SHIFTINGPARADIGMS

Creativity
Technology
Trust

BOSCH
Invented for life

Annual report 2020

We are currently experiencing paradigm shifts that are both economic and social – fueled above all by continuing digitalization and by tangible climate change, and compounded by the impact of the coronavirus pandemic. These enormous challenges can only be met by venturing off the beaten path and pursuing approaches marked by creativity – and responsibility. With innovations sparked by inspiration, based on technological excellence, and characterized by reliability, we are shaping the future of business, society, and technology.

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

Figures in millions of euros

	2020	2019
Sales revenue	**71,494**	**77,721**
percentage change from previous year	–8.0	–0.9
percentage of sales revenue generated outside Germany	79	80
Research and development cost	**5,890**	**6,079**
as a percentage of sales revenue	8.2	7.8
Capital expenditure	**3,312**	**4,989**
as a percentage of depreciation	101	146
Associates		
average for the year	395,029	407,538
as of December 31	395,034	398,150
Total assets	**91,369**	**87,861**
Equity	**40,166**	**41,079**
as a percentage of total assets	44	47
EBIT	1,657	**2,903**
as a percentage of sales revenue	2.3	3.7
Profit after tax	**749**	**2,060**
Dividend of Robert Bosch GmbH	**67**	**119**

The Bosch Group

is a leading global supplier of technology and services. It employs roughly 395,000 associates worldwide (as of December 31, 2020). The company generated sales of 71.5 billion euros in 2020. Its operations are divided into four business sectors: Mobility Solutions, Industrial Technology, Consumer Goods, and Energy and Building Technology. As a leading IoT provider, Bosch offers innovative solutions for smart homes, Industry 4.0, and connected mobility. Bosch is pursuing a vision of mobility that is sustainable, safe, and exciting. 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 facilitate connected living with products and solutions that either contain artificial intelligence (AI) or have been developed or manufactured with its help. 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 440 subsidiary and regional companies in some 60 countries. Including sales and service partners, Bosch's global manufacturing, engineering, and sales network covers nearly every country in the world. With its more than 400 locations worldwide, the Bosch Group has been carbon neutral since the first quarter of 2020. The basis for the company's future growth is its innovative strength. At 129 locations across the globe, Bosch employs some 73,000 associates in research and development, of which nearly 34,000 are software engineers.

MOBILITY SOLUTIONS

Powertrain Solutions
Chassis Systems Control
Electrical Drives
Cross-Domain Computing Solutions[1]
Car Multimedia[2]
Automotive Electronics
Automotive Aftermarket
Automotive Steering
Connected Mobility Solutions
Bosch eBike Systems

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

INDUSTRIAL TECHNOLOGY

Drive and Control Technology[3]

Other businesses:
Bosch Connected Industry
Robert Bosch Manufacturing Solutions GmbH

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-four percent of the share capital of Robert Bosch GmbH is held by Robert Bosch Stiftung GmbH, a charitable foundation. The remaining shares are held by Robert Bosch GmbH and by a corporation owned by the Bosch family. 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.

CONSUMER GOODS

Power Tools[4]
BSH Hausgeräte GmbH

ENERGY AND BUILDING TECHNOLOGY

Building Technologies
Thermotechnology
Bosch Global Service Solutions

Other businesses:
Robert Bosch Smart Home GmbH

Other businesses not allocated to business sectors:
Bosch Healthcare Solutions GmbH
Bosch.IO GmbH
grow platform GmbH
Robert Bosch Venture Capital GmbH

1. From January 1, 2021
2. Until December 31, 2020
3. Bosch Rexroth AG (100% Bosch-owned)
4. Robert Bosch Power Tools GmbH

Foreword

“The Covid-19 pandemic has shown what we are capable of achieving together.”

Dear readers,

The Covid-19 pandemic continues to present all of us with huge challenges. For many, it means suffering and anxiety. Yet despite all the downsides, it also shows what we can achieve in unison, as well as how creative and innovative humanity is – in getting the disease under control in many countries, for example, and in developing vaccines worldwide in a minimum of time. This gives us confidence that we will not only get a grip on the pandemic, but find solutions for other global challenges as well – especially also when it comes to mitigating global warming.

In 2020, our top priority at Bosch was protecting the health of our roughly 400,000 associates and safeguarding the company's business future. Both these endeavors were a resounding success. On the subject of workforce health, we were quick to take sweeping measures worldwide, set up our own mask production in just a few weeks, and launched a PCR rapid test for coronavirus through our medical technology subsidiary. In spite of temporary production shutdowns, especially in our biggest business sector Mobility Solutions, the Bosch Group can disclose a commendable profit for 2020. Once more, Bosch's broad diversification proved to be an advantage in this crisis. With many people currently switching their focus to their domestic environment, our consumer goods – household appliances and power tools – were in great demand last year. We also benefited from our global footprint, as the pandemic-related restrictions on public life affected the various major regions at different times.

I owe a huge debt of thanks to our associates for their untiring work, as well as for their willingness to shoulder considerable burdens, including financial ones. The agreements needed for this were reached in constructive dialogue with the employee representatives. I would also like to thank our customers and suppliers, as well as our shareholders and supervisory board members. All of them provided invaluable support in these difficult times.

Despite all the burdens we faced, this solidarity and dedication allowed the Bosch Group to prepare the ground for important future developments. With its more than 400 locations worldwide, the Bosch Group has been carbon neutral since February 2020. We are very proud of this. Moreover, we are widening the scope of our climate action, and now aim to reduce emissions in areas outside the company's direct sphere of influence. This is documented in our annual report, and in greater detail in the fact book that accompanies our sustainability report.

We also successfully made progress with strategically important areas of activity such as automated driving, the factory of the future, online commerce, and renewable heating and cooling, as well as with strengthening our expertise in software and AIoT – using artificial intelligence to facilitate the fusion of connectivity and data use in the internet. In addition, we have drawn up a comprehensive program to prepare our company for the far-reaching changes in its markets and to provide an enduring boost to its competitiveness.

One prominent challenge is the move away from fossil fuels in powertrain technology. We already offer a broad portfolio of alternative powertrain technologies, and explicitly advocate the global climate targets. As in all major upheavals, the difficult issue here is how to reconcile the interests of business, ecology, and society. The examples highlighted in this year's digital magazine also provide concrete examples of what we are doing to address the fundamental changes in our business environment.

On behalf of the Bosch board of management,
I wish you all the best in these challenging times.

Best regards,

Dr. Volkmar Denner
Chairman of the board of management


02


03


06


09


10

BOARD OF MANAGEMENT

01 Prof. Stefan Asenkerschbaumer
02 Dr. Volkmar Denner
03 Filiz Albrecht
04 Dr. Christian Fischer
05 Uwe Raschke
06 Dr. Michael Bolle
07 Dr. Stefan Hartung
08 Dr. Markus Heyn
09 Harald Kroeger
10 Rolf Najork

BOARD OF MANAGEMENT

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

Regional responsibilities
China[1]

Dr. Michael Bolle

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

Business units
- Bosch.IO Connect
- Bosch.IO X
- Residential IoT Services[2]
- Software and Digital Solutions[1]

Peter Tyroller[3]

Regional responsibilities
Asia Pacific, India

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
- Internal Auditing[1]
- Global Business Services

Christoph Kübel[3]
Filiz Albrecht[1]

Corporate responsibilities
- Human Resources, including Senior Executives, Labor Relations, Environmental Protection, Health, Safety, and Sustainability
- Legal Services
- Compliance Management, including Information Security and Privacy
- Internal Auditing[3]

Rolf Najork

Industrial Technology business sector
- Digital Business Industrial Technology

Division
- Drive and Control Technology

Subsidiary
- Robert Bosch Manufacturing Solutions GmbH

Business unit
- Bosch Connected Industry

PRESIDENTS
OF THE DIVISIONS

Manfred Baden
Automotive Aftermarket

Henning von Boxberg
Bosch Global Service Solutions

Uwe Glock[3]
Jan Brockmann[1]
Thermotechnology

Henk Becker
Power Tools

Claus Fleischer[4]
Bosch eBike Systems[4]

Klaus Mäder
Automotive Electronics

Dr. Steffen Berns
Car Multimedia[3]
Chassis Systems Control[1]

Dr. Uwe Gackstatter
Powertrain Solutions

Rolf Najork
Drive and Control Technology

Dr. Stefan Hartung

Mobility Solutions business sector
- Purchasing Direct Materials
- Quality Management
- Communications
- Performance Program
- Strategy

Divisions
- Powertrain Solutions
- Electrical Drives

Regional responsibilities
India[1]

Dr. Markus Heyn

- Sales Original Equipment Mobility Solutions
- Marketing and Sales Mobility Solutions
- Progressive Mobility Player Organization[3]
- Digital Business Mobility Solutions

Divisions
- Automotive Aftermarket
- Connected Mobility Solutions

Subsidiaries
- ETAS GmbH
- Bosch Engineering GmbH

Regional responsibilities
North America, South America,
Japan[1], South Korea[1]

Dr. Christian Fischer

Energy and Building Technology
business sector
- Bosch Performance Excellence Office[5]
- Transformation and Performance Consulting[5]

Divisions
- Building Technologies
- Bosch Global Service Solutions
- Thermotechnology

Subsidiary
- Robert Bosch Smart Home GmbH

Business unit
- Bosch Climate Solutions[6]

Harald Kroeger

- Systems Engineering and Technical Strategy Mobility Solutions

Divisions
- Chassis Systems Control
- Car Multimedia[3]
- Cross-Domain Computing Solutions[1]
- Automotive Electronics
- Automotive Steering
- Bosch eBike Systems[4]

Business unit
- Two-Wheeler and Powersports

Uwe Raschke

Consumer Goods business sector

Division
- Power Tools

Subsidiary
- BSH Hausgeräte GmbH

Regional responsibilities
Western Europe, Middle Eastern Europe,
Russia, Africa, Middle East,
Southeast Asia (ASEAN)[1], Australia[1]

Dr. Mathias Pillin
Chassis Systems Control[3]
Cross-Domain Computing Solutions[1]

Dr. Elmar Pritsch
Connected Mobility Solutions

Dr. Tanja Rückert
Building Technologies

Christian Sobottka[3]
Dr. Gerta Marliani[1]
Automotive Steering

Dr. Bernhard Straub
Electrical Drives

1. From January 1, 2021
2. From July 1, 2020
3. Until December 31, 2020
4. From January 1, 2020
5. From April 1, 2020
6. From May 1, 2020

SUPERVISORY BOARD **REPORT**

Ladies and gentlemen,

The Covid-19 pandemic presents the Bosch Group with huge challenges. Overall, we have so far managed to rise to them well. We achieved our two most important objectives – protecting associates' health and securing the company's financial stability. The supervisory board would like to thank the board of management and all Bosch Group associates around the world for their sterling efforts in combatting the effects of the pandemic. Yet this did not stop the Bosch Group continuing in the pursuit of its strategic tasks. These tasks result above all from the profound change in the automotive sector, growing digital connectivity, and the increasingly acute climate crisis. It is very pleasing that the Bosch Group with its more than 400 locations worldwide has been carbon neutral since February 2020.

In our supervisory board capacity, we fulfilled our legal and regulatory obligations with great care in 2020. To protect everyone involved, we carried out meetings virtually in part, in accordance with our company statutes. 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. We kept a close eye on the impact of the Covid-19 pandemic on the company. Other subjects meriting closer attention were the future strategy of the Mobility Solutions business sector – especially in powertrain technology – and the comprehensive performance program for enhancing the Bosch Group's competitiveness. We also concerned ourselves with HR strategy in relation to the required expansion of software expertise and to how digitalization is altering HR work. In addition, we reviewed financial and investment planning, as well as reports relating to compliance and risk management. This included reports about discussions with the authorities regarding the alleged manipulation of software in diesel engine control units.

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 the board of management and us, the highest priority is to safeguard the Bosch Group's successful and sustainable development over the long term in view of current challenges and the fundamental changes in our markets. In this endeavor, our consultations are open, conscientious, and constructive.

Ernst & Young 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, 2020. They furnished all these reports with an unqualified audit opinion. 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, the auditor met with the supervisory board to report on the main findings of the audit, which were then discussed in detail. After receiving the auditor's final report, 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.

We would like to express our thanks to Christoph Kübel and Peter Tyroller, who have now retired from the board of management, for their many years of good service. We wish Filiz Albrecht, our new chief human resources officer and director of industrial relations, all the best with her tasks. Our thanks are also due to Frank Sell, one of the employee representatives on the supervisory board, for stepping up as deputy chairman of the supervisory board in these difficult times.

Stuttgart, March 2021
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
Riederich
(until March 27, 2020)
Deputy chairman
Member of the works council of the Feuerbach plant, and chairman of the central works council of the Mobility Solutions business sector as well as deputy chairman of the combined works council of Robert Bosch GmbH

Frank Sell
Leonberg
(from March 28, 2020)
Deputy chairman
Chairman of the works council of the Feuerbach plant, and chairman of the central works council of the Mobility Solutions business sector as well as 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, and 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
Frankfurt am Main
President of
Industriegewerkschaft Metall

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

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

Prof. Lino Guzzella
Uster

Prof. Renate Köcher
Konstanz

Peter Spuhler
Weiningen

Dr. Eberhard Veit
Göppingen

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

Martina Koederitz
Stuttgart
GM Industry Platform,
IBM Deutschland GmbH

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

Oliver Simon
Dunzweiler
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
Weiningen
Majority shareholder and president of the supervisory board of Stadler Rail AG

Dr. Richard Vogt
Willstätt
Vice president, 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
Research professor at INSEAD, Singapore, and professor of international economics, Graduate Institute of International and Development Studies, Geneva

Prof. Hermann Scholl
Stuttgart
Honorary chairman of the Bosch Group

Group management report

Robert Bosch International Advisory Committee

Franz Fehrenbach
Stuttgart
Chairman

Prof. Ryozo Hayashi
Tokyo
(until December 31, 2020)

Prof. Lars G. Josefsson
Stockholm

Baba N. Kalyani
Pune

Pascal Lamy
Paris

Friedrich Merz
Arnsberg

Yumiko Murakami
Tokyo
(from January 1, 2021)

Prof. Volker Perthes
Berlin

Ingo Plöger
São Paulo

Paul Ryan
Janesville
(from January 1, 2020)

Jing Ulrich
Hong Kong

Prof. Igor Yurgens
Moscow

Highlights **2020**

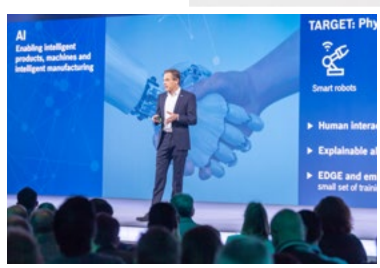
01

Jan. 6 – Las Vegas, USA

CES 2020: Bosch garners two Innovation Awards

The awards are conferred on two innovations for cars: a new 3D display and a digital, AI-based virtual visor.

02

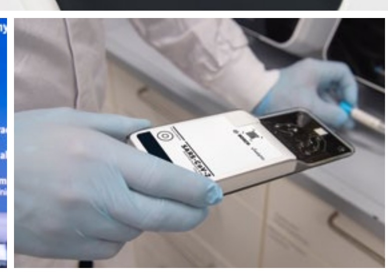


Feb. 19 – Berlin, Germany

Bosch Connected World 2020

Bosch showcases smart solutions for connected vehicles, houses, and factories, presents its new AI code of ethics, and announces the establishment of Bosch.IO GmbH. This new company will pool the Bosch Group's IoT and digital expertise.

03



Mar. 26 – Stuttgart, Germany

New rapid PCR test for coronavirus

A test that can identify a coronavirus infection on the spot in less than two-and-a-half hours: in just six weeks, Bosch has developed such a test for its Vivalytic analytic device. This is followed in September by a test that delivers a result in 39 minutes, and in December by one that can detect a positive sample in under 30 minutes.

04

Apr. 23 – Grasbrunn, Germany

Bosch premieres INTEOX camera platform

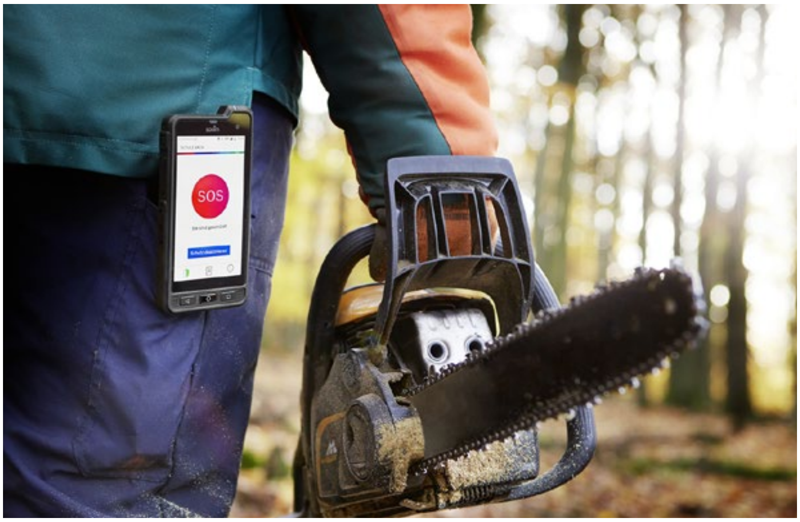
The first completely open platform of its kind, it offers users, system integrators, and app developers new possibilities for innovations and customized modifications to security solutions.

05

May 12 – Stuttgart, Germany

Bosch debuts 24/7 protection for lone workers

GuardMe is a certified app solution. In combination with a special smartphone, and via a link to monitoring centers, it performs all the functions of a personal emergency response system.



June 15 – Stuttgart, Germany

Bosch makes electromobility even more practicable

Bosch's recharging network, which drivers can access from one central app platform, counts more than 150,000 charge spots. This makes it one of Europe's biggest networks.

June 16 – Taichung, Taiwan

Bosch eBike Systems opens new Asia Pacific HQ

The new division is tenaciously continuing its global expansion.

May 15 – Stuttgart-Feuerbach, Germany

Bosch starts mask production

In the fight against coronavirus, Bosch puts its first production line for face masks into operation.

May 19 – Stuttgart, Germany

25th anniversary of Bosch ESP®

The ESP® electronic stability program, which Bosch and Daimler-Benz first launched in S-class vehicles in 1995, keeps vehicles safely on track in critical situations.

06

June 3 – Stuttgart, Germany

Bosch equips motorcycles with automatic emergency call function

In the shape of Help Connect, Bosch has developed a digitally connected emergency call system for motorized two-wheelers. It automatically alerts emergency services via smartphone, speeding up the rescue process.

June 8 – Reutlingen, Germany

Bosch sensors revolutionize navigation

If a GPS signal becomes temporarily unavailable, Bosch's new SMI230 MEMS sensor takes over, ensuring that the navigation system keeps its bearings.

June 25 – Reutlingen, Germany

Bosch debuts automatic emergency call for e-bikes

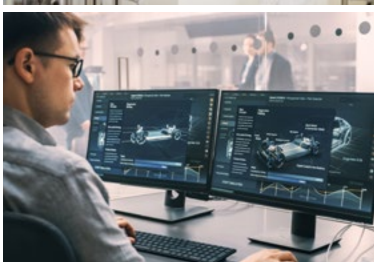
Thanks to a smart algorithm, the COBI.Bike app can detect when a rider has fallen off their e-bike. The premium function Help Connect then places an emergency call.

July 9 – Stuttgart, Germany

**CO_2 advisory service:
Bosch Climate Solutions set up**

Bosch announces a new unit that will pass on the knowledge and experience the company has gained from achieving carbon neutrality, as well as from the projects it has implemented worldwide.

07



July 21 – Stuttgart, Germany

Bosch pools its software and electronics expertise

With the aim of playing a leading role in mobility, Bosch announces that a new Cross-Domain Computing Solutions division with some 17,000 associates will start operations from the start of 2021.

Sep. 16 – Stuttgart, Germany, and Weifang, China

Bosch and Weichai Power set new benchmark for truck diesel engines

Together, the two companies have boosted the efficiency of diesel engines for heavy trucks to 50 percent – a four-point increase.

09

08

Aug. 6 – Reutlingen, Germany

5G tests start in Reutlingen wafer fab

As an Industry 4.0 pioneer, Bosch believes 5G will be a key building block of digitalization and connectivity in manufactur-ing and logistics.

Sep. 23 – Stuttgart, Germany

Robert Bosch Hospital made national center of tumor disease

The hospital is a globally leading authority in the field of genetic influences on drug response. This distinction, conferred by the German government, recognizes its outstanding work.

Sep. 29 – Taicang, China

Start of mass production of Bosch e-axle

Within two years, a team at United Automotive Electronic Systems Co., Ltd. developed the platform for the new e-axle, which is the most important part of the electrical powertrain.

10

Oct. 7 – Stuttgart, Germany

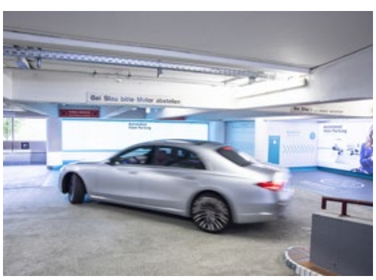
A world first from Bosch: adaptive cruise control for motorcycles

ARAS, the world's first radar-based assistance system for motorcyclists, enhances safety considerably.

Oct. 12 – Stuttgart, Germany

Apcoa, Bosch, and Mercedes-Benz announce world's first commercial automated valet parking (AVP) service at Stuttgart airport

In this undertaking, Bosch premieres camera-aided infrastructure as a way of identifying aisles and obstacles.



11

Nov. 4 – Stuttgart, Germany

Bosch announces achievement of carbon neutrality ahead of schedule

According to its own calculations, Bosch, with its 400 locations worldwide, has been carbon neutral since February 2020 – the first major industrial enterprise to achieve this goal.

Nov. 5 – Worcester, United Kingdom

Bosch premieres new hydrogen-powered domestic boiler

The new boiler can be run on a mixture of gas and up to 20 percent hydrogen. It illustrates how green hydrogen can future-proof domestic heating.

Nov. 26 – Stuttgart-Feuerbach, Germany

Bosch puts its first 5G campus network into operation

At its lead plant for Industry 4.0, the company wants future manufacturing to be done under previously unheard-of conditions: data will be transmitted ultra-reliably and ultra-fast.

12

Dec. 6 – Horsham, United Kingdom, and Stuttgart, Germany

Bosch announces mass production of stationary fuel cells

In 2024, the company plans to start the mass production of distributed power stations based on solid-oxide fuel-cell technology. To achieve this, it has agreed to intensify its collaboration with Ceres Power.

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 helps smooth the path toward viable solutions for social challenges. The support it provides can take the form of projects of its own, of partnerships, and of grants for third-party initiatives. The Stiftung finances its work from the dividend it receives as a shareholder in Robert Bosch GmbH.

Last year, the Robert Bosch Stiftung completed its fullest ever review of its strategy, and put itself on a new footing. In the future, its work will focus on three areas of support: healthcare, education, and global issues.

With the aim of making a more effective contribution to the solution of social problems, the Stiftung will focus on ten subjects within these three fields, instead of the 34 it has funded up to now.

Focus on the pressing issues of the age

In the global issues field, attention will center on peace, inequality, climate change, democracy, migration, and immigration society. The education field will focus on learning by individuals and school development/development in pre-school and daycare. In its support for healthcare, the Stiftung will direct its attention at people in the healthcare system and work toward making this system viable.

The Stiftung will aim to give more consideration to the way the above subjects interrelate – such as how climate change leads to conflict and migration.

Making more partnerships possible

Apart from this realignment in terms of subject matter, the Stiftung has also rethought its support tools and taken the latest developments in philanthropy into account.

As a result, the Stiftung will be developing fewer projects and programs of its own in the future. Instead, it will be joining more alliances, cultivating an even wider international network, and supporting organizations that take a long-term approach to tackling problems. Its new approach and the complexity of its focus subjects will make it necessary to enlist more third-party expertise.

Consequently, the Stiftung will support interdisciplinary dialogue between decision makers and opinion leaders in the Robert Bosch Academy, draw increasingly on academic support, and foster the work of high-profile, experienced think tanks around the world.

Celebrating Germany's best school:
In 2020, the German school prize went to the Otfried Preußler School in Hannover. The school teaches gifted children and children with disabilities in the same classroom.

Improved structures for greater effectiveness

Last year, the ground was also prepared for further structural changes intended to make support more effective. The Bosch Health Campus in Stuttgart, for example, will provide a common roof for all the Stiftung's health-related activities, from the Robert Bosch Hospital and its medical research institutes to all the other areas of healthcare supported by the Stiftung so far. And in the education field as well, activities will be directed toward one common strategic objective. To achieve this, the Deutsche Schulakademie and the education-related activities performed up to now by the Stiftung will be pooled within the Robert Bosch Stiftung.

Flexible support in response to Covid-19

While carrying out this strategic realignment, the Robert Bosch Stiftung has continued its programs. Last year, it donated 80.37 million euros to civic initiatives.

The Covid-19 pandemic affected the implementation of many projects and initiatives. To support partners and beneficiaries and to safeguard structures beyond the crisis, the Stiftung acted quickly and pragmatically, ensuring the greatest possible flexibility with respect to aspects such as grant conditions and project duration. Many of the changes it introduced are to become a firm part of everyday practice in the future.

In view of the huge challenges schools are facing in the pandemic, the Robert Bosch Stiftung and the Heidehof Stiftung have announced a special competition for this year's Deutscher Schulpreis (German school prize). In 2021, awards will be given to pioneering ideas that schools have developed in response to the coronavirus crisis, and that have the potential to change classroom interaction over the long term.

By supporting the Covid-19 Solidarity Response Fund of the World Health Organization and the United Nations Foundation, as well as a further emergency measure to improve medical care in Greek refugee camps, the Stiftung worked to mitigate the immediate effects of the pandemic.

UN75 initiative for global dialogue about our common future

To mark its 75th anniversary in 2020, the United Nations carried out the world's biggest ever survey of people's expectations of international cooperation. More than 1.5 million people gave insights into their hopes for the future, and contributed ideas for solving such global challenges as climate change, migration, increasing inequality, and the impact of digital technologies. As a partner of this anniversary campaign, the Stiftung fostered this dialogue in Germany and in its work across the globe.

Total project grants 2020
Figures in millions of euros

80.37

19.70	Global issues (aggregated)
12.94	Research at institutes and the Robert Bosch Hospital
7.32	Strategic partnerships and Robert Bosch Academy
6.34	Education
5.83	Die Deutsche Schulakademie gGmbH
5.63	Capital expenditure for the Robert Bosch Hospital
5.09	Healthcare
5.08	Science
1.73	Robert Bosch College UWC GmbH
1.66	International Alumni Center gGmbH
9.05	Other grants

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 Robert Bosch Stiftung
- Die Deutsche Schulakademie
- Robert Bosch College UWC
- Robert Bosch Centrum für Tumorerkrankungen
- International Alumni Center iac Berlin

GROUP MANAG REPO

01 Shareholders of Robert Bosch GmbH

Voting rights
7 % Bosch family
93 % Robert Bosch Industrietreuhand KG

Shareholding
1 % Robert Bosch GmbH
5 % ERBO II GmbH/Bosch family
94 % Robert Bosch Stiftung GmbH

EMENT RT

Bosch Group

From the perspective of the board of management, the Bosch Group came through the year 2020 well – a year dominated by the global coronavirus pandemic. Once again, the Bosch Group's broad diversification proved its worth. In the second half of the year, the group was able to offset much of the sharp second-quarter drop in sales. Despite the fall in sales, the result achieved was clearly positive. This was helped by the overall improvement in the second half of the year and extraordinarily high demand in the consumer goods sector, but also by substantial cost savings. In addition to implementing extensive measures to swiftly contain the economic impact of the coronavirus pandemic, good progress was made with the company's performance program, which is aimed at sustainably strengthening competitiveness, as well as with a large number of strategic projects. In addition, power supplies to the Bosch Group worldwide became carbon neutral.

In 2021 as well, there continues to be considerable uncertainty as a result of the coronavirus pandemic. Assuming that there are no restrictions on a similar severe scale to those seen in the second quarter of 2020, we expect the Bosch Group to increase its sales by roughly 6 percent and to slightly improve its EBIT margin from operations. One of the company's main tasks will be the implementation of its performance program, designed to help it return to its target EBIT margin of roughly 7 percent in the medium term. The Mobility Solutions business sector will be the subject of special scrutiny. In addition to strengthening competitiveness on the cost side, structural adjustments will above all have to be made in the area of components and systems for combustion engines. At the same time, areas of future importance such as electromobility, automated driving, and the electronics architecture for the vehicle of the future will require heavy upfront investments. Across all domains, the focus will be on smart connectivity and data use based on artificial intelligence, as well as on climate action.

MOBILITY SOLUTIONS

Powertrain Solutions
Chassis Systems Control
Electrical Drives
Cross-Domain Computing Solutions[1]
Car Multimedia[2]
Automotive Electronics
Automotive Aftermarket
Automotive Steering
Connected Mobility Solutions
Bosch eBike Systems

INDUSTRIAL TECHNOLOGY

Drive and Control Technology[3]

CONSUMER GOODS

Power Tools[4]
BSH Hausgeräte GmbH

ENERGY AND BUILDING TECHNOLOGY

Building Technologies
Thermotechnology
Bosch Global Service Solutions

1. From January 1, 2021
2. Until December 31, 2020
3. Bosch Rexroth AG (100 % Bosch-owned)
4. Robert Bosch Power Tools GmbH

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 440 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). Robert Bosch Stiftung GmbH has been the majority shareholder in Robert Bosch GmbH since 1964.

The not-for-profit foundation 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 holds a capital share of 0.01 percent. Most of the remaining shares and voting rights are held by the founder’s descendants. They have transferred a share of around 5 percentage points to the non-profit ERBO II GmbH. A further 2 percentage points were transferred to the Robert Bosch Stiftung. The share of voting rights held by the family remains unchanged at around 7 percent. Its residual capital share is minimal. This ownership structure guarantees the Bosch Group’s entrepreneurial independence.

Organization and competitive environment

With a workforce of some 395,000 associates worldwide, the Bosch Group 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 face stiff competition, especially when it comes to costs. This competition comes from both conventional suppliers and, increasingly, from market players in China and various emerging markets. Moreover, the rise of connectivity over the internet (internet of things, or IoT) is intensifying the competitive environment in all areas. It has opened the door to new providers from the IT and internet domain as well as the service sector, some of whom are using new business models. The Bosch Group itself is also offering an increasing number of connected solutions and services, and developing suitable business models for this purpose.

Apart from 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 major regional producers. However, this market is changing due to the expansion of electrification, automation, connectivity, multimodal mobility, and, related to this, cross-domain automotive electronic architectures and an increase in the amount of software in vehicles. These trends are attracting additional suppliers from industries such as consumer electronics, semiconductors, the services and internet sector, and mobility platforms. In view of changing needs and substantial upfront investments, the company’s divisions are required to collaborate more closely with each other or enter into partnerships with third parties. Important factors influencing our activities are the marked decline in the proportion of passenger cars fitted with diesel engines in the important European and Indian markets and the increasingly stringent statutory standards combustion engines have to satisfy, as in the current discussion about the future Euro 7 standard. The trend toward consolidation among traditional manufacturers and suppliers can also be expected to continue.

Within Industrial Technology, the Drive and Control Technology division supplies hydraulics and factory automation components and systems in fairly fragmented markets with many competitors and customers. The nature of these competitors and customers is changing as a result of trends such as electrification, the inroads being made by digital solutions, and market consolidation in areas such as hydraulics.

In the Consumer Goods business sector, the product solutions offered by the Power Tools and BSH Hausgeräte divisions orient to consumer requirements. These solutions compete with those from both global and regional providers. Even before the coronavirus pandemic, there was growing evidence in both divisions of a global shift from traditional brick-and-mortar retail to online commerce. This trend has gained further momentum as a result of the pandemic, and so is expected to lead to further consolidation in stationary retail.

In Energy and Building Technology, the Building Technologies and Thermotechnology divisions compete with a small number of international suppliers and many regional ones. Especially in the Building Technologies division, competition from global and niche providers is becoming fiercer. Moreover, the different domains 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 leads 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. The industrial trust Robert Bosch Industrietreuhand KG acts as partner. In line with the mission handed down in the will of the company's 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 entrepreneurially independent and able to act at all times.

Owing to German legal requirements, Bosch has also been obliged to set targets for the percentage of women on the supervisory board and board of management. The current deadline is December 31, 2021. The 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. Both targets have been met ahead of schedule. The percentage of women on the supervisory board is 30 percent. Since January 1, 2021, the figure for the board of management has been 10 percent. 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 2020, 8.9 percent had been reached for the first management level (previous year 8.4 percent), while for the second management level the figure was 13 percent (previous year 12.1 percent). Globally, the share of women executives across all management levels within the group rose to 17.8 percent (previous year: 17.2 percent). We intend to keep on increasing this percentage. At present, our target is 20 percent.

Business sectors

Mobility Solutions business sector

As an automotive supplier of original equipment, Bosch is engaged in a very wide range of activities, which are organized into six divisions. Beyond the original equipment segment, its other divisions are Automotive Aftermarket, the service provider Connected Mobility Solutions, and Bosch eBike Systems. Further activities involve two-wheelers, commercial as well as off-highway vehicles, and engineering services.

