
Property, plant, and equipment	294	919	180	911
Intangible assets	273	1,265	299	1,383
Other assets	118		74	
Liabilities	1,026	76	824	105
Provisions	1,109	84	2,500	91
Other liabilities	1	84	0	123
Unused tax losses and tax credits	356		245	
Total	**3,885**	**3,075**	**4,936**	**3,157**
Netting	−1,284	−1,284	−1,037	−1,037
	2,601	**1,791**	**3,899**	**2,120**

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In the fiscal year, write-downs on deferred tax assets came to EUR 1,960 million (previous year: EUR 709 million).

There are EUR 2,515 million in unused tax losses for which no deferred tax assets have been recognized (previous year: EUR 2,218 million). Within the next three years, EUR 130 million of that amount will be forfeited (previous year: EUR 173 million). As of the reporting date, there were no tax credits on which no deferred tax assets had been recognized (previous year: EUR 21 million).

Consolidation measures give rise to deferred tax assets of EUR 250 million (previous year: EUR 221 million) and deferred tax liabilities of EUR 0 million (previous year: EUR 3 million).

No deferred tax liabilities were recognized on temporary differences in connection with investments in subsidiaries, as it is not probable that these temporary differences will reverse in the foreseeable future. As of the reporting date, retained profits of subsidiaries amount to EUR 21,646 million (previous year: EUR 21,005 million). If these profits are distributed, this could lead to an income tax or withholding tax burden at Robert Bosch GmbH or at the level of intermediate holding entities. The taxable temporary differences were not determined on account of the undue cost or effort involved.

In the reporting period, deferred taxes of EUR 788 million (previous year: EUR 243 million) were recorded directly in equity. Of this total, EUR 55 million increases (previous year: decrease of EUR 33 million) the reserve from financial instruments and EUR 843 million decreases retained earnings due to the change in actuarial parameters in accordance with IAS 19 (previous year: decrease of EUR 210 million).

In the fiscal year, changed tax rates in the Bosch Group resulted in deferred tax income of EUR 25 million (previous year: a deferred tax expense of EUR 86 million).

The basis for the expected income tax expense is the German tax rate of 29 percent, as in the previous year. The difference between expected and disclosed income tax expense is attributable to the following factors:

Figures in millions of euros

	2018	2017
Profit before tax	5,067	4,796
Expected income tax expense	1,469	1,391
Variances due to tax rate	–151	3
Non-deductible expenses	180	201
Zero-rated income	–226	–306
Other differences	221	213
Income tax expense disclosed	**1,493**	**1,502**
Effective tax rate	29%	31%

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08 Non-controlling interests

Profits attributable to non-controlling interests amount to EUR 534 million (previous year: EUR 527 million). They are counter-balanced by losses of EUR 7 million (previous year: EUR 6 million).

09 Other notes to the income statement

In the reporting period, personnel expenses of EUR 22,219 million (previous year: EUR 22,238 million) were incurred. Cost of materials amounted to EUR 35,965 million (previous year: EUR 35,618 million).

Information about amortization and depreciation is contained in the notes on non-current assets.

Notes to the statement of financial position

10 Cash and cash equivalents

Figures in millions of euros

	2018	2017
Bank balances (term up to 90 days)	4,702	4,527
Cash and reserve bank deposits	14	16
	4,716	**4,543**

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The bank balances are partly invested as secured deposits in tri-party repo transactions. As of the reporting date, the carrying amount of the secured deposits is EUR 600 million (previous year: EUR 400 million). The bank provided collateral of the same amount in the form of securities.

11 Trade receivables

In the fiscal year, trade receivables came to EUR 14,859 million (previous year: EUR 14,970 million). Of that amount, EUR 3 million (previous year: EUR 5 million) have a term of more than one year.

Information about valuation allowances on trade receivables is contained in the credit risk section of the note on "Capital and risk management."

12 Other financial assets (current)

Figures in millions of euros

	2018	2017
Securities	1,336	565
Bank balances (term of more than 90 days)	136	331
Loan receivables	192	326
Derivative financial assets	123	221
Receivables from finance leases	35	34
Sundry other financial assets	454	529
	2,276	**2,006**

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The securities classified as current are listed securities with a residual term of less than one year as well as securities which are intended for sale within a year.

The note on "Leases" contains additional disclosures on receivables from finance leases.

13 Contract assets

Figures in millions of euros

	12/31/2018		1/1/2018	
	up to 1 year	more than 1 year	up to 1 year	more than 1 year
From revenue recognition over time	708	1	623	2
From incremental costs of obtaining the contract	47	245	25	171
From development work	150	314	139	126
	905	**560**	**787**	**299**

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The contract assets from revenue recognition over time present the excess of the Bosch Group's performance, presented as sales revenue, over consideration already received from the customer. The contract assets from incremental costs of obtaining a contract include those costs that the Bosch Group expects to be able to recover. At the point in time when control is transferred to the customer, contract assets from development work have to be presented for all separate consideration to be subsequently reimbursed by the customer for separately commissioned research and development work.

14 Other assets (current)

Figures in millions of euros

	2018	2017
Prepaid expenses	237	204
Receivables from tax authorities (without income tax receivables)	1,376	1,581
Sundry other assets	255	227
	1,868	**2,012**

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15 Inventories

Figures in millions of euros

	2018	2017
Raw materials, consumables, and supplies	3,731	3,281
Work in process	2,277	1,554
Finished goods and merchandise	4,925	5,199
Prepayments	82	85
	11,015	**10,119**

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Of the total amount of inventories, an amount of EUR 504 million (previous year: EUR 442 million) is carried at net realizable value. In the fiscal year, impairment losses of EUR 174 million (previous year: EUR 77 million) were recognized in profit or loss. No inventories were pledged as collateral.

16 Non-current financial assets

Figures in millions of euros

	2018	2017
Securities	10,294	11,051
Investments	1,865	1,063
Loan receivables	36	64
Derivative financial assets	5	67
Receivables from finance leases	153	142
Other financial assets	205	135
	12,558	**12,522**

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Loan receivables with a residual term of more than five years amount to EUR 3 million (previous year: EUR 0 million). Other financial receivables with a residual term of more than five years amount to EUR 52 million (previous year: EUR 0 million).

Disclosures on loss allowances on loan receivables, other financial receivables, and finance lease receivables are contained in the credit risk section of the note on “Capital and risk management.”

The note on “Leases” contains further details on receivables from finance leases.

Non-current securities
The securities consist of interest-bearing and other securities, investment funds, as well as shares. Shares with a fair value of EUR 1,105 million were sold in the fiscal year.

The pledged securities have a carrying amount of EUR 1,133 million (previous year: EUR 1,011 million). The pledged securities satisfy the legal requirement to secure obligations to employees and bank guarantees. Fund units equivalent to at least the value of the claims were pledged as collateral.

17 Property, plant, and equipment

Figures in millions of euros

	Land, buildings belonging to operating assets	Investment property	Plant and equipment	Other equipment, fixtures, and furniture, leased assets	Prepayments and assets under construction	Total
Gross values 1/1/2017	**10,494**	**85**	**24,961**	**10,778**	**2,286**	**48,604**
Changes in consolidated group	–4		–383	–230	–49	–666
Additions	201	1	1,068	921	2,154	4,345
Reclassifications	222	9	1,099	351	–1,681	
Disposals	–64	–3	–815	–600	–61	–1,543
Exchange rate differences	–384		–975	–262	–95	–1,716
Gross values 12/31/2017	**10,465**	**92**	**24,955**	**10,958**	**2,554**	**49,024**
Depreciation 1/1/2017	**4,424**	**38**	**17,155**	**7,892**	**10**	**29,519**
Changes in consolidated group	–8		–268	–187		–463
Additions	290	1	1,694	1,109	1	3,095
Reclassifications	3			2	–5	
Disposals	–33	–2	–723	–545	–1	–1,304
Exchange rate differences	–145		–633	–172	–2	–952
Depreciation 12/31/2017	**4,531**	**37**	**17,225**	**8,099**	**3**	**29,895**
Carrying amounts 12/31/2017	**5,934**	**55**	**7,730**	**2,859**	**2,551**	**19,129**
Gross values 1/1/2018	**10,465**	**92**	**24,955**	**10,958**	**2,554**	**49,024**
Changes in consolidated group	–1		9	–9	2	1
Additions	342		1,082	932	2,590	4,946
Reclassifications	445		1,262	416	–2,123	
Disposals	–163		–888	–574	–38	–1,663
Exchange rate differences	–14		–246	–31	–15	–306
Gross values 12/31/2018	**11,074**	**92**	**26,174**	**11,692**	**2,970**	**52,002**
Depreciation 1/1/2018	**4,531**	**37**	**17,225**	**8,099**	**3**	**29,895**
Changes in consolidated group	–2		3	–6		–5
Additions	290	1	1,683	1,129		3,103
Reclassifications	11		–3	–17	9	
Disposals	–95		–765	–503		–1,363
Write-ups	–3					–3
Exchange rate differences	21		–125	–13		–117
Depreciation 12/31/2018	**4,753**	**38**	**18,018**	**8,689**	**12**	**31,510**
Carrying amounts 12/31/2018	**6,321**	**54**	**8,156**	**3,003**	**2,958**	**20,492**

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The total depreciation charge for the fiscal year contains the following impairment losses:

- Land and buildings: EUR 0 million (previous year: EUR 2 million),
- Plant and equipment: EUR 21 million (previous year: EUR 16 million),
- Other equipment, fixtures, and furniture: EUR 4 million (previous year: EUR 10 million).

The impairment losses of the fiscal year contain an amount of EUR 20 million, attributable to plant and equipment of the Automotive Steering division (Mobility Solutions business sector). The impairment losses were recognized against the backdrop of increasingly demanding customer specifications and tough competition.

The carrying amounts contain the following amounts from finance leases in which the Bosch Group is the lessee:

- Land and buildings: EUR 12 million (previous year: EUR 14 million),
- Plant and equipment: EUR 1 million (previous year: EUR 2 million),
- Other equipment, fixtures, and furniture: EUR 13 million (previous year: EUR 8 million).

The obligations entered into to purchase items of property, plant, and equipment amounted to EUR 895 million (previous year: EUR 727 million); there were no restrictions on title in the fiscal year nor in the previous year. Government grants for assets of EUR 21 million (previous year: EUR 41 million) were deducted from the additions in the reporting year.

Investment property comprises rented land and buildings which were measured at amortized cost. Measured at fair value, the portfolio comes to EUR 112 million (previous year: EUR 108 million). The fair values were calculated at corporate headquarters. The residential property in Germany and Asia allocated to level 3 of the fair-value hierarchy pursuant to IFRS 13 is measured using the discounted earnings or comparative method based on the ImmoWertV [*Verordnung über die Grundsätze für die Ermittlung der Verkehrswerte von Grundstücken*: Ordinance on principles to assess the market value of land] and taking the current fabric and market values of the individual properties into account. The rental income from investment property came to EUR 8 million (previous year: EUR 8 million), maintenance expenses totaled EUR 4 million (previous year: EUR 4 million).

A review of the useful lives of property, plant, and equipment revealed that special-purpose machinery is used for a longer period than previously estimated. The useful life on which depreciation is based was therefore extended to eight years. In the fiscal year and subsequent years, this change increases depreciation of property, plant, and equipment as presented in the following table:

Figures in millions of euros

	2018	2019	2020
Depreciation of property, plant, and equipment	99	102	37

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18 Intangible assets

Figures in millions of euros

	Acquired intangible assets (without goodwill)	Acquired goodwill	Internally generated intangible assets	Total
Gross values 1/1/2017	**9,277**	**5,772**	**1,837**	**16,886**
Changes in consolidated group	95	45	–13	127
Additions	312		514	826
Disposals	–121		–193	–314
Exchange rate differences	–315	–167	–3	–485
Gross values 12/31/2017	**9,248**	**5,650**	**2,142**	**17,040**
Amortization 1/1/2017	**3,161**	**655**	**896**	**4,712**
Changes in consolidated group	–2		–12	–14
Additions	755	55	297	1,107
Disposals	–119		–181	–300
Exchange rate differences	–126	–2		–128
Amortization 12/31/2017	**3,669**	**708**	**1,000**	**5,377**
Carrying amounts 12/31/2017	**5,579**	**4,942**	**1,142**	**11,663**
Gross values 12/31/2017	**9,248**	**5,650**	**2,142**	**17,040**
IFRS 15 restatements	–132		–169	–301
Gross values 1/1/2018	**9,116**	**5,650**	**1,973**	**16,739**
Changes in consolidated group	–43	23		–20
Additions	235	2	351	588
Reclassifications	–3	3		
Disposals	–184	–37	–406	–627
Exchange rate differences	39	25	1	65
Gross values 12/31/2018	**9,160**	**5,666**	**1,919**	**16,745**
Amortization 12/31/2017	**3,669**	**708**	**1,000**	**5,377**
IFRS 15 restatements	–26			–26
Amortization 1/1/2018	**3,643**	**708**	**1,000**	**5,351**
Changes in consolidated group	–37			–37
Additions	726	17	367	1,110
Disposals	–167		–407	–574
Exchange rate differences	16	–1	1	16
Amortization 12/31/2018	**4,181**	**724**	**961**	**5,866**
Carrying amounts 12/31/2018	**4,979**	**4,942**	**958**	**10,879**

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The total amortization charge for the fiscal year contains the following impairment losses:

- ▶ Acquired intangible assets (without goodwill): EUR 0 million (previous year: EUR 9 million),
- ▶ Internally generated intangible assets: EUR 74 million (previous year: EUR 33 million).

The impairment losses recognized on internally generated intangible assets relate to capitalized development projects and are attributable to the Mobility Solutions business sector as well as to “Other segments.” They were charged because an economic benefit was no longer expected.

The goodwill of EUR 4,942 million (previous year: EUR 4,942 million) is attributable to the divisions (cash-generating units) as follows:

Figures in millions of euros

	2018	2017
Powertrain Solutions	347	382
Automotive Aftermarket	376	366
Automotive Steering	108	108
Drive and Control Technology	1,529	1,523
Packaging Technology	127	125
Power Tools	381	372
BSH Hausgeräte GmbH	548	548
Building Technologies	455	443
Thermotechnology	1,001	990
Other	70	85
	4,942	**4,942**

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Goodwill is tested for impairment annually. An impairment loss is recorded when the recoverable amount is below the carrying amount of the divisions (cash-generating units). An asset’s recoverable amount is the higher of its fair value less costs of disposal and its value in use. Value in use is derived from the future cash flows. The cash flows are determined by reference to business plans with a planning period of five years and based on the medium-term planning approved by management. Planning is based on expectations with respect to future market shares, growth in the respective markets, and the profitability of products and services. Cash flows after the detailed planning period are determined by reference to an expected long-term growth rate.

The parameters used in impairment testing are presented in the following table:

Percentage figures

	Mobility Solutions		Industrial Technology		Consumer Goods		Energy and Building Technology	
	2018	2017	2018	2017	2018	2017	2018	2017
Growth rate	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Pre-tax discount rate	10.5	11.6	10.2	10.4	8.7	8.9	10.3	10.3

39

A risk-free interest rate of 1.1 percent (previous year: 1.3 percent) and a market-risk premium of 6.5 percent (previous year: 6.5 percent) are assumed. The standard tax rate used is 29 percent (previous year: 29 percent).

Annual impairment testing of goodwill gave rise to an impairment loss of EUR 17 million in the fiscal year. The full amount of the impairment loss was attributable to the Bosch Software Innovations operating unit, which is disclosed under “All other segments.”

For all other items of goodwill for which the annual impairment test did not indicate any need to recognize an impairment loss, neither an increase in the discount rate by 0.5 of a percentage point nor a decrease in the growth rate by 0.5 of a percentage point would have led to an impairment loss.

19 Trade payables

Figures in millions of euros

	2018	2017
Trade payables	7,605	7,393
Notes payable	22	28
	7,627	**7,421**

40

In the fiscal year, there are trade payables of EUR 4 million due in more than one year (previous year: EUR 4 million).

20 Other current and non-current financial liabilities

Figures in millions of euros

	2018		2017	
	up to 1 year	more than 1 year	up to 1 year	more than 1 year
Bonds	300	3,001	51	3,298
Promissory loans	154	1,498		1,652
Liabilities to banks	269	14	619	117
Loans	71	30	87	22
Derivative financial liabilities	76	5	75	10
Finance lease obligations	7	18	6	18
Other financial liabilities	714	86	714	83
	1,591	**4,652**	**1,552**	**5,200**

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Financial liabilities amounting to EUR 2,998 million (previous year: EUR 3,492 million) are due in more than five years.

The note on “Leases” contains additional disclosures on liabilities from finance leases.

