June 25, 2019

- Ladies and gentlemen, thank you for attending this year's Bosch Group annual press conference. The video we just watched introduced only some of the many businesses carried out by approximately 6,800 associates of Bosch Japan. Bosch was founded in Stuttgart, Germany in 1886. Since then, it has grown into a global enterprise now comprising around 410,000 associates in 60 countries. Of course, when many of you hear the name Bosch, you think of a German corporation. Naturally our founding in Germany is integral to the Bosch identity. It is reflected in the importance our company places on work-life balance and associate diversity, which I will discuss later. However, Bosch is also a corporation with deep roots in Japan. Today, we would like to introduce where we stand now and where we are heading from not only business perspective but also from our corporate culture perspective.

- Before announcing our results, which are one indicator of business development in Japan, I would first like to discuss our global initiatives related to the pressing issues of CO2 emissions.
- We announced that Bosch will be fully carbon neutral as early as next year. This will make Bosch the first major industrial company to achieve this ambitious target. Climate change is becoming more pressing than ever before. You can all agree that we see its consequences in Japan as well such as flooding, extreme heat in the summer, and the decline of fish catch due to global warming.
- In order to limit global warming below two degrees by the end of the century as the Paris Climate Agreement targets, fossil emissions have to be reduced to zero by 2050 latest. That is for us the motivation to act now and become a complete CO2 neutral company.
- We have clearly exceeded all our CO2-reduction targets up to now. In 2007, Bosch undertook to reduce the CO2 emissions of its locations by 20 percent by 2020. We achieved this goal by 2014. So we decided to raise our target to 35 percent. After all, last year the CO2 emissions, measured as a proportion of value added, were some 30 percent lower than the baseline value twelve years ago. When it comes to climate action, it has been our policy to act without delay. That is why we moved up the deadline of our CO2 neutrality goal from 2030 to 2020.

- We apply four ways to achieve this goal: one, increase energy efficiency; two, produce more green energy at our locations; three, purchase more green power; four, offset unavoidable CO2 emissions. We will be taking the first two measures more in the near future, and we will increase our use of the other two beyond next year.
- You might be wondering how our efforts to achieve CO2 neutrality will pay off. First, we will incur added costs of a billion euros for buying in green power, offsetting CO2, and increasing our supply of renewable energy. Second, we will invest a billion euros in increasing energy efficiency. Third, we will save a billion euros by virtue of increasing energy efficiency. This is how the cost of the CO2 neutrality project will be reduced from two to one billion euros over the next 10 years by 2030.
- Bosch is willing to sacrifice revenue in favour of upfront investments in research and development for our future business. It is our value to focus on the future and results. Climate action also needs upfront investment – this time for the future of our blue planet.

- Now then, Executive Vice President Alexandre Riesterer will discuss our results of the year 2018 for Japan.

- Ladies and gentlemen, my name is Alexandre Riesterer, I started to work in Japan as of January 2019 as Executive Vice President and Director of Bosch Corporation. I would like to thank you, once again, for coming today. I would like to present you the key financial data for 2018.

- Before sharing the 2018 results for Bosch in Japan, I would like first to come back to the Bosch Group's worldwide results. We increased the sales revenue to 78.5 billion euros. Earnings before interest and taxes from operations reached 5.5 billion euros. In spite of heavy upfront investments related to electrification and automation, EBIT margin from operations improved from 6.8% to 7%. At the same time we increased our expenditure on research and development to 7.3 billion euros, or 9.3% of sales revenue. As of December 31, 2018, the company employed 410,000 associates worldwide. This is 7,700 additional persons compared to previous year. We are currently employing 70,000 associates in research and development. 27,000 associates are software and IT experts. In the next coming five years, we have the intention to hire almost 25,000 new IT and software experts.