Powertrain Solutions
The Powertrain Solutions division offers products and solutions for powertrain technology, from gasoline and diesel direct injection to electrified powertrains with battery systems and fuel-cell technologies. It is organized into the three market segments of passenger cars, commercial and off-highway vehicles, and electric vehicles. Where combustion engines are concerned, Powertrain Solutions offers technologies and systems based on diesel, gasoline, natural gas, ethanol, and synthetic fuels. These include engine management systems, fuel supply modules, fuel

injectors and pumps, ignition systems, exhaust-gas treatment systems, and sensors. In the area of electromobility, the product portfolio includes solutions for all vehicle types, from motorized two-wheelers to commercial vehicles – components and systems for gasoline and diesel hybrid vehicles, for purely electric vehicles, and for vehicles with fuel-cell powertrains. Products range from electric motors, power electronics, battery systems such as the 48-volt battery, battery management systems, and transmission technology to complete e-axles, a compact unit comprising electric motor, power electronics, and transmission. For fuel cells, Powertrain Solutions offers both components – such as electric air compressors, hydrogen injectors, and sensors – and stacks and complete power modules.

Chassis Systems Control

Following the transfer of parts of its business to the newly established Cross-Domain Computing Solutions division, the Chassis Systems Control division is focusing on developing, manufacturing, and selling brake systems, occupant-protection systems, and vehicle dynamics sensors. Its brake systems include ABS, ESP®, vacuum-based brake systems, vacuum-independent brake boosters (iBooster), and combined systems (integrated power brake). Its passenger protection systems encompass airbag control units and the associated crash sensor technology. In addition, the Brake Components business unit (Buderus Guss GmbH, Breidenbach, Germany) supplies brake discs for passenger cars.

Electrical Drives

The Electrical Drives division offers a wide range of electromechanical components and systems. These include motors and drive systems for convenience features such as window lifters, seat adjustment, and sunroofs, powerful servomotors for ABS and ESP®, applications for powertrain electrification, as well as wiper systems including wiper blades. This is complemented by an extensive selection of components and systems for thermal management in combustion engines and in hybrid and electrical powertrains. The product portfolio also includes pumps and valves for coolant and refrigerant circuits as well as air-conditioning fan components. Drives and systems, also for e-bikes and e-scooters, complete the portfolio.

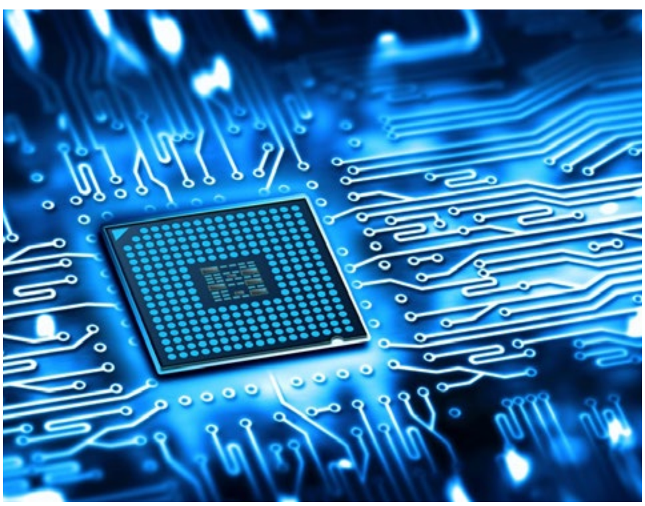
Cross-Domain Computing Solutions

Bosch's new Cross-Domain Computing Solutions division is a response to the changing requirements in the rapidly growing market for software-intensive electronic systems in the automotive sector. The electric/electronic architecture is evolving into a centralized architecture with three overarching domains: assisted and automated driving, body and motion, and connected information. This prompted us to consolidate the related activities in one division. At the start of 2021, moreover, the Car Multimedia division, which was previously responsible for infotainment, display, connectivity, interior-sensor, and user-personalization solutions for passenger cars, commercial vehicles, buses, two-wheelers, and off-highway vehicles, was transferred to the new Cross-Domain Computing Solutions division.

This reorganization also affected certain product units from the Powertrain Solutions, Chassis Systems Control, and Automotive Electronics divisions that develop software-intensive, cross-domain electronic systems.

Automotive Electronics

Following the integration of the Body Electronics business unit into the Cross-Domain Computing Solutions division, the Automotive Electronics division now focuses on two main areas. On the one hand, it operates as an in-house



manufacturing and engineering service provider for electronic control units and semiconductors (integrated circuits and sensors). On the other, it conducts third-party business with semiconductor products and sensors. Its semiconductors for automotive applications range from application-specific integrated circuits (ASICs) through to power semiconductors and MEMS (microelectromechanical systems) sensors. In entertainment electronics, Bosch Sensortec GmbH, based in Kusterdingen, Germany, supplies MEMS sensors for a diverse range of applications.

Automotive Aftermarket

The Automotive Aftermarket division provides the aftermarket and repair shops with technology and solutions related to auto diagnosis and repairs, as well as a range of spare parts for vehicles – from new and remanufactured exchange parts to repair solutions. The portfolio consists of Bosch original-equipment products, as well as specific aftermarket products and services, which it either makes itself or sources externally. In addition, the division 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 steering systems, steering columns, and steering and gear pumps for passenger cars and commercial vehicles. For passenger cars, the product portfolio primarily includes electric power steering systems, which are a key technology for highly automated driving. When it comes to commercial vehicles, electrohydraulic steering systems dominate, as do rear-axle steering systems.

Connected Mobility Solutions

The Connected Mobility Solutions division develops mobility solutions. Its goal is to offer connected solutions from a single source and to further develop the company’s platform for connected mobility solutions. The division focuses on software and services for automakers and for mobility service providers outside the traditional automotive sector.

Bosch eBike Systems

The Bosch eBike Systems range spans complete drive systems for pedelecs with batteries, control units and digital solutions, to an ABS for e-bikes and services for specialist bicycle dealers.

Other businesses

For two-wheelers, three-wheelers, and powersports vehicles, the Two-Wheeler and Powersports business unit offers assistance systems such as ABS, radar-based assistance systems such as ACC adaptive cruise control, the MSC motorcycle stability control system, powertrain technology, display instruments, and connectivity solutions. Around the world, the cross-divisional unit can draw on the resources of the Mobility Solutions business sector.

The subsidiary Bosch Engineering GmbH, based in Abstatt, Germany, develops a wide range of customized solutions based on 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 and other non-automotive applications. Bosch's motor racing activities are also based at Bosch Engineering.

Bosch Engineering manages the Commercial Vehicles and Off-Road unit, which holds cross-divisional responsibility for systems development, product management, and sales for the commercial and off-highway vehicle segment. It also oversees the operations of ITK Engineering GmbH, based in Rülzheim, Germany. In parallel to Bosch Engineering, the latter offers customized and bespoke systems- and software-development services under its own brand, with engineering operations separate from Bosch.

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

Industrial Technology business sector

This business sector comprises the Drive and Control Technology division, the Robert Bosch Manufacturing Solutions business unit, which primarily provides in-house assembly services, and the Bosch Connected Industry business unit.

Drive and Control Technology

The subsidiary Bosch Rexroth AG, based in Lohr am Main, Germany, specializes in drive and control technologies for efficient and powerful 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 system solutions, and services, Bosch Rexroth creates the necessary environment for applications with full connectivity. The division offers its customers hydraulics, electric drives and controls, gear technology, and linear motion and assembly technology, including software and interfaces to the IoT.

Other businesses

Robert Bosch Manufacturing Solutions GmbH, a provider of assembly systems based in Stuttgart, Germany, develops flexible, scalable plans for assembly systems, customized solutions in the field of testing and process technology, and related services. The Industrial Technology business sector also includes the Bosch Connected Industry business unit. With a focus on Industry 4.0, it develops software solutions and carries out projects for internal and external customers.

Consumer Goods business sector

The business sector comprises two divisions.

Power Tools

Robert Bosch Power Tools GmbH, based in Leinfelden-Echterdingen, Germany, is a supplier of power tools, garden tools, power-tool accessories, and measuring technology. Its extensive product range is aimed at both professional users in trade and industry and the DIY market. The range of accessories includes abrasive systems, drill bits, and saw blades. Precision rotary tools for DIY users are also sold under the Dremel brand.

BSH Hausgeräte

The household-appliance manufacturer BSH Hausgeräte GmbH, based in Munich, Germany, has a product portfolio that ranges from washing machines and tumble dryers through refrigerators and freezers, stoves, ovens, extractor hoods, 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 its own Gaggenau and Neff brands, as well as local brands such as Balay in Spain and Thermador in the United States. These are complemented by Home Connect, a brand for the BSH digital ecosystem on the IoT.

Energy and Building Technology business sector

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

Building Technologies

The Building Technologies division has two areas of business: its global product business for security and communications solutions, and its regional systems integration business. The latter offers solutions and customized services for building security, energy efficiency, and building automation in selected countries. Both units focus on commercial buildings and infrastructure projects. 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 heating and air-conditioning, hot water, and decentralized energy management to customers worldwide. It provides heating and air-conditioning systems, plus energy management for residential buildings, water heaters, and plant construction business for commercial and industrial heating and air-conditioning systems. The portfolio includes condensing boilers, solar thermal systems, heat pumps, hybrid systems, industrial boilers, and combined heat and power generation. The division's products are sold under international and regional brand names such as Bosch, Buderus, and Worcester.

Bosch Global Service Solutions

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

Robert Bosch Smart Home

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 indoor climate control, lighting, and shutters, as well as automated room monitoring using interior cameras and fire and motion detectors.

Companies not allocated to business sectors
Bosch.IO GmbH in Berlin helps Bosch operating units to develop, implement, and operate scalable IoT solutions and digital business models. Bosch.IO is also responsible for IoT activities relating to commercial buildings and energy, as well as external sales of the Bosch IoT Suite.

The subsidiary Bosch Healthcare Solutions GmbH, based in Waiblingen, Germany, operates in the medical technology sector, supplying sensors, software, and services. Its product range includes equipment for decentralized laboratory diagnostics and the diagnosis of respiratory conditions.

The subsidiary grow platform GmbH, based in Ludwigsburg, Germany (postal address), offers a platform within the Bosch Group for developing and implementing new business models and incubating new in-house startups, supporting them with business know-how in areas such as controlling, HR, infrastructure, marketing, and methods.

Through Robert Bosch Venture Capital GmbH, based in Gerlingen, Germany, we invest worldwide in technologies with promising potential, such as the IoT, 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 strategic orientation

The starting point for our goals and strategies is the objective of securing the company’s future as enshrined in the will of the company’s founder Robert Bosch – in other words, ensuring the company’s strong development and securing its financial independence. Our enduring ambition is 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” are not only physical products and services, but also the software-based solutions that go with them. We are driving forward innovations in both products and business models, operating in new business fields, and modifying our organization in the process. We want to be a data-driven AIoT company. In other words, we want to use connectivity on the internet of things, combined with artificial intelligence (AI), to continuously improve our products and services. Climate action is also one of our paramount strategic focal points for the future.

The Bosch Group is undergoing a phase of fundamental change in technologies and markets. Besides digitalization, increased connectivity via the IoT, and the opportunities

that artificial intelligence opens up, this is also due to growing global concern about climate change, geopolitical developments, and social trends such as increasing urbanization. Connectivity is affecting all our areas of business, from mobility solutions, industrial technology, and consumer goods such as household appliances and power tools, through to building and energy technology. Increasing electrification is revolutionizing our business, too, especially in automotive technology, but also in industrial technology and energy and building technology. The coronavirus pandemic is accelerating the trend toward digitalization in many areas of our lives.

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, energy efficiency, automation, and emerging markets. This is because it is our ambition to play a part in molding the far-reaching changes in markets and technology. Apart from shaping change, our strategic focal points are customer focus and excellence.

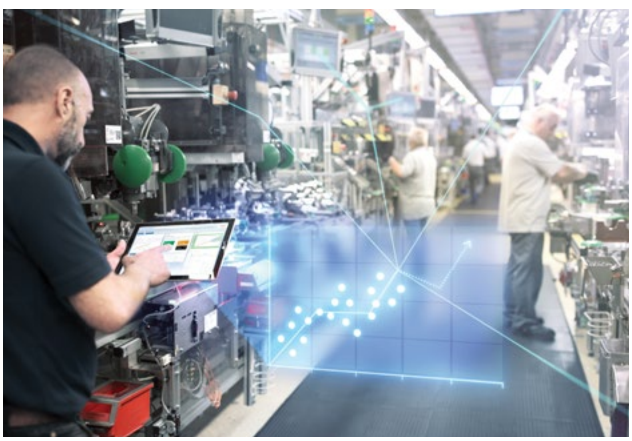
Customer focus means having a precise understanding of customers’ needs and using this understanding to find the best possible solutions for products and business models. Excellence in all areas is essential in order to sustainably achieve our business targets. In this respect, we measure ourselves against our best competitors. We believe that efficient processes, lean structures, and high productivity will help us maintain and increase the value of our company. A business environment that is changing at an ever faster pace also calls for a very high degree of adaptability and agility. To achieve this, we are redefining 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 the Bosch culture, our high level of innovation – also measured in terms of our research and development spending – and quality, and our broad global presence. Our actions are based on the Bosch values: future and result focus, responsibility and sustainability, initiative and determination, openness and trust, fairness, reliability and credibility, legality, and diversity.

A wealth of opportunities

For the Bosch Group, a wealth of opportunities are opening up through changes in markets and technology – especially as a result of connectivity, automation, electrification, the growing importance of sustainability, and through additional business in emerging markets such as ASEAN and Africa. More and more products can be inexpensively connected to the internet and made increasingly smart. In view of our expertise in many product areas and our know-how in software and sensor technology, we believe this offers huge opportunities for the development of Bosch’s business operations over the long term. We are also enhancing our proficiency in the areas of connectivity and artificial intelligence, which we see as fundamental for the design of intelligent, user-friendly products, services, 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, for instance, partially and highly automated driving can help reduce the number of accidents and improve traffic flow. Connected services and business models promise flexible and convenient mobility.



Where industrial technology is concerned, many opportunities arise from the increasing flexibility and more widespread connectivity of manufacturing operations. This opens up new ways of enhancing product quality and productivity, adding functionality, and saving energy. It also opens up potential for new services such as remote predictive maintenance. In the Consumer Goods and Energy and Building Technology business sectors as well, connectivity and increasingly smart products are creating additional potential for growth through new services such as maintenance and additional business models such as financing and leasing options.

Electrification is of particular importance for Mobility Solutions, our biggest business sector. The key drivers for electrification and electromobility are emissions standards aimed at complying with climate targets and improving urban air quality, falling battery costs, and customers' desire for driving enjoyment. In our Industrial Technology business sector, new solutions arising from the convergence of electrical and hydraulic systems offer growth opportunities. In building technology, especially in heating and air-conditioning, the use of heat pumps and renewables is playing a rapidly growing role and opening up new market opportunities. In general, we believe that sustainably manufactured products offer a great opportunity for future market success. For that reason, we are continuing to expand our presence with sales and manufacturing operations in the emerging markets of Asia, South America, central and eastern Europe, and Africa, which are home to much of the world's population. In these regions, there is demand for affordable products – frequently ones that that meet the special requirements of the local market, such as robustness and ease of repair.

Overcoming the coronavirus pandemic

When combatting the coronavirus pandemic, our top priorities are the health and safety of our associates and safeguarding the company's business and financial foundations. A global crisis team was set up as early as January 2020. This team was supported by local crisis teams and various task forces from a wide range of departments. Here, we made use of our experience from previous crises and regular crisis exercises, as well as of existing guidelines. Our wide-ranging reporting tools are important for the management of the situation. They provide up-to-date information on how the pandemic is developing in the various countries, on cases of the virus at Bosch, on capacity utilization at the plants, and on the security of supplies to customers. In the middle of the year, the integrated crisis team was dissolved, and many of its tasks transferred back to the specialist departments. A project group continues to provide the necessary transparency and information, and ensures the global coordination of the national crisis teams. By as early as mid-March 2020, it was possible to make the company's global IT infrastructure capable of accommodating a high proportion of associates working from home. In addition, health and safety regulations were introduced from January 2020, also covering travel. These regulations were also geared to regional differences. In the second quarter of 2020, we began producing our own face masks for distribution to a large number of our associates worldwide. To a large extent, these measures helped prevent outbreaks in the workplace and ensured that production could be rapidly ramped up again and output secured.

In addition to capacity reductions and the shutdown of some factories, which particularly affected the Mobility Solutions business sector due to the close-knit global supply chains in the automotive industry, we also introduced extensive personnel measures, especially during the second quarter. These included the wide use of government wage-subsidy programs in countries where they are available, the taking of vacation, unpaid leave, and the sacrifice of pay by specialists and executives, including the board of management. The shareholders also sacrificed compensation. Over the course of the year, these measures were adapted to current developments. In addition, we very closely monitored the status our own operational liquidity and that of our suppliers and, as a precaution, used credit lines and borrower's note loans to secure financial resources.

Business goals and strengthening of profitability

Our most important business goal is profitable growth. Given the fundamental changes in the market and competitive environment in some areas of our business, and also the need to curb growing complexity, this may also require adjustments to our portfolio in the future, as was the case in the past. We still want to grow more rapidly than the market, to increase our sales in Asia Pacific and the Americas faster than in Europe, and to become better established in Africa. In terms of business sector sales, we are aiming for a balance between Mobility Solutions and our other business sectors. Broad diversification across different business sectors is essential for securing the company's economic independence. The coronavirus pandemic provides further evidence of how diversification strengthens Bosch's resilience.

We intend to grow by innovating and by opening up new markets, but also by acquiring companies and entering into partnerships. For the Bosch Group, it remains our target to achieve an EBIT margin from operations of some 7 percent, a level to which we want to return in the medium term. This target margin from operations is calculated on the basis of benchmark comparisons from the operating units, taking particular account of the upfront investments needed for growth and enabling projects. 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.

In order to achieve the target for EBIT margin from operations, the company adopted a performance program in 2020 that now covers all business sectors, corporate departments, and service units. A particular focus is on the Mobility Solutions business sector, which launched its performance program in 2019 on account of the profound changes in the automotive sector. At root, the program is about all units focusing squarely on target cost structures. For instance, the divisions have been given the task of measuring themselves against benchmarks in the most important cost categories, and of formulating and implementing measures to improve their enduring competitiveness. Target budgets have been set for the contribution that corporate departments and service units make to result. The resulting personnel measures depend on the individual requirements in the operating units, service units, and regions. Most of the restructuring expenditure is attributable to the Mobility Solutions business sector and to the corporate departments and service units.

Strategy and innovation

Artificial intelligence and the internet of things

We see AIoT – the fusion of artificial intelligence with the internet of things – as a key technological factor in our future strategy. In particular, AIoT provides an opportunity to support customers throughout the entire product life cycle. We intend to use connected, intelligent solutions to make life easier, more efficient, safer, and also more sustainable for as many people as possible. We regard our presence in diverse markets and industries as an advantage. This presence is a source of many insights for us. Over the medium term, AIoT will especially help us significantly increase the proportion of annually recurring revenue, which is still low. This should also make our business operations more independent of cyclical fluctuations. With respect to our goal of becoming a thoroughly customer-focused AIoT company, the importance of software and IT in the value chain is growing significantly. For this reason, we are reinforcing the expertise and structures we need for this. We want to establish ourselves in the market as a provider of data quality and security, and to make data the cornerstone of our customer focus and innovation.

The technological basis for this is now in place throughout the company. It comprises four core elements. First, the Bosch IoT Suite collects data. Second, the Bosch hybrid cloud acts as a universal platform for securely processing and storing data. Third, the RED Lake (Robert Bosch Enterprise Data Lake) gives the data structure and makes it accessible in the company. Finally, the AI platform (under construction) analyzes the data, generates knowledge, and determines what action to take. The aim is to gradually grow the number of digitally connected products and active customers, to intensify the company's data focus, to advance the maturity of the AI platform, and to scale up the IoT suite – also as a way of generating additional annually recurring revenue. We now track progress – such as the number of registered customers and subscribed services – in the various domains on an IoT dashboard, which is continually being improved. On the technical side, rapid scaling is enabled by integrating content and services from external partners, such as cloud services. Clear corporate guidelines provide a frame of reference for development work. In the shape of the Bosch Center for Artificial Intelligence, we have a center of competence which operates at seven locations in Germany, the U.S., China, India, and Israel. We have published a code of ethics that governs our use of artificial intelligence. Our maxim today is that humans should be the ultimate arbiter of any AI-based decision. We want to develop safe, robust, and explainable AI products.

On the basis of our domain knowledge, the AIoT know-how we have developed, and our expertise in sensors, we work within and across our business sectors to develop new solutions. These are aimed at harnessing the power of connectivity and artificial intelligence to increase productivity and efficiency – for example by using automatic testing in the production of electronic components – and to align product design with customer requirements, such as individual preferences in the case of digitally connected ovens.

The growing importance of software and information technology goes hand in hand with activities and learning programs that pave the way to acquiring new skills.

Against this backdrop, human resource management is focusing heavily on needs-based training and retraining, which is a key step on our path to becoming an AIoT company. Various training formats allow associates such as engineers from the combustion-engine field to qualify for software-related jobs. Associates from the Powertrain Solutions division are receiving software training at basic or advanced level in programs lasting several months. The syllabus has been designed and taught in collaboration with universities and in-house experts. In 2020, we also launched an AI training program for managers, engineers, and AI developers, in which knowledge about artificial intelligence is taught at three different levels.

5G networks are a key component of digitalization and connectivity. At our lead plant for Industry 4.0 applications in Stuttgart-Feuerbach, we have put our first 5G campus network into operation. Bosch is also a member of the international 5G-SMART research project, which aims to test, demonstrate, and evaluate the new communications standard in real-life manufacturing environments. At our wafer fab in Reutlingen, Germany, tests for setting up a 5G network have begun. It is planned to use the results from the Reutlingen research project in our new wafer fab in Dresden, Germany.

Mobility Solutions

The automotive industry is in flux. After peaking in 2017, global automotive production has been falling since 2018. Moreover, the coronavirus pandemic caused production figures to fall by a further significant amount in 2020. Only over the medium term do we expect a recovery to pre-crisis levels. However, we do anticipate a further increase in passenger and goods transport in the coming decades. The drivers of this trend include further population growth and increasing prosperity, which should lead to an increase in world trade. In this process, mobility will change radically. The reasons for this are manifold: climate targets and the imminent further tightening of standards for carbon and exhaust emissions, new technological possibilities, and changing user preferences, particularly with regard to connectivity and convenient access to mobility. Connectivity also opens up the possibility of new types of mobility concepts and services, as well as of software updates (including new driving functions) even after vehicles have been delivered. At the same time, the further increase in traffic poses additional challenges in terms of safety and the optimum use of transport infrastructure. All these trends will have repercussions for technological developments. For example, they will affect electric vehicles, vehicle connectivity, driver assistance systems, and automated driving.

Our vision of the future is for mobility to be sustainable, safe, and exciting. We aspire to a leading position as the largest automotive supplier by revenue, even in a changing market, and to help shape change in the automotive industry. We expect considerable business opportunities for Bosch through innovations, the further strengthening of our software expertise, the growth of further business segments, and, in the future, new services. For instance, the Connected Mobility Solutions division offers recharging services that give drivers access to one of the biggest pan-European recharging networks.

In our pursuit of this vision, we are aiming for additional growth by establishing and growing areas of future importance while at the same time adapting structures, strengthening internal collaboration, and creating cost structures that will be enduringly competitive. In 2020, moreover, we also announced a number of personnel measures, which will primarily affect the Powertrain Solutions, Automotive Steering, Electrical Drives, and Chassis Systems Control divisions. We are working to boost the business sector's profitability once again in order to exploit its long-term opportunities for growth in those areas of future importance in which we are making considerable upfront investments. They include driver assistance systems and automated driving, electrified vehicles, fuel cells, vehicle computers and software, semiconductors and partially integrated vehicle systems, as well as services related to mobility services, the mobility cloud, and software. At the same time, we are driving forward existing business areas and growing our activities in segments such as e-bikes and motorcycles, as well as for the many different types of commercial vehicles.

Profound change in powertrain technology

Ever-tighter emissions regulations are making the changes in powertrain technology particularly acute, also with respect to diesel technology. As a company, we are committed to the Paris climate targets, even if they are very ambitious. We are pursuing a technology-neutral approach and are offering our customers a wide range of products and services. We want to make the necessary structural change as socially acceptable as possible and are committed to ensuring that the transformation in powertrain technology harmonizes the interests of ecology, business, and society.

We want to help make mobility carbon neutral. Electric vehicles powered by electricity from renewables are one part of this. On the other hand, in the transitional phase and in many applications (especially in heavy-duty and long-haul traffic), the modern combustion engine will continue to play an important role. It will also feature as part of hybrid configurations for many years. Using carbon-neutral fuels such as renewable synthetic fuels can make diesel and gasoline engines climate neutral as well. And as they can be mixed with conventional fuels, such alternative fuels can reduce CO_2 emissions from the existing fleet. In addition, we supply components for vehicles powered by natural gas and ethanol. Thanks to technical advances, modern diesel engines now have very low exhaust emissions. For example, a second inlet for the AdBlue additive results in nitrogen oxide emissions of a similar magnitude to those from a gasoline engine.

We are working to ensure our products help achieve further emissions reductions and efficiency improvements. This is particularly true for commercial vehicles. Working together, Bosch and the Chinese engine manufacturer Weichai Power increased the efficiency of a Weichai diesel engine for heavy trucks to 50 percent. The thermal efficiency of today's truck engines averages around 46 percent. In the case of a 40 metric-ton semitrailer, this means a reduction in fuel

consumption of between 1.5 and 2.5 liters per 100 kilometers, which helps significantly reduce both greenhouse gases and operating costs. When it comes to commercial vehicles, the diesel engine will remain an attractive option, especially when heavy loads have to be transported over long distances.

Electromobility as an important growth area

In electromobility, our strategy is to position ourselves as a supplier with a broad product portfolio comprising components and subcomponents such as electrical machines, e-axles (as an entire powertrain), power electronics, and 48-volt batteries. There is a high level of similarity between purely battery-electric vehicles and plug-in hybrids as well as between passenger cars and commercial vehicles. Moreover, electrical machines and inverters are not only designed for battery-electric vehicles, but are also suitable in principle for vehicles powered by fuel cells.

In 2020 alone, we made upfront investments of around 500 million euros in electromobility, including fuel cells. Our goal is to grow our sales in this area to 5 billion euros by 2025. For fuel-cell powertrains, we equally aim to offer a comprehensive portfolio of components, modules, and stacks. The ramp-up will depend on the expansion of hydrogen infrastructure as well. One way of spreading risk and accelerating market entry, which is broadly planned for 2022, is by entering into partnerships. In China, we have announced a joint venture with the commercial vehicle manufacturer Qingling. We intend to continue our joint work on fuel-cell technology with Iveco and the U.S. truck manufacturer Nikola, as well as with Weichai Power.

We also aim to support our customers in advancing electromobility solutions more quickly. As part of a development partnership with the chassis and automotive technology expert Benteler, we have developed a prototype rolling chassis for electric vehicles. This is a ready-to-drive, modular platform that serves as a flexible basis for bodywork designs for a wide variety of vehicle types. Initial customer projects are already underway. However, we have no intention of building vehicles, either now or in the future. In 2020, moreover, large-scale production of the e-axle started at the Taicang plant of our Shanghai-based subsidiary United Automotive Electronics Systems Co., Ltd. Moreover, our new eCityTruck electrical powertrain solutions for light commercial vehicles up to 7.5 metric tons permit driving with zero local emissions, as well as with low noise. The available solutions are an e-axle consisting of an electric motor, power electronics, and transmission, or alternatively an electric drive module without the transmission.

Pooling electronics expertise

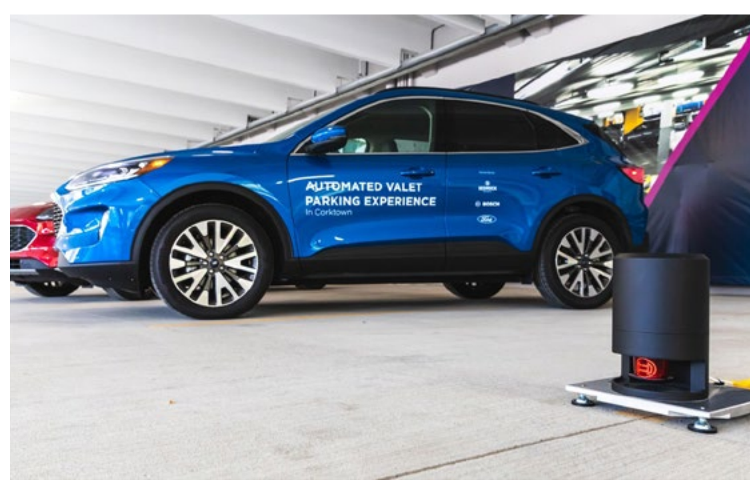
Our new Cross-Domain Computing Solutions division is a response to the changing requirements in the rapidly growing market for software-intensive automotive electronic systems. External studies lead us to expect this market to grow by as much as 15 percent annually until 2030. The reason for this is the move toward ever more sophisticated electronics and the ever greater share of software. The result is a considerable increase in the complexity of automotive engineering. The new division is tasked with reducing and controlling this complexity through cross-domain software and electronics solutions. With the new division, we will be able to offer customers automotive electronics and software from a single source. Roughly 17,000 associates have been working in this division at more than 40 locations since the start of 2021. Bosch vehicle computers have been controlling functions such as driver assistance systems and motion in production vehicles since 2019. In the coming years, they will be joined by central computers for cockpit functions and body electronics. Bosch has already won orders worth several billion euros for its vehicle computers.

As early as the spring of 2020, moreover, we consolidated all the electronics manufacturing activities of our Mobility Solutions business sector. Since then, the Automotive Electronics division has coordinated the production of control units and vehicle computers across all divisions. The manufacturing network employs some 24,000 associates across 21 plants in 14 countries. Our future wafer fab in Dresden, in which we are investing a total of around one billion euros, welcomed its first associates in spring 2020. In the future, the plant will manufacture semiconductors on 300-millimeter wafers. Due to a major order, we were able to start large-scale production of silicon carbide (SiC) semiconductors at our wafer fab in Reutlingen earlier than planned. These offer considerable advantages when used in the power electronics of electric vehicles. SiC semiconductors have better electrical conductivity and set new standards for switching speed, heat loss, and size. This permits an increase in the vehicle's range – an important selling point for electric vehicles.

Driver assistance systems as a growth area

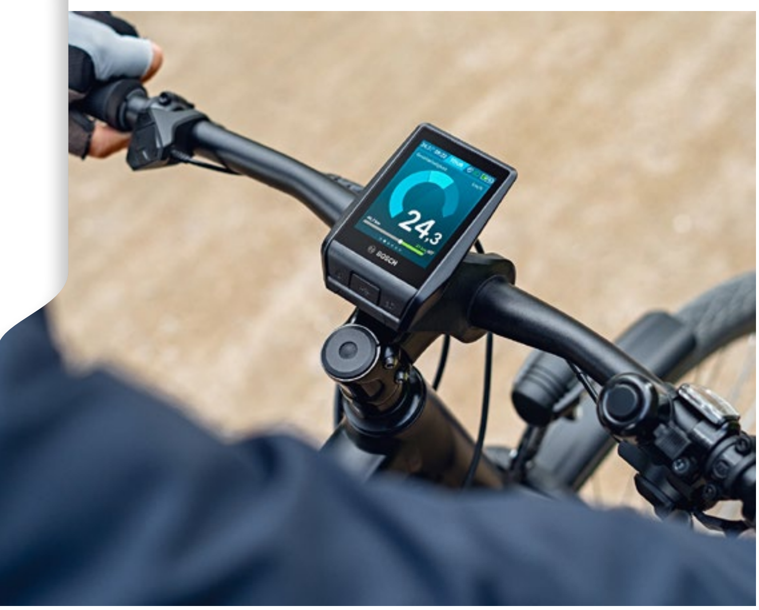
We believe driver assistance systems offer considerable opportunities for growth. By 2030, we expect the number of vehicles featuring Level 2 or Level 2+ systems to more than double. Bosch is a pioneer in vehicle safety and driver assistance systems. Forty years ago, we launched the electronic airbag control unit for cars, and 25 years ago, we achieved a further breakthrough in road safety with the ESP® electronic stability program. We are systematically improving our driver assistance systems for automation levels 1 and 2 and are also working on hands-free highway assist systems. These allow drivers to take their hands off the wheel for an extended period of time during partially automated driving on the freeway. Responsibility remains with the human driver. While not yet approved for use in Europe, these systems can be used in the United States and China. In addition, we are developing automated driving within the meaning of SAE Levels 3 and 4. For these automation levels, we are working on making a lidar (light detection and ranging) sensor production-ready for laser-based distance measurement in automotive applications. The new Bosch sensor will cover both long and close ranges, complementing camera and radar sensors with a third sensor principle.

Together with our partners – the automaker Ford and the real estate company Bedrock – we launched test operations of Level 4 parking in the U.S. in 2020. Together, we are testing automated valet parking in a parking garage in Detroit's Corktown neighborhood. In Germany, we are already working with our partners Daimler and the parking garage operator Apcoa on the world's first commercial service. For this, we are using camera-based infrastructure for the first time to detect lanes and obstacles. This infrastructure is supporting trial operations in a parking garage at Stuttgart airport, with new Mercedes-Benz S-Class production vehicles receiving smartphone commands to drive themselves to a parking space. Apcoa is testing barrier and payment functions enabled by its digital mobility platform.