21 Contract liabilities

Figures in millions of euros

	12/31/2018		1/1/2018	
	up to 1 year	more than 1 year	up to 1 year	more than 1 year
From revenue recognition over time	85	22	69	32
From services not yet rendered	1,342	175	1,001	25
	1,427	**197**	**1,070**	**57**

42

Amounts received from customers are presented as contract liabilities from revenue recognition over time to the extent that they exceed the Bosch Group's performance reported as sales revenue. Contract liabilities from services not yet rendered comprise the obligations, previously reported under other provisions in the sales area, from services invoiced, but not yet rendered (e.g. assembly, qualification, or validation costs). In addition, this item contains advance payments received from contracts that are within the scope of IFRS 15.

22 Other liabilities and provisions

Sundry other liabilities

Figures in millions of euros

	2018		2017	
	up to 1 year	more than 1 year	up to 1 year	more than 1 year
Accruals in the personnel area	2,671		2,551	
Accruals in the sales and marketing area	1,408		1,355	
Other accruals	868		825	
Tax liabilities (without income tax liabilities)	693		769	
Prepayments received for inventories			520	
Deferred income	245	97	196	104
Sundry other liabilities	344	86	398	113
	6,229	**183**	**6,614**	**217**

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EUR 1 million of the sundry other liabilities (previous year: EUR 1 million) are due in more than five years.

The accruals in the personnel area mainly relate to vacation and salary entitlements as well as accrued special payments, while those in the sales and marketing area mainly pertain to bonus and commission payments.

Provisions (without income tax provisions and pension provisions)

Figures in millions of euros

	2018		2017	
	up to 1 year	**more than 1 year**	**up to 1 year**	**more than 1 year**
Tax provisions (without income tax provisions)	35	39	40	43
Provisions in the personnel area	684	1,989	906	2,313
Provisions in the sales and marketing area	1,848	1,073	2,017	1,075
Other provisions	1,667	1,010	861	1,937
	4,234	**4,111**	**3,824**	**5,368**

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Provisions developed as follows:

Figures in millions of euros

	12/31/2017[1]	IFRS 15	1/1/2018	Changes in consolidated group	Amounts used	Amounts reversed	Increase	Currency	12/31/2018
Tax provisions	867		867		–86	–84	145	–7	835
Provisions in the personnel area	3,219		3,219	4	–761	–638	862	–13	2,673
Provisions in the sales and marketing area	3,092	138	3,230		–1,434	–441	1,574	–8	2,921
Other provisions	2,798		2,798	8	–395	–310	582	–6	2,677
	9,976	**138**	**10,114**	**12**	**–2,676**	**–1,473**	**3,163**	**–34**	**9,106**

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[1] Restated figures; see section “Changes in accounting policies.”

Of the increase in provisions, an amount of EUR 40 million (previous year: EUR 15 million) relates to the reversal of discount.

Provisions in the personnel area relate to obligations from personnel adjustment measures, from early phased retirement, and from other special benefits. Provisions in the sales and marketing area mainly take account of losses from delivery and warranty obligations, including risks from recall, exchange, and product liability cases. Other provisions are recognized, among other things, for risks from purchasing obligations, environmental protection obligations, litigation risks, restructuring, and legal risks.

In the antitrust investigations of automotive suppliers that have been running worldwide for a number of years, the proceedings brought by the European Commission against Bosch were brought to an end by common consent at the end of February 2018, in return for fines totaling EUR 77.2 million. In view of potential civil-law risks associated with some of the matters under investigation, Bosch has already conducted talks with customers and expects further talks on the subject of compensation. Bosch was also able to reach fundamental agreements with class-action claimants in Canada. As part of its investigations of suspected antitrust violations in the French market by several household-appliance manufacturers, the French antitrust authority fined the French BSH subsidiary EUR 23 million in November 2018.

The events concerning the emissions from diesel vehicles made by various automakers and in many countries bear considerable risks for Bosch. Authorities in many countries, also in North America and Europe, are investigating not only Volkswagen, Audi, and Porsche, but also several other automakers. According to press reports, these include Fiat Chrysler and Daimler. As one of the world's leading suppliers of engine control units, Bosch also supplied these automakers with engine control units, including software, for various models. It supplies such components to many other automakers worldwide. The Stuttgart public prosecutor's office has so far conducted several formal investigations of Bosch associates, some of them persons unknown. Bosch is cooperating with the Stuttgart public prosecutor's office and with many other regulatory and criminal investigation authorities worldwide.

With respect to the events concerning various automakers' diesel vehicle emissions, Bosch has been and is a defendant in many class and individual civil-law actions around the world. This relates to the U.S. and Canada, among other countries. In several other countries, actions are also pending or have at least been threatened. In two of the pending class actions in the U.S. relating to Volkswagen, Audi, and Porsche vehicles with 2.0- and 3.0-liter engines sold in the U.S., Bosch reached an agreement with buyers and reseller dealers in 2017 that partly settles the U.S. class actions. The settlement has meanwhile been approved by the competent court. For this, Bosch paid a total of USD 327.5 million. In agreeing to this settlement, Bosch neither acknowledges the validity of the claims brought forward, nor does it concede any guilt.

Many civil claimants have rejected the settlement, and are continuing to press their claims individually. In addition, the class action against Bosch by Volkswagen dealers continues. In the U.S., Bosch companies are still defendants in class actions relating to diesel passenger cars made by Daimler, BMW, General Motors, and Ford, together with the respective automaker. In all these proceedings, Bosch is asserting its rights. It cannot be ruled out that further actions will be brought against Bosch in relation to other automakers. The risks that may arise as a result of these pending and threatened actions are severe, and cannot be quantified in some cases. At the beginning of January 2019, moreover, Bosch reached a fundamental civil-law settlement with 50 individual U.S. states and territories, amounting to USD 98 million. In the class action concerning Fiat Chrysler vehicles in the United States, Bosch was also able to achieve a settlement involving the payment of USD 27.5 million. However, this is still subject to court approval.

On the basis of the facts relating to antitrust proceedings and engine control units that were available and assessed by the board of management when these financial statements were prepared, the board of management believes that sufficient precautions have been taken in the form of provisions for legal risks. For the various legal risks as outlined, provisions throughout the group amount to EUR 1,195 million.

Contingent liabilities and other financial obligations

No provisions were recognized for the following contingent liabilities, as it is more likely than not that they will not occur:

Figures in millions of euros

	2018	2017
Contingent liabilities related to notes issued and transferred	13	13
Contingent liabilities from guarantees	24	19
Other contingent liabilities	10	10
	47	**42**

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23 Pension provisions and similar obligations

The workforce of the companies included in the consolidated financial statements have certain rights in connection with the company pension scheme, depending on the conditions existing in the various countries. The benefit obligations include both currently claimed benefits and future benefit obligations of active associates or associates that have left the company.

The group's post-employment benefits include both defined contribution plans and defined benefit plans. In the case of defined contribution plans, the company pays voluntary contributions to state or private pension or insurance funds, based on legal or contractual provisions. No further payment obligations arise for the company from the payment of these contributions. The defined benefit plans are funded or unfunded pension systems, or systems financed by insurance premiums.

Plan assets are invested based on the underlying promised defined benefits. Asset-liability studies are performed for this purpose regularly. The funding status is an important controlling variable in this context. Bosch continuously monitors it with the involvement of external experts. The investment policy is derived from the corresponding governance guidelines. External asset managers are tasked with handling the investment of assets.

The major defined benefit plans and post-employment medical-care plans operated by the Bosch Group are described below. These plans are subject to actuarial risks such as longevity risks, interest fluctuation risks, and capital market risks.

Germany
The company pension scheme ("*Bosch bAV Plan*"), introduced on January 1, 2006, is a defined contribution plan with salary-based contributions for accumulating retirement benefits and additional benefits in the event of occupational disability or death. The *Bosch bAV Plan* is partly funded via an external pension fund. The value of the assets of the external pension fund is offset against the pension obligation calculated using the projected unit credit method. In Germany, the external pension funds are Bosch Pensionsfonds AG and Bosch Hilfe e.V.

During the vesting period, employer and employee contributions are added to the assets of Bosch Pensionsfonds AG up to the tax-allowed ceiling. Contributions that exceed the tax-allowed ceiling are allocated to the unfunded obligation. The benefit amount rises in line with the performance of Bosch Pensionsfonds. Grandfather provisions were transferred to the Bosch bAV Plan. For a constantly decreasing number of associates in the vesting period, a transitional arrangement guarantees a fixed rate of return on the defined benefit obligation.

As the amount of additional benefits promised in the event of occupational disability or death, which were moved to a separate plan in 2018, is not tied to years of service, these additional benefits are accounted for from 2018 onward only when the event triggering occupational disability or death occurs.

The plans in place at the BSH group in the form of defined contribution capital components with salary-based contributions or salary-based pension components were transferred to the Bosch company pension scheme ("*Bosch bAV Plan*") in 2018.

On reaching retirement, or in the event of occupational disability or death, the earned benefits are paid out in the form of a lump-sum payment, pension payments, or a lifelong annuity. Beneficiaries who reach retirement from January 1, 2016, onward receive a fund-based retirement pension payment through Bosch Pensionsfonds. Owing to the low likelihood of claims being made on Bosch, the plan is treated as a defined contribution plan from the start of the pension.

Japan
The majority of the pension obligations are corporate pension plans (CPPs), generally in the form of funded career average pension plans. The benefits are based on salary-based contributions that are subject to interest. The rate of return depends on the structure of the plan.

There are also obligations from unfunded retirement allowance plans (RAPs), the benefits of which are based on years of service and final salary.

All the benefits are paid out in the form of lump-sum payments on termination, death, or reaching retirement age. Annuity payments are possible for associates in some CPPs after a certain period of service.

Switzerland
Bosch has a funded pension plan. The Bosch pension plan is organized as a foundation. All the demographic and financial risks are borne by the foundation and regularly assessed by the foundation's board of trustees. In the case of a deficit, adjustments can be made such as a change in the pension factors or an increase in future contributions.

Pension plans are governed by the BVG [*Bundesgesetz über die berufliche Alters-, Hinterlassenen- und Invalidenvorsorge*: Swiss Pension Fund Law]. All benefits are defined by law, and the BVG stipulates the minimum benefits to be paid. The Bosch pension plan meets all legal requirements.

Both employer and employees make contributions to the Bosch pension plan. The benefits are paid out either as a lump sum or a lifelong annuity.

United Kingdom
Bosch finances a closed final-salary-based defined benefit plan. The obligation is funded via a trust association which is legally independent of Bosch, and which is operated in accordance with the law. The trustees are required to comply with the legal requirements. The plan has a deficit that is being closed through a restructuring plan.

The benefits earned are paid out on reaching retirement age, or in the event of occupational disability or death.

United States
Bosch maintains the Bosch pension plan and ten additional smaller pension plans, all of which are funded and in line with the ERISA requirements. The legal minimum funding requirements therefore apply to these plans. The Bosch pension plan is a cash balance plan under which the benefits depend on age, years of service, and salary. Benefits are paid out on reaching retirement age or in the event of death. The plan does not accept new members.

Two out of three unfunded pension plans are also closed for new members; these provide benefits for certain members of management or for members of the Bosch pension plan whose income lies above the statutory contribution assessment basis. The benefits depend on age, years of service, and salary, and are paid out on reaching retirement age or in the event of death.

In addition, Bosch finances 15 unfunded plans for post-employment medical care. Ten plans are already closed. The level of benefits and the contributions for pensioners vary depending on location, age, and years of service. The benefits include healthcare benefits and life assurance contributions for pensioners and their spouses.

Actuarial calculations and estimates are made for all defined benefit plans. Besides assumptions about life expectancy, and taking index-linked developments into account, the calculations are based on the following parameters, which vary from one country to another depending on local economic circumstances:

Percentage figures

	Germany		Japan		Switzerland		U.K.		U.S.		Total	
	2018	2017	2018	2017	2018	2017	2018	2017	2018	2017	2018	2017
Discount factor	1.8	2.0	0.3	0.4	0.8	0.6	2.9	2.5	4.2	3.5	2.0	2.2
Projected salaries	3.0	3.0	2.3	2.3	1.5	1.5	2.9	2.9	3.5	3.5	3.0	3.0
Projected pensions	1.8	1.8	n.a.	n.a.	n.a.	n.a.	3.0	2.8	n.a.	n.a.	1.6	1.7

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n.a. not applicable

To determine the discount factor in the euro zone, reference was made to bonds rated AA by at least one rating agency as of the reporting date. The discount factor is calculated for all regions in accordance with IAS 19.

Projected salaries are future salary increases estimated on the basis of the economic situation and inflation, among other factors.

The pension plans are measured using the current mortality tables as of December 31 of the fiscal year concerned. As of December 31, 2018, the following mortality tables are used:

Germany	Heubeck 2018G mortality tables
Japan	2015 MHLW Standard Table
Switzerland	BVG 2015 generation tables for pensioners, BVG 2015 P23 for future beneficiaries
United Kingdom	105 percent for males, 96 percent for females of S2PXA tables with 2017 CMI projections and 1.25 percent long-term improvement
United States	RP2006, projected by MP2018; aggregate for some plans, collar adjustments for others

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As of December 31, 2017, the following mortality tables were used in the key countries:

Germany	Heubeck 2005G mortality tables
Japan	2015 MHLW Standard Table
Switzerland	BVG 2015 generation tables for pensioners, BVG 2015 P22 for future beneficiaries
United Kingdom	105 percent for males, 96 percent for females of S2PXA tables with 2014 CMI projections and 1.25 percent long-term improvement
United States	RP2006, projected by MP2017; aggregate for some plans, collar adjustments for others

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For the key regions, the present value of the defined benefit obligation can be reconciled to the provision as follows:

Figures in millions of euros

	Present value of the obligation	Plan assets	Other assets	Unrecognized asset	Provision
At 12/31/2018					
Germany	14,309	–3,593			10,716
Japan	245	–269	6	49	31
Switzerland	1,083	–1,079	13	2	19
United Kingdom	325	–300	11		36
United States	1,734	–1,502	13		245
Other	572	–206	2		368
	18,268	**–6,949**	**45**	**51**	**11,415**
At 12/31/2017					
Germany	13,651	–3,524			10,127
Japan	230	–259		59	30
Switzerland	1,063	–1,081	17	14	13
United Kingdom	362	–320	8		50
United States	1,838	–1,535			303
Other	550	–190	6		366
	17,694	**–6,909**	**31**	**73**	**10,889**

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The development of the net liability of the defined benefit obligation is presented in the following tables:

Figures in millions of euros

	Present value of the obligation	Plan assets	Other assets	Unrecognized asset	Provision
At 1/1/2018	**17,694**	**–6,909**	**31**	**73**	**10,889**
Pension cost charged to profit or loss					
Current service cost	589				589
Past service cost[1]	5				5
Losses from plan settlements not related to past service cost	0				0
Net interest income/expense	374	–153		0	221
Other		4			4
	968	**–149**	**0**	**0**	**819**
Remeasurement					
Return on plan assets (excluding amounts included in net interest)		392			392
Losses arising from changes in demographic assumptions	55				55
Losses arising from changes in financial assumptions	167				167
Experience gains	–42				–42
Other adjustments		0		–26	–26
	180	**392**	**0**	**–26**	**546**
Contributions					
Employer		–399			–399
Beneficiaries	18	–18			0
	18	**–417**	**0**	**0**	**–399**
Benefits paid[2]	–697	251			–446
Special effects (plan settlement)	–5	5			0
Transfers	0	0			0
Currency translation	109	–122		4	–9
Changes in consolidated group	1	0			1
Changes in other assets			14		14
At 12/31/2018	**18,268**	**–6,949**	**45**	**51**	**11,415**

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[1] Mainly due to the increase in the maximum statutory gratuity payment in India.
[2] Including EUR 48 million for transfer payments to Bosch Pensionsfonds at the beginning of the pension phase for payment of a fund-based retirement pension.