- Third-party sales for Japan in 2018 were approximately at 325 billion yen, which corresponds to an increase of 10% compared to previous year. This is the second year that we recorded a double-digit growth. The Asia Pacific region now accounts for 30% of the global Bosch Group sales.
- Sales increased particularly strongly for the Mobility Solutions. Specifically, for powertrain products, products for safety systems including the field of driving assistance systems, and body electronics products. Beside the Mobility Solutions, the demand increased especially in China for hydraulic, electric drive and other products for industrial equipment.
- Mobility Solutions in Japan increased 11.6% year on year. This significantly exceeds the growth in vehicle production in Japan that grew by 0.4% vs. PY. For 2019, we foresee a growth of approximately 5 percent coming from Mobility Solutions.
- Japanese automakers have a strong presence in the global market as well. 1 out of every 3 cars is produced by Japanese automakers. Because of their such importance, Bosch wishes to expand its business with Japanese automakers. Bosch Japan plays an important role by supporting the global expansion of Japanese automakers. From 2013, Bosch worldwide sales with Japanese automakers have increased annually on a level of double digit in average. The increase in 2018 was approximately 8.8% vs. PY, exceeding the 1.4% growth in vehicle production by Japanese automakers on the global market.
- Klaus will now discuss some of the specific highlights of our businesses in Japan.

- Over 1.2 million people worldwide lose their lives in traffic accidents every year. This is the equivalent of 25 people lost every second. Even in Japan, where strong infrastructure is in place and advanced cars are popular, 3,532 people were lost to traffic accidents last year. This is an average of more than 9 people every day. Furthermore, we know that over 90% of traffic accidents are due to human error.
- Bosch's goal in pursuing automated driving is clear: to reduce traffic accidents to an absolute minimum. However, in order to ensure safe automated driving under any and all conditions, mastery in a variety of fields is required. This is not only in hardware such as sensors and control units, but also in fields such as computers, software and AI. Bosch

is one of the few suppliers conversant in all fields required for automated driving.

- Today in particular I will discuss first, the eyes of automated driving systems, the sensors. Specifically, the latest radars and video cameras that will go into mass production this year. At the Automotive Engineering Exposition, which was held recently in Yokohama, we had the world's first showcase of the Bosch next-generation radar. Radars are a vital component for surround sensing, which is necessary to achieve Advanced Driver Assistance Systems and automated driving. Bosch is a market leader in the field, having produced a total of over 20 million radars to date.
- Next-generation radars have improved detection range, detection angle and height detection, allowing for more accurate detection in complicated environments. Allow me to offer several examples. Because of the wider detection angle compared to existing products, next-generation radars are able to more quickly and accurately detect the appearance of other cars or pedestrians when entering an intersection. Likewise, the improved height detection minimizes false detections in complex scenes, such as the presence of signboards or empty cans in the roadway. This helps reduce the risk of various ADAS features, such as false engagement of collision damage mitigation braking. With its improved detection capabilities, next-generation radar allows for accurate detection despite increasingly complicated NCAP requirements, various hazardous situations that arise during actual driving, and even during automated driving. This is a next-generation radar, but as all of you can see we've succeeded in making it significantly smaller than current-generation products. Size has been reduced approximately 30%, with thickness decreased from 33 mm to 19 mm. This allows for more freedom when installing it into cars.
- In addition to radars, this year we will also begin mass production of next-generation video cameras. This will utilize AI and a unique multi-path approach for adaptive parallel processing of images. Through use of deep learning, next-generation cameras are able to understand road environments, such as parked cars and other objects on the shoulder of the roads, asphalt, gravel and grass, even in the absence of lane markers. Next-generation cameras also offer improved detection of objects such as cars and pedestrians. More robust surround sensing is

made possible through a fusion of sensors such as radar and cameras, which makes highly reliable automated driving a possibility.

- Radar and cameras are vital sensors for both ADAS and automated driving. We forecast Bosch's annual sales in sensors and other ADAS related products to break the 2 billion Euro mark this year. As sales in 2017 were 1 billion euros, this will be a twofold growth over the course of 2 years.