Expanding additional areas of business

Bosch eBike Systems has been an independent division since 2020. In many markets, e-bikes are growing in importance as a result of the transformation of mobility. And in 2020, the change in recreational behavior brought about by the coronavirus pandemic provided an additional boost. Moreover, we are continuously expanding our range of drives, batteries and control units, and digital solutions for e-cyclists, as well as services for specialist bicycle dealers. Our information system for e-cyclists links ride data automatically with our e-bike app and the associated online portal. The on-board computer has been expanded to include a navigation function and individually configurable displays. Another innovation is the Help Connect



premium function, which automatically triggers an emergency call from a smartphone to a call center in the event of an accident. In addition, software updates for the powertrain technology ensure improved functionality and performance features.

The markets of the Two-Wheeler and Powersports unit were initially hit hard by the coronavirus pandemic in 2020, but bounced back after mid-year. One important innovation is the advanced rider assistance system, the world's first radar-based motorcycle safety system, which will go into production with several motorcycle manufacturers. Other innovations include a fully integrated 10.25-inch split screen for motorcycles, which allows the simultaneous display of relevant vehicle information and content such as directions from smartphone navigation apps. This enhances both safety and convenience. Furthermore, in the shape of Help Connect, our motorcycle safety systems have been complemented by a digital guardian angel. Using a crash algorithm, this motorcycle sensor technology can detect accidents and set an app-based rescue process in motion.

In the Commercial Vehicles and Off-Road unit, we are working on innovations for trucks and digitalized agriculture. Bosch and BASF Digital Farming have signed an agreement to form a 50:50 joint venture that will market and offer smart agricultural solutions worldwide from a single source. A new company based in Cologne is to be established for this purpose. The new venture is subject to approval by the antitrust authorities responsible. The first two products to be marketed will be an intelligent, digital solution for planting and fertilization and a solution for smart spraying. The smart spraying solution combines Bosch camera sensor technology and software with a BASF digital platform to optimize the use of crop protection products.

Industrial Technology

In the Industrial Technology business sector, we are expanding activities in the Drive and Control Technology division (our Bosch Rexroth subsidiary) in its capacity as a provider of mobile and industrial hydraulics and of factory automation and connected manufacturing. Identifying potential for connectivity is an attractive source of growth across all technologies, and we are committed to further refining existing products as well as developing product innovations. The borders between hydraulic and electrical systems are becoming blurred. We expect this to increase pressure on costs in hydraulics on the one hand, but on the other hand believe it offers us additional opportunities as a solution provider, as customers increasingly expect precisely tailored solutions. Another strategic focus is on expanding our market position in factory automation and connectivity in manufacturing.

In the traditional core business of industrial hydraulics, we aim to generate additional business through connected, smart solutions. Our Cytro-generation products are Industry 4.0-compatible and enable IoT services in areas such as the condition monitoring of machines and systems. In mobile hydraulics, Bosch Rexroth is focusing on additional offerings in the fields of automation and driver assistance systems, electrification, and connectivity. This includes an open, scalable, and end-to-end telematics solution – from data source, to hardware and software, to ready-made analysis apps – which can be used to connect mobile machines with each other. Customers can use this solution to selectively read out and use data from the mobile application. In addition, the division premiered the first of its electrification-range components for mobile machinery. New products and solutions such as 700-volt electric motors and a new series of drive gears help customers reduce emissions while further enhancing performance. In these endeavors, the division is also drawing on the Mobility Solutions business sector's electromobility expertise. The result is a comprehensive portfolio of components for the electrification of mobile machinery ranging from new 700-volt electric motors, inverters, and transmissions to modular software and compatible hydraulic pumps.

In the growth market of factory automation and connected manufacturing, Bosch Rexroth is expanding its range of products and services. A new solution platform combines linear technology components with electronics and software. As well as making installation fast for users, this provides comprehensive process transparency and greater productivity. The ctrlX AUTOMATION platform family, which combines control technology, IT, and IoT into an open, scalable system, will also be expanded further. One result of this will be a modular and open control system that offers users new degrees of freedom in setting up functions. Services have also been added to the range. For example, an app store is now available for downloading individually required software, as well as a portal for the simple and centralized management of control systems. Another innovation in the field of robotics is a modular, hardware-agnostic software component with which mobile robots can independently (that is to say, without additional, permanently installed aids and expert knowledge) determine their position in changing environments. The solution is suitable for vehicles of all sizes and powertrain types. It simplifies the automation of intralogistics tasks in industry, commerce, and even hospitals, and is compatible with the industrial controllers and laser sensors made by various manufacturers.

Other businesses

We are realigning our in-house provider of assembly systems, Robert Bosch Manufacturing Solutions, as it is clearly feeling the effects of structural changes in the Powertrain Solutions division as a result of the shift toward electromobility. This calls for adjustments in this unit as well. At the same time, in association with Bosch Rexroth, the unit plans to generate additional external business in robotics and intralogistics services throughout the machinery life cycle. In just a few weeks in spring 2020, the unit built a fully automated facility to produce face masks for Bosch associates. A total of four production lines have been installed at Bosch locations in Germany, India, and Mexico.

The Bosch Connected Industry business unit is responsible for business in software applications for connected industry with internal and external customers. At its core is the Nexeed industrial application system (IAS). This includes solutions for monitoring and optimizing manufacturing processes, controlling service operations, and managing intralogistics. One current innovation is a digital twin used in the production of the stationary fuel-cell systems. For in-house Bosch applications, the Nexeed IAS is the central building block of the Bosch manufacturing and logistics platform. Bosch Connected Industry is working closely with the Drive and Control Technology division on this platform.

Consumer Goods

Covid-19 pandemic changes consumer behavior

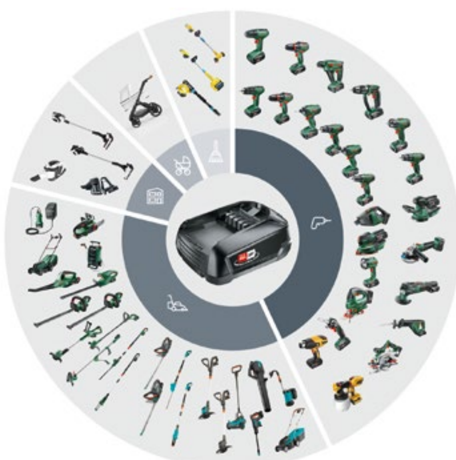
In the Consumer Goods business sector, we rely on our strong international and regional brands and regular product innovations. Both in the Power Tools and Household Appliances divisions, we are anticipating long-term global market growth, also in the emerging markets. In 2020, both divisions experienced significant increases in demand due to changes in consumer behavior resulting from the coronavirus pandemic.

Power Tools establishes battery partnerships

Power Tools aims to grow in its segments through product innovations and modifications as well as novel services. User experience – the focus on user needs in product and service development – is a decisive success factor in the professional segment in industry, construction, and the trades, as well as for the do-it-yourself (DIY) segment in homes and gardens. As cordless tools offer users greater convenience, and their performance matches that of corded models, the division is continuing to expand its cordless range.

In 2020, 26 new cordless tools for professional users were launched. For example, a new generation of cordless saws is now available to professional woodworkers in the 1600 to 1800-watt power class, which was previously reserved for corded tools.

The announcement of two battery platforms initiated by Bosch was an important milestone in 2020. In the future, compatible rechargeable batteries and chargers for various products from numerous manufacturers will save users money, space, and time. In the DIY segment, we formed an alliance to this effect with Gardena and partners from other product areas. By setting up a battery system that works with multiple manufacturers, we are



enhancing user-friendliness for a wide range of applications throughout the home: DIY, gardening tools, cleaning and household appliances, and leisure and camping products. Likewise, we have opened up our 18-volt battery platform for tradespeople to other professional brands. All platform partners share a common goal: to offer professional users a standardized battery across many brands. New partners are being added successively on both platforms, which should further increase the battery systems' attractiveness and range of applications.

The DIY unit is constantly refining its small electric screwdriver, of which more than 19 million have already been sold, and will be launching a new version featuring a different design and significantly shorter charging time. One new product in the portfolio for DIYers is a line laser with integrated measuring tape, which can be used to align and attach objects to the wall without help from a second person. In addition, Power Tools is driving digitalization on construction sites with the help of an app that enables easy documentation of measurements, images, and notes in one place. Users can access their projects at any time and from any location thanks to cloud-based data storage. Besides functions such as automatic building plan generation, other services such as invoicing are available.

It remains a key strategic focus to continuously expand our position in online retail, as this is playing an increasingly significant role, with more and more customers using digital media to search for and buy products. We are therefore expanding not only our strategic alliances with multi-channel and online retailers, but also the scope of information and interaction available online. For emerging markets, we are also broadening our portfolio of professional tools designed for local requirements: devices that are affordable, robust, and easy to maintain.

At the same time, we are working on improving the sustainability of our value chain. We recently established a project team to continuously review suitable measures and ensure their implementation worldwide; for example, with regard to the recycling of packaging and power tools. The focus is on reducing the carbon footprint of our products over the long term and promoting the circular economy.

BSH Hausgeräte backs customer focus and connectivity

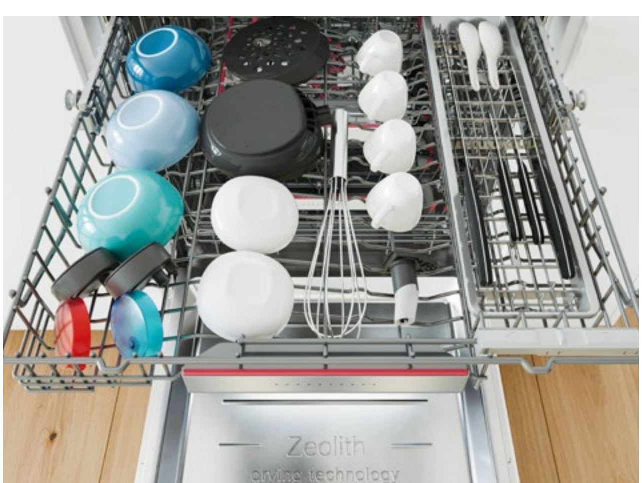
The growth strategy of our subsidiary BSH Hausgeräte focuses on product innovations, on services triggered by connectivity, and on the expansion of digital business models. It aims to use the possibilities offered by digitalization to further expand direct consumer contact.

BSH Hausgeräte has been offering Home Connect – an ecosystem with a cross-brand digital platform for home appliances – since 2014. Here, it collaborates with many different partners. Home Connect is now available in many countries and languages. With more and more home appliances featuring connectivity, the use of artificial intelligence is becoming possible. In the current generation of high-quality ovens, measurements from the sensors integrated into the appliance are transmitted to a cloud computer via Home Connect. On the basis of data from previous processes, the remaining baking time is computed and sent to the oven or an app. If consumers consent to the use of data for product development, the anonymized usage data can be incorporated into further product improvements.

A new electronics architecture turns devices into platforms for digital services. One such device is a multifunctional food processor with cooking function, which BSH Hausgeräte developed and launched in 2020. The electronics enable consumers to use digital services, download apps and programs, and update software. They also let service engineers diagnose and in some cases rectify device faults via remote maintenance if required.

Another important innovation is a new generation of dishwashers. Not only do they offer more space and flexibility, but their connectivity and update capability also mean they can adapt to owners' habits. BSH Hausgeräte is also tapping into the emerging market for digital business models, for example by providing connected washing machines in combination with a digital, usage-based billing model in multi-party residential buildings.

Regarding environmental sustainability, BSH Hausgeräte intends to continue improving the energy efficiency of its products as well as optimizing its entire product portfolio for a more sustainable lifestyle. BSH Hausgeräte was able to gain market share in China in 2020 as the strongest non-Chinese manufacturer focusing on premium segments and innovations. In the U.S., it plans significant growth with the Bosch, Thermador, and Gaggenau brands.



BSH Hausgeräte also especially intends to expand in emerging markets, and a new regional organization been established for this purpose. It will use tailored strategies to address the different needs of consumers in these densely populated markets.

Energy and Building Technology

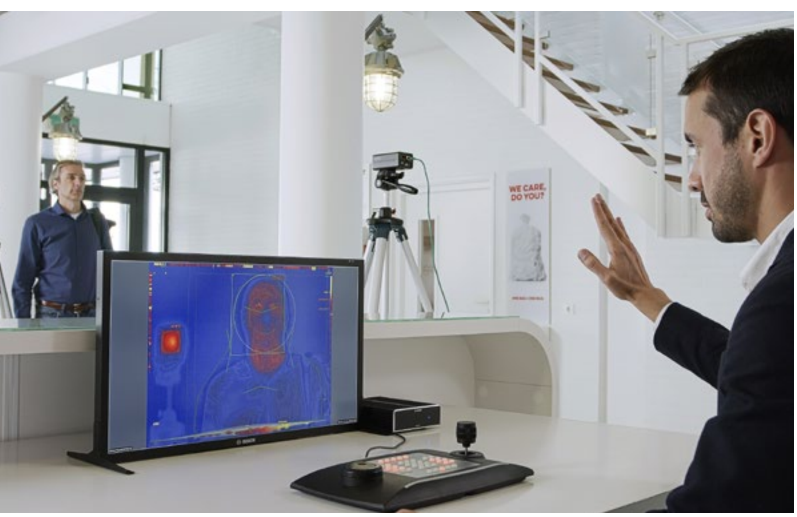
Building Technologies opts for connectivity

The Building Technologies division offers systems, solutions, and services that improve the safety and security of people, buildings, and material assets, and also increase convenience and energy efficiency. To achieve this, we are further expanding our regional systems integration business and strengthening our global product business through product innovations and modifications.

As a systems integrator, Building Technologies offers connected and integrated solutions for security, convenience, and efficiency in buildings. Its activities focus on the markets in Europe and North America, with additional business in Singapore and India. The division has proved to be a stabilizing factor thanks to a high proportion of sales from services during the coronavirus pandemic. Due to changing customer needs and against the backdrop of advancing digitalization, we are developing new IoT-based services for areas such as facility management. One focus is on mapping technologies, software, systems, and sensors, along with building processes and user behavior, in digital twins. The aim of this is to manage processes in buildings in such a way that optimum efficiency is achieved, for example.

In our product business, the markets for intrusion detection, fire detection, and video systems in particular are growing. Software, connectivity, artificial intelligence, intuitive operation, and cloud-based services are playing an increasingly important role alongside hardware. Our vision is one of cross-segment safety and security systems whose predictive warnings help prevent damage or injury. We are working on a large number of new products to establish ourselves in this promising market.

Current solutions include a system for contactless measurement of skin temperature, which helps companies safeguard the health of their workforce and maintain business operations during the pandemic. The camera's thermal module is extremely precise; integrated artificial intelligence and preconfigured profiles help avoid measurement errors caused by environmental influences such as air temperature and other sources.



Another innovation is a camera platform that combines artificial intelligence with a fully open operating system provided by our subsidiary Security and Safety Things. The platform makes it possible to customize security solutions by adding apps, software, and services as needed. Another important step is the latest generation of fire alarm panels, which serve as the basis for solutions in the IoT and smart buildings. The panels improve scalability and integrability. Our video-based, AI-supported fire detection system has now been modified to enable the early visual detection of fires in very poorly lit environments as well as in environments without visible light. The camera's video analysis capability was enhanced with newly developed artificial intelligence, which uses algorithms to decide whether or not to sound the alarm.

The Building Technologies division collaborates with Hanwha Techwin, Milestone Systems, Vivotek Inc., and other partners in the industry consortium Open Security & Safety Alliance, Inc. The consortium, an unlisted non-profit organization, is working to define a standardized platform for security solutions. Our subsidiary Security and Safety Things GmbH, based in Munich, Germany, is a partner in the alliance, which aims to offer an open, standardized IoT platform for camera apps in the fields of safety, security, and business process optimization. Numerous camera manufacturers and app developers have already decided to use this platform. The first customers, including retailers, sports stadiums, and car rental companies, have been using the platform since mid-2020.

Thermotechnology: focusing on climate action

In heating and air-conditioning technology as well as hot-water generation, electrification and renewables are also becoming increasingly important due to tougher requirements for reducing CO_2 emissions. Incentive programs in key markets led to rising demand in 2020 despite the coronavirus pandemic. Here, the Thermotechnology division is focusing on innovation, in addition to improving the efficiency of existing products and enhancing the connectivity capability of its devices.

At its Worcester site in the U.K., Thermotechnology has developed a prototype "H_2-ready" boiler. This climate-neutral alternative for existing residential buildings is scheduled for launch in 2022. Unlike heat pump solutions, which operate with low flow temperatures, this boiler requires no additional insulation of the building. It also takes up roughly the same amount of space as current

gas-fired condensing boilers. The new boiler can run on conventional natural gas or a mixture of natural gas and up to 20 percent hydrogen, and is relatively easy to convert to hydrogen-only use. In addition, the division supplies hydrogen boilers for industrial use, which can also be switched flexibly from natural-gas firing to hydrogen firing. As renewables and green hydrogen become increasingly established, it will be possible to switch heat generation over completely to CO_2-free fuels.

Thermotechnology is also expanding its range of heat pumps. One focus of its development efforts is low-noise water-to-air heat pumps, which are also suitable for densely settled residential areas. These pumps are web-enabled as standard. Their integrated IP interface means users can control them over the internet and an app. A newly developed hybrid system consisting of a gas-fired condensing boiler and a heat pump is also suitable for modernizing existing buildings, as it combines renewable and fossil energy for space heating and hot-water generation. The system primarily uses a water-to-air heat pump to produce hot water and heat. The condensing boiler backs up or takes over from the heat pump if the outside temperature becomes too cold. The system can be monitored by an app or portal solution for smartphones and tablets. For the Bosch heating brand, moreover, we work with partners to offer customers additional service packages as well as financing and leasing options for new heating systems.

Furthermore, Thermotechnology is strengthening its air-conditioning activities. It has debuted split air-conditioning units that, thanks to efficient inverter technology, always adjust their output to current demand. In this way, they provide a comfortable temperature throughout the year, while consuming very little energy. Environmentally friendly refrigerants and additional energy-saving functions such as timers reduce consumption still further. Special functions that prevent drafts keep living spaces cozy.

Stationary fuel cells in pre-commercialization phase

We have stepped up our alliance with Ceres Power to prepare for large-scale production of distributed power plants based on solid-oxide fuel-cell (SOFC) technology. Our aim for SOFC systems is an annual production capacity of some 200 megawatts. To achieve this, we will be investing a nine-figure sum. Large-scale production is scheduled to start in 2024. Following a successful prototype construction phase, the two companies now want to press ahead with pre-commercialization. Manufacturing operations will be located primarily at the locations in Bamberg, Wernau, and Homburg, while development will take place in Stuttgart-Feuerbach, Wernau, and Renningen. This means we are positioning ourselves as a systems supplier for stationary fuel cells with our own high level of value creation in the cell and stack segment. One intended application of SOFC technology is in small, distributed, connectivity-enabled power stations, which can then be used in cities, factories, trade and commerce, data centers, and electric vehicle charging infrastructure.

Expanding Bosch Global Service Solutions

The Bosch Global Service Solutions division focuses on mobility, IoT, and monitoring services for customers as well as on services involving digital customer contacts. It sees particular opportunities in the expansion of services for complex business processes and services, such as emergency calls from vehicles. In 2020, in a bid to expand its eCall service and roadside assistance to encompass complete accident handling via smartphone, Bosch acquired a minority interest in Sfara Inc., located in Hoboken, New Jersey (USA). This investment strengthens an existing partnership. In addition, the emergency call service will be extended to include solo workers to enable rapid assistance in emergencies such as accidents at work. The certified app solution, in conjunction with a special smartphone and incorporating monitoring centers, carries out all the functions of a personal emergency response system. In Germany, for example, this is mandatory for high-risk activities that are performed alone. Bosch is also expanding its digital booking platform for truck parking spaces in France. In addition to the first French site in Calais, another one is now available in Tournan-en-Brie near Paris through an alliance with BSH Hausgeräte, which operates a national warehouse there and has integrated the adjacent parking areas into the platform. The division is also launching a retrofit solution for elevators. Elevator monitoring enables facility managers to observe the operation of their elevators around the clock and automatically detect possible malfunctions.

Additional smart home solutions

The vision of the Bosch Smart Home unit is to provide users with a sense of well-being and security in their homes. To this end, it is greatly expanding its product range, strengthening its distribution channels, and entering into partnerships. Alarm notifications come straight to users' smartphones. For additional security, a water detector uses push notifications and a live video feed from the indoor cameras to inform smart home users about water leakage, even when they are out and about. The app has an emergency call button that lets the user directly request professional help. In addition, electrical appliances connected via smart adapters can be immediately disconnected from the power supply in the event of a water leak. New smart adapters can also be used to extend the ranges of a number of products by amplifying the wi-fi signal. In addition, a new partnership with the company LEDVANCE opens up new possibilities for smart lighting. Bosch Smart Home also offers an open interface for selected partners, Including Apple HomeKit and Daimler's Mercedes infotainment system.

Opening up new areas of business

Our subsidiary Bosch Healthcare Solutions offers customers connected products and services and is further expanding its medical technology portfolio. In the spring of 2020, for a compact analyzer that was itself only launched in 2020, Bosch Healthcare Solutions launched a PCR rapid test for the SARS-CoV-2 coronavirus. Developed with a partner in just six weeks, it can be performed fully automatically on site. Since the test's rollout in the spring, the test time has been gradually reduced down to 39 minutes. This reduction was due in part to software updates for the test devices, which are provided via a Bosch cloud. In addition, our Indian subsidiary Robert Bosch Engineering and Business Solutions Private Limited has developed a portable, compact, and battery-operated monitor. The device, which determines a patient's hemoglobin count at the point of care in order to detect anemia, is primarily intended for use in emerging and developing countries. It uses optical sensors for multi-wavelength spectrophotometry on the skin's surface, which means there is no risk of infection from contaminated needles when taking the patient's blood. Machine learning algorithms help determine hemoglobin levels.

Since 2013, Bosch's grow platform has provided an in-house platform for developing and implementing new business models. It has helped cultivate new business and strengthen the startup culture at Bosch, and is now part of a global in-house innovation network. In this network, new business models are evaluated and pursued in startup teams. Another element of its business model consists in finding additional development opportunities for the startups, such as by involving external investors or operating them as a new, self-contained unit if they do not prove enough of a strategic fit. The innovations it has brought forward include a mobile multisensor alarm system that informs users about break-ins and air quality. It uses sensor technologies supported by artificial intelligence, and its integrated cellular and wi-fi connectivity mean it can be used almost anywhere.

Through Robert Bosch Venture Capital (RBVC), we invest in external technology startups around the world. This gives us early access to innovative technologies, including potentially disruptive ones. The company's investments focus on projects involving automated driving, artificial intelligence, the IoT, mobility solutions, and computer architectures of the future. In the 2020 reporting year, RBVC's investments included startups involved in automated driving, in tools that measure and analyze air pollution and greenhouse-gas emissions at street level, and in virtualization strategies for enhancing the performance of data clouds.

Sustainability

Bosch wants to keep the environmental impact of its operations to a minimum. To fulfill this ambition, we have had a global environmental management system in place for many years. Through our strategies – backed by ambitious targets – we make it our aim to drive climate action worldwide. Our activities in this field are increasingly going beyond our direct sphere of influence to include supply chains and use of products sold. In 2020, moreover, we set up Bosch Climate Solutions GmbH, based in Stuttgart. Our aim with this advisory company is to pass on to other stakeholders the knowledge and experience gained on our path to carbon neutrality, as well as from projects we have implemented worldwide.

We set ourselves, and successfully achieved, the target of becoming carbon neutral for Scope 1 and 2 in 2020. The more than 400 reportable Bosch Group locations worldwide no longer leave a carbon footprint from their Scope 1 (direct emissions) and Scope 2 (energy purchases) activities. To accomplish this, we apply four levers – increasing energy efficiency, procuring renewable energy from newly built plants, procuring more green power (renewables from already existing plants), and offsetting unavoidable CO_2 emissions. As concerns the exclusive use of renewables, we signed three long-term contracts for PV electricity with the providers RWE, Statkraft, and Vattenfall in 2020.

Now that we have achieved carbon neutrality, we aim to continuously reduce the contribution made by offsets. We are also broadening the focus of our activities and aiming to reduce Scope 3 emissions – emissions that occur outside Bosch's direct sphere of influence, such as those generated at suppliers, in logistics, or in product use. For 2030, our aim is to cut these upstream and downstream emissions by 15 percent (in terms of millions of metric tons of CO_2) from their 2018 level. This target has been reviewed and endorsed by the Science Based Targets initiative (SBTi). We are the first automotive supplier to have “targets set” status.

The target we have set for Scope 3 is intentionally a very ambitious one, as its upstream and downstream emissions far exceed those from Scope 1 and 2. Moreover, we made the target independent of sales growth, so that the reduction target will increase as the company grows. There are also a large number of external factors, such as how successful suppliers are at reducing CO_2, over which Bosch can have only an indirect influence.

Bosch also places great importance on occupational safety. We see preventing accidents and providing workplace safety as part of our responsibility. To fulfill this responsibility, we will lower our 2020 target of 1.7 accidents per 1 million hours worked to 1.45 accidents, and want to meet this target by 2025.

Report on economic position

In 2020, the Bosch Group generated sales of 71.5 billion euros. Following the steep drop in sales in the second quarter as a result of the coronavirus pandemic, it was thus possible to make a significant recovery in the further course of the year. Once again, the company's broad diversification across different business sectors paid off. The Mobility Solutions business sector was hit particularly hard by production shutdowns, which were at times extensive. In addition to the impact of the pandemic, the Industrial Technology business sector felt the effects of the prolonged downturn in key machinery markets. By contrast, Consumer Goods benefited from increased demand for home-related products over the course of the pandemic. We were able to increase our sales in this business sector over the year as a whole. Sales in the Energy and Building Technology business sector dropped only to a limited extent.

Given the steep drop in business in some parts of the year, we see our result as encouraging, especially also in light of the high restructuring costs associated with our performance program. This also applies to EBIT from operations, which reached 2.0 billion euros despite the difficult business environment. This was made possible not only by the recovery of the markets in the second half of the year, but also by substantial cost savings. Yet despite the pandemic, we incurred considerable research and development expenditure in order to continue pursuing our work on projects of future importance. With the exception of the Mobility Solutions business sector, where restructuring costs present an especially heavy burden, all business sectors post a positive result from operations. Our Consumer Goods business sector achieved record earnings following the unusually heavy demand in its markets. In addition to the cost cuts, liquidity management – which included a cautious approach to capital investment – delivered a high level of positive free cash flow. In the first half of the year, moreover, we secured additional financial resources and credit lines as a precautionary measure, but did not draw on them.

Key performance indicators

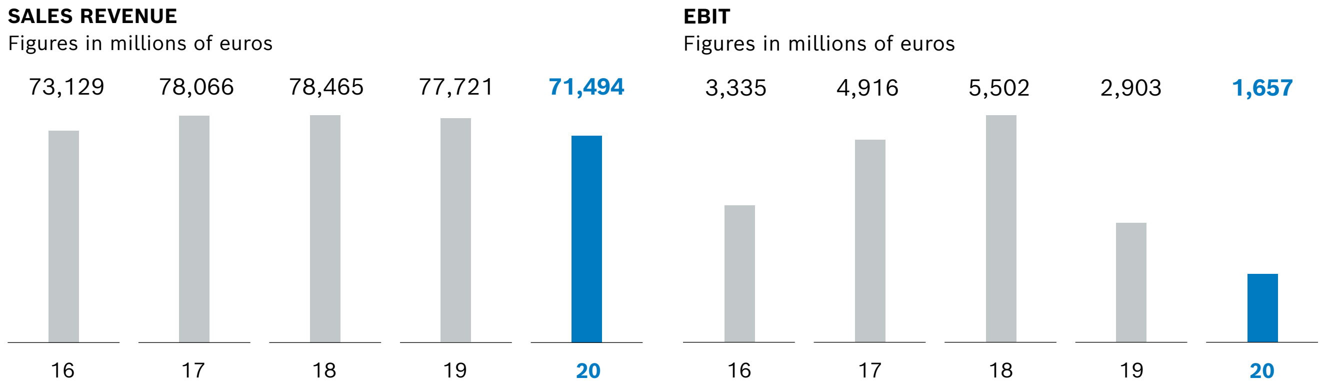
Particularly for an unlisted company such as the Bosch Group, being able to strengthen and maintain profitability over the long term is crucial for financing future growth. The main basis for managing this is our internal reporting, which takes its lead from the International Financial Reporting Standards (IFRS). The performance indicators we use are sales growth, earnings before financial result and taxes (EBIT) – which essentially corresponds to the EBIT from operations disclosed in the management report – and, as of 2020, net working capital (NWC). Unlike EBIT as per income statement, 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.

Operating value contribution is thus no longer used as a performance indicator. As an indicator of funds that are essentially tied up in the short term, NWC is calculated as an average of inventories, receivables, and contract assets minus trade payables and contract liabilities. This new performance indicator is designed to highlight the significance of capital tie-up. Additions to fixed assets will continue to be controlled via budgeting for capital expenditure.

The central internal reporting instrument 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 plan-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. The basis for setting these targets is external benchmark comparisons, which in turn serve as the foundation for determining target cost structures for the divisions and, as such, are the key frame of reference for our performance program.

Based on the KPIs, this benchmarking is also used to determine the targets that form the basis for the short-term variable portion of specialists' and executives' remuneration, from section-manager level to the board of management.

03 Development of sales revenue and EBIT
Bosch Group, 2016–2020



This is known as the Bosch performance bonus. The bonus is determined on the basis of year-on-year organic sales growth (weighted at 15 percent), EBIT margin (weighted at 75 percent), and average NWC (weighted at 10 percent); these last two indicators are measured as a percentage of sales. In 2020, the year of the coronavirus crisis, we derived reference values by comparing the divisions' performance with how their respective competitors performed in the reporting year. The Bosch performance bonus is complemented by VALUE, a variable bonus program for long-term corporate success at senior executive and board of management level, with a time horizon of three years.

Business environment

Pandemic poses major challenges for the world economy

At different times around the world, the coronavirus pandemic caused considerable drops in economic activity. After the Chinese economy shut down in the first quarter of 2020, the course of the pandemic in Europe, the U.S., and countries such as India and Brazil in the second quarter led to major restrictions on social and economic life. As a result, global economic output in the second quarter fell considerably year on year. With many countries easing their pandemic measures and industrial production and other sectors of the economy ramping up again, a significant economic recovery set in from mid-year. In many countries, this recovery was tempered by the return of tighter restrictions in the fourth quarter. The data for economic output are taken from Feri AG and the International Monetary Fund.

Year on year, global economic output in 2020 was down by some 3.8 percent, and thus well below our original expectation of 2 percent growth. In our 2019 management report, the figures we forecast for the development of key regions and market segments in 2020 were based on assumptions we made in early March 2020. We will therefore not go into any detailed comparison. At the time, we pointed out the risk that a spread of the coronavirus pandemic would entail: significant negative effects on the pace of global economic growth and on our markets.

China's economy grew by 2.3 percent. While this cushioned the decline in global economic output, it still fell well short of the growth achieved in 2019. Elsewhere in Asia, the Indian economy was by contrast very severely affected. Asia Pacific saw its economic output fall by 1.5 percent overall. Economic output shrank by 6.5 percent in Europe and by 7.0 percent in the European Union. At 5.0 percent, the decline in Germany was not quite so pronounced. The Americas saw a year-on-year decline in economic output of around 4.3 percent; in North America it fell by 4.0 percent, and in South America by 6.6 percent.

In our most important market, global automotive production, the pandemic had a serious impact, especially in the second quarter. In the second quarter, global supply chains were severely disrupted. Against this backdrop, we were at times expecting global production volumes, including commercial vehicles, to reach just 70 million units in 2020.

However, production volumes began growing substantially again in the middle of the year, with the result that some 78 million vehicles were manufactured in 2020 in total. Since the end of the year, a growing shortage of semiconductor components has dampened this development. The sources of the data for global automotive production in our automotive market forecast (AMP) process are the third-party forecasts of IHS Markit Ltd., London, the association of the German automotive industry (VDA), and other regional associations, as well as Bosch marketing expertise in the regions and at headquarters.

Despite the recovery, production volumes fell significantly short of both their previous-year level of more than 92 million vehicles and our initial forecast level of roughly 89 million vehicles. Global production volumes were already down in the years before the pandemic, after peaking at 98 million units in 2017. China's performance in the reporting year also proved to be a stabilizing factor for automotive production. But while production picked up much earlier there, the number of units produced over the year as a whole was still down by around 2 percent year on year. The slump in the market for commercial vehicles was more moderate, with global production down by around 5 percent compared with the previous year. Once again, this was mainly due to China, where heavy-truck production grew by 31 percent.

The number of electric vehicles continued to increase in 2020. Among passenger vehicles worldwide, the share of all-electric vehicles rose to 3.2 percent, up from 2.3 percent the previous year. Hybrid vehicles accounted for 6.8 percent, up from 5.5 percent. A key driver of this upward trend was growth in the number of electric vehicles in Europe. The largest market for all-electric vehicles is China; for hybrid vehicles it is Europe and Japan. By contrast, the proportion of passenger cars fitted with diesel engines declined further in Europe and India, our major markets. In terms of sales, Europe's share dropped to some 28 percent and India's to some 18 percent in 2020, compared to previous-year figures of roughly 31 and 33 percent respectively.