Figures in millions of euros

	Present value of the obligation	Plan assets	Other assets	Unrecognized asset	Provision
At 1/1/2017	**17,942**	**–6,570**	**50**	**5**	**11,427**
Pension cost charged to profit or loss					
Current service cost	563				563
Past service cost	–7				–7
Gains from plan settlements not related to past service cost	1				1
Net interest income/expense	349	–142			207
Other	0	5			5
	906	**–137**	**0**	**0**	**769**
Remeasurement					
Return on plan assets (excluding amounts included in net interest)		–456			–456
Gains arising from changes in demographic assumptions	–22				–22
Gains from changes in financial assumptions	–220				–220
Experience losses	304				304
Other adjustments		0		73	73
	62	**–456**	**0**	**73**	**–321**
Contributions					
Employer		–384			–384
Beneficiaries	20	–20			0
	20	**–404**	**0**	**0**	**–384**
Benefits paid[1]	–672	239			–433
Special effects (plan settlement)	–2	2			0
Transfers	0	0			0
Currency translation	–410	339		–5	–76
Changes in consolidated group	–152	78			–74
Changes in other assets			–19		–19
At 12/31/2017	**17,694**	**–6,909**	**31**	**73**	**10,889**

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[1] Including EUR 40 million for transfer payments to Bosch Pensionsfonds at the beginning of the pension phase for payment of a fund-based retirement pension

The plan assets comprise the following components:

Percentage figures

	Germany		Japan		Switzerland		U.K.		U.S.	
	2018	**2017**	**2018**	**2017**	**2018**	**2017**	**2018**	**2017**	**2018**	**2017**
Cash and cash equivalents	**1**	**1**	**1**	**2**	**1**	**1**		**1**	**1**	**1**
Equity instruments	**34**	**37**	**26**	**32**	**27**	**27**	**36**	**46**	**43**	**46**
of which Europe	57	59	12	13	45	45	42	53	13	13
of which North America	21	23	37	35	33	34	35	28	71	72
of which Asia Pacific	13	15	51	52	7	7	20	16	8	9
of which emerging markets	8	1			13	11	3	3	7	6
of which other	1	2			2	3			1	
Debt instruments	**47**	**45**	**69**	**62**	**32**	**32**	**60**	**50**	**56**	**53**
of which government bonds	39	31	77	76	18	17	50	42	30	36
of which corporate bonds	58	57	16	17	61	63	50	58	66	64
of which other debt instruments	3	12	7	7	21	20			4	
Property	**9**	**9**			**36**	**36**				
of which owner-occupied	20	21								
of which non-owner-occupied	80	79			100	100				
Insurance	**3**	**2**	**4**	**4**			**4**	**3**		
Other	**6**	**6**			**4**	**4**				

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Quoted prices in an active market are available for cash and equity instruments. For the other classes of assets, there are in most cases no quoted prices in an active market. Investments in infrastructure and investments in special funds are reported under “Other.”

Duration and estimated maturities of the pension obligation

The weighted duration of the pension obligation as of December 31, 2018, is 13.8 years (previous year: 13.9 years).

Estimated maturities of the undiscounted estimated pension payments

Figures in millions of euros

	2018	2017
Less than one year	772	717
Between one and two years	763	720
Between two and three years	802	784
	2,337	**2,221**

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The estimated additions to plan assets in the fiscal year 2019 amount to EUR 383 million (previous year: EUR 393 million).

The estimated benefits to be paid directly in the fiscal year 2019 amount to EUR 484 million (previous year: EUR 457 million).

Sensitivity of the defined benefit obligations in relation to actuarial parameters

Percentage figures

	Germany		Japan		Switzerland		U.K.		U.S.	
	2018	**2017**	**2018**	**2017**	**2018**	**2017**	**2018**	**2017**	**2018**	**2017**
Discount factor										
Increase of 0.5 percentage points	–4.8	–4.8	–4.3	–4.5	–5.5	–5.6	–7.4	–8.3	–5.7	–6.2
Decrease of 0.5 percentage points	5.1	5.0	4.6	4.9	6.2	6.4	8.3	9.2	6.4	6.9
Projected salaries										
Increase of 0.25 percentage points	0.1	0.1	0.8	0.8	0.2	0.2	0.5	0.5	0.0	0.0
Decrease of 0.25 percentage points	–0.1	–0.1	–0.7	–0.7	–0.2	–0.2	–0.5	–0.5	0.0	0.0
Projected pensions										
Increase of 0.25 percentage points	0.7	0.7	n.a.	n.a.	2.5	2.5	1.7	1.7	n.a.	n.a.
Decrease of 0.25 percentage points	–0.6	–0.6	n.a.	n.a.	–2.4	–2.4	–1.6	–1.6	n.a.	n.a.
Life expectancy										
Increase by one year	2.4	2.4	n.a.	n.a.	2.9	2.9	3.2	3.2	2.4	2.4

n.a. Not applicable

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The sensitivity analyses of the defined benefit obligation for the main actuarial assumptions are based on the same methods as those used for the post-employment benefit obligations presented in the consolidated statement of financial position (projected unit credit method). In each case, one assumption was changed and the other assumptions left unchanged. This means that possible correlation effects were not considered.

Defined contribution plans

Expenses for defined contribution plans amounted to EUR 1,368 million (previous year: EUR 1,308 million).

Provisions for additional benefits

From the fiscal year 2018 onward, provisions for additional benefits in the event of death or occupational disability are accounted for as other long-term employee benefits under non-current provisions in the personnel area. As the amount of benefits promised in the event of occupational disability or death is no longer tied to years of service, the expected benefit costs are expensed when the event triggering occupational disability or death occurs. A part amount of EUR 431 million from the provision was released on account of the benefit obligation no longer being tied to years of service. Of this amount, EUR 235 million was included in cost of sales, EUR 60 million in administrative cost, EUR 34 million in selling expenses, and EUR 102 million in research and development cost.

Provision for long-service bonuses

Expenses for additions to long-service bonuses amounted to EUR 63 million (previous year: EUR 57 million).

24 Equity

The issued capital of EUR 1,200 million and capital reserve of EUR 4,557 million correspond with the items of the statement of financial position disclosed by Robert Bosch GmbH. The issued capital is divided between the shareholders as follows:

Shareholders of Robert Bosch GmbH

Percentage figures

	Shareholding	Voting rights
Robert Bosch Stiftung GmbH	92.0	
Robert Bosch Industrietreuhand KG		93.2
Bosch family	7.4	6.8
Robert Bosch GmbH (treasury stock)	0.6	

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Retained earnings contain profits that have not been distributed and that were generated in the past by the entities included in the consolidated financial statements, as well as other comprehensive income. The effects of changes in actuarial parameters in the pension provisions are disclosed in the “Other changes” column of accumulated other comprehensive income. This position also contains differences between purchase price and purchased pro-rata equity of additional share purchases.

Retained earnings also include treasury stock of EUR 62 million.

The unappropriated earnings of the group match those of Robert Bosch GmbH.

Non-controlling interests

The non-controlling interests in the equity of the consolidated subsidiaries mainly comprise the non-controlling interests in United Automotive Electronic Systems Co., Ltd., Shanghai, Bosch Automotive Diesel Systems Co., Ltd., Wuxi, Bosch HUAYU Steering Systems Group, Shanghai, all China, and Bosch Ltd., Bengaluru, India.

Other notes

25 Statement of cash flows

The statement of cash flows presents cash inflows and outflows from operating activities, investing activities, and financing activities.

The cash flow is derived indirectly, starting from EBIT. EBIT is earnings before taxes and before the financial result. Cash inflows from operating activities are adjusted for non-cash expenses and income (mainly depreciation of non-current assets), and take into account cash-effective financial expenses, financial income, and taxes, as well as changes in working capital.

The investing activities mainly comprise additions to non-current assets, including leased assets and the purchase and disposal of subsidiaries and other operating units, as well as of securities.

Financing activities combine the inflows and outflows of cash and cash equivalents from borrowing and repayment of financial liabilities, as well as from dividends.

Changes in positions of the statement of financial position contained in the statement of cash flows cannot be directly derived from the statement of financial position, as they have been adjusted for exchange-rate effects and changes in the consolidated group.

The liquidity contained in the statement of cash flows includes cash of EUR 4,716 million (previous year: EUR 4,543 million). In the reporting period, there was no transfer restriction for cash and cash equivalents.

Changes in liabilities from financing activities during the fiscal year are presented in the following table:

Figures in millions of euros

		Cash effective changes		Non-cash changes		
	At 1/1/2018	Borrowing	Repayment	Changes in consolidated group, reclassifications	Exchange rate related changes	At 12/31/2018
Current liabilities from financing activities	670	30	–520	562	–19	723
Non-current liabilities from financing activities	5,067			–551	–3	4,513
	5,737	**30**	**–520**	**11**	**–22**	**5,236**

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26 Segment reporting

Disclosures on business sectors

Figures in millions of euros

	Mobility Solutions		Industrial Technology		Consumer Goods	
	2018	**2017[1]**	**2018**	**2017[1]**	**2018**	**2017[1]**
External sales	47,567	47,384	7,443	6,742	17,812	18,388
Intersegment sales	9	19	56		33	
Total sales	47,576	47,403	7,499	6,742	17,845	18,388
EBIT	3,531	3,346	687	222	1,149	1,239
of which: profit from entities consolidated using the equity method	−14	−29	0	3		
Non-cash expenses (without depreciation)	2,217	2,508	402	483	773	843
Amortization and depreciation of intangible assets and property, plant, and equipment	2,889	2,869	213	221	809	796
Impairment losses on intangible assets and property, plant, and equipment	57	47			6	23
Non-cash income	719	542	270	108	390	237
Assets	14,568	13,798	3,105	2,480	7,502	7,325
Liabilities	3,299	3,211	558	367	1,946	2,007
Investments measured at equity	19	106		37		

[1] Restated figures; see section “Changes in accounting policies.”

Energy and Building Technology		All other segments		Consolidation		Group	
2018	2017[1]	2018	2017[1]	2018	2017	2018	2017[1]
5,569	5,438	74	114			78,465	78,066
9	8	5		−112	−27		
5,578	5,446	79	114	−112	−27	78,465	78,066
266	239	−131	−102			5,502	4,944
						−14	−26
287	231	19	13			3,698	4,078
155	161	31	29			4,097	4,076
1		52	55			116	125
97	41	20	38			1,496	966
1,724	1,693	43	105			26,942	25,401
299	314	14	10			6,116	5,909
						19	143

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Based on the internal management and reporting structure, the Bosch Group is divided into four business sectors. These are the reportable segments and result from the combination of divisions in accordance with the criteria set forth in IFRS 8 *Operating Segments*. Business operations within the business sectors are the responsibility of the divisions.

The Mobility Solutions business sector mainly comprises the following areas of business: powertrain products and solutions, systems for active and passive driving safety, assistance and convenience functions, technology for user-friendly infotainment as well as vehicle-to-vehicle and vehicle-to-infrastructure communication, concepts, technology, and services for the automotive aftermarket, steering systems for passenger cars and commercial vehicles, and connected mobility services.

The Industrial Technology business sector combines the following activities:

- ▶ Automation technology (technologies for drives, controls, and motion),
- ▶ Packaging technology (machines and packing lines for the confectionery, food, beverage, and tobacco industry, as well as for the pharmaceuticals industry),
- ▶ Industry 4.0 software activities and projects.

The operations of the Consumer Goods business sector comprise the production and distribution of

- ▶ Power tools (tools for the trade, industry, and DIY, accessories, garden tools, as well as industrial tools and measuring equipment).
- ▶ Household appliances (appliances for cooking, washing-up, washing, drying, cooling, freezing, floor care, etc.).

The Energy and Building Technology business sector comprises the following activities:

- ▶ Security systems (video surveillance, public address systems, evacuation systems, and access control),
- ▶ Services to increase energy-efficiency in non-residential buildings,
- ▶ Heating systems (heating and hot-water boilers including open- and closed-loop control systems),
- ▶ Service solutions (business solutions for internal and external customers, shared services for the Bosch Group).

Business segments which are not reportable are combined and presented in the category “All other segments.” This mainly relates to financial, holding, and other service companies as well as the remaining activities in the photovoltaics area.

The divisions allocated to a business sector are aggregated into a single reportable segment as they have similar economic characteristics. Above all, the economic performance of all the divisions aggregated in one segment depends to a similar extent on the same core markets (automotive production, capital goods, consumer goods, and energy and building technology).

Items attributable to financing activities are not included in segment reporting.

The main controlling variables reported to the board of management are EBIT and, as an internal indicator, the operating value contribution.

Transfer prices between the business segments are determined at arm’s length.

The main items included in non-cash expenses are bad debt allowances, additions to provisions, as well as losses on the disposal of items of property, plant, and equipment, and of intangible assets.

The main item included in non-cash income is income from the reversal of provisions.

Segment assets comprise trade receivables as well as inventories, in both cases before valuation allowances. Segment liabilities contain trade payables. Items relating to segment assets and segment liabilities are presented at average amounts for the year.

Reconciliation statements

Figures in millions of euros

	2018	2017[1]
Sales		
Sales by reportable segment	78,498	77,979
Sales of all other segments	79	114
Consolidation	−112	−27
Group sales	**78,465**	**78,066**
Result		
EBIT by reportable segment	5,633	5,046
EBIT of all other segments	−131	−102
Financial income	1,956	2,264
Financial expenses	−2,391	−2,412
Profit before tax	**5,067**	**4,796**
Assets		
Assets by reportable segment	26,899	25,296
Assets of all other segments	43	105
Reconciliation to values at December 31	982	1,291
Impairment losses on segment assets	−2,050	−1,603
Other current assets	10,294	9,082
Non-current assets	47,486	47,699
Group assets	**83,654**	**81,870**
Liabilities		
Liabilities by reportable segment	6,102	5,899
Liabilities of all other segments	14	10
Reconciliation to values at December 31	1,511	1,512
Other current liabilities	13,936	12,407
Non-current liabilities	22,915	24,490
Group liabilities	**44,478**	**44,318**

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[1] Restated figures; see section “Changes in accounting policies.”

Disclosures by important countries

Figures in millions of euros

	Sales by registered office of the customer		Non-current assets[1]	
	2018	**2017**	**2018**	**2017**
Europe	**41,412**	**40,782**	**20,493**	**20,485**
of which Germany	16,093	15,342	12,973	13,059
of which the United Kingdom	3,693	3,935	394	404
of which France	3,109	3,194	428	425
of which Italy	2,456	2,526	520	510
Americas	**13,710**	**13,677**	**3,589**	**3,459**
of which the United States	10,497	10,110	3,030	2,921
Asia	**22,266**	**22,631**	**7,152**	**6,747**
of which China	14,426	14,862	5,036	4,801
of which Japan	2,497	2,332	508	471
Other regions	**1,077**	**976**	**137**	**101**
Group	**78,465**	**78,066**	**31,371**	**30,792**

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[1] Non-current assets consist of intangible assets and property, plant, and equipment.

The customer structure of the Bosch Group in the reporting period does not reveal any concentration on individual customers.

27 Additional notes on financial instruments

Net gain/loss by category

The table below presents the net gains and losses from financial instruments recognized in the income statement, classified by the categories defined in IFRS 9 (previous year: IAS 39):

Figures in millions of euros

	2018	2017
Financial assets, measured at amortised cost (AC)	57	
Financial assets, measured at fair value through other comprehensive income (FVOCI wR)	302	
Financial assets and financial liabilities, measured at fair value through profit or loss (FVPL)	–280	
Equity instruments, measured at fair value through other comprehensive income (FVOCI nR)	144	
Financial liabilities, measured at amortised cost (AC/FLAC)	–526	–201
Loans and receivables (LaR)		–124
Available-for-sale financial assets (AfS)		–28
Financial assets and liabilities, held for trading (HfT)		559

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The net gain/loss contains gains and losses from measuring receivables and loans, from the reversal of the gains/losses on financial instruments in equity, exchange-rate gains and losses, interest income and expenses, investment income, dividend income, and gains and losses from derivatives. The net gains and losses from investments in equity instruments contains dividend income totaling EUR 5 million from equity instruments derecognized in the fiscal year.

The measurement gains and losses from securities and equity investments recognized in other comprehensive income are presented in the statement of comprehensive income.