- The sensors introduced could be compared to the eyes of automated driving systems. Meanwhile, the actuators would be the muscles of an automated driving system. They control the vehicle's stops and turns according to the data gained from the sensors.
- Redundancy in actuators is integral to automated driving. Redundancy refers to when a system is designed with two pathways to ensure that functionality is maintained even when breakdown or degradation occurs. Bosch's fail-operational electric power steering, Servolectric ®, enables power steering to function even if a failure occurs in the electrical system.
- Servolectric ® is compatible with automated driving ranging from SAE automation level 2 all the way to levels 4 and 5. Redundant logic of Servolectric ® is developed with an eye on the realization of steer-by-wire systems, which control steering actuators through use of electric signals without a mechanical connection between wheel steering and tires. Servoelctric ® was developed using modular design principles, to ensure wide compatibility regardless of automation level, and to reduce the time necessary for automakers to develop steering systems. Because Servolectric ® uses one common platform ECU, automakers only need to configure the motor according to their desired steering assist power. Bosch is one of the few suppliers worldwide capable of developing steering control units that incorporate the key steering system hardware element, namely the ECU, with assistance controlling software.
- Fail-operational Servolectric ® went into mass production this year, and is Bosch's first series production project globally to be adopted by Japanese automaker. Mass production of electric power steering systems with the safety necessary for SAE level 4 automated driving is scheduled to begin after 2020.
- In 2015, Bosch acquired the joint venture that develops and manufactures steering systems, and it became the Automotive Steering division of the Bosch Group. Steering systems are an essential technology for

automated driving. This acquisition was our strategic decision to add steering systems to our portfolio. The number of employees engaged in steering systems in Japan has nearly tripled since the acquisition in 2015.

- Safer and more convenient driving is not the only thing that automation technology can offer. This technology can also free us from the stress involved in parking. Automated valet parking technology allows drivers to disembark in a designated zone, after which the car will automatically drive to a determined parking space. Vice-versa, drivers can command their car to meet them in designated boarding zones.
- In 2017, Bosch, in cooperation with Daimler, carried out the first demonstration of automated valet parking at the Mercedes-Benz Museum in Stuttgart. Bosch's automated valet parking system is capable of automated parking in environments where human-driven cars, pedestrians and automated vehicles share space.
- In 2017, we established a dedicated business unit for automated valet parking, to work toward commercialization in Japan. Achieving automated valet parking will not only free us from stress, such as searching for parking spaces or being forced to race through parking lots in the rain. But, it will also use parking spaces more efficiently as we won't have to worry about space to open and close doors. Parking lots with automated valet parking will be able to hold over 20% more vehicles than lots without it.
- Additionally, in the case of on-site transport of goods, automated valet parking technology together with infrastructure, allows for low-speed driverless transport. Not only preventing injury and property damage from accidents, it will also optimize the distribution process by eliminating driver standby time. This year, we started a pilot project of low-speed driverless transport system within a logistics facility in Japan. It is the first test for the global Bosch Group with plans for technical testing for practical use.
- Our AVP technology can contribute to easing 2 major pain points of the Japanese society; one is utilization of small parking spaces, another is improving labor shortage in the logistics industry. As Bosch automated valet parking can be installed in existing parking lots, we believe the market potential is strong.

- CO2 regulations are growing more strict worldwide. As we discussed at the outset, climate change brought about by CO2 emissions are a pressing issue. Electrified mobility is one important solution to climate change. This is why Bosch has been investing 400 million Euros into vehicle electrification every year, and we continue to see the results of those investments. At the end of 2018, we had the start of mass production of 48 Volt hybrid system batteries in China.
- These systems can also be installed in compact cars, and we estimate that by 2030, 26% of all new vehicles produced worldwide will be equipped with 48 Volt hybrid systems. Japanese automaker's scheduled model with Bosch component for the 48V hybrid system will go into series production in the second half of the year.
- Furthermore eAxle, another important component of electrification, will enter mass production this year. eAxle is an electrified axle with integrated motor, inverter and transmission. Integrating these three components not only improves powertrain efficiency, but also reduces costs. eAxle is at the forefront of Bosch's electrification business, and alone is expected to generate sales running into the billions.
- Electrification is not only for passenger vehicles. According to studies released by the Ministry of Land, Infrastructure, Transport and Tourism in September of last year, the number of home deliveries in 2017 reached 4.2 billion parcels. Since surveys began 30 years ago, the number of home deliveries has soared. Each parcel delivered results in an estimated average emission of 284 g of CO2.
- Engineers at Bosch continue to make united efforts to ensure that powerful diesel-engine commercial vehicles are able to meet future emission regulations around the globe. Along with further improvements to combustion engines, electrification is an important approach when addressing commercial vehicles. Bosch has a variety of electrification solutions in place for commercial vehicles. Commercial vehicle powertrains, with integrated motors and inverters, and electric drive modules, are available for trucks of up to 7.5 tons. As we announced recently, we are also cooperating with a Swedish fuel cell stack developer, Powercell, in large-scale production of fuel cells. Through this partnership, we hope to significantly accelerate the evolution of fuel cell powertrains.