Global production in the machinery sector, another important market segment, was already losing momentum before the coronavirus outbreak. With businesses reluctant to invest, the pandemic caused production to nosedive. As the year progressed, this segment also saw a strong recovery, especially in China but also in the United States. Machinery production in China is now above pre-crisis levels. By contrast, production in the European Union and Japan has not quite returned to its pre-crisis level.

Business developments

Development of sales

Pandemic-related drop in sales partly offset

In the Bosch Group, we generated sales of 71.5 billion euros in 2020, compared with 77.7 billion euros in the previous year. Year on year, this is a decline of 8.0 percent, or 5.9 percent after adjusting for exchange-rate effects. Compared to 2019, this figure includes consolidation effects of minus 1.3 billion euros in the 2020 business year. As with all income statement items, the figure for 2019 sales revenue still includes the activities of Robert Bosch Packaging Technology GmbH that were sold effective December 31, 2019. This entity has now been renamed Syntegon Technology GmbH, and is based in Waiblingen, Germany. Without these consolidation effects, the fall in sales is 6.4 percent, and 4.3 percent after adjusting for exchange-rate effects.

The exchange-rate burden amounted to 1.7 billion euros, distributed over the three major economic regions in roughly similar proportions. In 2020, these were primarily due to the euro's performance against the Turkish lira, the Chinese renminbi, the Brazilian real, the U.S. dollar, the Russian ruble, the Mexican peso, and the Indian rupee.

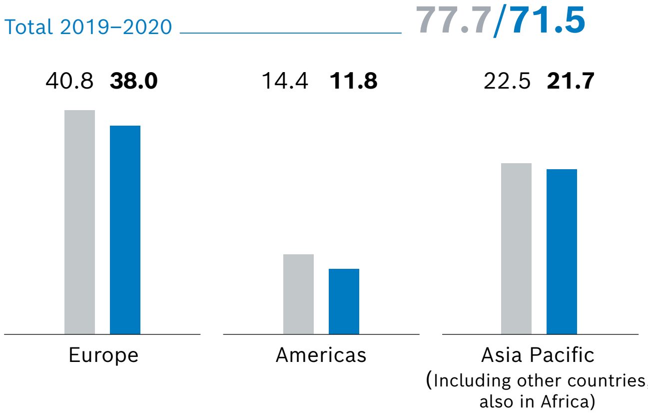
Thanks to the improvement in the economic environment and the sharp increase in demand for consumer goods during the pandemic, we were able to partially compensate for the steep drop in sales we saw in the second quarter. Nonetheless, we were unable to fulfill our forecast. For the Bosch Group as a whole, our expectation was that 2020 sales would be slightly below their 2019 level. However, we had already warned of the risks arising from the pandemic.

Development of sales revenue varies by region

The second-quarter slump in sales left its mark on all regions, albeit to varying degrees. In Europe, sales over the year as whole amounted to 38.0 billion euros, down 7.0 percent on the previous year, or 5.5 percent after adjusting for exchange-rate effects. In Germany, sales fell 6.0 percent to 14.8 billion euros. Without the consolidation effects arising from the divestment of our packaging operations, sales in Europe fell by 5.1 percent (3.7 percent after adjusting for exchange-rate effects) and by 3.5 percent in Germany.

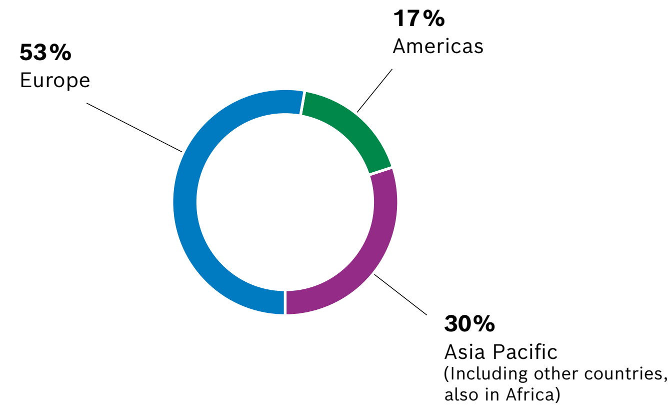
04 Development of sales revenue, 2019–2020
Bosch Group

SALES REVENUE BY REGION
Figures in billions of euros



05 Sales revenue structure, 2020
Bosch Group

SALES REVENUE BY REGION
Percentage figures



We saw the sharpest drop in sales for the year as a whole in the Americas. Sales in North America were down 17.7 percent to 10.7 billion euros. Adjusted for exchange-rate effects, the drop was 15.0 percent. Without consolidation effects, sales fell 15.5 percent, and by an exchange rate-adjusted 12.8 percent. In South America, sales decreased by 22.7 percent to 1.1 billion euros. After adjusting for exchange-rate effects, however, the decline was just 0.8 percent. Here as well, the amount disclosed is affected by the divestment of our packaging operations. Without this consolidation effect, the drop was 22.3 percent, and an exchange rate-adjusted 0.2 percent.

Asia Pacific performed better, with sales down 3.4 percent to 21.7 billion euros. After adjusting for exchange-rate effects, the decline was 1.5 percent. Without consolidation effects, the drop in sales was 2.6 percent, and an exchange rate-adjusted 0.7 percent. The milder losses there are attributable to the early and strong market recovery in China, where our sales grew 5.6 percent (7.4 percent after adjusting for exchange-rate effects) in 2020.

The regional differences in sales performance in 2020 mean that Asia Pacific accounted for a 30 percent share of our total sales, up from 29 percent in the previous year; Europe's share rose to 53 percent from 52 percent. The Americas' share decreased significantly to 17 percent, from 19 percent the previous year.

Significant differences by business sector

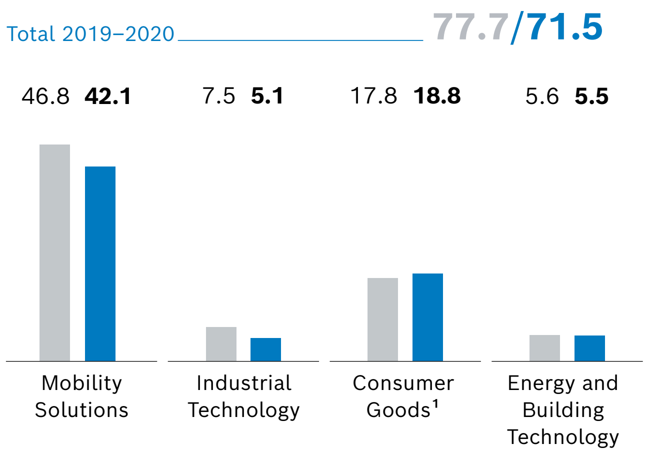
Our biggest business sector, Mobility Solutions, was hit particularly hard by the extensive scaling back of production in the second quarter due to the coronavirus pandemic. As of the middle of the year, the situation gradually improved. We also benefited from the early and significant recovery in China. At 42.1 billion euros, sales were still 10 percent down year on year, or 8.2 percent after adjusting for exchange-rate effects. Sales also fell short of our forecast. However, our business still outperformed global automotive production, which fell by 16 percent in unit volume terms.

The effect was the same in nearly all the business sector's divisions. The sales of the Car Multimedia division fell by a disproportionate amount, since it did not benefit from the recovery in China to the same extent as other divisions. By contrast, the Bosch eBike Systems division benefited from the sharp rise in demand in this market.

In 2020, the Industrial Technology business sector was unable to buck the protracted trend of weakness in its market, which faced a further heavy burden as a result of the coronavirus crisis. However, in this business sector as well, the order situation picked up again in the third quarter of 2020. When making a comparison with the previous-year figures, there are also the effects resulting from the divestment of packaging-machinery activities, which were not included in the figures for 2019. For Industrial Technology, we disclose sales of 5.1 billion euros in 2020, compared with the previous year's figure of 7.5 billion euros.

06 Development of sales revenue, 2019–2020
Bosch Group

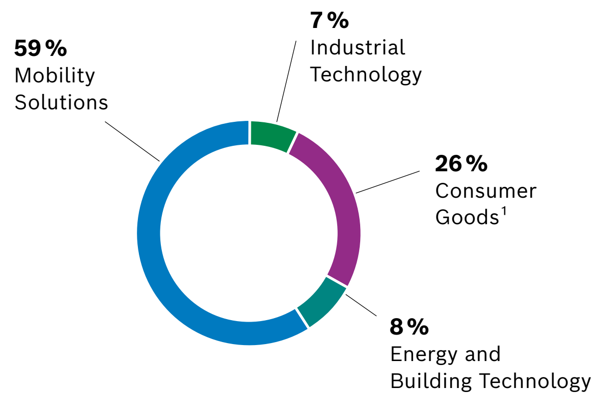
SALES REVENUE BY BUSINESS SECTOR
Figures in billions of euros



1. Including other activities

07 Sales revenue structure, 2020
Bosch Group

SALES REVENUE BY BUSINESS SECTOR
Percentage figures



1. Including other activities

The drop in sales is thus 31.5 percent, and an exchange rate-adjusted 29.9 percent. Excluding the effects of the divestment of our packaging-machinery activities, sales still dropped by 17 percent, or 15 percent after adjusting for exchange-rate effects. In our forecast, we had predicted a fall of 7 percent.

Our Consumer Goods business sector's performance had a stabilizing effect. We benefited from an extraordinary boom in demand for household appliances and power tools as the coronavirus pandemic caused consumers to focus more of their energies on their home environment. Despite a temporary yet significant downturn at the start of the second quarter, sales rose a nominal 5.1 percent to 18.7 billion euros (without other activities), and thus performed better than the originally expected slight drop of roughly 1 percent. After adjusting for exchange-rate effects, sales were up 8.4 percent. This favorable development benefited both the Power Tools division and BSH Hausgeräte.

The fall in sales in the Energy and Building Technology business sector was kept to a minimum. Sales dropped 2.7 percent to 5.5 billion euros. We had forecast growth of roughly 1 percent. After adjusting for exchange-rate effects, sales fell just 0.8 percent.

One main reason for the moderate fall is developments in the Thermotechnology division. Here, subsidies for renewables in important markets such as Germany generated additional demand in 2020. The declines in sales were significantly worse in Building Technologies and Service Solutions. In the case of Building Technologies, the product business was especially affected. The Service Solutions division above all felt the effect of reduced sales among customers in the travel and telecommunications industries as a result of the coronavirus pandemic.

The differences in our business sectors' fortunes mean that our sales structure has changed compared with the previous year. The share of sales attributable to the Consumer Goods business sector increased to 26 percent from 23 percent. By contrast, as a result of the significant fall in sales and the consolidation effects from the divestment of the packaging machinery business, the Industrial Technology business sector's share dropped to 7 percent from 10 percent the previous year. The share of the Mobility Solutions business sector fell one point to 59 percent. By contrast, Energy and Building Technology's share rose to 8 percent from 7 percent the previous year.

Results of operations

Bosch Group's result declines

We report positive EBIT for 2020 of 1.7 billion euros, compared with 2.9 billion euros the previous year. It should be pointed out that the previous year's figures included a non-recurring extraordinary positive effect resulting from the divestment of the packaging machinery business.

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

	2020	2019
Sales revenue	71,494	77,721
Cost of sales	–48,946	–53,236
Gross profit	**22,548**	**24,485**
Distribution cost and administrative expenses	–14,692	–16,262
Research and development cost	–5,890	–6,079
Other operating income and expenses	–305	766
Result from companies included at equity	–4	–7
EBIT	**1,657**	**2,903**
Financial result	–152	353
Profit before tax	**1,505**	**3,256**
Income tax expense	–756	–1,196
Profit after tax	**749**	**2,060**

Bosch Group EBIT from operations fell to 2.0 billion euros in 2020, compared with the previous year's figure of 3.3 billion euros. The margin from operations decreased to 2.8 percent, compared with 4.2 percent the previous year. When further adjusted for the effect from the sale of packaging operations, the previous year's figure was 3.7percent.

In light of the pandemic, the margin of 2.8 percent from operations is encouraging, even though it fell short of the roughly 3.5 percent stated in the original earnings forecast for 2020. In addition to the general market recovery and the sharp rise in demand in the Consumer Goods business sector, the positive result was helped by the extensive cost-cutting measures with which we attempted to cushion the steep drop in sales, especially in the second quarter.

As in previous years, the calculation of EBIT from operations, unlike EBIT as per the income statement, 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 340 million euros in 2020, and were thus lower than the previous year's figure of roughly 380 million euros.

Spending on restructuring, including provisions, again increased significantly over plan and the previous year. This is especially true for the Mobility Solutions business sector, which accounts for most of this spending. However, the adjustments also affect the other business sectors, as well as corporate and service units. The provisions that have been set up concern all functional costs. At the same time, we again made considerable upfront investments in areas of future importance.

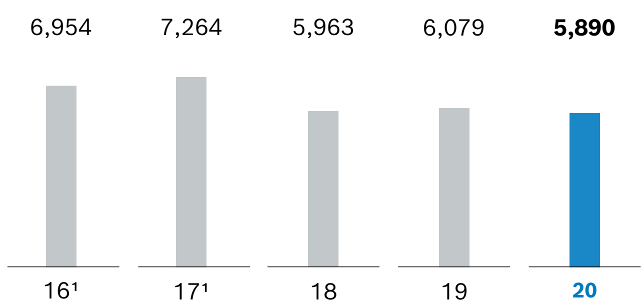
The effect of the measures taken to cushion the drop in sales can be seen in various income-statement items. Cost of sales fell 8.1 percent in 2020 to 48.9 billion euros. This was roughly proportionate to the 8.0 percent drop in sales. The gross margin thus remained on its previous-year level of 31.5 percent. At roughly 3.3 billion euros, depreciation of property, plant, and equipment was slightly below the previous-year level of 3.4 billion euros. Distribution cost and administrative expenses fell 9.7 percent from their previous-year level to 14.7 billion euros. They thus fell at a greater rate than sales.

Research and development cost came to 5.9 billion euros in 2020, compared with 6.1 billion euros the previous year; this means research and development intensity, at 8.2 percent, rose from the previous year's figure of 7.8 percent. This underscores the significance we ascribed to areas of future importance during the pandemic as well. The drop from 2017 to 2018 is the result of the first-time application of IFRS 15. Up to 2017, research and development cost still contained development work charged directly to customers.

The Mobility Solutions business sector again accounted for the largest share in 2020, at 75 percent (previous year 72 percent). The main focus of these upfront investments continues to be electrification including fuel cells, driver

08 Research and development cost
Bosch Group, 2016–2020

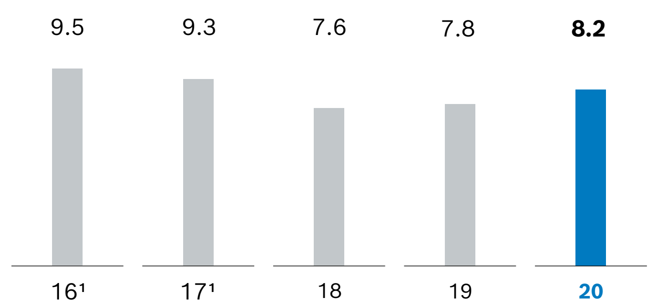
TOTAL EXPENDITURE
Figures in millions of euros



1. Including development work charged directly to customers

09 Research and development cost
Bosch Group, 2016–2020

TOTAL EXPENDITURE
as a percentage of sales revenue



1. Including development work charged directly to customers

assistance systems including automated driving, automotive electronics, and sensors. The percentage attributable to the Consumer Goods business sector came to 15 percent (previous year 16 percent), and to the Industrial Technology business sector, 6 percent (previous year 7 percent). The corresponding figure in Energy and Building Technology is 4 percent (previous year 5 percent). Here we are making upfront investments in heat pumps, stationary fuel cells (SOFC), and new products such as video technology and fire alarm systems, among other things. The significant fall in other operating income and expenses is mainly the result of the extraordinary income from the divestment of the packaging machinery business in the previous year, as well as of increased provisions.

On balance, we disclose a negative financial result of 152 million euros in 2020, compared with a positive balance of 353 million euros the previous year. Negative currency effects are a major factor. Profit before tax thus came to 1.5 billion euros, corresponding to a margin of 2.1 percent. Both figures are down significantly on their previous-year levels of 3.3 billion euros and 4.2 percent respectively. The result after tax amounts to 0.7 billion euros, compared with 2.1 billion euros the previous year.

While our new, in-house KPI of NWC as a percentage of Bosch Group sales is on the same level as the previous year, at 27.5 percent, it is significantly higher than forecast. One major reason for this is the steep drop in sales.

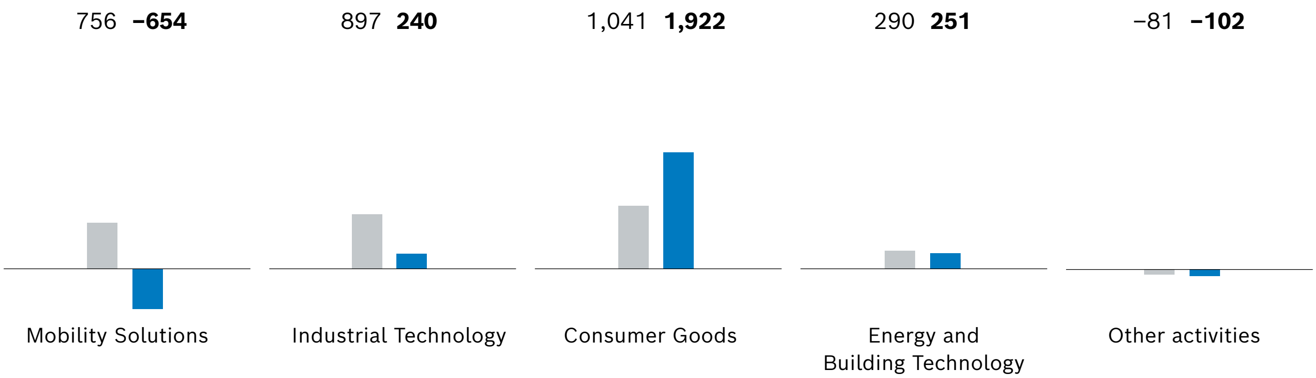
Result situation differs by business sector

The result situation differs markedly by business sector due to different sales trends, the scope of restructuring, and the need for upfront investments in areas of future importance. Due to the coronavirus pandemic, there are considerable differences compared to the forecast for result given in the outlook section of the 2019 group management report. We had expected a significant improvement in the Mobility Solutions business sector, a significant deterioration in Industrial Technology, and a margin from operations at around the previous year's level in Consumer Goods and Energy and Building Technology. As in previous years, 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.

In the Mobility Solutions business sector, a considerable decline in sales, continuing high upfront investments, and restructuring costs higher than originally planned mean that we report negative EBIT of 654 million euros, compared with positive EBIT of 756 million euros in the previous year. EBIT from operations came to minus 531 million euros, compared with the previous year's figure of 887 million euros. This results in a margin from operations of minus 1.3 percent, compared with plus 1.9 percent the previous year. Excluding restructuring costs, however, the Mobility Solutions business sector would also disclose a positive result.

10 EBIT
Bosch Group, 2019–2020

BY BUSINESS SECTOR
Figures in millions of euros

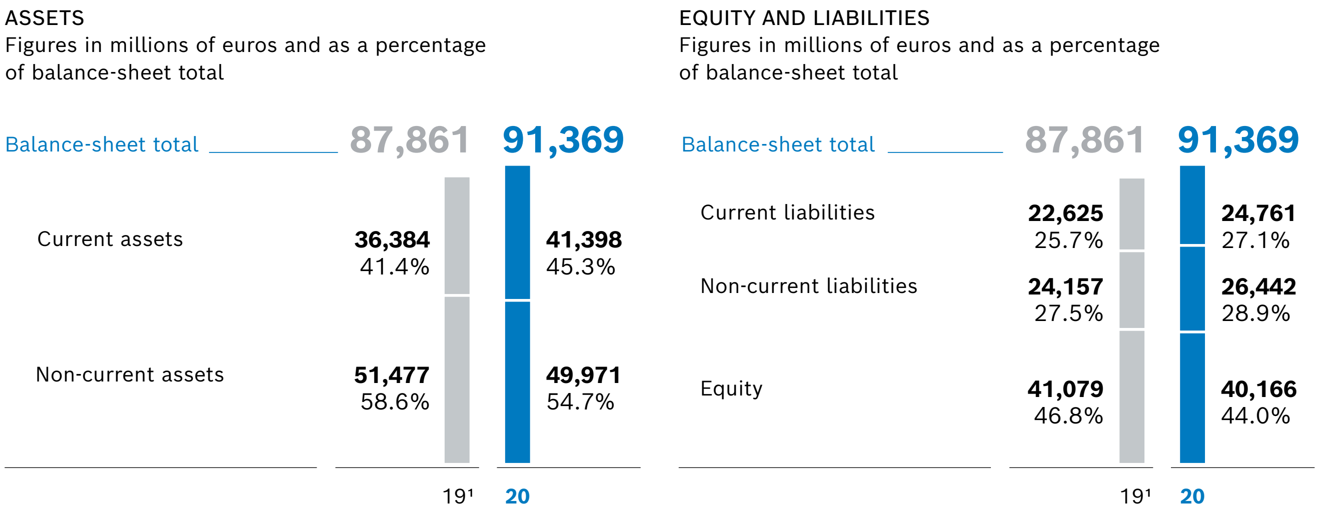


Despite the steep drop in sales, the Industrial Technology business sector achieved a positive result of 240 million euros and thus an EBIT margin of 4.7 percent. Including the non-recurring effect from the divestment of the packaging machinery business, the business sector disclosed EBIT of 897 million euros and a margin of 12.0 percent in 2019; excluding this non-recurring effect, the previous year's margin was 7 percent.

The Consumer Goods business sector improved its EBIT to 1.9 billion euros, compared with 1.0 billion euros the previous year. EBIT from operations came to 2.1 billion euros, following 1.3 billion euros the previous year, while the margin from operations stood at 11.5 percent, compared with 7.3 percent in 2019. The Power Tools and BSH Hausgeräte divisions benefited equally from the great demand for electric tools and household appliances. The Energy and Building Technology business sector posted EBIT of 251 million euros, compared with 290 million euros the previous year. The margin from operations came to 4.6 percent, compared with 5.1 percent in 2019.

When it comes to net working capital (NWC) as a proportion of sales, the deviation from forecast in the business sectors was in some cases considerable. This reflects the divergent impact the pandemic had on their respective business operations. While the NWC figures for Mobility Solutions and Industrial Technology are considerably higher than forecast, at 27.4 percent and 39.8 percent respectively, and have thus worsened, Consumer Goods fell considerably short of forecast with an NWC ratio of 26.6 percent, and Energy and Building Technology significantly exceeded forecast, at 21.9 percent. This means that the figures for Mobility Solutions and Industrial Technology are also considerably higher than their previous-year levels of 25.8 percent and 36.9 percent. A considerable drop (and thus an improvement) from the previous-year level of 31.0 percent can be seen in Consumer Goods. In Energy and Building Technology, the improvement from the previous-year level of 22.8 percent is significant.

11 Balance-sheet structure
Bosch Group, 2019–2020



1. Values following correction and reclassification

Net assets and financial position

High equity ratio and healthy balance sheet

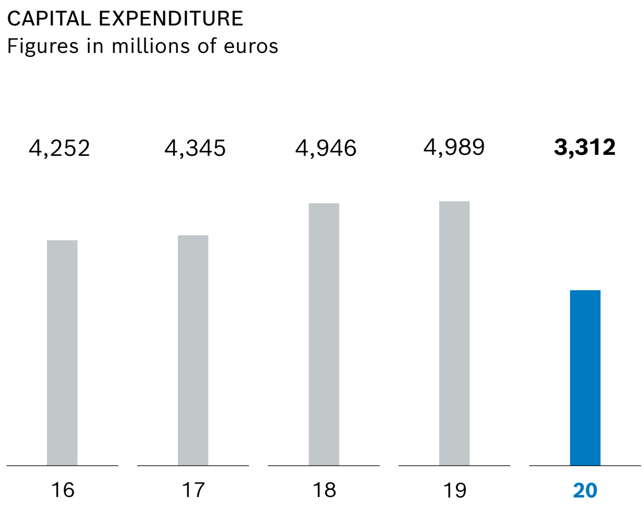
The Bosch Group balance-sheet total as of the 2020 reporting date stood at roughly 91.4 billion euros, exceeding the previous year's level of 87.9 billion euros. The main reason for this is the funds raised as a precaution in the capital market. This resulted in a significant increase in current assets on the left of the balance sheet and especially in non-current liabilities on the right. In addition, there was an increase in provisions. The equity ratio fell to 44 percent, compared with 47 percent the previous year. Negative currency effects in equity also played a role here. The effects from the divestment of the packaging machinery business were already taken into consideration in the balance-sheet figures for 2019.

On the assets side, our liquidity as reported in the statement of financial position rose to 25.7 billion euros as of the reporting date, compared with the previous year's 19.0 billion euros. 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. As well as the funds raised as a precaution in the capital market, this is due to the Bosch Group's high free cash flow.

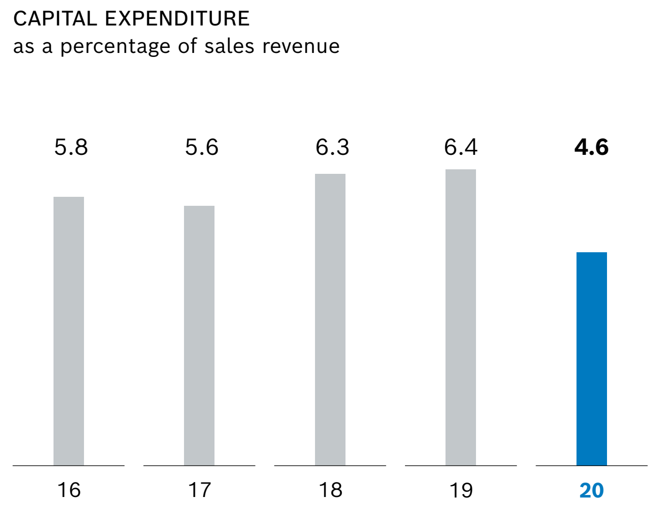
The liabilities side saw changes mainly due to an increase in financial liabilities arising from the issue of borrower's note loans and registered debentures, as well as from an increase in provisions and other liabilities. Our financing structure therefore remains very sound. For example, the net financial position (defined as balance-sheet liquidity minus financial liabilities and provisions for pensions and similar obligations) increased to 6.6 billion euros, compared with 1.7 billion euros in the previous year. With a long-term rating of A (with a "stable" outlook) from the credit rating agency Standard & Poor's, Robert Bosch GmbH still has a good rating despite the downgrade in 2020. The financial liabilities of the Bosch Group include borrower's note loans and registered debentures with a nominal value of 3.5 billion euros and bearing interest between 0.582 percent and 2.098 percent, as well as bonds with a nominal value of 2.5 billion euros and bearing interest between 1.625 percent and 4.375 percent. As a result, the average interest rate has fallen to 1.600 percent from the previous year's rate of 1.766 percent. The average residual term to maturity of the borrower's note loans and registered debentures is 5.85 years, compared with 6.26 years the previous year. The bonds' average residual term to maturity is 6.41 years, compared with 6.33 years the previous year. Most of the existing financial liabilities are denominated in euros.

As a precautionary measure in view of the major uncertainties caused by the coronavirus pandemic, we raised additional funds of 2.0 billion euros in the first half of the year by issuing borrower's note loans and registered debentures to institutional investors. In addition, we arranged a syndicated credit line of 3.0 billion euros. Furthermore, we relaunched our bond program in September 2020. The scale of the program is 12.5 billion euros. Moreover, in the fourth quarter of 2020, we updated our commercial paper program denominated in U.S. dollars, with a scale of 2.0 billion

12 Capital expenditure
Bosch Group, 2016–2020



13 Capital expenditure
Bosch Group, 2016–2020



dollars, and established several bilateral U.S. credit lines. In the reporting year, we repaid a 500-million-euro bond issued by our subsidiary BSH Hausgeräte that had fallen due.

Restraint in capital expenditure

Against the backdrop of the coronavirus pandemic and to safeguard liquidity, we invested cautiously in 2020. This applies to all business sectors, but particularly to Mobility Solutions. As a result, total capital expenditure in the Bosch Group fell to some 3.3 billion euros in 2020, compared with the previous year's figure of 5.0 billion euros. The investment ratio fell to 4.6 percent of sales, compared with 6.4 percent in the previous year. Nonetheless, capital expenditure reached 101 percent of depreciation and amortization. As of the reporting date, existing investment commitments as a result of orders already placed total 524 million euros, following a previous-year figure of 542 million euros. Thanks to our very good liquidity position, we have ample financial resources at our disposal.

By business sector, the lion's share – 2.5 billion euros, following 3.8 billion euros the previous year – once again went to Mobility Solutions. The main focus of capital expenditure in the Automotive Electronics division was on the wafer fabs in Dresden and Reutlingen; in the Powertrain Solutions division, it was on the electrification segment; in Chassis System Controls, it was on the ABS, ESP®, and integrated power brake products; and in Automotive Steering, it was on electric power steering.

Capital expenditure in Industrial Technology dipped to around 119 million euros, compared with 251 million euros the previous year. One important project in the area of linear technology was the expansion of our Xi'an plant in China. In the Consumer Goods business sector, capital expenditure was 616 million euros, compared with around 759 million euros in the previous year. The focus at BSH Hausgeräte was on the new dryer and washing machine factory in Chuzhou, China. In Energy and Building Technology, capital investment came to approximately 93 million euros, compared with 116 million euros the previous year. It was spread over a large number of projects, with the SOFC project attracting a significant share.

From a regional viewpoint, we invested 2.3 billion euros in our European locations, compared with 3.0 billion euros the previous year. Capital expenditure in Germany amounted to roughly 1.5 billion euros, compared with 1.7 billion euros the previous year. We invested 0.8 billion euros in Asia Pacific, compared with 1.5 billion euros the previous year. In the Americas, we invested a total of some 265 million euros, compared to around 440 million euros in the previous year.

Liquidity

Very well endowed with liquidity

The Bosch Group is financially strong. Liquidity as per the consolidated statement of cash flows (cash and cash equivalents) rose at year-end to 9.0 billion euros, compared with 4.6 billion euros the previous year. In 2020, cash

02 Bosch Group, statement of cash flows
Figures in millions of euros

	2020	2019[1]
Liquidity at the beginning of the year (Jan. 1)	**4,558**	**4,716**
Cash flow from operating activities	+9,016	+7,752
Cash flow from investing activities	−4,830	−6,306
Cash flow from financing activities	+484	−1,671
Other activities	−273	+67
Liquidity at the end of the year (Dec. 31)	**8,955**	**4,558**

1. Values following correction and reclassification

flow from operating activities rose to 9.0 billion euros or 12.6 percent of sales, against prior-year figures of 7.8 billion euros and 10 percent of sales. The main reasons for the increase are higher liabilities and higher current and non-current provisions.

Cash flows from investing activities amounted to 4.8 billion euros, and were significantly down on the previous-year figure of 6.3 billion euros. This has already been explained in detail in the separate section on investments. Cash flows from financing activities, including repayments of lease liabilities, disclosed an inflow of 0.5 billion euros in 2020, as opposed to an outflow of 1.7 billion euros the previous year. In 2020, for example, new long-term funding of 2.0 billion euros was raised.

In 2020, free cash flow comes to some 5.1 billion euros and is thus significantly (roughly 3.0 billion euros) higher than in 2019. Free cash flow is calculated by adding cash flow from operating activities, cash flow from investing activities (without participating interests and other financial investments), and the repayment of lease liabilities. The reasons are the higher cash flow from operating activities and lower outflows from investing activities.

Non-financial indicators

Target of carbon neutrality achieved

In 2020, we achieved our target of carbon neutrality in our own value chain (Scopes 1 and 2). The majority of our company's CO_2 emissions are a result of energy consumption. Bosch requires energy primarily in the form of electrical power for manufacturing plant and machinery, and in the form of thermal energy to heat and air-condition buildings and to operate foundry furnaces. In total, the companies in the Bosch Group consumed around 7,497 gigawatt-hours (GWh) of energy in 2020 (previous year: 7,762 GWh). We offset the corresponding emissions of 0.9 million metric tons of CO_2 (previous year: 1.9 million metric tons) in the course of achieving carbon neutrality. Production cutbacks due to the coronavirus pandemic also played a role in the considerable drop in our energy consumption. The calculation of emissions is based on the standards of the International Energy Agency (IEA) and the Intergovernmental Panel on Climate Change (IPCC).

Further progress in occupational health and safety

We achieved our target of reducing the accident rate to 1.7 accidents per million hours worked by 2020. The accident rate fell to 1.5 in the reporting year compared with 1.9 in the previous year. There were no fatal work-related accidents in the reporting year. The total number of workplace accidents in 2020 was 951, compared with 1,306 in 2019. The effects of the coronavirus pandemic are also likely to have played a role in this significant decline.