Carrying amounts and fair values by category

Figures in millions of euros

		2018	
	Category pursuant to IFRS 9	**Carrying amount**	**Fair value**
Assets			
Cash and cash equivalents	AC	**4,716**	
Trade receivables	AC	**14,859**	
Current other financial assets		**2,276**	
Securities	FVPL	1,210	1,210
	FVOCI wR	126	126
Bank balances	AC	136	
Loan receivables	AC	192	
Derivative financial assets	FVPL	123	123
Receivables from finance leases	n.a.	35	
Sundry other financial assets	AC	454	
Non-current financial assets		**12,558**	
Securities	FVOCI nR	2,546	2,546
	FVOCI wR	4,877	4,877
	FVPL	2,871	2,871
Investments	FVPL	73	73
	FVOCI nR	1,551	1,551
	n.a.	241	
Loan receivables	AC	36	37
Derivative financial assets	FVPL	5	5
Receivables from finance leases	n.a.	153	
Other financial assets	AC	205	206

Figures in millions of euros

			2018
	Category pursuant to IFRS 9	Carrying amount	Fair value
Equity and liabilities			
Trade payables	AC	**7,627**	
Current other financial liabilities		**1,591**	
Bonds	AC	300	
Promissory loans	AC	154	
Liabilities to banks	AC	269	
Loans	AC	71	
Derivative financial liabilities	FVPL	76	76
Finance lease obligations	n.a.	7	
Other financial liabilities	AC	714	
Non-current financial liabilities		**4,652**	
Bonds	AC	3,001	3,316
Promissory loans	AC	1,498	1,505
Liabilities to banks	AC	14	15
Loans	AC	30	32
Derivative financial liabilities	FVPL	5	5
Finance lease obligations	n.a.	18	
Other financial liabilities	AC	86	85

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AC	At amortized cost
FVPL	At fair value through profit or loss
FVOCI wR	At fair value through other comprehensive income, with recycling
FVOCI nR	At fair value through other comprehensive income, no recycling
n.a.	Not applicable

Figures in millions of euros

	Category pursuant to IAS 39	Carrying amount 2017	Carrying amount pursuant to IAS 39			Carrying amount pursuant to IAS 17 and IFRS 10	Fair value 2017
			(Amortized) cost	Fair value recognized in other compre-hensive income	Fair value recognized in profit or loss		
Assets							
Cash and cash equivalents	LaR	**4,543**	**4,543**				
Trade receivables	LaR	**14,970**	**14,970**				
Current other financial assets		**2,006**					
Securities	AfS	565		565			565
Bank balances	LaR	331	331				
Loan receivables	LaR	326	326				
Derivative financial assets	FAHfT	221			221		221
Receivables from finance leases	n.a.	34				34	
Sundry other financial assets	LaR	529	529				
Non-current financial assets		**12,522**					
Securities	AfS	11,051		11,051			11,051
Investments	AfS/n.a.	1,063	328	455		280	455
Loan receivables	LaR	64	64				66
Derivative financial assets	FAHfT	67			67		67
Receivables from finance leases	n.a.	142				142	
Other financial assets	LaR	135	135				135

Figures in millions of euros

	Category pursuant to IAS 39	Carrying amount 2017	Carrying amount pursuant to IAS 39			Carrying amount pursuant to IAS 17 and IFRS 10	Fair value 2017
			(Amortized) cost	Fair value recognized in other compre-hensive income	Fair value recognized in profit or loss		
Equity and liabilities							
Trade payables	FLAC	**7,421**	**7,421**				
Current other financial liabilities		**1,552**					
Bonds	FLAC	51	51				
Liabilities to banks	FLAC	619	619				
Loans	FLAC	87	87				
Derivative financial liabilities	FLHfT	75			75		75
Finance lease obligations	n.a.	6				6	
Other financial liabilities	FLAC	714	714				
Non-current financial liabilities		**5,200**					
Bonds	FLAC	3,298	3,298				3,674
Promissory loans	FLAC	1,652	1,652				1,693
Liabilities to banks	FLAC	117	117				119
Loans	FLAC	22	22				24
Derivative financial liabilities	FLHfT	10			10		10
Finance lease obligations	n.a.	18				18	
Other financial liabilities	FLAC	83	83				83

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LaR	Loans and receivables
AfS	Available-for-sale financial assets
FAHfT	Financial assets held for trading
FLAC	Financial liabilities measured at amortized cost
FLHfT	Financial liabilities held for trading
n.a.	Not applicable

The carrying amounts of the financial assets and liabilities, classified by the measurement categories of IFRS 9 (previous year: classified by the categories of IAS 39), are as follows:

Figures in millions of euros

	2018	2017
Financial assets, measured at amortized cost (AC)	20,598	
Financial assets, measured at fair value through other comprehensive income (FVOCI wR)	5,003	
Equity instruments, measured at fair value through other comprehensive income (FVOCI nR)	4,097	
Financial assets, measured at fair value through profit or loss (FVPL)	4,282	
Financial liabilities, measured at fair value through profit or loss (FVPL)	81	
Financial liabilities, measured at amortized cost (AC/FLAC)	13,764	14,064
Loans and receivables (LaR)		20,898
Available-for-sale financial assets (AfS)		12,399
Financial assets held for trading (FAHfT)		288
Financial liabilities held for trading (FLHfT)		85

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The fair values of financial assets and financial liabilities measured at fair value are determined using the fair value hierarchy in accordance with IFRS 13 presented in the tables below:

Figures in millions of euros

					2018
	Category pursuant to IFRS 9	Level 1[1]	Level 2[2]	Level 3[3]	Total
Financial assets					
Securities	FVPL	939	3,047	95	4,081
	FVOCI wR	72	4,931		5,003
	FVOCI nR	2,545	1		2,546
Investments	FVPL			73	73
	FVOCI nR	335		1,216	1,551
Derivative financial instruments	FVPL	3	125		128
Financial liabilities					
Derivative financial instruments	FVPL	1	80		81

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[1] Fair value is measured on the basis of listed, unadjusted market prices in active markets.
[2] Fair value is measured on the basis of market data such as share prices, exchange rates, or interest curves using market-based valuation techniques.
[3] Fair value is measured on the basis of unobservable market data.

Figures in millions of euros

					2017
	Category pursuant to IAS 39	Level 1[1]	Level 2[2]	Level 3[3]	Total
Financial assets					
Securities	AfS	4,195	7,355	66	11,616
Investments	AfS	455			455
Derivative financial instruments	FAHfT	1	287		288
Financial liabilities					
Derivative financial instruments	FLHfT	1	84		85

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[1] Fair value is measured on the basis of listed, unadjusted market prices in active markets.
[2] Fair value is measured on the basis of market data such as share prices, exchange rates, or interest curves using market-based valuation techniques.
[3] Fair value is measured on the basis of unobservable market data.

At the end of the fiscal year, items are reviewed to determine whether they need to be reclassified between individual levels of the fair-value hierarchy. No items were reclassified in the current fiscal year.

Investments measured at fair value through profit or loss and those measured at fair value through other comprehensive income are allocated to level 3. The fair values are determined on the basis of company data mainly using the discounted cash flow method.

Units in a closed fund are also allocated to level 3. The fair value of the fund units is notified by the asset management firm; it is measured based on the fund's net asset value. The fair value is dependent on the changes in the market value of the respective investments within the fund.

Changes during the fiscal year and the previous year in financial assets allocated to level 3 are presented in the tables below:

Figures in millions of euros

	1/1/2018	Additions	Disposals	Changes recognized in other comprehensive income	Changes recognized in profit or loss	Currency	12/31/2018
Investments FVOCI nR	782	333	–6	99		8	1,216
Investments FVPL	60	15	–8		6		73
Securities	66	21			8		95

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Changes in the fiscal year recognized through profit or loss are presented in the financial result, while changes in the fiscal year recognized in other comprehensive income are reported in the reserve from financial instruments.

Figures in millions of euros

	1/1/2017	Additions	Disposals	Changes recognized in other comprehensive income	Changes recognized in profit or loss	12/31/2017
Securities		61		5		66
						68

In the previous year, changes recognized in other comprehensive income were reported in equity in the reserve from securities.

28 Capital and risk management

Capital management

The main objective of the centralized capital management of the Bosch Group is to maintain the company's sound financial substance and thus to secure the financial independence and flexibility required for further growth.

The main controlling variables of our system of financial targets are EBIT and, as an internal indicator, the operating value contribution. The operating value contribution is calculated by deducting the cost of capital from EBIT. Additional adjustments are also made in certain other respects, such as recognition of impairment losses, pension provisions, and provisions for losses arising from delivery commitments. The development of the controlling variable is the yardstick used to assess performance. It is also used for portfolio management. It is supplemented for capital management purposes by the conventional financial, liquidity, and indebtedness indicators.

Hedging policy and financial derivatives

The business operations of the Bosch Group are impacted in particular by fluctuations in exchange and interest rates as well as commodity price risks on the procurement side. Business policy aims to limit these risks by means of hedging. All hedging transactions are managed at corporate level.

Internal regulations and guidelines set down a mandatory framework and define the responsibilities relating to investment and hedging transactions. According to these regulations, derivatives may only be used in connection with business operations, financial investments, or financing transactions; speculative transactions are not allowed. Trading limits are an important component of the guidelines. Hedges are concluded solely via banks whose creditworthiness is regarded as impeccable. The rating given by leading agencies as well as current risk assessments in financial markets are taken into account. The creditworthiness of the banking partners of the Bosch Group is closely monitored and the risk mitigated by counterparty limits.

To reduce the credit risk of the bank, fixed term deposits are in some cases entered into as secured deposits in tri-party repo transactions. In such cases, the bank provides predefined securities as collateral. The transactions themselves, as well as the management and valuation of the securities, are managed by a clearing center. For details, please refer to the note on "Cash and cash equivalents."

The decision-making bodies are committees for commodities, foreign currencies, and investments that meet at regular intervals. There is a spatial and functional segregation of trading, settlement, and control functions. Key tasks of the control function include determining risks using the value-at-risk method as well as the basis-point-value method, and ongoing compliance checks with instructions and guidelines.

Each month, the risk of financial investments is calculated using the value-at-risk concept for the next month. Prescribed risk limits for the various investment categories limit the potential loss. The forecast quality of the value-at-risk method is tested by means of monthly backtesting. Management is informed monthly about risk analyses and the results of investments and hedges.

Currency risk

Currency risks of business operations are mitigated by the central management of selling and purchasing currencies. The currency risk is determined on the basis of the worldwide consolidated cash flow in the respective currencies. Based on the business plan, estimated inflows and outflows in the various currencies for the planning period are aggregated in a foreign exchange balance plan. The resulting net position is used for the central management of currency exposures.

The largest net currency positions of the planned cash flow are in CNY, GBP, and JPY.

Hedging largely takes the form of forward exchange contracts; currency options and currency swaps to secure group financing are used to a lesser extent. These transactions, which are only entered into with banks, are subject to minimum requirements with respect to nature, scope, and complexity.

The risk attaching to material operating foreign currency items is determined using the value-at-risk concept, supplemented by worst-case analyses. These risk analyses and the hedge result are determined monthly and presented to management.

To present the currency risks for the most important foreign currencies in accordance with IFRS 7 *Financial Instruments: Disclosures*, all monetary assets and monetary liabilities denominated in foreign currency for all consolidated companies were analyzed as of the reporting date and sensitivity analyses carried out for the respective currency pairs, in terms of the net risk.

A change in the EUR of 10 percent (taking the closing rate as the baseline) against the foreign currencies listed in the table would have the following implications for the profit before tax:

Figures in millions of euros

	10% increase in EUR		10% decrease in EUR	
	2018	2017	2018	2017
CHF	18	–4	–18	4
CNY	42	13	–42	–13
CZK	–35	–43	35	43
GBP	73	66	–73	–66
HUF	–10	–10	10	10
JPY	–7	–14	7	14
KRW	4	22	–4	–22
PLN	3	–9	–3	9
RUB	–9	–29	9	29
TRY	–25	–45	25	45
USD	2	17	–2	–17

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A change in the USD of 10 percent (taking the closing rate as the baseline) against the foreign currency listed in the table would have the following implications for the profit before tax:

Figures in millions of euros

	10% increase in USD		10% decrease in USD	
	2018	2017	2018	2017
CNY	8	–7	–8	7

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The effects on earnings shown here mainly result from foreign currency positions relating to operations and from loans within the Bosch Group which, by way of an exception, were granted in a currency other than the local currency of the borrower, e.g. because it can be repaid from expected cash flows in this currency. The currency risk for the statement of financial position does not correspond to the economic risk, which is determined on the basis of forecast cash flows.

Interest-rate risks

Risks from changes in interest rates on investments and borrowings are limited by select use of derivative financial instruments, mainly interest swaps and interest futures.

An analysis of the interest risk was carried out in accordance with IFRS 7. The sensitivity analysis considered assets and liabilities subject to floating interest rates, fixed-rate securities, and interest derivatives. Pension funds and money market funds were not included.

A change in the market interest rate by 100 basis points (taking the interest rate on the cut-off date as the baseline) would have the following effect on the reserve from financial instruments recognized in equity and the profit before tax:

Figures in millions of euros

	Increase in market interest level by 100 basis points		Decrease in market interest level by 100 basis points	
	2018	2017	2018	2017
Reserve from financial instruments	–230	–234	230	234
Profit before tax	7	21	–7	–21

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Share-price risks

The analysis of the share-price risk in accordance with IFRS 7 took into account share portfolios, quoted investments, equity funds, and share derivatives with a total carrying amount of EUR 3,719 million (previous year: EUR 4,566 million).

A change in the share price of 10 percent (taking the share price on the reporting date as the baseline) would have the following effect on the reserve from financial instruments recognized in equity and the profit before tax:

Figures in millions of euros

	10% increase in share price		10% decrease in share price	
	2018	2017	2018	2017
Reserve from financial instruments	287	433	–287	–377
Profit before tax	85	23	–85	–79

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Other price risks

Derivatives and physical fixed-price contracts are used to limit the risks of fluctuating commodity prices. The analysis of the commodity-price risk in accordance with IFRS 7 took into account commodity derivatives measured as of the reporting date.

A change in the forward-rate level of 10 percent (taking the forward rate on the reporting date as the baseline) would have the following effect on the profit before tax:

Figures in millions of euros

	10% increase in forward rates		10% decrease in forward rates	
	2018	2017	2018	2017
Profit before tax	44	44	–44	–44

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As of the reporting date, the Bosch Group is not aware that it is exposed to any significant other price risks as defined by IFRS 7.

Credit risks

The maximum credit risk for each category of financial instruments is the carrying amount of the financial assets recognized in the statement of financial position.

The credit risk from customer receivables is recorded and monitored on an ongoing basis. Responsibilities and duties relating to credit risks are governed by an internal directive. This mainly concerns the stipulation of payment terms, fixing of credit limits, release of deliveries, and receivables monitoring.

The credit risk for trade receivables is reduced by processing invoices with the corresponding credit notes in a single work step; the net amount is reported in the statement of financial position. This procedure is only performed if there is a legal right to offset and there is an intention to settle the receivable based on the net amount or to settle the receivable by offsetting against the corresponding liability. Moreover, trade receivables are partly secured by retention of title. For some trade receivables, collateral has been additionally provided in the form of guarantees, property liens, and mortgages.

The table below shows the remaining credit risk for trade receivables:

Figures in millions of euros

	2018	2017
Trade receivables (before offsetting of credit notes)	15,508	15,577
Offsetting of credit notes	–649	–607
Trade receivables (carrying amount)	14,859	14,970
Financial guarantee contracts (received)	–2,065	–1,640
Remaining credit risk	**12,794**	**13,330**

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The table below presents the development of loss allowances on trade receivables (credit-impaired and not credit-impaired) in the fiscal year:

Figures in millions of euros

At 1/1/2018	**332**
Changes in consolidated group	–1
Amounts added	105
Amounts utilized	–48
Amounts reversed	–84
Exchange rate differences	–8
At 12/31/2018	**296**

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In the fiscal year, there were only immaterial changes compared with the previous year in the loss allowances on receivables from finance leases, contract assets, loan receivables, and other financial receivables.

The change in loss allowances for specific risks as well as for the general credit risk for the previous year is presented in the following table:

Figures in millions of euros

	Trade receivables	Loan receivables
At 1/1/2017	**646**	**12**
Change in the loss allowance for specific risks	–61	3
Change in the loss allowance for the general credit risk	–151	–3
At 12/31/2017	**434**	**12**

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In the previous year, loss allowances were recognized on a small scale on other financial receivables and receivables from finance leases. There was no indication of any significant defaults of trade receivables or of other financial receivables exposed to credit risks that were neither impaired nor past due.

The table below shows the gross carrying amounts of trade receivables:

Figures in millions of euros

	2018
Trade receivables	15,155
of which credit-impaired	268
of which not credit-impaired	9,983
not due	8,785
up to 30 days past due	656
31–90 days past due	260
91–180 days past due	130
more than 180 days past due	152

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The table below shows a maturity analysis of the unimpaired trade receivables for the previous year:

Figures in millions of euros

	2017
Trade receivables	14,970
of which not impaired and not past due at the reporting date	5,235
of which not impaired and past due at the reporting date	158
by less than one month	115
by more than one month, but less than three months	24
by more than three months	19

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Of the loan receivables, other financial receivables, and receivables from finance leases (both current and non-current), an amount of EUR 837 million was not impaired and not past due in the previous year. There were no loan receivables, other financial receivables, and receivables from finance leases (both current and non-current) which were not impaired but were past due.

Derivative transactions are entered into in accordance with the German master agreement for financial forward transactions or the ISDA (International Swaps and Derivatives Association). These do not satisfy the set-off criteria of IAS 32 *Financial Instruments: Presentation*, as netting is only enforceable in the case of insolvency.

The credit risk for derivatives with a positive market value that do not currently satisfy the set-off criteria of IAS 32 (offsetting only enforceable in the case of insolvency of the contracting party) is presented in the following table:

Figures in millions of euros

	2018	2017
Derivatives with a positive market value (carrying amount)	128	288
Amounts not offset in the statement of financial position		
Derivatives	–39	–44
Cash collateral received	–17	–7
Remaining credit risk	**72**	**237**

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Liquidity risks
Changes in financial assets and liabilities are monitored on an ongoing basis. Internal directives regulate the duties and responsibilities of liquidity management and planning. The company has liquidity reserves in the form of highly liquid assets totaling EUR 6,052 million (previous year: EUR 5,108 million). In addition to that, there is a euro commercial paper program with a volume of EUR 1,000 million and a U.S. commercial paper program with a volume of USD 2,000 million, neither of which had been drawn at the end of the reporting period.

The liquidity risk is reduced by processing invoices for trade payables with the corresponding credit notes received in a single work step. This procedure is only performed if there is a legal right to offset and there is an intention to settle the liability based on the net amount or to settle the liability by offsetting against the corresponding receivable. Moreover, collateral is provided in the form of guarantees.