- The last thing I would like to discuss, related to the mobility field, is our solution for safe digital vehicle key management, Perfectly Keyless. Car sharing and driverless ride-hailing services may play an important role to solve public issues of Japan such as providing better mobility to those in need.
- Fleets dedicated to these services will be used by multiple users, so digital keys will provide a convenient and safe means of accessing vehicles. Several years ago, however, keyless entry systems began facing issues of theft by relay attack. Last year, several incidents of similar vehicle theft were reported in Japan for the first time, and there are worries that relay attacks could become widespread here as well.
- Perhaps you believe that, when looking for both convenience and safety from digital keys, one will be sure to suffer. With Perfectly Keyless, however, Bosch is attempting to combine both safety and convenience in a way that was not possible with previous keyless entry systems. We would like to first show you how Perfectly Keyless works, using the Ford Mustang currently beside me.

- This solution can be applied to privately owned passenger vehicles, car-sharing vehicles, and fleets owned by distribution companies and other businesses. Furthermore, digital keys used to open trunks can be assigned to specific times and delivery persons, offering the added benefit that trunks can also be used as delivery boxes.
- So far, we've been discussing Bosch's initiatives from the technology and business aspects. But both the 2018 increase in sales and the various initiatives I have introduced today would not have been possible without our associates. Just as we've invested in expanding business, we have also focused on creating work environments that ensure respect and appreciation for all Bosch associates. If we could have a little more of your time, Alexandre, who oversees HR, will now discuss these efforts.

- Thank you, Klaus. In recent years, we took a stronger look at our attitudes towards diversity. As a corporate enterprise with some 410,000 associates worldwide, Bosch is committed to improving society by ensuring company environments where all people, regardless of personal identity, can exist in safety and peace of mind.
- Diverse not only in terms of age and in terms of gender, we employ workers from a wide range of nationalities. Recently, an in-company

network for LGBTQ associates and allies has also been established in Japan. Associate diversity is the source of corporate competitiveness at Bosch. We understand the opinions and ideas of a single group poses a risk. We believe that the ideas produced by associates from a diverse set of mind and backgrounds are key to business continuity.

- It's been over 30 years since Bosch first began efforts to nurture the physical and mental health of our associates by encouraging them to take advantage of paid leave. Currently, use of paid leave by non-management is over 98%, much higher than the Japanese average of 49%.
- Furthermore, to ensure that associates from a variety of lifestyles are able to work in a flexible manner, we introduced a work-from-home system for associates engaged in child and nursing care since 2011. In 2013, this system was enlarged to sick or injured associates. In 2015, we included all associates engaged in duties for which work at home applies. Associates can also work shortened hours from home. Combining the flex-time and work-from-home systems provide associates with a high degree of flexibility. We strive to provide work arrangements so that associates are not forced to abandon their careers due to changes in lifestyles, such as child and nursing care demands.
- Bosch also has unique programs to support older associates. Apart from our obligation to provide stable employment until age 65 for those who wish to continue working, we also offer the Bosch Management Support (BMS) program. It provides part-time in-house opportunities for retired associates. This program allows us to utilize the skills from experienced senior associates. The program includes a platform to match retired associates with project leaders in need of support. The BMS program was introduced in Germany, and is currently available in many other countries. The BMS program was introduced to Japan in 2010, and so far BMS staff have been dispatched to consult on nearly 200 projects covering engineering, finance and manufacturing.
- I hope you enjoyed our presentation. While we discussed Bosch technologies and business activities we also presented our initiatives in diversity and hopefully shared a better view into our corporate culture. It's said that the automotive industry is currently approaching the transformation that occurs only once in a 100 years. As we approach this change, as well as in future years to come, we at Bosch believe that contributions to society and pursuit of innovation are indispensable to

remaining the leader in innovation, building new technologies and markets. This, more than anything, is the Bosch DNA, passed down to us by our founder, Robert Bosch. If you could feel even a fraction of who we are, today, it is our greatest honor. Thank you for listening.