Headcount

Slight decline

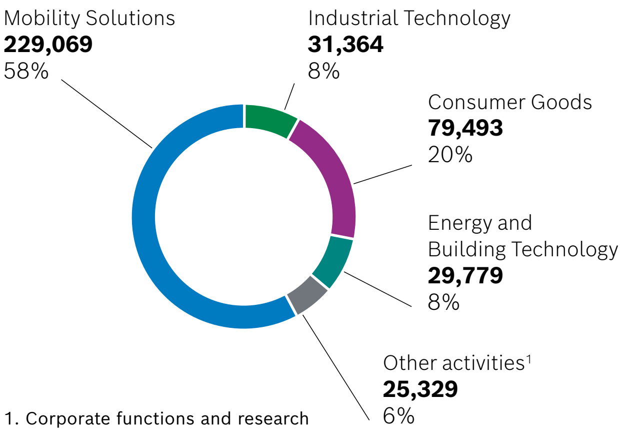
The total number of Bosch Group associates fell to 395,034 at the end of 2020, compared with roughly 398,200 at the end of 2019. The number of Bosch associates decreased by 3,116. Consolidation effects play only a minor role. The 2019 headcount figures already took account of the divestment of the Packaging Technology business.

The workforce in the Mobility Solutions business sector shrank to 229,069, compared with some 236,700 at the end of 2019. The Powertrain Solutions, Automotive Aftermarket, and Chassis Systems Control divisions were particularly affected. The number of associates in the Industrial Technology business sector dropped to 31,364, compared with roughly 33,200 at the end of 2019.

14 Associates
Bosch Group 2020 (year-end figure)

BY BUSINESS SECTOR

Total 395,034

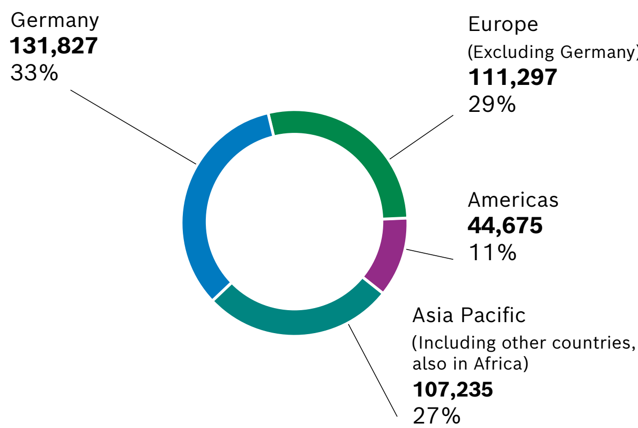


1. Corporate functions and research

15 Associates
Bosch Group 2020 (year-end figure)

BY REGION

Total 395,034



This was mainly due to the downturn in the mechanical engineering market. In contrast, the number of associates in the Consumer Goods business sector rose to 79,493, compared with approximately 76,600 at the end of 2019. This was a result of the increased demand for consumer goods in 2020. The number of associates in the Energy and Building Technology business sector fell to 29,779, compared with some 33,200 at the end of the previous year. Much of this reduction was at Bosch Global Service Solutions. 25,329 associates are employed in other activities, compared with roughly 18,600 in the previous year. The reason is mainly the organizational reassignment of associates to global service units and regional cross-functional units. In terms of business sectors, this means the workforce structure changed slightly year on year.

The number of associates in research and development across all units worldwide grew again by 555 to stand at 73,172 at the end of the year. The expansion of the global research and development network affects all regions. In Germany, however, the number of associates in research and development fell slightly. Regions outside Germany now account for 58 percent of associates in research and development, with Asia Pacific still accounting for 38 percent. The number of associates in the corporate sector for research and advance engineering ("Other activities") rose worldwide to 1,574, compared with approximately 1,450 the previous year.

The percentage distribution of associates by region shifted slightly. The share of associates in Asia Pacific fell one percentage point, with Europe's share rising by the same amount. The decline in headcount relates mainly to Asia Pacific and Germany. In Europe (excluding Germany) and the Americas, headcount rose slightly year on year.

Outlook

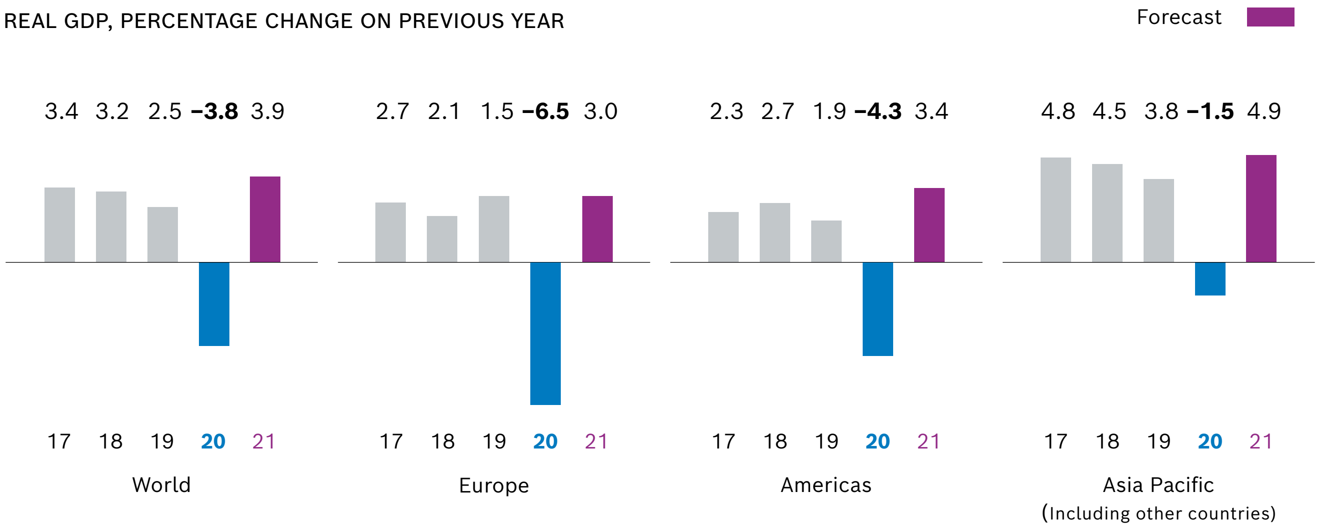
Pandemic continues to fuel considerable uncertainty

On the whole, we expect 2021 to be a challenging year. Despite the start of vaccinations, there may be further negative effects on global growth and our markets. Uncertainty as concerns the further course of the pandemic remains great. Assuming that there are no restrictions on a similar scale to those seen in the second quarter of 2020, we expect sales growth of roughly 6 percent and a slightly improved EBIT margin from operations. However, we will continue to make considerable upfront investments in promising areas, and carry out further adjustment measures. As a result of the far-reaching changes in the automotive sector, these will relate above all to the Mobility Solutions business sector.

The efforts to contain the coronavirus pandemic, especially the start of vaccinations, suggest that the global economy will recover. We expect global economic output to grow 3.9 percent in 2021. Here, there is considerable uncertainty as to how the pandemic will develop with respect to virus variants, vaccination take-up, and further restrictive measures by governments. These can only be factored into our forecasts to a limited extent. As their point of reference, our forecasts take the estimates made by Feri AG, the IMF, and our own assessments.

16 Economic growth by region, 2017–2021

REAL GDP, PERCENTAGE CHANGE ON PREVIOUS YEAR



Some previous-year figures changed from the 2019 annual report following an audit

In terms of the major economic regions, our expectation is that economic output in the Americas will grow by some 3½ percent in 2021. For Europe, the latest data suggest year-on-year growth of roughly 3 percent. We expect to see the strongest growth in Asia Pacific (including other countries), at just under 5 percent. This is due to the dynamic Chinese economy, which we expect to grow by nearly 7½ percent. The gradual suppression of the pandemic will help the recovery of the global economy, as will monetary policy, which is likely to remain very expansionary in 2021, and increases in government spending, some of them considerable. The United States, for example, is planning a wide range of pandemic-related increases in transfer payments and investments, and the European Union has already published a recovery plan. In 2021, a further factor bolstering demand in global markets should be that the savings ratio, which rose significantly in many countries last year, will return to normal.

Within Europe, we forecast year-on-year growth of some 3¼ percent in the European Union. In Germany, economic output will likely grow by some 3 percent. Shortly before the end of the transition period on December 24, 2020, and following years of negotiations, a Brexit agreement was reached between the United Kingdom and the European Union. A no-deal, “hard” Brexit was thus avoided. Nonetheless, we expect that Brexit will be a drag on economic momentum in the European Union. This has already been factored in to our forecast. We expect this effect to be significantly more severe in the United Kingdom. That said, its economy will likely grow 5 percent in 2021, mainly as a rebound from the steep 10 percent collapse in 2020.

In North America, we forecast year-on-year growth of roughly 3½ percent. Here as well, this will mainly be due to the economy recovering from the effects of the pandemic and the planned extensive aid package in the United States. In South America, we expect economic growth to be approximately 3 percent. In this region, the effects of the pandemic on the population and the economy were especially hard, and this is likely to initially dampen recovery.

In automotive production, our most important market, we expect total production of passenger cars and commercial vehicles to grow by some 11 percent year on year in 2021, to roughly 86 million vehicles. This forecast is again based on data from our in-house AMP process and the company’s own estimates. Over the medium term, we expect a return to the 2019, pre-crisis, level of 92 million vehicles. For heavy trucks, our forecast is that production will grow by a modest 1 percent year on year. The reason for this is the likelihood of a drop in production in China.

As concerns the severe global scarcity of semiconductors, we only expect to see a gradual easing over the course of 2021, also as a result of the substantial lead times needed to reschedule semiconductor production. Following the historic collapse in the second quarter of 2020 as a result of the Covid-19 pandemic, demand in the automotive sector picked up strongly in the second half of 2020, also because of the rapid market recovery in China. This rapid recovery caused an abrupt increase in demand for electronic components in the automotive industry, and especially for semiconductors. These are needed for integrated circuits such as microcontrollers and ASICs. In the semiconductor market, this increase in demand from the automotive industry is at odds with already considerable requirements for semiconductors, triggered by heavy demand from the consumer electronics, computer, and communications industries. To exacerbate the situation, certain semiconductor manufacturers had to scale back production owing to the Covid-19 pandemic. Moreover, investments in expanding production capacity were delayed.

Taken together, this is leading to global supply bottlenecks in the semiconductor industry, with the consequence that the sudden increase in demand on the part of automakers cannot be satisfied. We are reacting to the resulting supply difficulties by keeping very tight control over critical components. The anticipated commercial risk has been evaluated, taking the necessary assumptions and estimates into consideration, and presented accordingly in the consolidated financial statements.

Improved business outlook despite pandemic

The repercussions of the coronavirus pandemic will influence the Bosch Group's business prospects in 2021 as well. Our business expectations start from the assumption that there will be no repeat of the restrictions seen in the second quarter of 2020. With the aim of minimizing risks from the pandemic, a crisis management team with remain in place across the company, keeping a close track of developments and coordinating workforce protection with a raft of measures. The financial repercussions of Brexit are limited for the company as a whole, even though the organizational preparations were extensive. As early as 2018, a cross-divisional task force was set up at Bosch to coordinate preparations for Brexit. The measures taken to ensure a smooth transition included changes to the IT system in finance and accounting, analyzing and securing supply chains, and ensuring the fulfilment of customs requirements.

Given the forecast recovery of the global economy and the automotive industry, we expect Bosch Group sales to increase by some 6 percent year on year. This disregards any exchange-rate effects. Looked at by business sector, our assumption for 2021 is year-on-year growth of some 8 percent for the Mobility Solutions business sector, of approximately 6 percent for Industrial Technology, and of roughly 3 percent for both Consumer Goods and Energy and Building Technology.

On this basis, we expect the Bosch Group's EBIT margin from operations to be slightly improved year on year. However, in 2021 as well, we will once again have to absorb considerable burdens on result arising from the dictates of transformation, especially in the automotive industry, and from the concomitant adjustment measures. We will also have to make heavy upfront investments in promising areas. Nonetheless, we expect a considerably improved, and thus positive, EBIT margin (from operations) in the Mobility Solutions business sector and a slightly improved margin in Industrial Technology. In Consumer Goods, we expect an encouraging margin of roughly 8 percent (from operations). In Energy and Building Technology, we expect EBIT margin to fall slightly as a result of increased investments in new products such as SOFC and heat pumps.

Average NWC as a percentage of sales revenue, which we calculate solely on the basis of figures from internal accounting, will likely improve significantly year on year in the Bosch Group. This is due to considerable improvements in Industrial Technology and significant improvements in Mobility Solutions and Energy and Building Technology. In Consumer Goods, by contrast, we assume the ratio will increase considerably, as we expect inventories to return to normal following heavy demand in 2020.

Report on opportunities and risks

Opportunities

On the whole, we see good growth opportunities for the Bosch Group. For us as a technology company, the changes brought about by connectivity – also in combination with artificial intelligence – by automation and electrification, and by the growing significance of sustainability and the potential of emerging markets, open up additional opportunities for sales. For further explanations, the “Outlook for the Bosch Group” section describes in detail the opportunities and specific strategies we derive from them for the company as a whole and the business sectors.

Risk report

Comprehensive risk management system

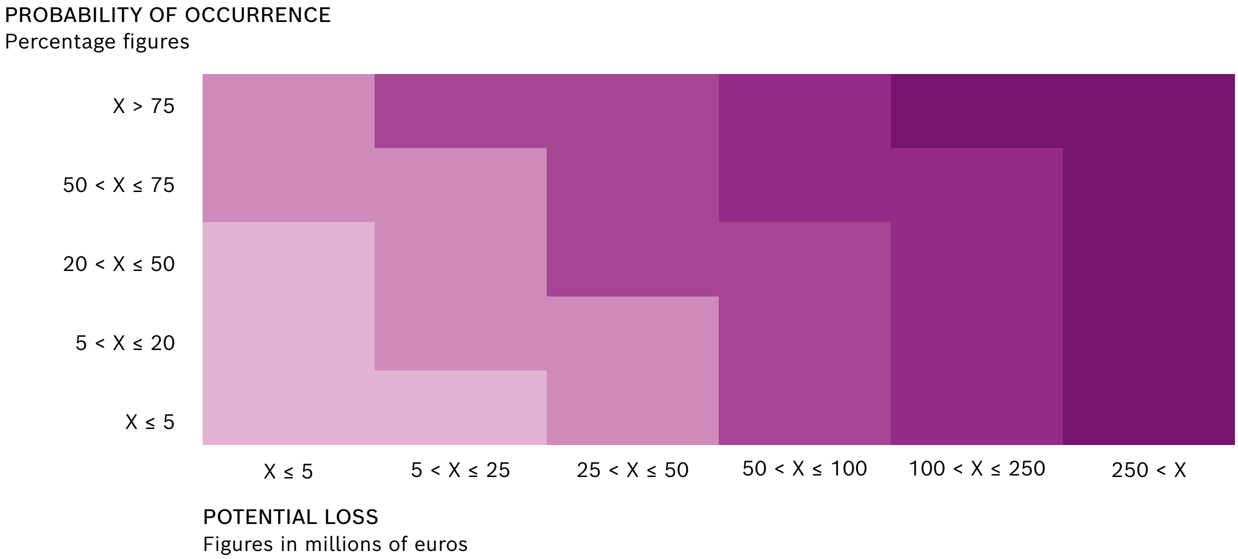
In the Bosch Group, risk management encompasses the entire company, including all essential operations, functional areas, divisions, regional organizations, and business sectors. Risk management is a core responsibility for all managers on every level of the Bosch Group. As a rule, responsibility for risk management is assumed locally on all group management levels, with certain governance tasks being organized at corporate level. This means that, as far as possible, risks are identified and managed where they arise: in other words, above all in the divisions and their regional subsidiaries. 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 the corporate office for the risk management system support, direct, and monitor the operating units’ control activities. Internal auditing, which additionally reports directly to the managing partners of Robert Bosch Industrietreuhand KG, has responsibilities including assessing the appropriateness and effectiveness of the tasks described and, if necessary, proposing that the board of management initiate remedial measures. The instruction to take any measures is issued on the basis of a resolution by the board of management meeting.

The Bosch Group risk management system takes its lead from the relevant standards: ISO 31000, COSO III (ERM), and IDW PS 340. The main risk-management principles include the systematic detection, tracking, and prevention of relevant risks, as well as structures to promote and monitor legally compliant and rule-compliant conduct. In this context, the corporate coordinating office for the risk management system is responsible for making risk management fit for the growing tasks ahead. This has included the preparation and publication of a risk management directive which is valid for the entire Bosch Group. It was introduced in 2019 and enforced to a large extent in 2020. In certain units, there were delays as a result of the coronavirus pandemic. This directive serves to ensure greater clarity regarding basic principles and responsibilities. The corporate coordinating office also began introducing a new, standardized electronic risk information system across the Bosch Group in 2019, which helps risks to be recorded and analyzed and improves transparency. Most features of this system have now been implemented. In addition, a cross-functional risk committee is tasked with identifying significant risk areas across the divisions and pinpointing potentially 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 2021. From a current perspective, there are no risk exposures that could jeopardize the Bosch Group’s continued existence as a going concern.

17 Risk matrix of potential loss



Analysis of medium-term risks

The number of medium-term (up to 2024) risks reported by the units has risen since the previous year. However, the financial risk ("monetary risk"), calculated from a risk matrix of probability of occurrence and potential loss, has fallen for the Bosch Group, also because risks with a high probability of occurrence were reevaluated or included in our business planning. Here, the potential scale of loss is based on a three-point estimate for the worst-case, realistic, and best-case scenarios, in a ratio of 1:4:1. Risk reporting uses the residual method.

Risks with a probability of occurrence of at least 50 percent are still considered in our annual or interim sales and income forecasts as a matter of principle. The assessment is based on our current planning. As particular risks for the Bosch Group (monetary risk with a potential scale of loss of more than 250 million euros and a probability of occurrence of at least over 20 and up to 50 percent), the largest single risks are attacks on its core IT processes, attacks on IT-aided business processes, and attacks on connected products. Fundamentally, therefore, the picture is no different from the previous year.

Apart from the pandemic, one further subject of concern is the potential of greater conflict in trade relations between the U.S. and China, which could have profound effects on Bosch business operations in both countries. However, the probability of occurrence in both cases is assumed to be just 10 percent. We are closely monitoring developments here, and attempt to counter them through risk-minimizing measures such as diversification of our supplier and production base.

The current global pandemic clearly reveals the dependencies that go with an international division of labor and a highly connected world, together with the risks of interrupted operations and cyberattacks. We have a comprehensive IT strategy in place to combat IT and data protection risks. This is because a systems failure caused by external attacks or internal errors can lead to considerable problems in product development, product manufacturing, and the continued operation of software-based products as well as administrative processes, resulting in significant financial losses.

In addition, 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. For the operation of our computing centers and cloud solutions, we apply an integrated security concept, which we continuously update in line with the state of the art. We verify its effectiveness with extensive security tests, among other things. For our IT infrastructure, a high level of availability is vital, especially in a global pandemic. We achieve this by providing a redundant, location-independent systems architecture.

Risks from the use of software-based products and solutions in the AIoT domain arise from connected hardware products, software, or data being misused or wrongly used. With connected AIoT products, there is a risk of external attacks. Our group-wide security engineering process works on identifying and addressing these risks, while the product design process also considers IT security aspects right from the outset. We are also addressing the issue of IT security vulnerabilities in products by upgrading the update capability of Bosch products. Our aim here is to enduringly reinforce the trust that customers and business partners place in us.

Furthermore, we are devising a group-wide data strategy that lays down uniform rules for the responsibilities and processes involved in handling data. 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 and components for automated driving. To reduce these risks, we conclude agreements with our customers on terms of use and limitations on liability.

Taken altogether, the highest overall potential for risk by business sector – in terms of the number of risks and the potential overall risk – lies in Mobility Solutions. However, the potential scale of loss is disproportionately small compared with the sector's share of total sales. We limit the risk (considerable in terms of potential loss) of the insolvency or bankruptcy of critical suppliers in the Mobility Solutions business sector by having our purchasing and logistics units extensively monitor our suppliers' commercial situation as well as through detailed, regular reporting to the chief financial officer. In the Mobility Solutions business sector, there may possibly be a potential substantial risk to operations as a result of the public debate about diesel technology. In addition, there is a risk for the combustion engine generally in light of ever tighter rules for CO_2 emissions and pollutants, most importantly nitrogen oxides. The EU Commission is currently continuing its deliberations about CO_2 and pollutant emissions standards (Euro 7). A substantiated evaluation cannot be made until the EU Commission's decisions are published. We are making efforts to counter these risks with a fact-based discussion about the potential of diesel technology and through our commitment to a technology-neutral approach to powertrain technology development, including renewable synthetic fuels. On the other hand, we are carrying out extensive adjustment measures and applying our performance management program.

There are no particular risks affecting the Industrial Technology or Energy and Building Technology business sectors, although the high level of market volatility is a significant factor. In Consumer Goods, there are risks due to changes in the markets, particularly for household appliances with respect to digitalization, and to the required location structure. The risks facing Energy and Building Technology are low overall.

In the following section, the risks relating to compliance and legal risks are considered separately. Risks arising from currency and interest-rate fluctuations and, on the procurement side, from commodity-price risks are part of the risk management system. No unusual risks are apparent as concerns these factors and the measures used to hedge them.

Compliance: In 2020, we did not register any unusual corruption-related risks within the organization. The general risks concern the handling of special payments to our customers and dealings with business partners whose risk profile is high. In the case of complex cross-border constellations, this involves the danger of violating prevailing laws. In addition, we can observe that national and international laws and draft laws are increasingly tightening the requirements made of effective compliance, data protection, and information security management systems. The general risk of liability is increasing as a result. The compliance organization was further extended in 2020, in terms of both content and staffing. In this way, we underscored our commitment to taking responsibility, obeying the law, and behaving ethically. To complement the regional compliance offices, target responsibility for the divisional compliance offices was also assigned to headquarters. In addition, the corporate compliance organization assumed responsibility for information security and data protection from the internal auditing department. The central directive governing the compliance management system (CMS) was revised. It describes the CMS and sets out the responsibilities for different areas of compliance. The compliance committee's role has been strengthened. Above all, its task is to support the implementation und further development of the CMS in the Bosch Group. In addition, we have evaluated the results of our global corruption analysis and defined risk-reducing measures. With the help of external consultants, a risk analysis in the area of money laundering was carried out, and further measures will be derived from this. An anti-corruption course has been added to our training-program portfolio. Its target group is roughly 40,000 associates outside Germany.

Legal risks: With respect to emissions from diesel vehicles, various automakers are being investigated by German and non-German authorities. Outside Germany, some authorities are also investigating Bosch in its capacity as a supplier of engine control units. To our knowledge, no new investigative proceedings were instituted against Bosch in 2020. Nor, however, were any of the proceedings still pending outside Germany brought to a close.

With respect to the events concerning various automakers' diesel vehicle emissions, Bosch remains a defendant in a number of class and individual civil-law actions around the world. In 2020, Bosch was able to reach settlements in several proceedings in the United States and Canada, including major class actions. In total, Bosch agreed to pay out less than 60 million euros. With this, Bosch neither acknowledges the validity of the claims brought forward, nor does it concede any guilt. In Germany, Bosch has won all the proceedings that have been finally closed. Last year, new lawsuits were filed, especially in the Netherlands and Israel. Although these pending and potentially impending further actions pose risks, we do not believe that these risks have grown in severity. In all these proceedings, Bosch is asserting its rights.

Bosch is also engaged in discussions with customers regarding compensation in respect of potential civil-law risks associated with antitrust proceedings that have come to an end. Investigations by the antitrust authorities in the automotive supplier sphere, also against Bosch, are still continuing in certain countries. In addition, investigations against BSH Hausgeräte in France concerning a possible breach of antitrust law are still ongoing. On the basis of the facts relating to antitrust law and engine control units that were available when the financial statements were prepared and that the board of management has assessed, 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 855 million euros. From the 2020 business 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.

Hedging policy and financial risks: The operating business of the Bosch Group is affected by fluctuations in exchange and interest rates and, on the procurement side, by commodity-price risks. The aim of business policy is to limit these risks. Internal regulations and guidelines set down a mandatory framework and define responsibilities relating to payment transactions, investments, and hedging activities. The decision-making bodies are committees for commodities, foreign currencies, and investments that meet at regular intervals. Trading, settlement, and controlling are functionally segregated from each other.

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. 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. As a matter of principle, hedges are entered into via banks whose creditworthiness is regarded as impeccable; we take the rating given by leading agencies as well as current risk assessments of the financial markets into account. 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.

As concerns commodity-price risks, derivatives are used to limit fluctuations in the prices of raw materials. As of the reporting date, the Bosch Group is not aware that it is exposed to any significant other price risks.

CONSOLIDATED FINANCIAL STATEMENTS

**of Robert Bosch GmbH
as of December 31, 2020**

MENTS

CONSOLIDATED INCOME STATEMENT

for the period from January 1 to December 31, 2020

Figures in millions of euros

	Note	2020	2019
Sales revenue	7)	**71,494**	**77,721**
Cost of sales	8)	–48,946	–53,236
Gross profit		**22,548**	**24,485**
Distribution and administrative cost	8)	–14,692	–16,262
Research and development cost	8)	–5,890	–6,079
Other operating income	9)	1,818	2,306
Other operating expenses	10)	–2,123	–1,540
Profit from entities consolidated using the equity method		–4	–7
EBIT		**1,657**	**2,903**
Financial income	11)	2,570	2,301
Financial expenses	11)	–2,722	–1,948
Profit before tax		**1,505**	**3,256**
Income taxes	12)	–756	–1,196
Profit after tax		**749**	**2,060**
of which attributable to non-controlling interests	13)	433	469
of which attributable to parent company		316	1,591

01

CONSOLIDATED STATEMENT OF COMPREHENSIVE INCOME

for the period from January 1 to December 31, 2020

Figures in millions of euros

	2020	2019
Profit after tax	**749**	**2,060**
Change in debt instruments, measured at fair value	98	187
of which reclassified to profit or loss	–14	–19
Currency translation of entities outside the euro zone	–1,548	162
of which reclassified to profit or loss		–27
Items that will be reclassified to profit or loss	**–1,450**	**349**
Change in equity instruments, measured at fair value	739	1,077
Remeasurement of pension provisions	–224	–1,003
Items that will not be reclassified to profit or loss	**515**	**74**
Other comprehensive income	**–935**	**423**
Comprehensive income	**–186**	**2,483**
of which attributable to non-controlling interests	357	483
of which attributable to parent company	–543	2,000

02

CONSOLIDATED STATEMENT OF FINANCIAL POSITION

for the year ended December 31, 2020

Assets

Figures in millions of euros

	Note	12/31/2020	12/31/2019
Current assets			
Cash and cash equivalents	15)	8,955	4,558
Trade receivables	16)	13,696	14,024
Other financial assets	17)	5,031	3,400
Contract assets	18)	865	1,003
Income tax receivables		352	329
Other assets	19)	1,961	2,087
Inventories	20)	10,538	10,983
		41,398	**36,384**
Non-current assets			
Financial assets	17)	15,273	14,859
Contract assets	18)	468	648
Income tax receivables		151	151
Property, plant, and equipment	21)	20,751	21,894
Right-of-use assets	33)	1,977	2,083
Intangible assets	22)	9,288	10,097
Investments measured at equity		0	4
Other assets	19)	733	371
Deferred taxes	12)	1,330	1,370
		49,971	**51,477**
Total assets		**91,369**	**87,861**

Equity and liabilities

Figures in millions of euros

	Note	12/31/2020	12/31/2019
Current liabilities			
Trade payables	23)	8,335	7,673
Lease liabilities	33)	491	503
Other financial liabilities	24)	1,495	1,417
Contract liabilities	25)	1,278	1,385
Income tax liabilities	12)	667	809
Other contingent liabilities	26)	6,596	5,864
Other provisions	26)	5,899	4,974
		24,761	**22,625**
Non-current liabilities			
Financial liabilities	24)	5,656	4,149
Lease liabilities	33)	1,541	1,608
Contract liabilities	25)	345	288
Other contingent liabilities	26)	163	172
Pension provisions	27)	12,811	12,648
Other provisions	26)	5,384	4,769
Deferred taxes	12)	542	523
		26,442	**24,157**
Equity	28)		
Issued capital		1,200	1,200
Capital reserve		4,557	4,557
Retained earnings		32,472	33,229
Equity attributable to parent company		**38,229**	**38,986**
Non-controlling interests		1,937	2,093
		40,166	**41,079**
Total equity and liabilities		**91,369**	**87,861**

CONSOLIDATED STATEMENT OF CHANGES IN EQUITY

Figures in millions of euros

Note 28)	Issued capital	Capital reserve	Retained earnings: Earned profit	Treasury stock	Currency translation
1/1/2019	**1,200**	**4,557**	**35,680**	**−62**	**−623**
Profit after tax			1,591		
Other comprehensive income					155
Comprehensive income			**1,591**		**155**
Dividends			−242		
Changes in ownership interests in subsidiaries			−17		
Other changes			486		
12/31/2019	**1,200**	**4,557**	**37,498**	**−62**	**−468**
Profit after tax			316		
Other comprehensive income					−1,469
Comprehensive income			**316**		**−1,469**
Dividends			−119		
Changes in ownership interests in subsidiaries			−3		
Other changes			−60		
12/31/2020	**1,200**	**4,557**	**37,632**	**−62**	**−1,937**

Other comprehensive income					
Financial instruments	Pensions	Total	Equity parent company	Equity non-controlling interests	Group equity
616	−4,170	−4,177	37,198	1,978	39,176
			1,591	469	2,060
1,258	−1,004	409	409	14	423
1,258	**−1,004**	**409**	**2,000**	**483**	**2,483**
			−242	−241	−483
			−17	−109	−126
−532	93	−439	47	−18	29
1,342	−5,081	−4,207	38,986	2,093	41,079
			316	433	749
835	−225	−859	−859	−76	−935
835	**−225**	**−859**	**−543**	**357**	**−186**
			−119	−504	−623
			−3	−5	−8
−36	4	−32	−92	−4	−96
2,141	−5,302	−5,098	38,229	1,937	40,166

04

CONSOLIDATED STATEMENT OF CASH FLOWS

Figures in millions of euros

	Note 29)	2020	2019
EBIT		1,657	2,903
Depreciation and amortization[1]		4,866	5,261
Gains/losses on disposal of non-current assets		70	–402
Result from investments measured at equity		4	7
Other expenses and income, not cash effective		–657	–347
Change in inventories		238	204
Change in receivables and other assets		47	250
Change in liabilities		1,822	–250
Change in pension provisions and other provisions		1,692	1,182
Interest paid		–204	–189
Interest and dividends received		395	496
Other financial expenses and income, cash effective		151	–154
Income taxes paid		–1,065	–1,209
Cash flows from operating activities (A)		**9,016**	**7,752**
Acquisition of subsidiaries		–2	–27
Disposal of subsidiaries		709	–105
Additions to non-current assets		–3,958	–5,862
Proceeds from disposal of non-current assets		549	1,088
Purchase of securities and other financial assets		–9,841	–7,502
Disposal of securities and other financial assets		7,713	6,102
Cash flows from investing activities (B)		**–4,830**	**–6,306**
Acquisition of non-controlling interests		–2	–111
Borrowing		2,189	28
Repayment of financial liabilities		–541	–608
Repayments of lease liabilities		–539	–497
Dividends paid		–623	–483
Cash flows from financing activities (C)		**484**	**–1,671**
Change in liquidity (A+B+C)		4,670	–225
Liquidity at the beginning of the period (January 1)		**4,558**	**4,716**
Exchange rate-related change in liquidity		–272	38
Change in liquidity due to changes in the consolidated group		–1	29
Liquidity at the end of the period (December 31)		**8,955**	**4,558**

05

1. In the reporting year, after offsetting write-ups of EUR 1 million.

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

Principles and methods

01 General explanations

Robert Bosch Gesellschaft mit beschränkter Haftung (Stuttgart Local Court, HRB 14000; referred to in the following as: Robert Bosch GmbH) is headquartered in Stuttgart, Germany. Its business address is Robert-Bosch-Platz 1, 70839 Gerlingen, Germany. The shareholders of Robert Bosch GmbH are Robert Bosch Stiftung Gesellschaft mit beschränkter Haftung, Stuttgart (93.99 percent of the shares), ERBO II GmbH, Stuttgart (4.54 percent of the shares), the Bosch family (0.82 percent of the shares), and Robert Bosch Industrietreuhand KG, Stuttgart (0.01 percent of the shares), which performs the entrepreneurial ownership functions. Robert Bosch GmbH holds treasury stock equivalent to 0.64 percent of capital. For further information on the Bosch Group's business activities, please refer to the group management report.

The consolidated financial statements of Robert Bosch GmbH as of December 31, 2020, have been prepared in accordance with the International Financial Reporting Standards (IFRS) and International Accounting Standards (IAS), as well as with the corresponding interpretations of the IFRS Interpretations Committee (IFRS IC) as adopted by the EU in accordance with Regulation (EC) No. 1606/2002 of the European Parliament and of the Council on the application of international accounting standards at the end of the reporting period. In addition, the provisions of Sec. 315e (3) HGB [Handelsgesetzbuch: German Commercial Code] have been observed. The previous-year figures have been determined using the same principles.

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, 2020, were authorized for publication by the board of management on March 11, 2021. The consolidated financial statements and group management report will be filed with the Federal Gazette [*Bundesanzeiger*] and published there.

02 Changes in financial reporting

Accounting standards applied for the first time in the fiscal year 2020

The following amendments were mandatory for the first time in the fiscal year:

- Amendments to IAS 1 *Presentation of Financial Statements* and IAS 8 *Accounting Policies, Change in Accounting Estimates and Errors* (definition of "material")
- Amendments to IFRS 3 *Business Combinations* (definition of a "business")
- Amendments to IFRS 9 *Financial Instruments*, IAS 39 *Financial Instruments: Recognition and Measurement*, and IFRS 7 *Financial Instruments: Disclosures* (Interest Rate Benchmark Reform – Phase 1).