The table below shows the remaining liquidity risk for trade payables:

Figures in millions of euros

	2018	2017
Trade payables (before offsetting of credit notes)	8,276	8,028
Offsetting of credit notes	–649	–607
Trade payables (carrying amount)	7,627	7,421
Financial guarantee contracts (granted)	–9	–10
Remaining liquidity risk	**7,618**	**7,411**

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The liquidity risk for derivatives that do not currently satisfy the set-off criteria of IAS 32 (offsetting only enforceable in the case of insolvency) is presented in the following table:

Figures in millions of euros

	2018	2017
Derivatives with a negative market value (carrying amount)	81	85
Amounts not offset in the statement of financial position		
Derivatives	–39	–44
Cash collateral provided	–1	–1
Remaining liquidity risk	**41**	**40**

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The undiscounted cash flows of the non-derivative and derivative financial liabilities are presented in the tables below:

Figures in millions of euros

	Carrying amount	Undiscounted cash flows					
	2018	2019	2020	2021	2022	2023	2024 ff.
Non-derivative financial liabilities							
Trade payables	7,627	7,623	4				
Bonds	3,301	375	566	552	68	48	2,278
Promissory loans	1,652	171	14	14	14	513	1,042
Liabilities to banks	283	271	14				
Finance lease obligations	25	8	7	5	4	3	3
Loans	101	72	4	6	5	4	12
Other financial liabilities	800	715	14	3	6	1	62
Derivative financial liabilities							
Gross settlement	41						
Cash outflows		3,315	5				
Cash inflows		3,273	5				
Net settlement	40						
Cash outflows		35	5				

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Figures in millions of euros

	Carrying amount	Undiscounted cash flows					
	2017	2018	2019	2020	2021	2022	2023 ff.
Non-derivative financial liabilities							
Trade payables	7,421	7,416	3	2			
Bonds	3,349	134	375	566	552	68	2,326
Promissory loans	1,652	23	171	14	14	14	1,555
Liabilities to banks	736	633	105	14			
Finance lease obligations	24	6	6	5	4	3	6
Loans	109	88	5	5	3	2	7
Other financial liabilities	797	715	13	3	2	6	58
Derivative financial liabilities							
Gross settlement	79						
Cash outflows		4,529	245			6	
Cash inflows		4,459	236			6	
Net settlement	6						
Cash outflows		6	0				

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The undiscounted cash flows contain interest and principal payments. All on-call financial liabilities are allocated to the earliest possible period. The variable interest payments were calculated using the last interest rate determined before the respective reporting date.

29 Leases

The receivables from finance lease agreements mainly stem from products leased by the Building Technologies (formerly: Security Systems) division. As a rule, the agreed term is ten years. The receivables are due as follows:

Figures in millions of euros

	2018	2017
Gross capital expenditures on finance leases		
due not later than one year	44	43
due later than one year and not later than five years	121	119
due later than five years	59	52
	224	**214**
Present value of outstanding minimum lease payments		
due not later than one year	35	34
due later than one year and not later than five years	103	98
due later than five years	55	47
	193	**179**
Unearned finance income	**31**	**35**

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There were no unguaranteed residual values.

Liabilities from finance leases primarily stem from vehicle lease agreements with terms of three to six years and the lease on a factory building. The liabilities are due as follows:

Figures in millions of euros

	2018	2017
Future minimum lease payments		
due not later than one year	9	8
due later than one year and not later than five years	19	18
due later than five years	3	6
Interest portion contained in the future minimum lease payments		
due not later than one year	2	2
due later than one year and not later than five years	4	5
due later than five years	0	1
Present value of outstanding minimum lease payments		
due not later than one year	7	6
due later than one year and not later than five years	15	13
due later than five years	3	5
	25	**24**

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The outstanding minimum lease payments from operating lease agreements with entities of the Bosch Group as lessors mainly stem from activities of the Building Technologies (formerly: Security Systems) division, and are due as follows:

Figures in millions of euros

	2018	2017
Due not later than one year	57	47
Due later than one year and not later than five years	169	139
Due later than five years	84	59
	310	**245**

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Obligations from operating lease agreements with entities of the Bosch Group as lessors mainly pertain to lease agreements for technical equipment, for IT equipment, for vehicles, and for buildings. The minimum amount of the undiscounted future payments from operating leases comes to EUR 2,025 million (previous year: EUR 1,706 million).

The obligations are due as follows:

Figures in millions of euros

	2018	2017
Due not later than one year	534	512
Due later than one year and not later than five years	1,083	909
Due later than five years	408	285
	2,025	**1,706**

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The payments of the period of EUR 600 million (previous year: EUR 604 million) recognized in profit or loss are contained in the costs of the functional areas (cost of sales, and distribution, administrative, and research and development cost).

30 Related parties disclosures

As shareholder, Robert Bosch Industrietreuhand KG exercises majority voting rights at Robert Bosch GmbH. In addition, Robert Bosch Industrietreuhand KG is accountable for the internal audit of the Bosch Group. The costs incurred for this of EUR 17 million (previous year: EUR 15 million) were borne by Robert Bosch GmbH.

A part of the pension obligations and funds has been outsourced to Bosch Pensionsfonds AG. Robert Bosch GmbH is the sole shareholder of Bosch Pensionsfonds AG. Bosch Hilfe e.V. provides assistance to associates of co-owners in emergencies (emergency assistance). Bosch Hilfe e.V. is co-owned by Robert Bosch GmbH, Stuttgart, Germany, Robert Bosch Car Multimedia Holding GmbH, Hildesheim, Germany, and Robert Bosch Elektronik GmbH, Salzgitter, Germany. A part of the asset portfolio of Bosch Hilfe e.V. consists of its ownership in Robert Bosch Wohnungsgesellschaft mbH, Stuttgart, Germany, which builds and rents property for Bosch associates.

Robert Bosch Stiftung GmbH, Stuttgart, is the tenant of several properties belonging to Robert Bosch GmbH, Stuttgart.

Transactions with related parties

Related parties of the Bosch Group include the joint ventures as well as the entities in which non-controlling interests are held. Transactions with these entities are presented in the following table:

Figures in millions of euros

	Goods and services sold		Goods and services purchased		Receivables		Liabilities	
	2018	2017	2018	2017	2018	2017	2018	2017
Joint ventures	14	35	24	40	57	21	15	18
Investees	139	86	462	500	31	41	72	98

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All transactions with related parties were at arm's length.

Total remuneration of key management personnel

The key management personnel are the general partners of Robert Bosch Industrietreuhand KG and any limited partners who are concurrently members of the board of management of Robert Bosch GmbH, as well as the members of the supervisory board and the members of the board of management of Robert Bosch GmbH.

The total remuneration of key management personnel comes to EUR 57 million in fiscal year 2018 (previous year: EUR 50 million) and breaks down as follows:

Figures in millions of euros

	2018	2017
Short-term benefits	36	32
Post-employment benefits	11	9
Other long-term benefits	10	9
Termination benefits	0	0

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Share-based payments are not made.

Key management personnel had been granted loans of EUR 0.3 million as of the reporting date (previous year: EUR 0.1 million). There are no provisions (loss allowances) for doubtful debts due from key management personnel. Moreover, no expenses were incurred for uncollectible or doubtful receivables. Guarantees have neither been given nor received.

For obligations from pensions and deferred compensation, provisions totaling EUR 119 million (previous year: EUR 115 million) have been recognized.

31 Additional disclosures pursuant to Sec. 315e HGB

Remuneration of members of the board of management and supervisory board

The total remuneration of the members of the board of management (including provisions) comes to EUR 40 million in the fiscal year 2018 (previous year: EUR 36 million), and that of the former members of the board of management and their dependants to EUR 15 million (previous year: EUR 15 million). The remuneration of the members of the supervisory board comes to approximately EUR 2 million. An amount of EUR 229 million (previous year: EUR 214 million) has been accrued for pension obligations to former members of the board of management and their surviving dependants.

Headcount

	Annual average 2018	Annual average 2017
EU countries	222,237	218,635
Rest of Europe	26,593	26,199
Americas	44,796	44,209
Asia, Africa, Australia	113,859	113,576
	407,485	**402,619**

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Disclosures on personnel expenses

Personnel expenses break down as follows:

Figures in millions of euros

	2018	2017
Remuneration	18,691	18,397
Social security costs	2,703	3,036
Post-employment benefit costs	825	805
	22,219	**22,238**

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Auditor’s fees

The fees of the group auditor for audit and advisory services in Germany amount to:

Figures in millions of euros

	2018	2017
Fees for		
Audit services	7	8
Audit-related services	0	3
Tax advisory services	2	3
Other services	16	15

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LIST OF SHAREHOLDINGS OF THE BOSCH GROUP
as of December 31, 2018

1 Consolidated group

	Company name	Registered office	Percentage share of capital
Germany	Robert Bosch GmbH	Stuttgart	
	Ampack GmbH	Königsbrunn	100.0 [1]
	AS Abwicklung Dritte Produktion GmbH i.L.	Stuttgart	100.0
	AS Abwicklung und Solar-Service Deutschland GmbH i.L.	Stuttgart	100.0
	AS Abwicklung und Solar-Service GmbH i.L.	Stuttgart	100.0
	AS Guss Beteiligungsgesellschaft mbH	Stuttgart	100.0
	BD Kompressor GmbH	Lollar	100.0
	BD Kompressor Holding GmbH & Co. KG	Lollar	50.0
	Bosch Access Systems GmbH	Würselen	100.0 [1]
	Bosch Automotive Service Solutions GmbH	Pollenfeld	100.0 [1]
	Bosch Connected Devices and Solutions GmbH	Reutlingen	100.0 [1]
	Bosch Emission Systems GmbH & Co. KG	Stuttgart	100.0 [3]
	Bosch Energy and Building Solutions GmbH	Ditzingen	100.0 [1]
	Bosch Engineering GmbH	Abstatt	100.0 [1]
	Bosch Healthcare Solutions GmbH	Waiblingen	100.0 [1]
	Bosch Industriekessel GmbH	Gunzenhausen	100.0 [1]
	Bosch KWK Systeme GmbH	Lollar	100.0 [1]
	Bosch Packaging Systems GmbH	Remshalden	100.0 [1]
	Bosch Pensionsgesellschaft mbH	Stuttgart	100.0 [1]
	Bosch Power Tec GmbH	Böblingen	100.0
	Bosch Rexroth AG	Stuttgart	100.0 [1, 2]
	Bosch Rexroth Guss GmbH	Lohr am Main	100.0 [1]
	Bosch Rexroth Vermögensverwaltung GmbH	Lohr am Main	100.0 [1]
	Bosch Sensortec GmbH	Kusterdingen	100.0 [1]
	Bosch Service Solutions GmbH	Stuttgart	100.0 [1]
	Bosch Service Solutions Leipzig GmbH	Leipzig	100.0 [1]
	Bosch Service Solutions Magdeburg GmbH	Magdeburg	100.0 [1]
	Bosch Sicherheitssysteme Engineering GmbH	Nuremberg	100.0 [1, 2]
	Bosch Sicherheitssysteme GmbH	Stuttgart	100.0 [1]
	Bosch Sicherheitssysteme Montage und Service GmbH	Weimar	100.0 [1]
	Bosch Silicon Trading GmbH	Erfurt	100.0
	Bosch SoftTec GmbH	Hildesheim	100.0 [1]
	Bosch Software Innovations GmbH	Berlin	100.0 [1]
	Bosch Solar CISTech GmbH	Gerlingen	100.0
	Bosch Solar Services GmbH	Arnstadt	100.0 [1, 2]
	Bosch Solar Thin Film GmbH	Arnstadt	100.0 [1]
	Bosch Solarthermie GmbH	Wettringen	100.0 [1]
	Bosch Technology Licensing Administration GmbH	Gerlingen	100.0 [1]
	Bosch Telecom Holding GmbH	Stuttgart	100.0 [1, 2]

Company name	Registered office	Percentage share of capital
Bosch Thermotechnik GmbH	Wetzlar	100.0 [1, 2]
Bosch Thermotechnik Vermögensverwaltung 1 GmbH	Wetzlar	100.0 [1]
Bosch-Hilfe Immobilien GbR	Stuttgart	94,9
BSH Hausgeräte GmbH	Munich	100.0 [1, 2]
BSH Hausgeräte Service GmbH	Munich	100.0 [1]
BSH Hausgeräte Service Nauen GmbH	Nauen	100.0 [1]
BSH Hausgerätewerk Nauen GmbH	Nauen	100.0 [1]
BSH Vermögensverwaltungs-GmbH	Munich	100.0 [1]
Buderus Guss GmbH	Breidenbach	100.0
Buderus Immobilien GmbH	Wetzlar	96.0 [1]
COBI.Bike GmbH	Frankfurt/Main	100.0 [1]
CONSTRUCTA Gesellschaft mit beschränkter Haftung	Munich	100.0 [1]
Constructa-Neff Vertriebs-GmbH	Munich	100.0
Coup Mobility GmbH	Berlin	100.0
DAA Deutsche Auftragsagentur GmbH	Hamburg	87.0
ETAS GmbH	Stuttgart	100.0 [1, 2]
EVI Audio GmbH	Straubing	100.0 [1]
Gaggenau Hausgeräte GmbH	Munich	100.0 [1]
grow platform GmbH	Stuttgart	100.0 [1]
Holger Christiansen Deutschland GmbH	Wilnsdorf	100.0 [1]
Hüttlin GmbH	Schopfheim	100.0 [1]
ITK Engineering GmbH	Rülzheim	100.0
Landau Electronic GmbH	Mörfelden-Walldorf	100.0 [1]
Matra-Werke GmbH	Hainburg	100.0 [1]
Moehwald GmbH	Homburg/Saar	100.0 [1]
Neff GmbH	Munich	100.0 [1]
Pharmatec GmbH	Dresden	100.0 [1]
Pollux Solar-Service GmbH	Arnstadt	100.0
Robert Bosch Aftermarket Solutions GmbH	Göttingen	100.0 [1]
Robert Bosch Automotive Steering Bremen GmbH	Bremen	100.0 [1, 2]
Robert Bosch Automotive Steering GmbH	Schwäbisch Gmünd	100.0 [1]
Robert Bosch Battery Systems GmbH	Stuttgart	100.0 [1]
Robert Bosch Car Multimedia GmbH	Hildesheim	100.0 [1]
Robert Bosch Car Multimedia Holding GmbH	Hildesheim	100.0 [1, 2]
Robert Bosch Elektronik GmbH	Salzgitter	100.0 [1]
Robert Bosch Elektronik Thüringen GmbH	Arnstadt	100.0 [1]
Robert Bosch Fahrzeugelektrik Eisenach GmbH	Eisenach	100.0 [1]
Robert Bosch Hausgeräte GmbH	Munich	100.0 [1]
Robert Bosch Immobilienverwaltungs GmbH & Co. KG	Stuttgart	100.0

	Company name	Registered office	Percentage share of capital
	Robert Bosch Lollar Guss GmbH	Lollar	100.0 [1]
	Robert Bosch Manufacturing Solutions GmbH	Stuttgart	100.0 [1, 2]
	Robert Bosch Mobility Services GmbH	Gerlingen	100.0
	Robert Bosch Packaging Technology GmbH	Waiblingen	100.0 [1, 2]
	Robert Bosch Power Tools GmbH	Leinfelden-Echterdingen	100.0
	Robert Bosch Risk and Insurance Management GmbH	Stuttgart	100.0 [1]
	Robert Bosch Sechste Vermögensverwaltungsgesellschaft mbH	Gerlingen	100.0 [1]
	Robert Bosch Semiconductor Manufacturing Dresden GmbH	Dresden	100.0 [1]
	Robert Bosch Siebte Vermögensverwaltungsgesellschaft mbH	Gerlingen	100.0 [1]
	Robert Bosch Smart Home GmbH	Stuttgart	100.0 [1]
	Robert Bosch Starter Motors Generators GmbH	Schwieberdingen	100.0 [1]
	Robert Bosch Venture Capital GmbH	Gerlingen	100.0 [1]
	Robert Bosch Vierte Vermögensverwaltungsgesellschaft mbH	Gerlingen	100.0 [1]
	Security and Safety Things GmbH	Munich	100.0
	SEG Hausgeräte GmbH	Munich	100.0 [1]
	sia Abrasives Deutschland GmbH	Solingen	100.0
	UC Vermögensverwaltung GmbH	Stuttgart	100.0 [1]
	WeWash GmbH	Munich	100.0

[1] These companies make use of the exemption provided for in Sec. 264 (3) HGB.
[2] These companies make use of the exemption provided for in Sec. 291 (2) HGB.
[3] The company makes use of the exemption provided for in Sec. 264b HGB.

	Company name	Registered office	Percentage share of capital
Europe			
Austria	Bosch Industriekessel Austria GmbH	Bischofshofen	100.0
	Bosch Rexroth GmbH	Pasching	100.0
	BSH Finance and Holding GmbH	Vienna	100.0
	BSH Hausgeräte Gesellschaft mbH	Vienna	100.0
	Robert Bosch AG	Vienna	100.0
	Robert Bosch Holding Austria GmbH	Vienna	100.0
	SBM Schoeller-Bleckmann-Medizintechnik GmbH	Ternitz	100.0
Belgium	Bosch Rexroth N.V.	Brussels	100.0
	Bosch Thermotechnology N.V. / S.A.	Leuven-Heverlee	100.0
	BSH Home Appliances S.A.	Brussels	100.0
	Robert Bosch Produktie N.V.	Tienen	100.0
	Robert Bosch S.A.	Anderlecht (Brussels)	100.0
	sia Abrasives Belgium N.V. / S.A.	Mollem	100.0

	Company name	Registered office	Percentage share of capital
Bulgaria	BSH Domakinski Uredi Bulgaria EOOD	Sofia	100.0
	Bosch Software Innovations EOOD	Sofia	100.0
Croatia	BSH kućanski uređaji d.o.o.	Zagreb	100.0
Czech Republic	Bosch Diesel s.r.o.	Jihlava	100.0
	Bosch Rexroth spol. s.r.o.	Brno	100.0
	Bosch Thermotechnika s.r.o.	Krnov	100.0
	BSH domácí spotřebiče s.r.o.	Prague	100.0
	Robert Bosch odbytova s.r.o.	Prague	100.0
	Robert Bosch, spol. s.r.o.	České Budějovice	100.0
Denmark	Bosch Rexroth A/S	Hvidovre	100.0
	BSH Hvidevarer A/S	Ballerup	100.0
	Holger Christiansen A/S	Esbjerg	100.0
	Robert Bosch A/S	Ballerup	100.0
Finland	Bosch Rexroth Oy	Vantaa	100.0
	BSH Kodinkoneet Oy	Helsinki	100.0
	Robert Bosch Oy	Vantaa	100.0
France	Bosch Automotive Service Solutions S.a.r.l.	La Ferté-Bernard	100.0
	Bosch Centre de Service S.A.S.	Freyming-Merlebach	100.0
	Bosch Rexroth DSI S.A.S.	Vénissieux	100.0
	Bosch Rexroth S.A.S.	Vénissieux	100.0
	Bosch Security Systems France S.A.S.	Clamart	100.0
	BSH Electroménager S.A.S.	Saint-Ouen	100.0
	COUP France S.A.S.	Paris	100.0
	e.l.m. leblanc S.A.S.	Drancy	100.0
	Gaggenau Industrie S.A.S.	Lipsheim	100.0
	Holger Christiansen France S.A.S.	Olivet	100.0
	Robert Bosch (France) S.A.S.	Saint-Ouen	100.0
	Robert Bosch Automotive Steering Marignier S.A.S.	Marignier	100.0
	Robert Bosch Automotive Steering Vendôme S.A.S.	Vendôme	100.0
	sia Abrasives France S.a.r.l.	Villepinte	100.0
Greece	BSH Ikiakes Syskeves A.B.E.	Athens	100.0
	Robert Bosch S.A.	Koropi (Athens)	100.0
Hungary	Automotive Steering Column Kft.	Eger	100.0
	Bosch Rexroth Kft.	Budapest	100.0
	BSH Háztartási Készülék Kereskedelmi Kft.	Budapest	100.0

	Company name	Registered office	Percentage share of capital
	Robert Bosch Automotive Steering Kft.	Eger	100.0
	Robert Bosch Elektronika Gyártó Kft.	Hatvan	100.0
	Robert Bosch Energy and Body Systems Kft.	Miskolc	100.0
	Robert Bosch Kft.	Budapest	100.0
	Robert Bosch Power Tool Elektromos Szerszámgyártó Kft.	Miskolc	100.0
	Zelmer Magyarország Kereskedelmi Kft.	Budapest	100.0
Ireland	Robert Bosch Ireland Ltd.	Dublin	100.0
Italy	ARESI S.p.A.	Brembate	100.0
	Albertini Cesare S.p.A.	Villasanta	100.0
	Bosch Automotive Service Solutions S.r.l.	Parma	100.0
	Bosch Energy and Building Solutions Italy S.r.l.	Milan	100.0
	Bosch Rexroth Oil Control S.p.A.	Milan	100.0
	Bosch Rexroth S.p.A.	Cernusco	100.0
	Bosch Security Systems S.p.A.	Milan	100.0
	BSH Elettrodomestici S.p.A.	Milan	100.0
	Centro Studi Componenti per Veicoli S.p.A.	Modugno (Bari)	100.0
	Freud S.p.A.	Milan	100.0
	Holger Christiansen Italia S.r.l.	San Lazzaro di Savena	100.0
	ROBERT BOSCH S.p.A. Società Unipersonale	Milan	100.0
	Tecnologie Diesel S.p.A. Società Unipersonale	Modugno (Bari)	100.0
	VHIT S.p.A.	Offanengo	100.0
Kazakhstan	TOO BSH Home Appliances	Almaty	100.0
	TOO Robert Bosch	Almaty	100.0
Latvia	Robert Bosch SIA	Riga	100.0
Luxembourg	Ferroknepper Buderus S.A.	Esch-sur-Alzette	100.0
	BSH électroménagers S.A.	Senningerberg	100.0
Netherlands	Bosch Packaging Technology B.V.	Schiedam	100.0
	Bosch Rexroth B.V.	Boxtel	100.0
	Bosch Security Systems B.V.	Eindhoven	100.0
	Bosch Thermotechniek B.V.	Deventer	100.0
	Bosch Thermotechnology Netherlands Holding B.V.	Boxtel	100.0
	Bosch Transmission Technology B.V.	Tilburg	100.0
	BSH Huishoudapparaten B.V.	Amsterdam	100.0
	Nefit Vastgoed B.V.	Deventer	100.0
	Robert Bosch B.V.	Boxtel	100.0
	Robert Bosch Asset Managing C.V.	Boxtel	100.0

	Company name	Registered office	Percentage share of capital
	Robert Bosch Finance Nederland B.V.	Boxtel	100.0
	Robert Bosch Holding Nederland B.V.	Boxtel	100.0
	Robert Bosch IC Financing Nederland B.V.	Boxtel	100.0
	Robert Bosch Investment Nederland B.V.	Boxtel	100.0
	Robert Bosch Packaging Technology B.V.	Weert	100.0
	Bosch Power Tools B.V.	Breda	100.0
Norway	Bosch Rexroth AS	Ski	100.0
	BSH Husholdningsapparater A/S	Oslo	100.0
	Robert Bosch AS	Trollåsen	100.0
Poland	Bosch Rexroth Sp. z o.o.	Warsaw	100.0
	BSH Sprzęt Gospodarstwa Domowego Sp. z o.o.	Warsaw	100.0
	ROBERT BOSCH Sp. z o.o.	Warsaw	100.0
	SIA Abrasives Polska Sp. z o.o.	Goleniów	100.0
Portugal	Bosch Car Multimedia Portugal, S.A.	Braga	100.0
	Bosch Security Systems, S.A.	Ovar	100.0
	Bosch Termotechnologia, S.A.	Aveiro	100.0
	BSHP Electrodomésticos, S.U., Lda.	Carnaxide	100.0
	Robert Bosch, S.A.	Lisbon	100.0
Romania	Bosch Automotive S.R.L.	Blaj	100.0
	Bosch Rexroth Sales S.R.L.	Blaj	100.0
	Bosch Service Solutions S.R.L.	Timişoara	100.0
	BSH Electrocasnice S.R.L.	Bucharest	100.0
	ROBERT BOSCH S.R.L.	Bucharest	100.0
Russian Federation	OOO “Construction & investments”	Khimki	100.0
	OOO Bosch Power Tools	Engels	100.0
	OOO Bosch Rexroth	Moscow	100.0
	OOO Bosch Thermotechnik	Moscow	99.0
	OOO BSH Bytowije Pribory	St. Petersburg	100.0
	OOO Robert Bosch	Moscow	100.0
	Evroradiators LLC	Engels	100.0
	Robert Bosch Samara LLC	Chernovskiy	100.0
	OOO Robert Bosch Saratow	Engels	100.0
Serbia	BSH Kućni Aparati d.o.o. Beograd	Belgrade	100.0
	Robert Bosch DOO	Belgrade	100.0

	Company name	Registered office	Percentage share of capital
Slovakia	BSH Drives and Pumps s.r.o.	Michalovce	100.0
	Holger Christiansen Produktion Slovakia s.r.o.	Bernolákovo	100.0
	Robert Bosch spol. s.r.o.	Bratislava	100.0
Slovenia	BSH Hišni Aparati d.o.o.	Nazarje	100.0
	Bosch Rexroth d.o.o.	Škofja Loka	100.0
Spain	Bosch Rexroth, S.L.U.	Madrid	100.0
	Bosch Service Solutions, S.A.U.	Madrid	100.0
	BOSCH SISTEMAS DE FRENADO, S.L.U.	Madrid	100.0
	BSH Electrodomésticos España, S.A.	Zaragoza	100.0
	Coup Urban Mobility S.L.	Madrid	100.0
	ROBERT BOSCH ESPAÑA FÁBRICA ARANJUEZ S.A.U.	Aranjuez	100.0
	ROBERT BOSCH ESPAÑA FÁBRICA CASTELLET S.A.U.	Castellet	100.0
	ROBERT BOSCH ESPAÑA FÁBRICA MADRID S.A.U.	Madrid	100.0
	ROBERT BOSCH ESPAÑA, S.L.U.	Madrid	100.0
	sia Abrasives Espana S.A.U.	Madrid	100.0
Sweden	Bosch Rexroth AB	Stockholm	100.0
	Bosch Thermoteknik AB	Tranås	100.0
	BSH Home Appliances AB	Stockholm	100.0
	Robert Bosch AB	Kista	100.0
Switzerland	Bosch Packaging Services AG	Beringen	100.0
	Bosch Packaging Systems AG	Beringen	100.0
	Bosch Pouch Systems AG	Beringen	100.0
	Bosch Rexroth Schweiz AG	Buttikon	100.0
	BSH Hausgeräte AG	Geroldswil	100.0
	Buderus Heiztechnik AG	Pratteln	100.0
	Robert Bosch AG	Zuchwil	100.0
	Robert Bosch Internationale Beteiligungen AG	Zuchwil	100.0
	Scintilla AG	Solothurn	100.0
	sia Abrasives Industries AG	Frauenfeld	100.0
Turkey	Bosch Fren Sistemleri Sanayi ve Ticaret A.S.	Bursa	84.5
	Bosch Rexroth Otomasyon Sanayi ve Ticaret A.S.	Bursa	100.0
	Bosch Sanayi ve Ticaret A.S.	Bursa	100.0
	Bosch Termoteknik Isitma ve Klima Sanayi Ticaret A.S.	Manisa	100.0
	BSH Ev Aletleri Sanayi ve Ticaret A.Ş.	Istanbul	100.0
Ukraine	TOV BSH Pobutova Technika	Kiev	100.0
	Holger Christiansen Production Ukraine	Krakovets	100.0

	Company name	Registered office	Percentage share of capital
	MBT Trade T.B.O.	Kiev	100.0
	Zelmer Ukraine T.B.O.	Kiev	100.0
United Kingdom	Bosch Automotive Service Solutions Ltd.	Brixworth	100.0
	Bosch Lawn and Garden Ltd.	Stowmarket	100.0
	Bosch Packaging Technology Limited	Derby	100.0
	Bosch Rexroth Ltd.	St. Neots	100.0
	Bosch Service Solutions Ltd.	Denham	100.0
	Bosch Thermotechnology Ltd.	Worcester	100.0
	BSH Home Appliances Ltd.	Milton Keynes	100.0
	Kliklok International Limited	Bristol	100.0
	Robert Bosch Investment Ltd.	Worcester	100.0
	Robert Bosch Ltd.	Denham	100.0
	Robert Bosch UK Holdings Limited	Denham	100.0
	sia Abrafoam Ltd.	Alfreton	100.0
	sia Abrasives (G.B.) Ltd.	Greetland	100.0
	sia Abrasives Holding Ltd.	Greetland	100.0
	sia Fibral Ltd.	Greetland	100.0
	Worcester Group plc	Worcester	100.0
Americas			
Argentina	Bosch Rexroth S.A.I.C.	Buenos Aires	100.0
	BSH Electrodomésticos S.A.	Buenos Aires	100.0
	Robert Bosch Argentina Industrial S.A.	Buenos Aires	100.0
Brazil	Bosch Rexroth Ltda.	Atibaia	100.0
	Bosch Termotecnologia Ltda.	São Paulo	100.0
	Robert Bosch Ltda.	Campinas	100.0
	Robert Bosch Direçáo Automotiva Ltda.	Sorocaba	100.0
	Robert Bosch Tecnologia de Embalagem Ltda.	Barueri	100.0
Canada	Bosch Rexroth Canada Corporation	Welland, ON	100.0
	BSH Home Appliances Ltd./ Électroménagers BSH Ltée	Mississauga, ON	100.0
	Freud Canada Inc.	Mississauga, ON	100.0
	ROBERT BOSCH INC.	Mississauga, ON	100.0
Chile	Bosch Rexroth Chile S.p.A.	Santiago de Chile	100.0
	Robert Bosch S. A.	Santiago de Chile	100.0
Colombia	BSH Electrodomesticos S.A.S.	Bogotá	100.0
	Robert Bosch Ltda.	Bogotá	100.0

	Company name	Registered office	Percentage share of capital
Costa Rica	Robert Bosch Service Solutions – Costa Rica Sociedad Anonima	Heredia	100.0
Mexico	Bosch Automotive Service Solutions, S.A. de C.V.	Mexico City	100.0
	Bosch Rexroth, S.A. de C.V.	Mexico City	100.0
	Frenados Mexicanos, S.A. de C.V.	Aguascalientes	100.0
	Robert Bosch México Sistemas Automotrices, S.A. de C.V.	San Luis Potosí	100.0
	Robert Bosch México Sistemas de Frenos, S. de R.L. de C.V.	Juárez	100.0
	Robert Bosch México Sistemas de Seguridad, S.A. de C.V.	Hermosillo	100.0
	Robert Bosch México, S.A. de C.V.	Mexico City	100.0
	Robert Bosch Sistemas Automotrices, S.A. de C.V.	Juárez	100.0
	Robert Bosch Tool de México, S.A. de C.V.	Mexicali	100.0
	Robert Bosch, S. de R.L. de C.V.	Toluca	100.0
Peru	BSH Electrodomésticos S.A.C.	Callao/Lima	100.0
	Robert Bosch S.A.C.	Lima	100.0
United States	Automotive Steering Column LLC	Wilmington, DE	100.0
	Bosch Automotive Service Solutions Inc.	Warren, MI	100.0
	Bosch Brake Components LLC	Broadview, IL	100.0
	Bosch Packaging Services Inc.	Raleigh, NC	100.0
	Bosch Packaging Technology, Inc.	New Richmond, WI	100.0
	Bosch Rexroth Corporation	Lehigh Valley, PA	100.0
	Bosch Security Systems Inc.	Burnsville, MN	100.0
	Bosch Thermotechnology Corp.	Londonderry, NH	100.0
	BSH Home Appliances Corporation	Irvine, CA	100.0
	Climatec, LLC	Phoenix, AZ	100.0
	Compu-Spread Corporation	Delano, MN	100.0
	ETAS Inc.	Ann Arbor, MI	100.0
	FHP Manufacturing Company	Fort Lauderdale, FL	57.0
	Freud America Inc.	High Point, NC	100.0
	Kliklok Corporation	Decatur, GA	100.0
	Nimbus Holdings LLC	Wilmington, DE	100.0
	Osgood Industries, Inc.	Oldsmar, FL	100.0
	Robert Bosch Asset Management I LLC	Wilmington, DE	100.0
	Robert Bosch Asset Management I LP	Wilmington, DE	100.0
	Robert Bosch Asset Management II Corporation	Farmington Hills, MI	100.0
	Robert Bosch Automotive Steering LLC	Florence, KY	100.0
	Robert Bosch Battery Systems LLC	Orion, MI	100.0
	Robert Bosch Finance LLC	Broadview, IL	100.0
	ROBERT BOSCH FUEL SYSTEMS LLC	Kentwood, MI	100.0
	Robert Bosch LLC	Broadview, IL	100.0
	Robert Bosch North America Corporation	Broadview, IL	100.0