In addition, amendments to various accounting standards with regard to references to the revised conceptual framework were mandatory for the first time in the fiscal year. Neither the amendments to the aforementioned accounting standards nor the amended references to the revised conceptual framework had a material impact on the consolidated financial statements of the Bosch Group.

Accounting standards not adopted early

In 2020, the EU endorsed the following amendments to accounting standards that were not mandatory for the fiscal year:

- Amendments to IFRS 16 *Leases* (Covid 19-related rent concessions; effective for fiscal years beginning on or after June 1, 2020)
- Amendments to IFRS 4 *Insurance Contracts* (deferral of the temporary exemption from the application of IFRS 9; effective for fiscal years beginning on or after January 1, 2021)

The Bosch Group has not adopted the aforementioned amendments.

Correction and reclassification of the previous year’s figures

Statement of financial position

From fiscal year 2020 onward, uncertain tax items will no longer be reported in income tax provisions in the statement of financial position, but will instead be combined with income tax liabilities in the line item “income tax liabilities.” This restatement is based on the IFRS IC’s agenda decision on IFRIC 23, which was published in September 2019.

In addition, from fiscal year 2020 onward, the unappropriated earnings of Robert Bosch GmbH will no longer be reported as a separate component of group equity, but under retained earnings. The breakdown of group equity is thus consistent with standard international presentation practice. The presentation in the statement of changes in equity has been restated accordingly.

Furthermore, in accordance with IAS 8.42, deferred tax assets and liabilities within group taxation systems will also be netted in the consolidated statement of financial position from fiscal year 2020 onward, as a review has determined that the requirements for offsetting are satisfied. The effect this has on the statement of financial position as of December 31, 2019, is presented in the following table. As of January 1, 2019, the amount of deferred tax assets would have been reduced by EUR 1,126 million, from EUR 2,601 million to EUR 1,475 million, and the amount of deferred tax liabilities would have been reduced by EUR 1,126 million, from EUR 1,791 million to EUR 665 million.

The previous year's figures in the statement of financial position were restated retrospectively with regard to the aforementioned items. A reconciliation of the items reported in the previous year's statement of financial position to the restated figures for the previous year is also presented in the following table:

Figures in millions of euros

	12/31/2019 before adjustment		12/31/2019 after adjustment
Assets			
Deferred taxes	2,539	–1,169	1,370
Equity and liabilities			
Current liabilities			
Income tax liabilities		809	809
Income tax liabilities	252	–252	
Income tax provisions	108	–108	
Non-current liabilities			
Income tax provisions	449	–449	
Deferred taxes	1,692	–1,169	523
Equity			
Retained earnings	33,110	119	33,229
Unappropriated earnings	119	–119	

06

Statement of cash flows

In accordance with IAS 8.42, the presentation of changes in cash and cash equivalents relating to bank balances due in more than 90 days or more than one year was restated in the amount of EUR 1,025 million. From fiscal year 2020 onward, the item is reported under cash flows from investing activities (purchase of securities and other financial assets) and not, as previously, under cash flows from operating activities (change in receivables and other assets), as the bank balances in question are deposits.

Likewise in accordance with IAS 8.42, changes in cash and cash equivalents from derivatives used to hedge foreign currency risks were reclassified from cash flows from operating activities (other financial expenses and income, cash effective) to cash flows from investing activities (disposal of securities and other financial assets), as the changes in cash and cash equivalents are to be allocated to investing activities in accordance with their hedged transactions.

Also from fiscal year 2020 onward, the structure of the statement of cash flows has been changed and adapted to the presentation customary in corporate practice. Accordingly, items previously reported separately have been combined into single line items, a new line item “other expenses and income, not cash effective” has been introduced, and changes have been made to the allocation of individual components of the statement of cash flows. The changes result in a more appropriate presentation of cash flows from operating activities and investing activities, and thus in more transparent information on the cash flows of the Bosch Group.

The previous year's figures in the statement of cash flows were restated retrospectively; the effects of the changes are shown in the following table:

Figures in millions of euros

	2019 before adjustment		2019 after adjustment
EBIT	2,903		2,903
Depreciation and amortization	5,261		5,261
Gains/losses on disposal of non-current assets	–402		–402
Result from investments measured at equity	7		7
Other expenses and income, not cash effective		–347	–347
Change in inventories	–92	296	204
Change in receivables and other assets	–711	961	250
Change in liabilities	–365	115	–250
Change in pension provisions and other provisions	1,182		1,182
Interest paid	–189		–189
Interest and dividends received	496		496
Other financial expenses and income, cash effective	–322	168	–154
Income taxes paid	–1,209		–1,209
Cash flows from operating activities (A)	**6,559**	**1,193**	**7,752**
Acquisition of subsidiaries	–27		–27
Disposal of subsidiaries	–105		–105
Additions to non-current assets	–5,862		–5,862
Proceeds from disposal of non-current assets	1,088		1,088
Purchase of securities and other financial assets	–6,477	–1,025	–7,502
Disposal of securities and other financial assets	6,270	–168	6,102
Cash flows from investing activities (B)	**–5,113**	**–1,193**	**–6,306**
Cash flows from financing activities (C)	**–1,671**		**–1,671**
Change in liquidity (A+B+C)	–225		–225
Liquidity at the beginning of the period (January 1)	**4,716**		**4,716**
Exchange rate-related change in liquidity	38		38
Change in liquidity due to changes in the consolidated group	29		29
Liquidity at the end of the period (December 31)	**4,558**		**4,558**

07

03 Currency translation

In the separate financial statements of the group companies, all monetary assets 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 =	12/31/2020	12/31/2019	2020	2019
Australia	AUD	1.59	1.60	1.65	1.61
Brazil	BRL	6.37	4.52	5.89	4.41
China	CNY	8.02	7.82	7.87	7.74
Czech Republic	CZK	26.24	25.41	26.46	25.67
Hungary	HUF	365.13	330.52	351.17	325.32
India	INR	89.66	80.19	84.64	78.84
Japan	JPY	126.49	121.94	121.85	122.01
Korea	KRW	1,336.00	1,296.28	1,345.58	1,305.32
Mexico	MXN	24.42	21.22	24.52	21.56
Poland	PLN	4.56	4.26	4.44	4.30
Russian Federation	RUB	91.47	69.96	82.72	72.46
Switzerland	CHF	1.08	1.09	1.07	1.11
Turkey	TRY	9.11	6.68	8.05	6.36
United Kingdom	GBP	0.90	0.85	0.89	0.88
United States	USD	1.23	1.12	1.14	1.12

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04 Accounting policies

From fiscal year 2020 onward, the accounting policies used in the preparation of the consolidated financial statements of the Bosch Group are presented in the notes to the individual items of the income statement and the statement of financial position. The accounting policies applicable to financial instruments are presented together in note 31 “Additional disclosures on financial instruments.”

In general, the accounting policies applied are unchanged from the previous year. Exceptions are presented in note 2 “Changes in financial reporting” in the explanations on the correction and reclassification of the previous year’s figures.

05 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. Uncertainty about these assumptions and estimates may result in actual outcomes that require a restatement to the carrying amount of assets or liabilities concerned in future periods. Assumptions and estimates 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, other intangible assets, and property, plant, and equipment for impairment are based on estimates. Assumptions are also made in the determination of the discount rates and growth rates used. Determining lease terms requires assumptions and estimates with respect to the likelihood of options to terminate or extend the lease being exercised. 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, the pension growth rate, and the discount factor. 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, reviewed regularly, and adjusted as necessary.

In fiscal year 2020, the coronavirus pandemic had a significant impact on the economic and business environment of individual divisions in the Bosch Group. The effects vary from region to region and also in relation to the different markets in which the Bosch Group operates. Despite the economic recovery in the second half of the fiscal year, the continued presence of the pandemic meant that significant uncertainties remained both as of December 31, 2020, and up to the date of authorization of the financial statements. The assumptions and estimates required in the preparation of the consolidated financial statements were reviewed as of the reporting date with regard to these uncertainties and possible effects on the net assets, financial position, and results of operations of the Bosch Group, and, where necessary, updated. An analysis was performed in particular of possible effects on expected credit losses that must be taken into account in the measurement of financial instruments in accordance with IFRS 9 and on the parameters used in testing for impairment goodwill, other intangible assets, and property, plant, and equipment.

Despite the existing uncertainties, the assumptions and estimates used in the preparation of the consolidated financial statements for accounting and measurement purposes did not have any material effects on the net assets, financial position, and results of operations of the Bosch Group.

06 Consolidation

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 in profit or loss after reassessment. Any difference resulting from the purchase of additional non-controlling interests is offset against equity.

All 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.

Consolidated group

Besides Robert Bosch GmbH, the consolidated group comprises a further 438 (previous year: 438) fully consolidated entities. The group developed as follows:

	Germany	Outside Germany	Total
Included in consolidation at January 1, 2019	**96**	**367**	**463**
Additions/formations in fiscal year 2019	8	10	18
Disposals/mergers in fiscal year 2019	–16	–26	–42
Included in consolidation at December 31, 2019	**88**	**351**	**439**
Additions/formations in fiscal year 2020	1	8	9
Disposals/mergers in fiscal year 2020	–5	–4	–9
Included in consolidation at December 31, 2020	**84**	**355**	**439**

09

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

In fiscal year 2020, the following companies were consolidated for the first time:

- ESCRYPT GmbH, Bochum, Germany,
- Bosch Soluções Logisticas e Armazém Geral Ltda., Itupeva, Brazil,
- Bosch Connected Mobility Solutions Ltd., Wuxi, China,
- Bosch Innovation and Software Development (Wuxi) Co., Ltd., Wuxi, China,
- Robert Bosch Semiconductor Manufacturing Penang Sdn. Bhd., Kuala Lumpur, Malaysia,
- Digicontrol Benelux B.V., Apeldoorn, Netherlands,
- Security and Safety Things B.V., Eindhoven, Netherlands,
- Robert Bosch Panama Colón, S.A., Colón, Panama,
- Bosch Aviation Technology LLC, Novi, MI, United States.

Due to changes to the consolidated group, sales revenue decreased by EUR 1,340 million, while total assets increased by EUR 18 million. Most of the decrease in sales revenue is attributable to the divestment of the Packaging Technology division effective December 31, 2019.

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	
	2020	**2019**	**2020**	**2019**
Current assets	1,507	1,408	1,663	1,580
Non-current assets	393	400	1,377	1,439
Current liabilities	940	568	1,208	1,074
Non-current liabilities	1	46	199	189
Sales revenue	2,058	1,897	2,955	2,834
Profit after tax	465	413	349	336
Comprehensive income	447	420	308	347
Cash flows from operating activities	726	390	581	505
Cash flows from investing activities	–48	–62	–186	–339
Cash flows from financing activities	–681	–327	–405	–148
Share of capital attributable to non-controlling interests	34,0%	34,0%	49,0%	49,0%
Profit/loss attributable to non-controlling interests	158	140	171	165
Equity attributable to non-controlling interests	326	406	800	860
Dividends paid to non-controlling interests	231	111	214	68

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Figures in millions of euros

	Bosch HUAYU Steering Systems Group, Shanghai, China		Bosch Ltd., Bengaluru, India	
	2020	**2019**	**2020**	**2019**
Current assets	1,571	1,336	956	860
Non-current assets	520	569	773	946
Current liabilities	1,354	1,204	537	454
Non-current liabilities	3	11	38	51
Sales revenue	1,582	1,707	991	1,281
Profit after tax	196	243	17	130
Comprehensive income	174	247	–109	143
Cash flows from operating activities	262	244	101	–17
Cash flows from investing activities	–33	–92	–67	304
Cash flows from financing activities	–80	–87	–39	–317
Share of capital attributable to non-controlling interests	49,0%	49,0%	29,5%	29,5%
Profit/loss attributable to non-controlling interests	96	119	5	38
Equity attributable to non-controlling interests	360	338	340	384
Dividends paid to non-controlling interests	38	42	11	14

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

Joint ventures and joint operations

The accounting for joint arrangements in accordance with IFRS 11 *Joint Arrangements* is based on whether they are classified as a joint operation or a joint venture, which in turn depends on the contractually agreed rights and obligations of the parties to the arrangement. With regard to joint operations, the Bosch Group recognizes, in relation to its interest, its rights to the assets, liabilities, expenses, and revenue in the related line items in the consolidated financial statements. Interests in joint ventures as defined by IFRS 11 are accounted for 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.

The following **joint venture** is subject to joint control as defined by IFRS 11 and was recognized in the consolidated financial statements as of December 31, 2020, using the equity method in accordance with IAS 28:

- KB Wiper Systems Co., Ltd., Daegu, Korea (50 percent).

The share of capital indicated corresponds to the share of voting rights.

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.

Condensed financial information on the individually immaterial joint venture

Figures in millions of euros

	2020	2019
Carrying amount of the investments	0	4
Group share of profit after tax	–4	–7
Group share of other comprehensive income of the period	0	5
Group share of comprehensive income	–4	–2

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The carrying amount of the interests in the above-mentioned individually immaterial joint venture corresponds to the proportionate share in this entity's equity.

Associated entities

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.

Non-current assets held for sale and discontinued operations

Assets intended 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. Discontinued operations are distinguishable, material operations that have either already been disposed of or are classified as held for sale.

In June 2018, plans were announced to sell the Industrial Technology business sector's packaging technology business in order to secure the division's long-term prospects. This decision affected the pharmaceuticals and food units of the Packaging Technology division. In July 2019, an agreement was signed to sell Syntegon Technology GmbH (formerly: Robert Bosch Packaging Technology GmbH), Waiblingen, Germany, including its subsidiaries. The transaction was closed on December 31, 2019. The sale comprised assets of EUR 1,556 million (thereof current assets of EUR 1,064 million and non-current assets of EUR 492 million) and liabilities of EUR 982 million (thereof current liabilities of EUR 764 million and non-current liabilities of EUR 218 million). The final purchase price determination in fiscal year 2020 did not result in any material change in the gain on disposal of EUR 376 million published in fiscal year 2019 and disclosed under sundry other operating income in the previous year. Of the purchase price, EUR 875 million was paid in fiscal year 2020 by transferring cash. The purchase price receivable still outstanding as of December 31, 2020, is reported under current other financial assets. In the statement of cash flows for the previous year, the effect of the transaction is included in the line item "gains/losses on disposal of non-current assets." The cash inflow in fiscal year 2020 is reported under the line item "disposal of subsidiaries"; this is counterbalanced by the settlement of payment obligations with the buyer.

There were no non-current assets held for sale or discontinued operations reportable in accordance with IFRS 5 in fiscal year 2020.

Notes to the income statement

07 Sales revenue

In accordance with IFRS 15 *Revenue from Contracts with Customers*, sales revenue is recognized 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.

Sales revenue comprises an amount of EUR 1,195 million (previous year: EUR 1,275 million) that had been included in the balance of current contract liabilities at the beginning of the fiscal year.

In relation to performance obligations not satisfied in full or in part as of the reporting date, an amount of EUR 4 million (previous year: EUR 35 million) is expected to be realized as sales revenue within the next two years and an amount of EUR 10 million (previous year: EUR 10 million) thereafter. These amounts relate to long-term construction contracts.

Sales revenue recognized over time amounts to EUR 36,493 million (previous year: EUR 41,193 million) in the Mobility Solutions business sector, EUR 14 million (previous year: EUR 79 million) in the Industrial Technology business sector, and EUR 253 million (previous year: EUR 224 million) in the Energy and Building Technology business sector.

A breakdown of sales revenue by business sector and region is provided in note 30 "Segment reporting."

08 Expenses by function

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.

The **distribution and administrative cost** breaks down as follows:

Figures in millions of euros

	2020	2019
Administrative expenses	3,718	4,358
Distribution cost	10,974	11,904
	14,692	**16,262**

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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.

Research and development cost contains both research cost and development cost that cannot be capitalized.

Figures in millions of euros

	2020	2019
Total research and development cost	6,044	6,229
Development cost capitalized in the reporting period	−197	−233
Impairment losses on capitalized development cost	43	83
	5,890	**6,079**

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Cost of materials amounted to EUR 33,146 million in the fiscal year (previous year: EUR 35,303 million).

09 Other operating income

Figures in millions of euros

	2020	2019
Income from exchange-rate fluctuations	931	785
Income from the reversal of loss allowances on trade receivables and other financial assets	58	
Income from the disposal of non-current assets	98	175
Income from rent and leases	10	12
Income from the reversal of provisions	117	229
Sundry other operating income	604	1,105
	1,818	**2,306**

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The income from exchange-rate fluctuations is offset by expenses that 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.

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 income are presented as part of profit or loss in the period in which the related expenses are incurred. They are offset against the respective expenses. If there are no such expenses, the grants are disclosed in sundry other operating income. In the fiscal year, grants related to income came to EUR 366 million (previous year 144 million). EUR 110 million thereof is attributable to the reimbursement of social security contributions in connection with wage subsidy programs in Germany in fiscal year 2020.

10 Other operating expenses

Figures in millions of euros

	2020	2019
Expenses from exchange-rate fluctuations	944	791
Loss allowances on trade receivables and other financial assets	166	65
Expenses from the disposal of non-current assets	168	150
Other taxes	37	47
Expenses from the recognition of provisions	565	199
Sundry other operating expenses	243	288
	2,123	**1,540**

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11 Financial result

Figures in millions of euros

	2020	2019
Interest and similar income	401	578
Interest and similar expenses	–355	–494
Interest result	**46**	**84**
Investment income	37	62
Income from securities	320	505
Expenses from securities	–192	–51
Income from exchange-rate fluctuations	585	661
Expenses from exchange-rate fluctuations	–1,293	–604
Income from derivatives	1,224	490
Expenses from derivatives	–809	–754
Other income	3	5
Other expenses	–73	–45
Other financial result	**–198**	**269**
Financial result, total	**–152**	**353**
of which financial income	2,570	2,301
of which financial expenses	–2,722	–1,948

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The line item “interest and similar income” contains dividend income from shares of EUR 55 million (previous year: EUR 82 million) and income from investment funds of EUR 17 million (previous year: EUR 23 million).

Investment income comprises dividend income 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 from derivatives” and “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

	2020		2019	
	Interest income	Interest expenses	Interest income	Interest expenses
Financial assets measured at amortized cost (AC)	83		135	
Financial assets measured at fair value through other comprehensive income (FVOCI wR)	152		180	
Financial liabilities measured at amortized cost (AC)		124		133
	235	**124**	**315**	**133**

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12 Income taxes

Income tax liabilities comprise liabilities from income taxes and uncertain income tax liabilities.

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 are recognized for unused tax losses and unused tax credits to the extent that it is sufficiently probable that they can be utilized. 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. If it is uncertain whether recognized deferred taxes can be realized, they are adjusted accordingly.

Income taxes are classified according to their origin as follows:

Figures in millions of euros

	2020	2019
Current taxes	890	1,220
Deferred taxes	–134	–24
	756	**1,196**

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Deferred taxes break down as follows:

Figures in millions of euros

	2020	2019
Temporary differences	–240	–57
Tax losses and tax credits	106	33
	–134	**–24**

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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 unchanged from the previous year, at 29 percent. As in the previous year, the tax rates outside Germany range between 9 percent and 34 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

	2020		2019	
	Assets	**Liabilities**	**Assets**	**Liabilities**
Receivables, other assets, and inventories	713	473	593	521
Securities, investments	8	324	5	314
Property, plant, and equipment	189	608	191	786
Right-of-use assets	0	428	0	458
Intangible assets	191	1,114	305	1,127
Other assets	85	0	84	0
Liabilities	987	116	1,083	90
Lease liabilities	413	0	462	0
Provisions	1,308	44	1,236	45
Other liabilities	4	216	15	106
Unused tax losses and tax credits	213		320	
Total	**4,111**	**3,323**	**4,294**	**3,447**
Netting	–2,781	–2,781	–2,924	–2,924
	1,330	**542**	**1,370**	**523**

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No deferred tax assets were recognized in the statement of financial position for the items presented in the table below as it is not probable that sufficient taxable profit will be available in the future:

Figures in millions of euros

	2020	2019
Temporary differences	6,809	5,382
Tax losses	6,990	6,605
Tax credits	21	27
	13,820	**12,014**

22

In the disclosures on unrecognized deferred tax assets, a distinction was previously made between those for which the recognition criteria were not satisfied from the outset and those that were initially recognized and subsequently impaired. With a view to a uniform and thus more appropriate presentation, it was decided in the fiscal year to no longer make this distinction. The previous year's figures have been restated accordingly.

The utilization of tax losses and tax credits for which no deferred tax assets have been recognized to date resulted in a reduction of the current tax expense in the fiscal year of EUR 26 million (previous year EUR 22 million).

The unused tax losses for which no deferred taxes were recognized expire as follows:

Figures in millions of euros

	2020	2019
Due not later than one year	45	94
Due later than one year and not later than two years	46	41
Due later than two years and not later than three years	47	63
Due later than three years	422	537
Without expiry date	6,430	5,870
	6,990	**6,605**

23

In the fiscal year, deferred tax liabilities were recognized for the first time on temporary differences in connection with investments in subsidiaries where the temporary differences are expected to reverse in the following year due to planned dividend distributions (EUR 101 million; thereof EUR 77 million recognized directly in equity). No further deferred tax liabilities were recognized on temporary differences in this connection, as it is not probable that the temporary differences will reverse in the foreseeable future. As of the reporting date, retained profits of subsidiaries amount to EUR 11,755 million (previous year: EUR 18,821 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.

Deferred taxes recognized directly in equity in the fiscal year are presented in the following table:

Figures in millions of euros

	2020	2019
Reserve from financial instruments	–70	–109
Reserve from pensions	32	76
	–38	**–33**

24

A deferred tax expense of EUR 5 million (previous year: EUR 5 million) is attributable to the change in debt instruments measured at fair value through other comprehensive income, which was reclassified to profit or loss in the fiscal year.

In the fiscal year, changed tax rates in the Bosch Group resulted in deferred tax income of EUR 13 million (previous year: deferred tax expense of EUR 12 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

	2020	2019
Profit before tax	1,505	3,256
Expected income tax expense	436	944
Variances due to tax rate	–173	–160
Non-deductible expenses	237	115
Zero-rated income	–165	–304
Other differences	421	601
Income tax expense disclosed	**756**	**1,196**
Effective tax rate	50%	37%

25

The “other differences” item mainly includes effects resulting from the measurement of deferred tax assets, effects not related to the reporting year, and effects from withholding taxes.

13 Non-controlling interests

Profits attributable to non-controlling interests amount to EUR 437 million (previous year: EUR 473 million). They are counterbalanced by losses of EUR 4 million (previous year: EUR 4 million).

14 Personnel expenses and headcount

Disclosures on personnel expenses

Personnel expenses break down as follows:

Figures in millions of euros

	2020	2019
Remuneration	18,581	19,778
Social security costs	2,981	3,222
Post-employment benefit costs	921	824
	22,483	**23,824**

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Headcount

	Annual average 2020	Annual average 2019
EU countries	216,953	222,821
Rest of Europe	25,625	24,906
Americas	44,046	45,309
Asia, Africa, Australia	108,405	114,502
	395,029	**407,538**

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Notes to the statement of financial position

15 Cash and cash equivalents

Figures in millions of euros

	2020	2019
Bank balances (term up to 90 days)	8,955	4,545
Cash and reserve bank deposits	0	13
	8,955	**4,558**

28

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 700 million (previous year: EUR 400 million). The bank provided collateral of the same amount in the form of securities.

16 Trade receivables

The accounting policies applicable to trade receivables are explained in note 31 “Additional disclosures on financial instruments.”

In the fiscal year, trade receivables came to EUR 13,696 million (previous year: EUR 14,024 million). Of that amount, EUR 0 million (previous year: EUR 1 million) has a term of more than one year.

Information about loss allowances on trade receivables is contained in the credit risk section of note 32 “Capital and risk management.”

17 Other current and non-current financial assets

Figures in millions of euros

	2020		2019	
	up to 1 year	more than 1 year	up to 1 year	more than 1 year
Securities	2,575	12,357	981	12,266
Investments		2,524		1,884
Bank balances (term of more than 90 days)	1,804	5	858	304
Loan receivables	88	28	268	32
Derivatives	131	63	86	23
Receivables from finance leases	38	159	36	159
Sundry other financial assets	395	137	1,171	191
	5,031	**15,273**	**3,400**	**14,859**

29

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.

Non-current securities consist of interest-bearing and other securities, investment funds, and shares. In the fiscal year, shares and investments in corporations with a fair value of EUR 1,205 million (previous year: EUR 1,337 million) were sold and the cumulative gains on sale of EUR 36 million (previous year: EUR 532 million) were reclassified from the reserve from financial instruments to retained earnings. The sales of investments in corporations are based on business-policy decisions.

The pledged securities have a carrying amount of EUR 1,435 million (previous year: EUR 1,351 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.

Disclosures on loss allowances on loan receivables, sundry other financial assets, and finance lease receivables are contained in the credit risk section of note 32 “Capital and risk management.”

Note 33 “Leases” contains additional disclosures on receivables from finance leases.

18 Contract assets

In accordance with IFRS 15, any performance surpluses at contract level are presented as contract assets. The asset constitutes the Bosch Group's right to consideration in exchange for goods or services it has transferred to the customer.

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. At the point in time when control is transferred to the customer, contract assets from development work are presented for all separate consideration to be subsequently reimbursed by the customer for separately commissioned research and development work. In the previous year, contract assets also contained the incremental costs of obtaining contracts. These comprised costs for obtaining a contract that the Bosch Group expected to recover. From fiscal year 2020 onward, incremental costs of obtaining a contract will be recognized as an asset under other assets, consistent with general corporate practice.

Figures in millions of euros

	2020		2019	
	up to 1 year	more than 1 year	up to 1 year	more than 1 year
From revenue recognition over time	505	1	630	3
From incremental costs of obtaining the contract			71	302
From development work	360	467	302	343
	865	**468**	**1,003**	**648**

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19 Other current and non-current assets

Figures in millions of euros

	2020		2019	
	up to 1 year	more than 1 year	up to 1 year	more than 1 year
Prepaid expenses	186	59	229	30
Receivables from tax authorities (without income tax receivables)	1,318	131	1,477	180
Incremental costs of obtaining the contract	115	372		
Sundry other assets	342	171	381	161
	1,961	**733**	**2,087**	**371**

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Assets recognized for the incremental costs of obtaining a contract are amortized on a straight-line basis over the term of the contract.

20 Inventories

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.

Inventories break down as follows:

Figures in millions of euros

	2020	2019
Raw materials, consumables, and supplies	3,559	3,729
Work in process	2,331	2,472
Finished goods and merchandise	4,598	4,735
Prepayments	50	47
	10,538	**10,983**

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Of the total amount of inventories, an amount of EUR 1,374 million (previous year: EUR 736 million) is carried at net realizable value. In the fiscal year, the change in impairment losses of EUR 336 million was recognized as income in profit or loss (previous year: expense of EUR 192 million). No inventories were pledged as collateral.

21 Property, plant, and equipment

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 23 *Borrowing Costs*, borrowing costs are capitalized if they are directly attributable to the acquisition, construction, or production of a qualifying asset. All other borrowing costs are expensed in the period in which they are incurred. Write-downs on capitalized borrowing costs are reported in the cost of sales. In the fiscal year, borrowing costs of EUR 9 million (previous year: EUR 8 million) were capitalized. The underlying borrowing rate is 1.5 percent (previous year: 2.0 percent).

Government grants are recognized pursuant to IAS 20 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.

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 1/1/2019	**11,057**	**92**	**26,171**	**11,658**	**2,970**	**51,948**
Changes in consolidated group	116		25	–37	–1	103
Additions	359		1,129	893	2,608	4,989
Reclassifications	252	1	1,382	584	–2,219	
Disposals	–112	–59	–1,150	–732	–60	–2,113
Exchange-rate differences	80		45	39	9	173
Gross values 12/31/2019	**11,752**	**34**	**27,602**	**12,405**	**3,307**	**55,100**
Depreciation 1/1/2019	**4,748**	**38**	**18,016**	**8,668**	**12**	**31,482**
Changes in consolidated group	–110		–2	–41		–153
Additions	345	1	1,865	1,203	7	3,421
Reclassifications			–92	74	18	
Disposals	–44	–30	–904	–663	–6	–1,647
Exchange-rate differences	33		39	31		103
Depreciation 12/31/2019	**4,972**	**9**	**18,922**	**9,272**	**31**	**33,206**
Carrying amounts 12/31/2019	**6,780**	**25**	**8,680**	**3,133**	**3,276**	**21,894**
Gross values 1/1/2020	**11,752**	**34**	**27,602**	**12,405**	**3,307**	**55,100**
Changes in consolidated group	11		–10	3	11	15
Additions	140		675	733	1,764	3,312
Reclassifications	445	1	1,334	469	–2,249	
Disposals	–193	–3	–1,236	–777	–125	–2,334
Exchange-rate differences	–369	–2	–1,009	–333	–117	–1,830
Gross values 12/31/2020	**11,786**	**30**	**27,356**	**12,500**	**2,591**	**54,263**
Depreciation 1/1/2020	**4,972**	**9**	**18,922**	**9,272**	**31**	**33,206**
Changes in consolidated group	1		–10		11	2
Additions	319		1,803	1,160		3,282
Reclassifications	–19	1	32	–13	–1	
Disposals	–117		–1,097	–729	–10	–1,953
Write-ups			–1			–1
Exchange-rate differences	–130	–1	–658	–236	1	–1,024
Depreciation 12/31/2020	**5,026**	**9**	**18,991**	**9,454**	**32**	**33,512**
Carrying amounts 12/31/2020	**6,760**	**21**	**8,365**	**3,046**	**2,559**	**20,751**

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

- Land and buildings: EUR 4 million (previous year: EUR 16 million)
- Plant and equipment: EUR 38 million (previous year: EUR 76 million)
- Other equipment, fixtures, and furniture, assets under construction: EUR 14 million (previous year: EUR 14 million).

The corresponding expenses are recognized by function.

The impairment losses of the fiscal year 2020 contain an amount of EUR 18 million attributable to plant and equipment as well as other equipment, fixtures, and furniture of the Automotive Electronics division (Mobility Solutions business sector). The impairment losses were recognized because the market development fell short of expectations and high competitive pressure meant that new contractual arrangements had to be agreed with the customers.

EUR 30 million concerns plant and equipment, other equipment, fixtures, and furniture, and assets under construction 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 obligations entered into to purchase items of property, plant, and equipment amounted to EUR 524 million (previous year: EUR 542 million); there were no restrictions on title, either in the fiscal year or in the previous year. Government grants for assets of EUR 84 million (previous year: EUR 164 million) were deducted from the additions in the reporting year.

Investment property comprises rented land and buildings which were measured at amortized cost in accordance with IAS 40 *Investment Property*. Measured at fair value, the portfolio comes to EUR 22 million (previous year: EUR 30 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 *Fair Value Measurement* 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 4 million (previous year: EUR 8 million), maintenance expenses totaled EUR 2 million (previous year: EUR 3 million).

22 Intangible assets

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.

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.

Figures in millions of euros

	Acquired intangible assets (without goodwill)	Acquired goodwill	Internally generated intangible assets	Total
Gross values 1/1/2019	**9,160**	**5,666**	**1,919**	**16,745**
Changes in consolidated group	–91	–111	–37	–239
Additions	372		281	653
Disposals	–145	–14	–272	–431
Exchange-rate differences	39	17	1	57
Gross values 12/31/2019	**9,335**	**5,558**	**1,892**	**16,785**
Amortization 1/1/2019	**4,181**	**724**	**961**	**5,866**
Changes in consolidated group	–61	–8	–13	–82
Additions	775		518	1,293
Disposals	–122	–13	–272	–407
Exchange-rate differences	17		1	18
Amortization 12/31/2019	**4,790**	**703**	**1,195**	**6,688**
Carrying amounts 12/31/2019	**4,545**	**4,855**	**697**	**10,097**
Gross values 1/1/2020	**9,335**	**5,558**	**1,892**	**16,785**
Additions	185		242	427
Disposals	–487	–2	–287	–776
Exchange-rate differences	–152	–67		–219
Gross values 12/31/2020	**8,881**	**5,489**	**1,847**	**16,217**
Amortization 1/1/2020	**4,790**	**703**	**1,195**	**6,688**
Additions	695		317	1,012
Disposals	–379	–2	–303	–684
Exchange-rate differences	–84	–3		–87
Amortization 12/31/2020	**5,022**	**698**	**1,209**	**6,929**
Carrying amounts 12/31/2020	**3,859**	**4,791**	**638**	**9,288**

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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. In accordance with the requirements of IAS 36, an impairment loss is recorded when the recoverable amount is below the carrying amount of the net assets of a cash-generating unit (including the goodwill allocated to it). 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	
	2020	2019	2020	2019	2020	2019	2020	2019
Growth rate	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Pre-tax discount rate	11.4	9.1	11.3	9.7	9.4	7.5	9.8	8.8

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A risk-free interest rate of 0.0 percent (previous year: 0.1 percent) and a market-risk premium of 7.0 percent (previous year: 6.5 percent) are assumed. The standard tax rate used is 29 percent (previous year: 29 percent).

As of the reporting date, the recoverable amount of each cash-generating unit corresponds with its value in use. Annual impairment testing of goodwill did not give rise to any impairment losses in the fiscal year. The sensitivity analysis of the cash generating units to which the goodwill is allocated considers the following assumed changes: an increase in the pre-tax discount rate of 0.5 percentage points, a reduction in the growth rate of 0.5 percentage points, and a reduction in EBIT of 5 percent. None of the aforementioned changes would have required the recognition of an impairment loss on goodwill.

The goodwill of EUR 4,791 million (previous year: EUR 4,855 million) is attributable to the divisions (cash-generating units) as follows:

Figures in millions of euros

Division	Reportable segment	2020	2019
Powertrain Solutions	Mobility Solutions	376	359
Automotive Aftermarket	Mobility Solutions	323	380
Automotive Steering	Mobility Solutions	108	108
Drive and Control Technology	Industrial Technology	1,551	1,525
Power Tools	Consumer Goods	377	387
BSH Hausgeräte GmbH	Consumer Goods	548	548
Building Technologies	Energy and Building Technology	447	472
Thermotechnology	Energy and Building Technology	996	1,001
Others		65	75
		4,791	**4,855**

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

- Acquired intangible assets (without goodwill): 5 EUR million (previous year: EUR 2 million)
- Internally generated intangible assets: 43 EUR million (previous year: EUR 83 million).

The impairment losses recognized on internally generated intangible assets relate to capitalized development projects and are attributable to the Mobility Solutions business sector. They are recognized in research and development costs. They were charged because an economic benefit was no longer expected.

23 Trade payables

Figures in millions of euros

	2020	2019
Trade payables	8,331	7,671
Notes payable	4	2
	8,335	**7,673**

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For a share of the trade payables, the Bosch Group has concluded reverse factoring agreements amounting to EUR 469 million. Under these programs, suppliers can assign their receivables from Bosch Group companies to the commercial bank offering the program in return for a discount and thus receive the discounted invoice amount early. The companies of the Bosch Group settle the invoice amount with the bank on the originally agreed due date. Due to the connection with the operating business, the corresponding liabilities are not reclassified to financial liabilities.

In the fiscal year, trade payables totaling EUR 2 million were due in more than one year (previous year: EUR 0 million).

Further disclosures on trade payables are contained in the liquidity risk section of note 32 “Capital and risk management.”

24 Other current and non-current financial liabilities

Figures in millions of euros

	2020		2019	
	up to 1 year	more than 1 year	up to 1 year	more than 1 year
Bonds	500	2,006	499	2,505
Promissory loans, registered notes		3,495		1,498
Liabilities to banks	262	9	143	3
Loans	67	33	73	31
Derivatives	41	6	58	8
Sundry other financial liabilities	625	107	644	104
	1,495	**5,656**	**1,417**	**4,149**

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Further disclosures on other financial liabilities are contained in the liquidity risk section of note 32 “Capital and risk management.”

25 Contract liabilities

In accordance with IFRS 15, performance obligations vis-à-vis customers at contract level are presented as contract liabilities. These constitute the Bosch Group’s obligation to transfer to the customer goods and services for which the customer has already paid consideration.

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 mainly comprise advance payments received from contracts falling within the scope of IFRS 15, other advance payments received, and obligations from services invoiced but not yet rendered.

Figures in millions of euros

	2020		2019	
	up to 1 year	more than 1 year	up to 1 year	more than 1 year
From revenue recognition over time	26	0	25	1
From services not yet rendered	1,252	345	1,360	287
	1,278	**345**	**1,385**	**288**

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26 Other liabilities, other provisions, and contingent liabilities

Other liabilities

Figures in millions of euros

	2020		2019	
	up to 1 year	more than 1 year	up to 1 year	more than 1 year
Accruals in the personnel area	2,311		2,076	
Accruals in the sales and marketing area	1,877		1,432	
Other accruals	907		982	
Tax liabilities (without income taxes)	836		734	
Deferred income	320	107	283	104
Sundry other liabilities	345	56	357	68
	6,596	**163**	**5,864**	**172**

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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.

Other provisions

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 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, if the effect is material. They are discounted at the capital market interest rate that reflects the risks specific to the liability.

A breakdown of other provisions is presented in the following table:

Figures in millions of euros

	2020		2019	
	up to 1 year	more than 1 year	up to 1 year	more than 1 year
Tax provisions (without income taxes)	28	13	54	17
Provisions in the personnel area	1,406	2,974	1,065	2,435
Provisions in the sales and marketing area	2,242	1,422	2,070	1,182
Sundry other provisions	2,223	975	1,785	1,135
	5,899	**5,384**	**4,974**	**4,769**

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Provisions in the personnel area relate to obligations from personnel adjustment measures, long-service bonuses, 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, and legal risks.

Other provisions developed as follows:

Figures in millions of euros

	1/1/2020	Amounts used	Amounts reversed	Amounts added	Currency	12/31/2020
Tax provisions (without income taxes)	71	–24	–10	11	–7	41
Provisions in the personnel area	3,500	–726	–124	1,778	–48	4,380
Provisions in the sales and marketing area	3,252	–1,244	–443	2,198	–99	3,664
Sundry other provisions	2,920	–484	–246	1,086	–78	3,198
	9,743	**–2,478**	**–823**	**5,073**	**–232**	**11,283**

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Of the increase in provisions, an amount of EUR 20 million (previous year: EUR 35 million) relates to the reversal of discount.

With respect to emissions from diesel vehicles, various automakers are being investigated by German and non-German authorities. Outside Germany, some authorities are also investigating Bosch in its capacity as a supplier of engine control units. To our knowledge, no new investigative proceedings were instituted against Bosch in 2020. Nor, however, were any of the proceedings still pending outside Germany brought to a close.

With respect to the events concerning various automakers' diesel vehicle emissions, Bosch remains a defendant in a number of class and individual civil-law actions around the world. In 2020, Bosch was able to reach settlements in several proceedings in the United States and Canada, including major class actions. In total, Bosch agreed to pay out less than 60 million euros. With this, Bosch neither acknowledges the validity of the claims brought forward, nor does it concede any guilt. In Germany, Bosch has won all the proceedings that have been finally closed. Last year, new lawsuits were filed, especially in the Netherlands and Israel. Although these pending and potentially impending further actions pose risks, we do not believe that these risks have grown in severity. In all these proceedings, Bosch is asserting its rights.

Bosch is also engaged in discussions with customers regarding compensation in respect of potential civil-law risks associated with antitrust proceedings that have come to an end. Investigations by the antitrust authorities in the automotive supplier sphere, also against Bosch, are still continuing in certain countries. In addition, investigations against BSH Hausgeräte in France concerning a possible breach of antitrust law are still ongoing.

On the basis of the facts relating to antitrust law and engine control units that were available when the financial statements were prepared and that the board of management has assessed, 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 EUR 855 million (previous year: EUR 881 million).

In the automotive segment, demand for semiconductors picked up considerably again in the second half of the fiscal year after a downturn in the second quarter. This increased demand from the automotive industry and the high demand for semiconductors from the consumer electronics, IT, and communications sectors caused bottlenecks in the global supply of semiconductors, which were exacerbated by some semiconductor manufacturers having to close factories due to the coronavirus pandemic. The expected commercial risk from the global supply bottlenecks in the semiconductor industry was assessed taking into account the necessary assumptions and estimates and was reflected in the consolidated financial statements. With reference to IAS 37.92, no further disclosures are made in order to protect the interests of the Bosch Group.

Contingent liabilities

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

	2020	2019
Contingent liabilities related to notes issued and transferred	9	12
Contingent liabilities from guarantees	13	32
Other contingent liabilities	16	18
	38	**62**

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27 Pension provisions and similar obligations

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.

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 contributions to state or private pension or insurance funds, either voluntarily or based on legal or contractual provisions. The payment of these contributions does not give rise to any further payment obligations for the company. The defined benefit plans are funded or unfunded pension systems, or systems financed by insurance premiums.

Plan assets are invested based on the underlying defined benefits granted. 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 contribution-based 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, Bosch Pensionsfonds AG. The value of the assets of the external pension fund is offset against the pension obligation calculated using the projected unit credit method.

During the vesting period, employer and employee contributions are added to the assets of Bosch Pensionsfonds AG up to the tax-allowed ceiling in accordance with Sec. 3 No. 63 EStG [Einkommensteuergesetz: German Income Tax Act]. Contributions that exceed the tax-allowed ceiling are allocated to the unfunded obligation. The amount of the total entitlement, irrespective of whether contributions are paid to Bosch Pensionsfonds AG or allocated to the unfunded obligation, develops in line with the performance of the Bosch Pensionsfonds. Entitlements to retirement benefits from commitments predating the introduction of the Bosch bAV Plan 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 is not tied to years of service, these additional benefits are accounted for only when the event triggering payment of the benefits occurs.

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, in several installments, or as a lifelong annuity, depending on the beneficiary’s choice. For benefits triggered from January 1, 2016 onward, a fund-based retirement pension payment is made through Bosch Pensionsfonds. Owing to the low likelihood of claims being made against Bosch, the plan is treated as a defined contribution plan from the start of the pension.

The calculation of the pension obligation was previously based on the prudent assumption that the beneficiaries would choose forms of payment that would result in the highest carrying amount of the obligation. By taking into account the statistically observable and established decision behavior by beneficiaries it was possible to reduce the scope of obligations in 2020 as well as corresponding actuarial gains arising from changes in demographic assumptions.

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 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.

Likewise closed for new members, unfunded pension plans 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 unfunded plans for post-employment medical care. Several 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	
	2020	2019	2020	2019	2020	2019	2020	2019	2020	2019	2020	2019
Discount factor	0.5	1.0	0.4	0.3	0.1	0.2	1.4	2.0	2.4	3.2	0.8	1.3
Projected salaries	3.0	3.0	2.3	2.3	1.6	1.5	2.7	2.7	3.5	3.5	3.0	3.0
Projected pensions	1.5	1.5	n.a.	n.a.	0.0	0.0	2.7	2.9	n.a.	n.a.	1.4	1.4

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n.a. not applicable

To determine the discount factor in the euro zone, reference was made to corporate bonds rated AA by at least one of the leading rating agencies as of the reporting date.

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

The pension trend for inflation-linked pension payments is based on the development of country-specific, recognized indices.

The pension plans are measured using the current mortality tables as of December 31 of the fiscal year concerned. As of December 31, 2020, the following mortality tables are used:

Germany	Heubeck 2018G mortality tables
Japan	2020 MHLW Standard Table
Switzerland	BVG 2015 with CMI_2016 improvement factors, long-term improvement of 1.5 percent
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	Pri-2012, projected by MP2020; aggregate for some plans, collar adjustments for others

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As of December 31, 2019, the following mortality tables were used in the key countries:

Germany	Heubeck 2018G mortality tables
Japan	2015 MHLW Standard Table
Switzerland	BVG 2015 generation tables for pensioners, BVG 2015 P24 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	Pri-2012, projected by MP2019; 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
12/31/2020					
Germany	16,544	–4,389			12,155
Japan	229	–295	11	87	32
Switzerland	917	–940	32		9
United Kingdom	388	–364	6		30
United States	1,829	–1,682	21		168
Other	655	–246	8		417
	20,562	**–7,916**	**78**	**87**	**12,811**
12/31/2019					
Germany	16,006	–4,024			11,982
Japan	250	–298	11	70	33
Switzerland	908	–914	12		6
United Kingdom	383	–354	9		38
United States	1,881	–1,719	9		171
Other	642	–226	2		418
	20,070	**–7,535**	**43**	**70**	**12,648**

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

Figures in millions of euros

	Present value of the obligation	Plan assets	Other assets	Unrecognized asset	Provision
1/1/2020	**20,070**	**–7,535**	**43**	**70**	**12,648**
Pension cost charged to profit or loss					
Current service cost	592				592
Past service cost	–3				–3
Gains/losses from plan settlements not related to past service cost	–4				–4
Net interest income/expense	247	–111			136
Others		4			4
	832	**–107**	**0**	**0**	**725**
Remeasurement					
Return on plan assets (excluding amounts included in net interest)		–371			–371
Gains/losses arising from changes in demographic assumptions	–584				–584
Gains/losses arising from changes in financial assumptions	1,078				1,078
Experience gains/losses	166				166
Other adjustments				20	20
	660	**–371**	**0**	**20**	**309**
Contributions					
Employer		–379			–379
Beneficiaries	14	–14			0
	14	**–393**	**0**	**0**	**–379**
Benefits paid[1]	–774	298			–476
Special effects (plan settlement)	–1				–1
Transfers					0
Currency translation	–244	194		–3	–53
Changes in consolidated group	5	–2			3
Changes in other assets			35		35
12 /31/2020	**20,562**	**–7,916**	**78**	**87**	**12,811**

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1. Including EUR 70 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
1/1/2019	**18,268**	**–6,949**	**45**	**51**	**11,415**
Pension cost charged to profit or loss					
Current service cost	624				624
Past service cost	1				1
Gains/losses from plan settlements not related to past service cost	–30				–30
Net interest income/expense	363	–154			209
Others		5			5
	958	**–149**	**0**	**0**	**809**
Remeasurement					
Return on plan assets (excluding amounts included in net interest)		–925			–925
Gains/losses arising from changes in demographic assumptions	48				48
Gains/losses arising from changes in financial assumptions	1,513				1,513
Experience gains/losses	424				424
Other adjustments		0		16	16
	1,985	**–925**	**0**	**16**	**1,076**
Contributions					
Employer		–419			–419
Beneficiaries	19	–19			0
	19	**–438**	**0**	**0**	**–419**
Benefits paid[1]	–776	669			–107
Special effects (plan settlement)	0	0			0
Transfers	23	–23			0
Currency translation	90	–89		3	4
Changes in consolidated group	–497	369			–128
Changes in other assets			–2		–2
12/31/2019	**20,070**	**–7,535**	**43**	**70**	**12,648**

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1. Including EUR 51 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.	
	2020	2019	2020	2019	2020	2019	2020	2019	2020	2019
Cash and cash equivalents	2	1	1	1	2	1			1	1
Equity instruments	46	40	30	29	30	30	36	37	34	40
of which Europe	55	56	10	12	42	43	40	41	16	16
of which North America	22	20	35	39	35	34	37	35	69	69
of which Asia Pacific	14	13	55	49	6	7	20	20	6	7
of which emerging markets	8	9			14	13	3	4	9	7
of which other	1	2			3	3				1
Debt instruments	48	48	65	66	31	32	60	59	65	59
of which government bonds	41	40	82	83	15	19	43	50	30	18
of which corporate bonds	57	57	13	11	60	60	57	50	70	81
of which other debt instruments	2	3	5	6	25	21				1
Property	2	2			34	34				
of which owner-occupied	89	78								
of which non-owner-occupied	11	22			100	100				
Insurance	2	2	4	4			4	4		
Other		7			3	3				

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Quoted prices in an active market are available for cash as well as equity and debt instruments. For the other classes of assets, there are in most cases no quoted prices in an active market. The “other” line item mainly contains investments in infrastructure.

Duration and estimated maturities of the pension obligation

The weighted duration of the pension obligation as of December 31, 2020, is 14.1 years (previous year: 14.8 years).

Estimated maturities of the undiscounted estimated pension payments

Figures in millions of euros

	2020	2019
Less than one year	849	807
Between one and two years	876	776
Between two and three years	957	818
	2,682	**2,401**

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The estimated additions to plan assets in fiscal year 2021 amount to EUR 449 million (previous year: EUR 444 million).

The estimated benefits to be paid directly in fiscal year 2021 amount to EUR 545 million (previous year: EUR 503 million).

Sensitivity of the defined benefit obligations in relation to actuarial parameters

Percentage figures

	Germany		Japan		Switzerland		U.K.		U.S.	
	2020	2019	2020	2019	2020	2019	2020	2019	2020	2019
Discount factor										
Increase of 0.5 percentage points	−5.0	−5.0	−4.4	−4.1	−6.1	−5.8	−8.7	−8.1	−6.1	−6.0
Decrease of 0.5 percentage points	5.7	5.6	4.7	4.5	7.3	7.1	9.5	9.4	6.8	6.7
Projected salaries										
Increase of 0.25 percentage points	n.a.	n.a.	0.8	0.8	0.2	0.2	0.4	0.4	0.0	0.0
Decrease of 0.25 percentage points	n.a.	n.a.	−0.8	−0.8	−0.2	−0.2	−0.4	−0.4	0.0	0.0
Projected pensions										
Increase of 0.25 percentage points	0.6	0.6	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	−1.7	−1.7	n.a.	n.a.
Life expectancy										
Increase by one year	2.2	2.2	n.a.	n.a.	3.0	3.0	3.6	3.6	2.6	2.6

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n.a. not applicable

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

Defined contribution plans mainly include employee contributions to statutory pension schemes and company contributions for defined contribution plans of the company. Expenses for defined contribution plans amounted to EUR 1,301 million (previous year: EUR 1,449 million).

Provision for long-service bonuses

Expenses for additions to the provision for long-service bonuses amounted to EUR 73 million (previous year: EUR 88 million).

28 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	93.99	
Robert Bosch Industrietreuhand KG	0.01	93.17
ERBO II GmbH	4.54	
Bosch family	0.82	6.83
Robert Bosch GmbH (treasury stock)	0.64	

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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 accumulated other comprehensive income. Of the revaluations recognized directly in equity included in the “financial instruments” line item in the fiscal year, EUR 737 million (previous year: EUR 1,071 million) relates to equity instruments and EUR 98 million (previous year: EUR 187 million) to debt instruments.

Retained earnings also include treasury stock of EUR 62 million (previous year: EUR 62 million).

The board of management proposes that a dividend of EUR 67 million be distributed.

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

29 Statement of cash flows

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

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

Investing activities mainly comprise additions to non-current assets, including leased assets, the acquisition and disposal of subsidiaries and other operating units, and the purchase and disposal of securities and other financial assets.

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

Changes in items 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 line item “interest and dividends received” contains interest received of EUR 355 million (previous year: EUR 436 million) and dividends received of EUR 40 million (previous year: EUR 60 million).

The liquidity reported in the statement of cash flows includes cash of EUR 8,955 million (previous year: EUR 4,558 million). In the fiscal year, there were cash transfer restrictions of EUR 53 million (previous year: EUR 5 million).

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

Figures in millions of euros

		Cash effective changes		Non-cash changes		
	1/1/2020	**Borrowing**	**Repayment**	**Changes in consolidated group, other changes**	**Exchange rate-related changes**	**12/31/2020**
Bonds	3,004	0	–500	2		2,506
Promissory loans, registered notes	1,498	1,996		1		3,495
Other financial liabilities	146	193	–41		–27	271
Lease liabilities	2,111		–539	518	–58	2,032
	6,759	**2,189**	**–1,080**	**521**	**–85**	**8,304**

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Figures in millions of euros

		Cash effective changes		Non-cash changes		
	1/1/2019	**Borrowing**	**Repayment**	**Changes in consolidated group, other changes**	**Exchange rate-related changes**	**12/31/2019**
Bonds	3,301		–300	3		3,004
Promissory loans, registered notes	1,652		–154			1,498
Other financial liabilities	283	28	–154	–11		146
Lease liabilities	2,115		–497	485	8	2,111
	7,351	**28**	**–1,105**	**477**	**8**	**6,759**

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30 Segment reporting

Disclosures on business sectors

Figures in millions of euros

	Mobility Solutions		Industrial Technology		Consumer Goods	
	2020	**2019**	**2020**	**2019**	**2020**	**2019**
External sales	42,120	46,784	5,131	7,494	18,659	17,752
Intersegment sales	1	1	219	2	202	
Total sales	42,121	46,785	5,350	7,496	18,861	17,752
EBIT	–654	756	240	897	1,922	1,041
of which: profit from entities consolidated using the equity method	–4	–7				
Non-cash expenses (without depreciation and amortization)	4,394	3,414	364	558	842	812
Amortization and depreciation of intangible assets, right-of-use assets, and property, plant, and equipment[1]	3,336	3,562	206	243	963	1,009
Impairment losses on intangible assets, right-of-use assets, and property, plant, and equipment	97	163	5		2	30
Non-cash income	613	771	96	107	167	105
Assets	15,905	17,278	2,273	2,701	6,670	7,181
Liabilities	5,176	5,165	486	548	2,113	1,945
Investments measured at equity	0	4				

1. In the reporting year, after offsetting write-ups of EUR 1 million

	Energy and Building Technology		Others		Consolidation		Group	
	2020	2019	2020	2019	2020	2019	2020	2019
	5,502	5,654	82	37			71,494	77,721
	2	11			−424	−14		
	5,504	5,665	82	37	−424	−14	71,494	77,721
	251	290	−102	−81			1,657	2,903
							−4	−7
	357	392	35	16			5,992	5,192
	214	200	34	34			4,753	5,048
		2					104	195
	64	150	12	2			952	1,135
	1,620	1,615	26	6			26,494	28,781
	407	389	31	12			8,213	8,059
							0	4

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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, connected mobility services, and a wide-ranging portfolio for e-bikes.

The Industrial Technology business sector combines the following activities:
- ▶ Automation technology (technologies for drives, controls, and motion)
- ▶ 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 professionals, industry, and DIY, accessories, garden tools, as well as industrial tools and measuring equipment)
- ▶ Household appliances (appliances for cooking, washing-up, laundry, 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 “Others.” 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 management are revenue growth, EBIT, and net working capital as an indicator of the capital that is essentially tied up in the short term. Net working capital is calculated as an average of inventories, receivables, and contract assets minus trade payables and contract liabilities.

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 items included in non-cash income are income from the reversal of provisions.

Segment assets comprise trade receivables as well as inventories and current and non-current contract assets, in all cases before valuation allowances. Segment liabilities contain trade payables as well as current and non-current contract liabilities. Line items relating to segment assets and segment liabilities are reported at average amounts for the year.

Reconciliation statements

Figures in millions of euros

	2020	2019
Sales		
Sales by reportable segment	71,836	77,698
Sales of “Others”	82	37
Consolidation	–424	–14
Group sales	**71,494**	**77,721**
Result		
EBIT by reportable segment	1,759	2,984
EBIT of “Others”	–102	–81
Financial income	2,570	2,301
Financial expenses	–2,722	–1,948
Profit before tax	**1,505**	**3,256**
Assets		
Assets by reportable segment	26,468	28,775
Assets of “Others”	26	6
Reconciliation to values at December 31	1,445	141
Valuation allowances on segment assets	–1,885	–2,264
Other current assets	16,184	10,374
Other non-current assets	49,131	50,829
Group assets	**91,369**	**87,861**
Liabilities		
Liabilities by reportable segment	8,182	8,047
Liabilities of “Others”	31	12
Reconciliation to values at December 31	1,778	1,287
Other current liabilities	15,115	13,567
Other non-current liabilities	26,097	23,869
Group liabilities	**51,203**	**46,782**

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Disclosures by important countries

Figures in millions of euros

	Sales by registered office of the customer		Non-current assets[1]	
	2020	2019	2020	2019
Europe	**37,969**	**40,817**	**21,047**	**21,865**
of which Germany	14,764	15,705	13,279	13,564
of which the United Kingdom	3,159	3,571	357	395
of which France	2,776	3,180	422	459
of which Italy	2,012	2,250	598	611
Americas	**11,815**	**14,433**	**3,670**	**4,240**
of which the United States	8,826	10,911	3,173	3,591
Asia	**20,728**	**21,405**	**7,152**	**7,813**
of which China	14,151	13,547	5,129	5,474
of which Japan	2,197	2,699	518	575
Other regions	**982**	**1,066**	**147**	**156**
Group	**71,494**	**77,721**	**32,016**	**34,074**

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1. Non-current assets consist of intangible assets, right-of-use assets, and property, plant, and equipment.

As in the previous year, the customer structure of the Bosch Group in the reporting period does not reveal any concentration on individual customers.

31 Additional disclosures on 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. For regular-way purchases or sales, however, the settlement date is the relevant date for initial recognition and for derecognition from the statement of financial position. On initial recognition, financial assets and financial liabilities are measured at fair value and classified in accordance with IFRS 9 *Financial Instruments*. 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 derivatives with a positive fair 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 12 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 file for 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 subsequently measured at amortized cost using the effective interest method. In the Bosch Group, this applies to trade payables, bonds, promissory note loans, registered notes, 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 fair value.

When determining the fair value of financial assets and financial liabilities, the input factors of the measurement methods pursuant to IFRS 13 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.

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:

Figures in millions of euros

	2020	2019
Financial assets measured at amortized cost (AC)	–177	145
Financial assets measured at fair value through other comprehensive income (FVOCI wR)	–112	267
Financial assets and financial liabilities measured at fair value through profit or loss (FVPL)	585	177
Equity instruments measured at fair value through other comprehensive income (FVOCI nR)	93	133
Financial liabilities measured at amortized cost (AC)	–462	–224

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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 contain dividend income totaling EUR 4 million (previous year: 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

		2020		2019	
	Category pursuant to IFRS 9	Carrying amount	Fair value	Carrying amount	Fair value
Assets					
Cash and cash equivalents	AC	**8,955**		**4,558**	
Trade receivables	AC	**13,696**		**14,024**	
Current other financial assets		**5,031**		**3,400**	
Securities	FVPL	2,404	2,404	858	858
	FVOCI wR	171	171	123	123
Bank balances	AC	1,804		858	
Loan receivables	AC	88		268	
Derivatives	FVPL	131	131	86	86
Receivables from finance leases	n.a.	38		36	
Sundry other financial assets	AC	395		1,171	
Non-current financial assets		**15,273**		**14,859**	
Securities	FVOCI nR	3,101	3,101	3,081	3,081
	FVOCI wR	5,313	5,313	5,045	5,045
	FVPL	3,943	3,943	4,140	4,140
Investments	FVPL	100	100	86	86
	FVOCI nR	2,276	2,276	1,639	1,639
	n.a.	148		159	
Bank balances	AC	5	5	304	304
Loan receivables	AC	28	29	32	33
Derivatives	FVPL	63	63	23	23
Receivables from finance leases	n.a.	159	159	159	159
Other financial assets	AC	137	139	191	191

Figures in millions of euros

		2020		2019	
	Category pursuant to IFRS 9	Carrying amount	Fair value	Carrying amount	Fair value
Equity and liabilities					
Trade payables	AC	**8,335**		**7,673**	
Current other financial liabilities		**1,495**		**1,417**	
Bonds	AC	500		499	
Liabilities to banks	AC	262		143	
Loans	AC	67		73	
Derivatives	FVPL	41	41	58	58
Sundry other financial liabilities	AC	625		644	
Non-current financial liabilities		**5,656**		**4,149**	
Bonds	AC	2,006	2,420	2,505	2,909
Promissory loans, registered notes	AC	3,495	3,748	1,498	1,549
Liabilities to banks	AC	9	10	3	3
Loans	AC	33	36	31	34
Derivatives	FVPL	6	6	8	8
Other financial liabilities	AC	107	109	104	105

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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

The carrying amounts of the financial assets and liabilities, classified by IFRS 9 measurement categories, are as follows:

Figures in millions of euros

	2020	2019
Financial assets measured at amortized cost (AC)	25,108	21,406
Financial assets measured at fair value through other comprehensive income (FVOCI wR)	5,484	5,168
Equity instruments measured at fair value through other comprehensive income (FVOCI nR)	5,377	4,720
Financial assets measured at fair value through profit or loss (FVPL)	6,641	5,193
Financial liabilities measured at fair value through profit or loss (FVPL)	47	66
Financial liabilities measured at amortized cost (AC)	15,439	13,173

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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

					2020
	Category pursuant to IFRS 9	Level 1[1]	Level 2[2]	Level 3[3]	Total
Financial assets					
Securities	FVPL	242	5,906	199	6,347
	FVOCI wR	61	5,423		5,484
	FVOCI nR	3,100	1		3,101
Investments	FVPL			100	100
	FVOCI nR	1,261		1,015	2,276
Derivatives	FVPL	1	193		194
Financial liabilities					
Derivatives	FVPL	1	46		47

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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

					2019
	Category pursuant to IFRS 9	**Level 1[1]**	**Level 2[2]**	**Level 3[3]**	**Total**
Financial assets					
Securities	FVPL	247	4,586	165	4,998
	FVOCI wR	70	5,098		5,168
	FVOCI nR	3,081			3,081
Investments	FVPL			86	86
	FVOCI nR	446		1,193	1,639
Derivatives	FVPL	3	106		109
Financial liabilities					
Derivatives	FVPL	2	64		66

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1. Fair value is measured on the basis of quoted, 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

The investments measured at fair value through other comprehensive income also comprise the equity investment in Ceres Power Holdings plc (fair value of EUR 443 million; previous year EUR 18 million), in Nikola Corporation (EUR 234 million; previous year: EUR 202 million), in Powercell Sweden AB (EUR 190 million; previous year: EUR 86 million), and in Weifu High Technology Group Co, Ltd. (EUR 376 million; previous year: EUR 323 million).

The fair value of financial assets and liabilities measured at amortized cost is determined on the basis of observable market data such as share prices, exchange rates, and interest curves (level 2).

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. In the current fiscal year, there were no reclassifications between levels 1 and 2. The table presenting the changes in financial assets allocated to level 3 includes reclassifications relating to this level.

Equity 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 (reported under securities). 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

	1/1/2020	Additions	Disposals	Reclassi-fications	Changes recognized in other compre-hensive income	Changes recognized in profit or loss	Currency	12/31/2020
Investments FVOCI nR	1,193	96	−66	−202	1		−7	1,015
Investments FVPL	86	23	−5			−3	−1	100
Securities	165	23				11		199

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Figures in millions of euros

	1/1/2019	Additions	Disposals	Reclassi-fications	Changes recognized in other compre-hensive income	Changes recognized in profit or loss	Currency	12/31/2019
Investments FVOCI nR	1,216	122	−584	−7	443		3	1,193
Investments FVPL	73	13	−4			4		86
Securities	95	60				10		165

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

On account of the IPO of an entity in the reporting year and in the previous year, the Bosch Group's corresponding equity investment in the entity was reclassified from level 3 to level 1. No securities were reclassified in the reporting year or in the previous year.

32 Capital and risk management

Capital management

The Bosch Group's goal is to achieve sustainable growth through innovation while maintaining its financial independence. To achieve this goal, it is necessary to maintain a high internal financing ability, along with unrestricted access to capital markets and a solid A rating. Capital structure and other financial performance indicators, such as free cash flow, are tracked as part of financial planning. As of December 31, 2020, the Bosch Group's equity stood at EUR 40,166 million or 44 percent of total equity and liabilities (previous year: EUR 41,079 million; 47 percent of total equity and liabilities). As a rule, the Bosch Group raises debt capital on capital markets, which it accesses through a medium-term note program and a commercial paper program.

Hedging policy and financial derivatives

The business operations of the Bosch Group are impacted in particular by fluctuations in exchange and interest rates and, on the procurement side, by commodity-price risks. 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 generally concluded 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 note 15 “Cash and cash equivalents.”

The decision-making bodies are committees for commodities, foreign currencies, and investments that meet at regular intervals. There is a 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 risks

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 HUF.

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 and scope.

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	
	2020	**2019**	**2020**	**2019**
CHF	20	6	–20	–6
CNY	22	5	–22	–5
CZK	–28	–31	28	31
GBP	36	33	–36	–33
HUF	–16	–13	16	13
JPY	–17	10	17	–10
KRW	4	–5	–4	5
PLN	–3	8	3	–8
RUB	–16	–3	16	3
TRY	–20	–38	20	38
USD	–7	11	7	–11

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A change in the USD 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 USD		10% decrease in USD	
	2020	**2019**	**2020**	**2019**
CNY	–6	–1	6	1

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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 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

	Increase in market interest level by 100 basis points		Decrease in market interest level by 100 basis points	
	2020	2019	2020	2019
Reserve from financial instruments	–301	–251	301	251
Profit before tax	50	33	–50	–33

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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 5,722 million (previous year: EUR 4,909 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	
	2020	2019	2020	2019
Reserve from financial instruments	436	352	–436	–352
Profit before tax	136	139	–136	–139

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Other price risks

Derivatives 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	
	2020	2019	2020	2019
Profit before tax	51	44	–51	–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 the customer intends 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

	2020	2019
Trade receivables (before offsetting of credit notes)	14,548	14,709
Offsetting of credit notes	–852	–685
Trade receivables (carrying amount)	13,696	14,024
Financial guarantee contracts (received)	–2,243	–2,164
Remaining credit risk	**11,453**	**11,860**

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The following table presents the development of loss allowances on trade receivables (credit-impaired and not credit-impaired) as well as on loan receivables and sundry other financial assets (according to the three-level impairment model) for the financial year and the previous year:

Figures in millions of euros

	Trade receivables	Loan receivables and sundry other financial assets	
		Level 1	Level 2/3
1/1/2019	**296**	**8**	**26**
Changes in consolidated group	–8		–8
Amounts added	83	4	19
Amounts utilized	–38		–8
Amounts reversed	–33	–4	
Exchange rate differences	1		
12/31/2019	**301**	**8**	**29**
Changes in consolidated group	–3		
Amounts added	73	2	105
Amounts utilized	–49		–7
Amounts reversed	–45	–3	–1
Exchange rate differences	–16	–1	
12/31/2020	**261**	**6**	**126**

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As of December 31 of the fiscal year, loss allowances on contract assets stand at EUR 13 million (previous year EUR 16 million), and allowances on receivables from finance leases at EUR 2 million (previous year EUR 1 million).

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

Figures in millions of euros

	2020	2019
Trade receivables	13,957	14,325
of which not exposed to default	4,932	4,621
of which credit-impaired	284	302
of which not credit-impaired	8,741	9,402
not due	7,976	8,310
up to 30 days past due	429	604
31–90 days past due	155	230
91–180 days past due	60	113
more than 180 days past due	121	145

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As of December 31 of the fiscal year, impairment losses on securities measured at fair value through other comprehensive income amounted to EUR 82 million (previous year: EUR 69 million).