	Company name	Registered office	Percentage share of capital
	Robert Bosch Packaging Technology Inc.	Minneapolis, MN	100.0
	Robert Bosch Start-up Platform North America LLC	Wilmington, DE	100.0
	Robert Bosch Tool Corporation	Mt. Prospect, IL	100.0
	Seeo, Inc.	Hayward, CA	100.0
	sia Abrasives, Inc. USA	Charlotte, NC	100.0
Asia			
China	Bosch (Ningbo) e-scooter Motor Co., Ltd.	Ningbo	60.0
	Bosch (Shanghai) Investment Consulting Co., Ltd.	Shanghai	100.0
	Bosch (Shanghai) Security Systems Ltd.	Shanghai	100.0
	Bosch (Shanghai) Venture Capital Investment Co., Ltd.	Shanghai	100.0
	Bosch (Zhuhai) Security Systems Co., Ltd.	Zhuhai	100.0
	Bosch Automotive Components (Changchun) Co., Ltd.	Changchun	55.0
	Bosch Automotive Diesel Systems Co., Ltd.	Wuxi	66.0
	Bosch Automotive Products (Changsha) Co., Ltd.	Changsha	100.0
	Bosch Automotive Products (Chengdu) Co., Ltd.	Chengdu	100.0
	Bosch Automotive Products (Wuhu) Co., Ltd.	Wuhu	100.0
	Bosch Automotive Aftermarket (China) Co., Ltd.	Nanjing	100.0
	Bosch Automotive Products (Suzhou) Co., Ltd.	Suzhou	100.0
	Bosch Automotive Service Solutions (Suzhou) Co., Ltd.	Suzhou	100.0
	Bosch Automotive Steering (Jinan) Co., Ltd.	Jinan	100.0
	Bosch HUAYU Steering Systems (Nanjing) Co., Ltd.	Nanjing	100.0
	Bosch Automotive Steering Jincheng (Nanjing) Co., Ltd.	Nanjing	70.0
	Bosch Automotive Steering Management (Shanghai) Co., Ltd.	Shanghai	100.0
	Bosch Automotive Systems (Wuxi) Co., Ltd.	Wuxi	100.0
	Bosch Automotive Technical Service (Beijing) Co., Ltd.	Beijing	100.0
	Bosch Car Multimedia (Wuhu) Co., Ltd.	Wuhu	60.0
	Bosch (China) Investment Ltd.	Shanghai	100.0
	Bosch Electronics Trading (Suzhou) Co., Ltd.	Suzhou	100.0
	Bosch HUAYU Steering Systems Co., Ltd.	Shanghai	51.0
	Bosch HUAYU Steering Systems (Wuhan) Co., Ltd.	Wuhan	100.0
	Bosch HUAYU Steering Systems (Yantai) Co., Ltd.	Yantai	100.0
	Bosch Laser Equipment (Dongguan) Limited	Dongguan	100.0
	Bosch Power Tools (Chengdu) Co., Ltd.	Chengdu	100.0
	Bosch Packaging Technology (Hangzhou) Co., Ltd.	Hangzhou	100.0
	Bosch Power Tools (China) Ltd.	Hangzhou	100.0
	Bosch Rexroth (Beijing) Hydraulic Co., Ltd.	Beijing	100.0
	Bosch Rexroth (Changzhou) Co., Ltd.	Changzhou	100.0
	Bosch Rexroth (China) Ltd.	Hong Kong	100.0
	Bosch Rexroth (Xi'an) Electric Drives and Controls Co., Ltd.	Xi'an	100.0
	Bosch Security Systems Ltd.	Hong Kong	100.0
	Bosch Thermotechnology (Beijing) Co., Ltd.	Beijing	100.0

	Company name	Registered office	Percentage share of capital
	Bosch Thermotechnology (Shandong) Co., Ltd.	Zibo	100.0
	Bosch Thermotechnology (Shanghai) Co., Ltd.	Shanghai	100.0
	Bosch Thermotechnology (Wuhan) Co., Ltd.	Wuhan	100.0
	Bosch Trading (Shanghai) Co., Ltd.	Shanghai	100.0
	BSH Electrical Appliances (Jiangsu) Co., Ltd.	Nanjing	100.0
	BSH Home Appliances Co., Ltd.	Chuzhou	100.0
	BSH Home Appliances Ltd.	Hong Kong	100.0
	BSH Home Appliances (China) Co., Ltd.	Nanjing	100.0
	BSH Home Appliances Holding (China) Co., Ltd.	Nanjing	100.0
	BSH Home Appliances Service Jiangsu Co., Ltd.	Nanjing	100.0
	BSW Household Appliances Co., Ltd.	Wuxi	100.0
	ETAS Automotive Technology (Shanghai) Co., Ltd.	Shanghai	100.0
	Guangzhou sia Abrasives Company Ltd.	Guangzhou	100.0
	Robert Bosch Company Ltd.	Hong Kong	100.0
	Shanghai Bosch Rexroth Hydraulics & Automation Ltd.	Shanghai	100.0
	Taixiang Vehicle Replace Parts (Shenzhen) Co., Ltd.	Shenzhen	100.0
	United Automotive Electronic Systems Co., Ltd.	Shanghai	51.0
	United Automotive Electronic Systems (Chongqing) Co., Ltd.	Chongqing	65.0
India	Bosch Automotive Electronics India Private Ltd.	Bengaluru	100.0
	Bosch Chassis Systems India Private Ltd.	Pune	100.0
	Bosch Electrical Drives India Private Ltd.	Chennai	90.8
	Bosch Ltd.	Bengaluru	70.5
	Bosch Rexroth (India) Private Limited	Ahmedabad	100.0
	BSH Home Appliances Private Limited	Mumbai	100.0
	BSH Household Appliances Manufacturing Private Limited	Mumbai	100.0
	Robert Bosch Automotive Steering Private Limited	Pune	74.0
	Robert Bosch Engineering and Business Solutions Private Ltd.	Bengaluru	100.0
Indonesia	PT BSH Home Appliances	Jakarta	100.0
	P.T. Robert Bosch	Jakarta	100.0
Israel	BSH Home Appliances Ltd.	Herzlia	100.0
Japan	Bosch Corporation	Tokyo	100.0
	Bosch Packaging Technology K.K.	Tokyo	100.0
	Bosch Rexroth Corporation	Tsuchiura-shi	99.9
	Bosch Security Systems Ltd.	Tokyo	100.0
	ETAS K.K.	Yokohama	100.0
	FA Niigata Co., Ltd.	Niigata	100.0
	Fuji Aitac Co., Ltd.	Gunma	100.0
	Gunma Seiki Co., Ltd.	Gunma	100.0
	Nippon Injector Corporation	Odawara	50.0

	Company name	Registered office	Percentage share of capital
Korea	Bosch Electrical Drives Co., Ltd.	Sejong	100.0
	Bosch Rexroth Korea Ltd.	Busan	100.0
	Robert Bosch Korea Limited Company	Daejeon	100.0
Malaysia	Bosch Power Tools Engineering Sdn. Bhd.	Penang	100.0
	Bosch Rexroth Sdn. Bhd.	Shah Alam	100.0
	BSH Home Appliances Sdn. Bhd.	Kuala Lumpur	100.0
	ROBERT BOSCH (MALAYSIA) SDN. BHD.	Penang	100.0
	Robert Bosch Automotive Steering Sdn. Bhd.	Penang	100.0
	ROBERT BOSCH POWER TOOLS SDN. BHD.	Penang	100.0
	Robert Bosch Sdn. Bhd.	Kuala Lumpur	100.0
Philippines	Bosch Service Solutions, Inc.	Manila	100.0
	Robert Bosch Inc.	Manila	100.0
Saudi Arabia	BSH Home Appliances Saudi Arabia LLC	Jeddah	51.0
Singapore	BOSCH PACKAGING TECHNOLOGY (SINGAPORE) PTE. LTD.	Singapore	100.0
	Bosch Rexroth Pte. Ltd.	Singapore	100.0
	BSH Home Appliances Pte. Ltd.	Singapore	100.0
	Robert Bosch (South East Asia) Pte. Ltd.	Singapore	100.0
	Robert Bosch Security Solutions Pte.	Singapore	100.0
Taiwan	Bosch Rexroth Co. Ltd.	Taipei	100.0
	BSH Home Appliances Private Limited	Taipei	100.0
	Robert Bosch Taiwan Co., Ltd.	Taipei	100.0
	Unipoint Electric MFG Co., Ltd.	Taipei	100.0
Thailand	Bosch Automotive Thailand Co. Ltd.	Rayong	87.9
	Bosch Packaging Technology (Thailand) Co., Ltd.	Chonburi	100.0
	BSH Home Appliances Ltd.	Bangkok	100.0
	Robert Bosch Ltd.	Bangkok	100.0
	Robert Bosch Automotive Technologies (Thailand) Co., Ltd.	Rayong	100.0
United Arab Emirates	BSH Home Appliances FZE	Dubai	100.0
	BSH Home Appliances General Trading LLC	Dubai	100.0
	Robert Bosch Middle East FZE	Dubai	100.0
Vietnam	Bosch Vietnam Co., Ltd.	Dong Nai Province	100.0
	Robert Bosch Engineering and Business Solutions Vietnam Co. Ltd.	Ho Chi Minh City	100.0

	Company name	Registered office	Percentage share of capital
Rest of World			
Australia	Australian Industrial Abrasives Pty. Ltd.	Rowville	100.0
	Bosch Automotive Service Solutions Pty. Ltd.	Clayton	100.0
	Bosch Rexroth Pty. Ltd.	Kings Park	100.0
	Bosch Security Systems Pty. Ltd.	Sydney	100.0
	BSH Home Appliances Pty. Ltd.	Heatherton	100.0
	Robert Bosch (Australia) Pty. Ltd.	Clayton	100.0
	sia Abrasives Australasia Holding Pty. Ltd.	Rowville	100.0
	sia Abrasives Australia Pty. Ltd.	Rowville	100.0
Botswana	Hytec Hydraulics Botswana (Pty) Ltd.	Gaborone	100.0
Ghana	Bosch Rexroth Ghana Ltd.	Accra	100.0
Kenya	Bosch Rexroth Kenya Ltd.	Nairobi	100.0
Morocco	BSH Electroménagers (SA)	Casablanca	100.0
	Robert Bosch Morocco Sarl	Casablanca	100.0
Mozambique	Hytec Hydraulics Mocambique Lda.	Maputo	100.0
	Hytec Services Mozambique Lda.	Maputo	100.0
Namibia	Hytec Namibia Pty. Ltd.	Walvis Bay	100.0
New Zealand	BSH Home Appliances Ltd.	Auckland	100.0
South Africa	Bosch Rexroth South Africa (RF) (Pty) Ltd.	Johannesburg	100.0
	BSH Home Appliances (Pty.) Ltd.	Johannesburg	100.0
	Robert Bosch (Pty.) Ltd.	Brits	100.0
	Hytec South Africa (RF) (Pty) Ltd.	Kempton Park	75.0
	Corgam Property Investments Pty. Ltd.	Kempton Park	100.0
	Hydraulic and Automation Warehouse Pty. Ltd.	Kempton Park	100.0
	HYSA Pty. Ltd.	Kempton Park	100.0
	Hytec Engineering Pty. Ltd.	Kempton Park	100.0
	Hytec Fluid Technology Pty. Ltd.	Kempton Park	100.0
	Hytec Services Africa Pty. Ltd.	Kempton Park	100.0
	Tectra Automation Pty. Ltd.	Kempton Park	100.0
Zambia	Hytec Zambia Ltd.	Kitwe	100.0

2 Investments measured using the equity method

	Company name	Registered office	Percentage share of capital
Germany	EM-motive GmbH	Hildesheim	50.0
Korea	KB Wiper Systems Co., Ltd.	Daegu	50.0

3 Non-consolidated and other investments

	Company name	Registered office	Percentage share of capital
Germany	ads-tec Energy GmbH	Nürtingen	24.8
	AIG Planungs- und Ingenieurgesellschaft mbH	Stuttgart	100.0
	AJNS New Media GmbH	Berlin	64.9
	Alltrucks GmbH & Co. KG	Munich	33.3
	BD Kompressor Management GmbH	Lollar	100.0
	Bosch Emission Systems Verwaltungs-GmbH	Stuttgart	100.0
	Bosch Management Support GmbH	Leonberg	100.0
	Bosch Pensionsfonds AG	Stuttgart	100.0
	BS Systems GmbH & Co. KG	Zusmarshausen	50.0
	BSH Altersfürsorge GmbH	Munich	100.0
	BSH Digital Ventures GmbH	Munich	100.0
	Circular Economy Solutions GmbH	Göttingen	100.0
	Drivelog GmbH	Berlin	100.0
	ECP Energiecontracting GmbH	Heidelberg	81.0
	Energiespeicher Nord GmbH & Co. KG	Braderup	45.0
	Energiespeicher Nord Verwaltungs GmbH	Braderup	45.0
	ESCRYPT GmbH	Bochum	100.0
	European Center for Information and Communication Technologies – EICT GmbH	Berlin	20.0
	GFI Gesellschaft für Infrastrukturdienste mbH	Reutlingen	100.0
	Home Connect GmbH	Munich	100.0
	JCB Management GmbH	Hannover	20.0
	Johnson Controls Autobatterie GmbH & Co. KGaA	Hannover	20.0
	Knorr-Bremse Systeme für Nutzfahrzeuge GmbH	Munich	20.0
	Koller + Schwemmer GmbH	Nuremberg	100.0
	Kraftwerksbatterie Heilbronn GmbH	Stuttgart	50.0
	KSK Diagnostics GmbH	Hamburg	100.0
	Lithium Energy and Power Management GmbH	Stuttgart	100.0
	Makat Candy Technology GmbH	Dierdorf	100.0

	Company name	Registered office	Percentage share of capital
	Mobility Media GmbH	Berlin	100.0
	mozaiq operations GmbH	Munich	38.6
	part GmbH	Bad Urach	50.0
	Prüfzentrum Boxberg GmbH	Boxberg	100.0
	Residential IoT Services GmbH	Munich	100.0
	Robert Bosch Battery Solutions GmbH	Eisenach	100.0
	Robert Bosch Immobilien GmbH	Stuttgart	100.0
	Reflekt GmbH	Munich	50.0
	Robert Bosch Technical and Business Solutions GmbH	Stuttgart	100.0
	SAPCORDA SERVICES GmbH	Berlin	28.5
	Service- und Betriebsgesellschaft Heidehof GmbH	Stuttgart	100.0
	SupplyOn AG	Hallbergmoos	42.1
	Valicare GmbH	Frankfurt/Main	100.0
	for you Insurance Services GmbH	Stuttgart	100.0
Europe			
Austria	Bosch General Aviation Technology GmbH	Vienna	100.0
	ITK Engineering GmbH	Premstätten	100.0
	RobArt GmbH	Linz	20.1
	ZENO Track GmbH	Vienna	100.0
Belarus	Robert Bosch OOO	Minsk	100.0
Belgium	EpiGaN NV	Leuven	17.1
Bulgaria	Robert Bosch EOOD	Sofia	100.0
Croatia	Robert Bosch d.o.o.	Zagreb	100.0
Denmark	Moeller & Devicon A/S	Sandved	100.0
Estonia	Robert Bosch OÜ	Tallinn	100.0
France	Bosch Packaging Technology S.A.S.	Saint-Ouen	100.0
	ETAS S.A.S.	Saint-Ouen	100.0
Georgia	Robert Bosch Ltd.	Tiflis	100.0
Greece	Bosch Rexroth S.A.	Athens	100.0
Hungary	Bosch Electronic Service Kft.	Kecskemét	100.0
	Bosch Packaging Systems Kft.	Pécel	100.0

	Company name	Registered office	Percentage share of capital
Italy	BARI SERVIZI INDUSTRIALI Società consortile a r.l.	Modugno	50.0
	Dana Rexroth Transmission Systems S.r.l.	Arco	50.0
	DECA S.r.l.	Lugo	100.0
	Oleodinamica Gambini S.r.l.	Modena	20.0
Lithuania	UAB Robert Bosch	Vilnius	100.0
Netherlands	Tradeplace B.V.	Amsterdam	20.0
Poland	Loos Centrum Sp.z o.o.	Warsaw	26.0
Romania	BSH Electrocasnice Manufacturing S.R.L.	Bucharest	100.0
Russian Federation	Bosch Heating Systems LLC	Engels	100.0
Slovakia	Valicare s.r.o.	Trencin	51.1
Slovenia	BSH I.D. Invalidska družba d.o.o.	Nazarje	100.0
	Robert Bosch d.o.o.	Ljubljana	100.0
Spain	Bosch Automotive Service Solutions S.A.U.	Madrid	100.0
	ITK Systems Engineering, S.L.U.	Barcelona	100.0
	Noustique Perfumes S.L.	Barcelona	100.0
Switzerland	Bosch Automotive Service Solutions AG	Kriens	100.0
	Rotzinger Group AG	Kaiseraugst	46.7
Ukraine	Robert Bosch Ltd.	Kiev	100.0
United Kingdom	Bosch Automotive Training Limited	Motherwell	100.0
	BOXT Limited	Leeds	45.0
	ETAS Ltd.	York	100.0
	LAGTA Group Training Limited	Motherwell	100.0

	Company name	Registered office	Percentage share of capital
Americas			
Brazil	Bosch Management Support Ltda.	Campinas	99.9
	Bosch Soluções Integradas Brasil Ltda.	Campinas	100.0
	Metapar Usinagem Ltda.	Curitiba-Paraná	100.0
	Robert Bosch Centro de Comunicação Limitada	Campinas	100.0
	sia Abrasivos Industriais Ltda.	São José dos Pinhais	100.0
Canada	ETAS Embedded Systems Canada Inc.	Kitchener, ON	100.0
Colombia	Robert Bosch Caribe S.A.S.	Bogotá	100.0
Ecuador	Robert Bosch Sociedad Anónima – Ecuabosch	Guayaquil	100.0
Mexico	Bopatec, S.A. de C.V.	Mexico City	50.0
	Bosch Management Services México, S.C.	Mexico City	100.0
	SPLT México, S.A. de C.V.	Mexico City	100.0
Panama	Robert Bosch Panama S.A.	Panama City	100.0
	Robert Bosch Panama Colón, S.A.	Colón	100.0
Paraguay	Robert Bosch Sociedad Anonima	Asunción	100.0
Peru	Bosch Rexroth S.A.C.	Lima	100.0
Uruguay	Robert Bosch Uruguay S.A.	Montevideo	100.0
Venezuela	Bosch Rexroth S.A.	Caracas	100.0
	Inversiones 421.10 (Venezuela Holding)	Caracas	100.0
	Robert Bosch S.A.	Caracas	100.0
	Skil Venezolana SRL	Caracas	100.0
United States	Bosch Aviation Technology LLC	Novi, MI	100.0
	Bosch Management Services Corporation	Wilmington, DE	100.0
	Bosch Solar Energy Corp.	Detroit, MI	100.0
	Industrial Pharmaceutical Resources, Inc.	Bartlett, IL	49.0
	ITK Engineering, LLC	Howell, MI	100.0
	North America Fuel Systems Remanufacturing LLC	Kentwood, MI	50.0
	PBR International USA Ltd.	Knoxville, TN	100.0
	RoboToolz Inc.	Mountain View, CA	100.0
	Shop-Ware Inc.	San Francisco, CA	28.0
	Splitting Fares Inc.	Detroit, MI	100.0

	Company name	Registered office	Percentage share of capital
Asia			
Bangladesh	Robert Bosch (Bangladesh) Ltd.	Dhaka	100.0
Cambodia	Robert Bosch (Cambodia) Co., Ltd.	Phnom Penh	100.0
China	Bosch (Donghai) Automotive Test & Technology Center Co., Ltd.	Donghai	100.0
	Bosch (Hulunbeier) Automotive Test and Technology Centre Co., Ltd.	Yakeshi	100.0
	Bosch (Shanghai) Smart Life Technology Ltd.	Shanghai	100.0
	Freud International Trading (Shanghai) Co., Ltd.	Shanghai	100.0
	Guangdong Vanbo Electric Co., Ltd.	Foshan	50.0
	HEFEI M&B Air Conditioning Equipment Co., Ltd.	Heifei	40.0
	Nanjing Bovon Power Tools Co.	Nanjing	50.0
	Seeo Battery Systems Co., Ltd.	Shanghai	100.0
India	Automobility Services and Solutions Private Limited	Bengaluru	100.0
	ETAS Automotive India Private Ltd.	Bengaluru	100.0
	Klenzaids Contamination Controls Private Limited	Mumbai	49.0
	MIVIN Engineering Technologies Private Ltd.	Bengaluru	100.0
	Newtech Filter India Private Limited	Nalagarh	100.0
	Precision Seals Manufacturing Ltd.	Chakan	100.0
	Simyog Technology Pvt. Ltd.	Bengaluru	24.7
	ZF Steering Gear (India) Ltd.	Pune	26.0
Indonesia	P.T. Bosch Rexroth	Jakarta	100.0
	P.T. Robert Bosch Automotive	Jakarta	100.0
Iran	Bosch Tejarat Pars	Tehran	100.0
Israel	Robert Bosch Technologies Israel Ltd.	Tel Aviv	100.0
	Utilight Ltd.	Yavne	21.5
Japan	Advanced Driver Information Technology Corporation	Kariya-shi	50.0
	Bosch Engineering K.K.	Tokyo	100.0
	Bosch Engineering Solutions Ltd.	Tokyo	100.0
	Bosch Service Solutions Corporation	Siki	100.0
	ITK Engineering Japan, Inc.	Tokyo	100.0
	Kanto Seiatsu Kogyo Co., Ltd.	Honjo	94.9
	Knorr-Bremse Commercial Vehicle Systems Japan, Ltd.	Tokyo	20.0

	Company name	Registered office	Percentage share of capital
Korea	ETAS Korea Co., Ltd.	Seoul	100.0
Laos	Robert Bosch (Lao) Sole Co., Ltd.	Vientiane	100.0
Malaysia	Pacific BBA (Malaysia) Sdn. Bhd.	Shah Alam	100.0
	Robert Bosch (Penang) Sdn. Bhd.	Penang	100.0
Saudi Arabia	Robert Bosch Saudi Arabia Limited Liability Company	Riyadh	100.0
Singapore	Surelock Pte. Ltd.	Singapore	20.0
	Whatsegg Pte. Ltd.	Singapore	20.8
Sri Lanka	Robert Bosch Lanka (Pvt.) Ltd.	Colombo	100.0
Thailand	FMP Distribution Ltd.	Rayong	50.1
	FMP Group (Thailand) Ltd.	Rayong	50.7
	Pacific BBA (Thailand) Ltd.	Bangkok	100.0
Rest of World			
Angola	Robert Bosch, Limitada	Luanda	100.0
Australia	Autocrew Australia Pty. Ltd.	Lawnton	50.0
	FMP Group (Australia) Pty. Ltd.	Ballarat	49.0
	Pacifica Group Pty. Ltd.	Melbourne	100.0
	The Yield Technology Solution Pty. Ltd.	Hobart	28.7
Egypt	Bosch Packaging Technology Ltd.	Cairo	100.0
	BSH Home Appliances LLC	New Cairo	100.0
	BSH Home Appliances Holding LLC	New Cairo	100.0
	Robert Bosch Ltd.	Cairo	100.0
	RBEG LLC	Cairo	100.0
	Robert Bosch Holding-Egypt LLC	Cairo	100.0
Ghana	Robert Bosch Ghana Ltd.	Accra	100.0
Kenya	Robert Bosch East Africa Ltd.	Nairobi	100.0
Morocco	Bosch Rexroth Morocco S.A.R.L.	Casablanca	100.0

	Company name	Registered office	Percentage share of capital
New Zealand	Bosch Rexroth Ltd.	Auckland	100.0
	Robert Bosch Ltd.	Auckland	100.0
Nigeria	Robert Bosch Limited	Lagos	100.0
South Africa	Hägglunds Drives South Africa (Pty.) Ltd.	Fourways	100.0
Tunisia	Robert Bosch Tunisie SARL	Tunis	100.0
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Stuttgart, March 12, 2019

Robert Bosch GmbH
The board of management

AUDITOR'S REPORT

Independent Auditor's Report
To Robert Bosch Gesellschaft mit beschränkter Haftung, Stuttgart

Audit Opinions

We have audited the consolidated financial statements of Robert Bosch Gesellschaft mit beschränkter Haftung, Stuttgart, and its subsidiaries (the Group), which comprise the consolidated statement of financial position as at 31 December 2018, and the consolidated statement of comprehensive income, consolidated statement of profit or loss, consolidated statement of changes in equity and consolidated statement of cash flows for the financial year from 1 January 2018 to 31 December 2018, and notes to the consolidated financial statements, including a summary of significant accounting policies. In addition, we have audited the group management report of Robert Bosch Gesellschaft mit beschränkter Haftung, Stuttgart,for the financial year from 1 January 2018 to 31 December 2018. In accordance with the German legal requirements, we have not audited the content of the statement on corporate governance pursuant to § [Article] 289f Abs. [paragraph] 4 HGB [Handelsgesetzbuch: German Commercial Code] (disclosures regarding women's quota).

In our opinion, on the basis of the knowledge obtained in the audit,

- the accompanying consolidated financial statements comply, in all material respects, with the IFRSs as adopted by the EU, and the additional requirements of German commercial law pursuant to § [Article] 315e Abs. [paragraph] 1 HGB [Handelsgesetzbuch: German Commercial Code] and, in compliance with these requirements, give a true and fair view of the assets, liabilities, and financial position of the Group as at 31 December 2018, and of its financial performance for the financial year from 1 January 2018 to 31 December 2018, and
- the accompanying group management report as a whole provides an appropriate view of the Group's position. In all material respects, this group management report is consistent with the consolidated financial statements, complies with German legal requirements and appropriately presents the opportunities and risks of future development. Our audit opinion on the group management report does not cover the content of the statement on corporate governance referred to above.

Pursuant to § 322 Abs. 3 Satz [sentence] 1 HGB, we declare that our audit has not led to any reservations relating to the legal compliance of the consolidated financial statements and of the group management report.

Basis for the Audit Opinions

We conducted our audit of the consolidated financial statements and of the group management report in accordance with § 317 HGB and in compliance with German Generally Accepted Standards for Financial Statement Audits promulgated by the Institut der Wirtschaftsprüfer [Institute of Public Auditors in Germany] (IDW). Our responsibilities under those requirements and principles are further described in the "Auditor's Responsibilities for the Audit of the Consolidated Financial Statements and of the Group Management Report" section of our auditor's report. We are independent of the group entities in accordance with the requirements of German commercial and professional law, and we have fulfilled our other German professional responsibilities in accordance with these requirements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinions on the consolidated financial statements and on the group management report.

Other Information

The executive directors are responsible for the other information. The other information comprises the statement on corporate governance pursuant to § [Article] 289f Abs. [paragraph] 4 HGB [Handelsgesetzbuch: German Commercial Code] (disclosures regarding women's quota).

The other information comprises further the remaining parts of the annual report – excluding cross-references to external information – with the exception of the audited consolidated financial statements, the audited group management report and our auditor's report.

Our audit opinions on the consolidated financial statements and on the group management report do not cover the other information, and consequently we do not express an audit opinion or any other form of assurance conclusion thereon.

In connection with our audit, our responsibility is to read the other information and, in so doing, to consider whether the other information

- is materially inconsistent with the consolidated financial statements, with the group management report or our knowledge obtained in the audit, or
- otherwise appears to be materially misstated.

Responsibilities of the Executive Directors and the Supervisory Board for the Consolidated Financial Statements and the Group Management Report

The executive directors are responsible for the preparation of the consolidated financial statements that comply, in all material respects, with IFRSs as adopted by the EU and the additional requirements of German commercial law pursuant to § 315e Abs. 1 HGB and that the consolidated financial statements, in compliance with these requirements, give a true and fair view of the assets, liabilities, financial position, and financial performance of the Group. In addition the executive directors are responsible for such internal control as they have determined necessary to enable the preparation of consolidated financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the consolidated financial statements, the executive directors are responsible for assessing the Group's ability to continue as a going concern. They also have the responsibility for disclosing, as applicable, matters related to going concern. In addition, they are responsible for financial reporting based on the going concern basis of accounting unless there is an intention to liquidate the Group or to cease operations, or there is no realistic alternative but to do so.

Furthermore, the executive directors are responsible for the preparation of the group management report that, as a whole, provides an appropriate view of the Group's position and is, in all material respects, consistent with the consolidated financial statements, complies with German legal requirements, and appropriately presents the opportunities and risks of future development. In addition, the executive directors are responsible for such arrangements and measures (systems) as they have considered necessary to enable the preparation of a group management report that is in accordance with the applicable German legal requirements, and to be able to provide sufficient appropriate evidence for the assertions in the group management report.

The supervisory board is responsible for overseeing the Group's financial reporting process for the preparation of the consolidated financial statements and of the group management report.

Auditor's Responsibilities for the Audit of the Consolidated Financial Statements and of the Group Management Report

Our objectives are to obtain reasonable assurance about 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 appropriate view of the Group's position and, in all material respects, is consistent with the consolidated financial statements and the knowledge obtained in the audit, complies with the German legal requirements and appropriately presents the opportunities and risks of future development, as well as to issue an auditor's report that includes our audit opinions on the consolidated financial statements and on the group management report.

Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with § 317 HGB and in compliance with German Generally Accepted Standards for Financial Statement Audits promulgated by the Institut der Wirtschaftsprüfer (IDW) will always detect a material misstatement. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these consolidated financial statements and this group management report.

We exercise professional judgment and maintain professional skepticism throughout the audit. We also:

- Identify and assess the risks of material misstatement of the consolidated financial statements and of the group management report, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our audit opinions. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- Obtain an understanding of internal control relevant to the audit of the consolidated financial statements and of arrangements and measures (systems) relevant to the audit of the group management report in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an audit opinion on the effectiveness of these systems.
- Evaluate the appropriateness of accounting policies used by the executive directors and the reasonableness of estimates made by the executive directors and related disclosures.
- Conclude on the appropriateness of the executive directors' use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Group's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in the auditor's report to the related disclosures in the consolidated financial statements and in the group management report or, if such disclosures are inadequate, to modify our respective audit opinions. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the Group to cease to be able to continue as a going concern.
- Evaluate the overall presentation, structure and content of the consolidated financial statements, including the disclosures, and whether the consolidated financial statements present the underlying transactions and events in a manner that the consolidated financial statements give a true and fair view of the assets, liabilities, financial position and financial performance of the Group in compliance with IFRSs as adopted by the EU and the additional requirements of German commercial law pursuant to § 315e Abs. 1 HGB.
- Obtain sufficient appropriate audit evidence regarding the financial information of the entities or business activities within the Group to express audit opinions on the consolidated financial statements and on the group management report. We are responsible for the direction, supervision and performance of the group audit. We remain solely responsible for our audit opinions.
- Evaluate the consistency of the group management report with the consolidated financial statements, its conformity with German law, and the view of the Group's position it provides.
- Perform audit procedures on the prospective information presented by the executive directors in the group management report. On the basis of sufficient appropriate audit evidence we evaluate, in particular, the significant assumptions used by the executive directors as a basis for the prospective information, and evaluate the proper derivation of the prospective information from these assumptions. We do not express a separate audit opinion on the prospective information and on the assumptions used as a basis. There is a substantial unavoidable risk that future events will differ materially from the prospective information.

We communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

Stuttgart, March 12, 2019

PricewaterhouseCoopers GmbH
Wirtschaftsprüfungsgesellschaft

Petra Justenhoven
Wirtschaftsprüferin
(German Public Auditor)

Marcus Nickel
Wirtschaftsprüfer
(German Public Auditor)

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GROUP MANAGEMENT REPORT

CONSOLIDATED FINANCIAL STATEMENTS

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TEN-YEAR SUMMARY OF THE BOSCH GROUP

Figures in millions of euros

	2009	2010	2011	2012[1]	2013	2014	2015	2016[1]	2017[1]	2018
Sales	**38,174**	**47,259**	**51,494**	**44,703**	**46,068**	**48,951**	**70,607**	**73,129**	**78,066**	**78,465**
of which generated outside Germany (as a percentage)	76	77	77	77	77	78	80	80	80	79
Research and development cost[2]	3,603	3,810	4,190	4,442	4,543	4,959	6,378	6,911	7,045	5,963
as a percentage of sales revenue	9.4	8.1	8.1	9.9	9.9	10.1	9.0	9.5	9.0	7.6
Capital expenditure	1,892	2,379	3,226	2,714	2,539	2,585	4,058	4,252	4,345	4,946
of which in Germany	928	1,023	1,161	988	913	1,098	1,394	1,580	1,546	1,757
of which outside Germany	964	1,356	2,065	1,726	1,626	1,487	2,664	2,672	2,799	3,189
as a percentage of sales revenue	5.0	5.0	6.3	6.1	5.5	5.3	5.7	5.8	5.6	6.3
as a percentage of depreciation	80	100	142	101	126	138	146	141	140	159
Depreciation of property, plant, and equipment	2,374	2,373	2,265	2,689	2,008	1,868	2,788	3,022	3,095	3,103
Annual average number of associates (thousands)	275	276	295	273	280	286	369	384	403	407
of which in Germany	113	112	117	109	108	105	131	133	137	138
of which outside Germany	162	164	178	164	172	181	238	251	266	269
as of 12/31 of the year	271	284	303	273	281	290	375	389	402	410
Personnel expenses	12,787	14,132	14,719	14,198	14,907	15,325	20,369	21,056	22,238	22,219
Total assets	**47,509**	**52,683**	**54,616**	**52,611**	**55,725**	**61,924**	**77,266**	**81,875**	**81,870**	**83,654**
Equity	23,069	26,243	26,917	26,900	27,686	29,541	34,424	36,084	37,552	39,176
as a percentage of total assets	49	50	49	51	50	48	45	44	46	47
Cash flow	1,910	5,460	4,959	4,053	3,956	4,866	6,835	6,565	8,367	7,026
as a percentage of sales revenue	5.0	11.6	9.6	9.1	8.6	9.9	9.7	9.0	10.7	9.0
Result after tax	−1,214	2,489	1,820	2,304	1,251	2,637	3,537	2,374	3,294	3,574
Unappropriated earnings	67	82	88	88	88	102	142	138	241	242

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[1] Adjusted for changes in accounting policies
[2] Up to 2017, including development work charged directly to customers

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