Derivative transactions are entered into in accordance with either 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, as netting is only enforceable in the case of insolvency.

The credit risk for derivatives with a positive fair 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

	2020	2019
Derivatives with a positive fair value	194	109
Amounts not offset in the statement of financial position		
Derivatives	–22	–21
Cash collateral received	–72	–34
Remaining credit risk	**100**	**54**

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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 11,530 million (previous year: EUR 5,539 million). In addition, a U.S. commercial paper program with a volume of USD 2,000 million is available but had not been drawn as of the reporting date. In addition, a syndicated credit facility of EUR 3,000 million was agreed in the fiscal year, but has likewise not been drawn. Furthermore, we relaunched our bond program in fiscal year 2020. The scale of the program is 12.5 billion euros.

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

	2020	2019
Trade payables (before offsetting of credit notes)	9,187	8,358
Offsetting of credit notes	–852	–685
Trade payables (carrrying amount)	8,335	7,673
Financial guarantee contracts (granted)	–3	–9
Remaining liquidity risk	**8,332**	**7,664**

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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

	2020	2019
Derivatives with a negative fair value	47	66
Amounts not offset in the statement of financial position		
Derivatives	–22	–21
Cash collateral provided	0	0
Remaining liquidity risk	**25**	**45**

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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					
	2020	2021	2022	2023	2024	2025	2026 et seq.
Non-derivative financial liabilities							
Trade payables	8,335	8,333	2				
Bonds	2,506	552	67	48	791	35	1,452
Promissory loans, registered notes	3,495	40	534	636	32	646	1,894
Liabilities to banks	271	267	2	2	2	1	0
Lease liabilities	2,032	552	446	305	228	191	575
Loans	100	68	5	5	6	5	12
Other financial liabilities	732	626	13	5	4	1	85
Derivatives							
Gross settlement	32						
Cash outflows		2,547	15	15			
Cash inflows		2,516	15	14			
Net settlement	15						
Cash outflows		10	5	1			

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Figures in millions of euros

	Carrying amount	Undiscounted cash flows					
	2019	2020	2021	2022	2023	2024	2025 et seq.
Non-derivative financial liabilities							
Trade payables	7,673	7,673					
Bonds	3,004	566	552	68	48	791	1,487
Promissory loans, registered notes	1,498	14	14	14	513	11	1,031
Liabilities to banks	146	147	0	0	1	1	1
Lease liabilities	2,111	548	455	309	229	177	584
Loans	104	73	6	5	5	5	11
Other financial liabilities	748	644	8	6	4	1	86
Derivatives							
Gross settlement	50						
Cash outflows		3,419	0	10			
Cash inflows		3,370	0	9			
Net settlement	16						
Cash outflows		9	7				

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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.

33 Leases

Contracts that convey the right to control the use of an identified asset for a period of time in exchange for consideration are accounted for as leases in accordance with IFRS 16.

Bosch as lessee

The lessee generally recognizes leases based on the right-of-use approach. With certain exceptions, this requires recognizing right-of-use assets and liabilities for the payment obligations under the lease in the statement of financial position. These accounting requirements are not applied to short-term leases and leases for low-value assets; lease payments under such leases are recognized in expenses by function on a straight-line basis over the lease term. The requirements of IFRS 16 are also not applied to leases of intangible assets.

Lease liabilities are measured at the present value of the lease payments over the lease term. Lease payments include fixed payments for lease components and non-lease components as well as variable lease payments based on an index or an interest rate. The payments are generally discounted using the incremental borrowing rate for the appropriate currency and lease term. In determining the lease term, termination and extension options are considered if it is reasonably certain that they will be exercised.

At the commencement date, right-of-use assets are recognized at the amount of the lease liability, plus initial direct costs and less any lease incentives received. Right-of-use assets are typically depreciated over the lease term, with depreciation being recorded in functional costs.

Entities of the Bosch Group have entered into leases as lessees mainly for land and buildings and, to a lesser extent, vehicles, plant and equipment, and other equipment, fixtures, and furniture.

The right-of-use assets recognized in the statement of financial position, and the depreciation or amortization charged on them, are as follows:

Figures in millions of euros

	2020		2019	
	Carrying amount	Depreciation and amortization	Carrying amount	Depreciation and amortization
Land and building	1,702	403	1,802	388
Plant, fixtures and furniture	52	18	51	16
Vehicles	223	142	230	125
	1,977	**563**	**2,083**	**529**

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Additions to right-of-use assets came to EUR 558 million in the fiscal year (previous year: EUR 517 million).

Furthermore, the following amounts were recognized in the income statement:

Figures in millions of euros

	2020	2019
Interest expenses relating to lease liabilities	55	58
Expenses relating to short-term leases	106	134
Expenses relating to leases of low-value assets	58	52
Expenses for variable lease payments	15	11

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Cash outflows from leases totaled EUR 774 million in the fiscal year (previous year: EUR 742 million). The maturity analysis of future lease payments is contained in the liquidity risk section of note 32 “Capital and risk management.”

Bosch as lessor

Lessors are required to classify a lease as either a finance lease or an operating lease.

Finance leases transfer substantially all the risks and rewards incidental to ownership to the lessee. For such leases, a receivable is recognized at the amount of the net investment in the lease and disclosed under financial assets.

The receivables from finance lease agreements mainly stem from products leased by the Building Technologies division. As a rule, the agreed lease term is ten years. The receivables are due as follows in the fiscal year:

Figures in millions of euros

	2020	2019
Gross capital expenditures on finance leases		
due not later than one year	45	44
due later than one year and not later than two years	39	38
due later than two years and not later than three years	34	33
due later than three years and not later than four years	28	27
due later than four years and not later than five years	21	21
due later than five years	56	61
	223	**224**
Present value of outstanding minimum lease payments		
due not later than one year	38	36
due later than one year and not later than two years	34	32
due later than two years and not later than three years	30	28
due later than three years and not later than four years	25	24
due later than four years and not later than five years	19	19
due later than five years	53	58
	199	**197**
Unearned finance income	**24**	**27**

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In relation to finance leases, finance income came to EUR 8 million (previous year: EUR 9 million) and losses on disposal amounted to EUR 3 million (previous year: EUR 3 million). There were no unguaranteed residual values.

Under operating leases, the lessor retains substantially all the risks and rewards incidental to ownership. 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.

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 division and are due as follows in the fiscal year:

Figures in millions of euros

	2020	2019
Due not later than one year	81	67
Due later than one year and not later than two years	64	61
Due later than two years and not later than three years	60	57
Due later than three years and not later than four years	54	55
Due later than four years and not later than five years	45	42
Due later than five years	124	133
	428	**415**

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In the fiscal year, income from operating leases came to EUR 108 million (previous year: EUR 90 million).

34 Related party 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 21 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.

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

Business relationships with related entities

Related entities 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	
	2020	2019	2020	2019	2020	2019	2020	2019
Joint ventures	7	12	2	3	8	7	2	1
Investees	61	79	441	274	26	34	79	81

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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.

Total remuneration of key management personnel breaks down as follows:

Figures in millions of euros

	2020	2019
Short-term benefits	31	25
Post-employment benefits	5	23
Other long-term benefits	7	5
Termination benefits	0	0

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For obligations from pensions and deferred compensation, provisions totaling EUR 177 million (previous year: EUR 197 million) have been recognized.

Share-based payments are not made.

Beyond this, companies of the Bosch Group have not conducted any reportable transactions with key management personnel.

35 Remuneration of members of the board of management and supervisory board

The total remuneration of the members of the board of management comes to EUR 32 million in fiscal year 2020 (previous year: EUR 25 million), and that of the former members of the board of management and their dependants to EUR 17 million (previous year: EUR 17 million).

The remuneration of the members of the supervisory board comes to approximately EUR 2 million. An amount of EUR 296 million (previous year: EUR 257 million) has been accrued for pension obligations to former members of the board of management and their surviving dependants.

36 Auditor’s fees

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

Figures in millions of euros

	2020	2019
Fees for		
Audit services	6	6
Audit-related services	0	0
Tax advisory services	0	0
Other services	5	10

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LIST OF SHAREHOLDINGS OF THE BOSCH GROUP

as of December 31, 2020

1 Consolidated group

	Company name	Registered office	Percentage share of capital
Germany	Robert Bosch GmbH	Stuttgart	
	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	Stuttgart	100.0
	AS Guss Beteiligungsgesellschaft mbH	Stuttgart	100.0
	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 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 Hilfe GmbH	Stuttgart	100.0
	Bosch Industriekessel GmbH	Gunzenhausen	100.0 [1]
	Bosch KWK Systeme GmbH	Lollar	100.0 [1]
	Bosch Pensionsgesellschaft mbH	Stuttgart	100.0 [1]
	Bosch Power Tec GmbH	Stuttgart	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]
	Bosch Sicherheitssysteme GmbH	Stuttgart	100.0 [1, 2]
	Bosch Sicherheitssysteme Montage und Service GmbH	Weimar	100.0 [1]
	Bosch SoftTec GmbH	Hildesheim	100.0 [1]
	Bosch.IO GmbH	Berlin	100.0 [1]
	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]
	Bosch Thermotechnik GmbH	Wetzlar	100.0 [1, 2]
	Bosch Wohnungsverwaltungsgesellschaft mbH & Co. KG	Stuttgart	100.0
	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]

	Company name	Registered office	Percentage share of capital
	BSH Vermögensverwaltungs-GmbH	Munich	100.0 [1]
	Buderus Guss GmbH	Breidenbach	100.0 [1]
	Buderus Immobilien GmbH	Wetzlar	100.0 [1]
	COBI.Bike GmbH	Frankfurt/Main	100.0 [1]
	Constructa-Neff Vertriebs-GmbH	Munich	100.0
	Coup Mobility GmbH	Berlin	100.0 [1]
	DAA Deutsche Auftragsagentur GmbH	Hamburg	100.0 [1]
	ESCRYPT GmbH	Bochum	100.0 [1]
	ETAS GmbH	Stuttgart	100.0 [1, 2]
	EVI Audio GmbH	Straubing	100.0 [1]
	Gaggenau Hausgeräte GmbH	Munich	100.0 [1]
	GFR Gesellschaft für Regelungstechnik und Energieeinsparung mbh	Jena	100.0 [1]
	GFR-Gesellschaft für Regelungstechnik und Energieeinsparung mbh	Verl	100.0 [1]
	grow platform GmbH	Stuttgart	100.0 [1]
	Holger Christiansen Deutschland GmbH	Wilnsdorf	100.0 [1]
	ITK Engineering GmbH	Rülzheim	100.0
	ITK Holding GmbH	Rülzheim	100.0
	Moehwald GmbH	Homburg/Saar	100.0 [1]
	Neff GmbH	Munich	100.0 [1]
	Pollux Solar-Service GmbH	Arnstadt	100.0
	Residential IoT Services GmbH	Stuttgart	100.0 [1]
	Robert Bosch Aftermarket Solutions GmbH	Göttingen	100.0 [1]
	Robert Bosch Automotive Steering Bremen GmbH	Bremen	100.0 [1]
	Robert Bosch Automotive Steering GmbH	Schwäbisch Gmünd	100.0 [1, 2]
	Robert Bosch Car Multimedia GmbH	Hildesheim	100.0 [1]
	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
	Robert Bosch Lollar Guss GmbH	Lollar	100.0 [1]
	Robert Bosch Manufacturing Solutions GmbH	Stuttgart	100.0 [1, 2]
	Robert Bosch Power Tools GmbH	Leinfelden-Echterdingen	100.0 [1]
	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]

Company name	Registered office	Percentage share of capital
Robert Bosch Siebte Vermögensverwaltungsgesellschaft mbH	Gerlingen	100.0 [1]
Robert Bosch Smart Home GmbH	Stuttgart	100.0 [1]
Robert Bosch Venture Capital GmbH	Gerlingen	100.0 [1]
Robert Bosch Wohnungsgesellschaft mbH	Stuttgart	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
WeWash GmbH	Munich	100.0 [1]
WOGE Service- und Regiebetrieb GmbH	Stuttgart	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.

	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
Belgium	Bosch Rexroth N.V.	Anderlecht	100.0
	Bosch Thermotechnology N.V. / S.A.	Mechelen	100.0
	BSH Home Appliances S.A.	Brussels	100.0
	Robert Bosch Produktie N.V.	Tienen	100.0
	Robert Bosch S.A.	Anderlecht	100.0
	sia Abrasives Belgium N.V. / S.A.	Mollem	100.0
Bulgaria	Bosch.IO EOOD	Sofia	100.0
	BSH Domakinski Uredi Bulgaria 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.	Prague	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

	Company name	Registered office	Percentage share of capital
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 SAS	Cergy Saint-Christophe	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.	Drancy	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.	Drancy	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
	Robert Bosch Automotive Steering Kft.	Maklár	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
Ireland	Robert Bosch Ireland Ltd.	Dublin	100.0
Italy	ARESI S.p.A.	Brembate	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

	Company name	Registered office	Percentage share of capital
	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
	EDiM S.p.A.	Villasanta	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	BSH électroménagers S.A.	Senningerberg	100.0
	Ferroknepper Buderus S.A.	Esch-sur-Alzette	100.0
Netherlands	Bosch Power Tools B.V.	Breda	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
	Digicontrol Benelux B.V.	Apeldoorn	100.0
	Nefit Vastgoed B.V.	Deventer	100.0
	Robert Bosch Asset Managing C.V.	Boxtel	100.0
	Robert Bosch B.V.	Boxtel	100.0
	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
	Security and Safety Things B.V.	Eindhoven	100.0
Norway	Bosch Rexroth AS	Ski	100.0
	BSH Husholdningsapparater A/S	Oslo	100.0
	Robert Bosch AS	Trollåsen	100.0

	Company name	Registered office	Percentage share of capital
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 Termotecnologia 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	Bosch Heating Systems LLC	Engels	100.0
	Evroradiators LLC	Engels	100.0
	OOO “Construction & investments”	Khimki	100.0
	OOO Bosch Power Tools	Engels	100.0
	OOO Bosch Rexroth	Moscow	100.0
	OOO Bosch Thermotechnik	Moscow	100.0
	OOO BSH Bytowije Pribory	St. Petersburg	100.0
	OOO Robert Bosch	Moscow	100.0
	OOO Robert Bosch Saratow	Engels	100.0
	Robert Bosch Samara LLC	Chernovskiy	100.0
Serbia	BSH Kućni Aparati d.o.o. Beograd	Belgrade	100.0
	Robert Bosch DOO	Belgrade	100.0
Slovakia	BSH Drives and Pumps s.r.o.	Michalovce	100.0
	Robert Bosch spol. s.r.o.	Bratislava	100.0
	Robert Bosch Production Slovakia, s.r.o.	Bernolákovo	100.0
Slovenia	Bosch Rexroth d.o.o.	Škofja Loka	100.0
	BSH Hišni Aparati d.o.o.	Nazarje	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

	Company name	Registered office	Percentage share of capital
	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 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	MBT Trade T.B.O.	Kiev	100.0
	Robert Bosch Production Ukraine	Krakovets	100.0
	TOV BSH Pobutova Technika	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 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
	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 Ltd.	Worcester	100.0

	Company name	Registered office	Percentage share of capital
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.	Itatiba-SP	100.0
	Bosch Soluções Integradas Brasil Ltda.	Campinas	100.0
	Bosch Soluções Logisticas e Armazém Geral Ltda.	Itupeva	100.0
	Bosch Telecom Ltda.	São Paulo	100.0
	Bosch Termotecnologia Ltda.	São Paulo	100.0
	Robert Bosch Direçáo Automotiva Ltda.	Sorocaba	100.0
	Robert Bosch Ltda.	Campinas	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
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
	SPLT México, S.A. de C.V.	Mexico City	100.0
Panama	Robert Bosch Panama Colón, S.A.	Colón	100.0
Peru	BSH Electrodomésticos S.A.C.	Callao/Lima	100.0
	Robert Bosch S.A.C.	Lima	100.0

	Company name	Registered office	Percentage share of capital
United States	Automotive Steering Column LLC	Florence, KY	100.0
	Bosch Automotive Service Solutions Inc.	Warren, MI	100.0
	Bosch Aviation Technology LLC	Novi, MI	100.0
	Bosch Brake Components LLC	Broadview, IL	100.0
	Bosch Rexroth Corporation	Lehigh Valley, PA	100.0
	Bosch Security Systems LLC	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
	ETAS Inc.	Ann Arbor, MI	100.0
	FHP Manufacturing Company	Fort Lauderdale, FL	57.0
	Freud America Inc.	High Point, NC	100.0
	Nimbus Holdings LLC	Wilmington, DE	100.0
	Robert Bosch Asset Management I LLC	Wilmington, DE	100.0
	Robert Bosch Asset Management I LP	Wilmington, DE	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
	Robert Bosch Start-up Platform North America LLC	Wilmington, DE	100.0
	Robert Bosch Tool Corporation	Mt. Prospect, IL	100.0
	sia Abrasives, Inc. USA	Charlotte, NC	100.0
	Splitting Fares Inc.	Detroit, MI	100.0
Asia			
China	Bosch (China) Investment Ltd.	Shanghai	100.0
	Bosch (Donghai) Automotive Test & Technology Center Co., Ltd.	Donghai	100.0
	Bosch (Hulunbeier) Automotive Test and Technology Centre Co., Ltd.	Yakeshi	100.0
	Bosch (Ningbo) e-scooter Motor Co., Ltd.	Ningbo	100.0
	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 Aftermarket (China) Co., Ltd.	Nanjing	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 (Suzhou) Co., Ltd.	Suzhou	100.0
	Bosch Automotive Products (Wuhu) Co., Ltd.	Wuhu	100.0

	Company name	Registered office	Percentage share of capital
	Bosch Automotive Service Solutions (Suzhou) Co., Ltd.	Suzhou	100.0
	Bosch Automotive Steering (Jinan) Co., Ltd.	Jinan	100.0
	Bosch Automotive Steering Jincheng (Nanjing) Co., Ltd.	Nanjing	70.0
	Bosch Automotive Systems (Wuxi) Co., Ltd.	Wuxi	100.0
	Bosch Automotive Technical Service (Beijing) Co., Ltd.	Beijing	100.0
	Bosch Connected Mobility Solutions Ltd.	Wuxi	100.0
	Bosch Electronics Trading (Suzhou) Co., Ltd.	Suzhou	100.0
	Bosch HUAYU Steering Systems (Nanjing) Co., Ltd.	Nanjing	100.0
	Bosch HUAYU Steering Systems (Wuhan) Co., Ltd.	Wuhan	100.0
	Bosch HUAYU Steering Systems (Yantai) Co., Ltd.	Yantai	100.0
	Bosch HUAYU Steering Systems Co., Ltd.	Shanghai	51.0
	Bosch Innovation and Software Development (Wuxi) Co., Ltd.	Wuxi	100.0
	Bosch Laser Equipment (Dongguan) Limited	Dongguan	100.0
	Bosch Power Tools (Chengdu) Co., Ltd.	Chengdu	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
	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 (China) Co., Ltd.	Nanjing	100.0
	BSH Home Appliances Co., Ltd.	Chuzhou	100.0
	BSH Home Appliances Holding (China) Co., Ltd.	Nanjing	100.0
	BSH Home Appliances Ltd.	Hong Kong	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 (Chongqing) Co., Ltd.	Chongqing	65.0
	United Automotive Electronic Systems Co., Ltd.	Shanghai	51.0
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

	Company name	Registered office	Percentage share of capital
	Bosch Rexroth (India) Private Limited	Ahmedabad	100.0
	BSH Household Appliances Manufacturing Private Limited	Mumbai	100.0
	Robert Bosch Automotive Steering Private Limited	Pune	100.0
	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 Engineering 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
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 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 Semiconductor Manufacturing Penang Sdn. Bhd.	Kuala Lumpur	100.0
Philippines	Bosch Service Solutions, Inc.	Manila	100.0
	Robert Bosch Inc.	Manila	100.0
Singapore	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. Ltd.	Singapore	100.0

	Company name	Registered office	Percentage share of capital
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
	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
Rest of world			
Australia	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 Australia Pty. Ltd.	Rowville	100.0
Botswana	Hytec Hydraulics Botswana (Pty) Ltd.	Gaborone	100.0
Egypt	BSH Home Appliances LLC	New Cairo	100.0
	BSH Home Appliances Holding LLP	New Cairo	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

	Company name	Registered office	Percentage share of capital
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
	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
	Hytec South Africa (RF) (Pty) Ltd.	Kempton Park	75.0
	Robert Bosch (Pty.) Ltd.	Brits	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
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	39.0
	AIG Planungs- und Ingenieurgesellschaft mbH	Stuttgart	100.0
	AJNS New Media GmbH	Berlin	64.9
	Alltrucks GmbH & Co. KG	Munich	33.3
	Bosch Climate Solutions GmbH	Gerlingen	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

	Company name	Registered office	Percentage share of capital
	Energiespeicher Nord Verwaltungs GmbH	Braderup	45.0
	ETAS NI Systems GmbH & Co. KG	Stuttgart	50.0
	European Center for Information and Communication Technologies – EICT GmbH	Berlin	20.0
	for you Insurance Services GmbH	Stuttgart	100.0
	GFI Gesellschaft für Infrastrukturdienste mbH	Reutlingen	100.0
	Home Connect GmbH	Munich	100.0
	Knorr-Bremse Systeme für Nutzfahrzeuge GmbH	Munich	20.0
	Koller + Schwemmer GmbH	Nuremberg	100.0
	Kraftwerksbatterie Heilbronn GmbH	Stuttgart	50.0
	Lithium Energy and Power Management GmbH	Stuttgart	100.0
	MAGURA Bosch Parts & Services GmbH & Co. KG	Bad Urach	50.0
	MAGURA Bosch Parts & Services Verwaltungs-GmbH	Bad Urach	50.0
	Mobility Media GmbH	Berlin	100.0
	Prüfzentrum Boxberg GmbH	Boxberg	100.0
	RE'FLEKT GmbH	Munich	30.2
	Robert Bosch Immobilien GmbH	Stuttgart	100.0
	Robert Bosch Technical and Business Solutions GmbH	Stuttgart	100.0
	SAPCORDA SERVICES GmbH	Berlin	28.5
	Service- und Betriebsgesellschaft Heidehof mbH	Stuttgart	100.0
	SupplyOn AG	Hallbergmoos	42.1
Europe			
Austria	Bosch General Aviation Technology GmbH	Vienna	100.0
	ITK Engineering GmbH	Premstätten	100.0
	RobArt GmbH	Linz	24.8
	ZENO Track GmbH	Vienna	100.0
Belarus	Robert Bosch OOO	Minsk	100.0
Bulgaria	Robert Bosch EOOD	Sofia	100.0
Croatia	Robert Bosch d.o.o.	Zagreb	100.0
Estonia	Robert Bosch OÜ	Tallinn	100.0
France	ETAS S.A.S.	Saint-Ouen	100.0
Georgia	Robert Bosch Ltd.	Tiflis	100.0
Greece	Bosch Rexroth S.A.	Athens	100.0

	Company name	Registered office	Percentage share of capital
Hungary	Bosch Electronic Service Kft.	Kecskemét	100.0
Italy	BARI SERVIZI INDUSTRIALI Società consortile a r.l.	Modugno	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	Intrinsic ID B.V.	Eindhoven	28.2
	Tradeplace B.V.	Amsterdam	20.0
Poland	Loos Centrum Sp.z o.o.	Warsaw	26.0
Romania	Bosch Servicii Termotehnica SRL	Bucharest	100.0
	BSH Electrocasnice Manufacturing S.R.L.	Bucharest	100.0
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	Horw	100.0
Ukraine	Robert Bosch Ltd.	Kiev	100.0
United Kingdom	Bosch Automotive Training Limited	Motherwell	100.0
	BOXT Limited	Leeds	50.0
	ETAS Ltd.	York	100.0
	LAGTA Group Training Limited	Motherwell	100.0
	Sunlight.io Ltd.	Cambridge	25.2
Americas			
Brazil	Bosch Management Support Ltda.	Campinas	99.9
	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

	Company name	Registered office	Percentage share of capital
Ecuador	Robert Bosch Sociedad Anónima – Ecuabosch	Guayaquil	100.0
Mexico	Bosch Management Services México, S.C.	Mexico City	100.0
Panama	Robert Bosch Panama S.A.	Panama City	100.0
Paraguay	Robert Bosch Sociedad Anonima	Asunción	100.0
Peru	Bosch Rexroth S.A.C.	Lima	100.0
United States	Bosch Management Services Corporation	Wilmington, DE	100.0
	Bosch Solar Energy Corp.	Detroit, MI	100.0
	Foldimate Inc.	Delaware	39.6
	ITK Engineering, LLC	Howell, MI	100.0
	North America Fuel Systems Remanufacturing LLC	Kentwood, MI	50.0
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
Asia			
Bangladesh	Robert Bosch (Bangladesh) Ltd.	Dhaka	100.0
Cambodia	Robert Bosch (Cambodia) Co., Ltd.	Phnom Penh	100.0
China	Bosch (Shanghai) Smart Life Technology Ltd.	Shanghai	100.0
	Boyuan (Shanghai) Investment Management Co., Ltd.	Shanghai	50.0
	Freud International Trading (Shanghai) Co., Ltd.	Shanghai	100.0
	HEFEI M&B Air Conditioning Equipment Co., Ltd.	Heifei	40.0
India	AMP Solar Infrastructure Private Limited	New Delhi	26.0
	Automobility Services and Solutions Private Limited	Bengaluru	100.0
	ETAS Automotive India Private Ltd.	Bengaluru	100.0
	MIVIN Engineering Technologies Private Ltd.	Bengaluru	100.0
	Newtech Filter India Private Limited	Nalagarh	100.0
	Prebo Automotive Pte. Ltd.	Pune	40.0
	Precision Seals Manufacturing Ltd.	Chakan	100.0
	Robert Bosch India Manufacturing and Technology Private Limited	Bengaluru	100.0
	Simyog Technology Pvt. Ltd.	Bengaluru	24.7
	ZF Steering Gear (India) Ltd.	Pune	26.0

	Company name	Registered office	Percentage share of capital
Indonesia	PT Bosch Rexroth	Jakarta	100.0
	P.T. Robert Bosch Automotive	Jakarta	100.0
Iran	Bosch Tejarat Pars	Tehran	100.0
Israel	Allegro Artificial Intelligence Ltd.	Ramat Gan	20.9
	Electra Industries Ltd.	Rishon Le'Zion	40.0
	Robert Bosch Technologies Israel Ltd.	Tel Aviv	100.0
Japan	Advanced Driver Information Technology Corporation	Kariya-shi	50.0
	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	92.9
	Knorr-Bremse Commercial Vehicle Systems Japan, Ltd.	Tokyo	20.0
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	BSH Home Appliances Saudi Arabia LLC	Jeddah	51.0
	Robert Bosch Saudi Arabia Limited Liability Company	Riyadh	100.0
Singapore	SUN Mobility Pte. Ltd.	Singapore	26.0
	WhatsEGG Pte. Ltd.	Singapore	20.0
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

	Company name	Registered office	Percentage share of capital
Egypt	Bosch Rexroth Egypt LLC	Cairo	100.0
	RBEG LLC	Cairo	100.0
	Robert Bosch Holding-Egypt LLC	Cairo	100.0
	Robert Bosch Ltd.	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
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

Stuttgart, March 11, 2021

Robert Bosch GmbH
The board of management

Dr. Volkmar Denner
Prof. Stefan Asenkerschbaumer
Filiz Albrecht
Dr. Michael Bolle
Dr. Christian Fischer
Dr. Stefan Hartung
Dr. Markus Heyn
Harald Kroeger
Rolf Najork
Uwe Raschke

AUDITOR’S REPORT

Independent auditor’s report
To Robert Bosch Gesellschaft mit beschränkter Haftung

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 income statement and consolidated statement of comprehensive income for the fiscal year from 1 January to 31 December 2020, the consolidated statement of financial position as of 31 December 2020, the consolidated statement of changes in equity and the consolidated statement of cash flows for the fiscal year from 1 January to 31 December 2020, 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 for the fiscal year from 1 January to 31 December 2020. In accordance with the German legal requirements, we have not audited the content of the corporate governance statement pursuant to Sec. 289f (4) HGB [“Handelsgesetzbuch”: German Commercial Code] included in the “Report on corporate governance” section of the group management report (disclosure on the quota for women on executive boards).

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 Sec. 315e (1) HGB 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 2020 and of its financial performance for the fiscal year from 1 January 2020 to 31 December 2020, 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 opinion on the group management report does not cover the content of the corporate governance statement referred to above.

Pursuant to Sec. 322 (3) 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 opinions

We conducted our audit of the consolidated financial statements and of the group management report in accordance with Sec. 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 opinions on the consolidated financial statements and on the group management report.

Other information

The supervisory board is responsible for the supervisory board report. The executive directors are responsible for the other information. The other information comprises the corporate governance statement mentioned above pursuant to Sec. 289f (4) HGB (disclosures on the quota for women on executive boards). Furthermore, the other information comprises additional parts to be included in the annual report, of which we obtained a version prior to issuing this auditor’s report, in particular the sections: “Foreword”, “Board of management”, “Supervisory board report”, “Supervisory board, industrial trust and international advisory committee”, “Highlights 2020”, “Robert Bosch Stiftung” and “Ten-year summary of the Bosch Group”,

but not the consolidated financial statements, not the group management report disclosures whose content is audited and not our auditor’s report thereon.

Our 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 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 Sec. 315e (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 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 Sec. 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 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 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 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 net assets, financial position and results of operations of the Group in compliance with IFRSs as adopted by the EU and the additional requirements of German commercial law pursuant to Sec. 315e (1) HGB.

- Obtain sufficient appropriate audit evidence regarding the financial information of the entities or business activities within the Group to express 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 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, 11 March 2021

Ernst & Young GmbH
Wirtschaftsprüfungsgesellschaft

Prof. Dr. Wollmert
Wirtschaftsprüfer
[German Public Auditor]

Somes
Wirtschaftsprüferin
[German Public Auditor]

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ROBERT BOSCH STIFTUNG

GROUP MANAGEMENT REPORT

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GROUP MANAGEMENT REPORT

CONSOLIDATED FINANCIAL STATEMENTS

PUBLISHED BY:
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Additional information about the company can be taken from the brochure **Bosch today**, as well as from the internet at: **sustainability.bosch.com**

The above brochure can be ordered at:
bosch.com/company/our-figures/order-publications

For an online version of the annual report, go to:
annual-report.bosch.com

IDEA AND COORDINATION:
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IDEA, DESIGN, AND LITHOGRAPHY:
heureka GmbH – einfach kommunizieren, Essen

PRINT:
Elanders GmbH, Waiblingen

MIX
Paper from responsible sources
FSC® C016368
www.fsc.org

Climate neutral
Print product
ClimatePartner.com/12461-2103-1013

Printed in Germany

TEN-YEAR SUMMARY OF THE BOSCH GROUP

Figures in millions of euros

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Sales revenue	51,494	52,464	46,068	48,951	70,607	73,129	78,066	78,465	77,721	71,494
of which generated outside Germany (as a percentage)	77	77	77	78	80	80	80	79	80	79
Research and development cost[1]	4,190	4,787	4,543	4,959	6,378	6,954	7,264	5,963	6,079	5,890
as a percentage of sales revenue	8.1	9.1	9.9	10.1	9.0	9.5	9.3	7.6	7.8	8.2
Capital expenditure	3,226	3,151	2,539	2,585	4,058	4,252	4,345	4,946	4,989	3,312
of which in Germany	1,161	1,115	913	1,098	1,394	1,580	1,546	1,757	1,718	1,469
of which outside Germany	2,065	2,036	1,626	1,487	2,664	2,672	2,799	3,189	3,271	1,843
as a percentage of sales revenue	6.3	6.0	5.5	5.3	5.7	5.8	5.6	6.3	6.4	4.6
as a percentage of depreciation	142	107	126	138	146	141	140	159	146	101
Depreciation of property, plant, and equipment	2,265	2,948	2,008	1,868	2,788	3,022	3,095	3,103	3,421	3,282
Annual average number of associates (thousands)	295	306	280	286	369	384	403	407	408	395
of which in Germany	117	119	108	105	131	133	137	138	136	133
of which outside Germany	178	187	172	181	238	251	266	269	272	262
as of 12/31 of the year	303	306	281	290	375	389	402	410	398	395
Personnel expenses	14,719	15,663	14,907	15,325	20,369	21,056	22,266	22,219	23,824	22,483
Total assets	54,616	56,326	55,725	61,924	77,266	81,875	81,870	83,654	87,861	91,369
Equity	26,917	26,884	27,686	29,541	34,424	36,084	37,552	39,176	41,079	40,166
as a percentage of total assets	49	48	50	48	45	44	46	47	47	44
Cash flows from operating activities	2,717	3,687	4,276	3,835	5,959	6,137	6,799	7,267	7,752	9,016
as a percentage of sales revenue	5.3	7.0	9.3	7.8	8.4	8.4	8.7	9.3	10.0	12.6
Profit after tax	1,820	2,342	1,251	2,637	3,537	2,374	3,274	3,574	2,060	749
Dividend of Robert Bosch GmbH	88	88	88	102	142	138	241	242	119	67

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1. Up to 2017, including development work charged directly to customers

Robert Bosch GmbH

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