

October 24, 2019

A presentation by Dr. Stefan Hartung

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at the press conference on October 24, 2019

at the Tokyo Motor Show

Check against delivery.

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Ladies and gentlemen,

It has been two years since the last Tokyo Motor Show. The environment encompassing mobility is changing significantly and at high speed. As environmental regulations get tougher each year, automakers are intensifying their focus on improving fuel efficiency and developing and popularizing next-generation vehicles including electric vehicles. And there are also social problems unique to Japan's aging society, such as the increase in traffic accidents being caused by elderly drivers, that are creating an increased need for new mobility solutions.

Bosch strives to respond to social issues surrounding mobility, both locally and globally, while listening to the voices of automakers, including our Japanese customers. As a leading global supplier, Bosch has promoted automation, electrification, and connectivity in the pursuit of mobility that is as emissions-free as possible, safer and fascinating. Our announcement that we will be carbon neutral in our locations worldwide by 2020 is proof of our particular commitment to environmental measures. Bosch will be the first industrial enterprise to make all its locations worldwide carbon neutral within one year. And we're applying the same determination to deliver efficient powertrains, from combustion engines to fuel cells. We want mobility that helps keep our planet healthy and the air in our cities clean.

In addition to automation, electrification and connectivity initiatives that we have been focusing on, Bosch is working on new elements that did not exist in the previous motor show. That is Personalization.

People's awareness of the automobile has changed, and as urban mobility becomes more colourful, for some people cars are no longer the first choice. Since various services such as ride sharing, intermodal and ride hailing have appeared, we are turning into a society where individuals can personalize their choice of transportation method to meet their needs. Bosch is also moving forward with mobility solutions in this new era. PACE, which is Personalized, Automated, Connected and Electrification. This is what we are proceeding for mobility in the future.

Today, I would like to take the opportunity to introduce how Bosch is shaping the mobility of the future with PACE.

As a leader in innovation, Bosch leads the market in mobility that helps to reduce emissions as much as possible. Over the past few years, Bosch has in-

vested 400 million euros in emission-free mobility annually. No company offers such a wide range of solutions for electrification. Bosch is also an innovative leader in driving electrification for a wide range of mobility from e-bikes to trucks. It is becoming ever more obvious that the electrical powertrain will be Bosch's next success story. Both technologically and commercially, we lead the way. We lead the way in the efficiency of our components, and have a broader footprint than other suppliers.

And growth is on its way. In 2018, we acquired orders for 30 electromobility projects worth 8 billion euros, and the first half of 2019 has already seen a series of further orders worth 5 billion euros. The total value in the last 18 months thus amounts to 13 billion euros. As early as 2020, our sales in this area will pass the one-billion-euro mark. For 2025, we have set ourselves a sales target of 5 billion euros – a target which we will surpass. Our products are finding a market, and our upfront investments are paying off.

eAxle is one of the important components of electrification. eAxle is an electrified axle with integrated motor, inverter and transmission. Integrating these three components not only improves powertrain efficiency, but also reduces costs. It also makes it possible for automakers to shorten the development time. eAxle is at the forefront of Bosch's electrification business, and vehicle featuring our eAxle will be launched in China in 2020.

The electrification of two-wheelers is also steadily taking shape. Bosch's two-wheeler portfolio includes lithium-ion batteries, displays, control units, drive units, safety systems and others. It can be provided as an electrified system that integrates all of the main components needed for an electric two-wheeler. The 48-volt central drive system has already been adopted by Govecs in Germany, NUUK in Spain and Peugeot in France, and can be provided in Japan as well. We see increasing activity in Japan towards promoting the uptake of electric two-wheelers, such as the establishment of a consortium aimed at standardizing exchangeable batteries and battery exchange systems for two-wheelers. We expect that Bosch's 48-volt central drive system will contribute to Japan's electric two-wheeler market.

When it comes to 48-volt battery, Bosch is aiming to achieve a leading position in the market with its 48-volt battery, and has concluded a long-term cooperation agreement with CATL for the production of the relevant battery cells.

Currently, demand for 48-volt mild hybrid systems is growing in Europe and China. In addition, the 48-volt mild hybrid system is attracting interest from

Japanese automakers as well, because it can increase fuel efficiency by up to 15% while being lower in cost than a full hybrid system and compact in size, making it relatively easy to mount on an automobile. In fact, in early next year, a Japanese automaker is planning to sell a model fitted with Bosch's 48-volt mild hybrid system.

And, we estimate that by 2030, up to 20% of all electric vehicles will have a fuel cell on board. With the aim of growing our presence in the fuel cell market, Bosch is currently preparing to manufacture a Bosch stack. We are further refining the stack made by our partner Powercell, which already offers the highest power density in the market.

We are also steadily moving forward with efforts targeting safer mobility via automation. Bosch is developing solutions for an increasingly automated driving, such as driver assistance systems, automated valet parking technology, and accurate vehicle localization.

In July this year, Bosch and Daimler obtained approval for automated valet parking technology at the Mercedes-Benz Museum in Stuttgart as the world's first automated driving system (SAE level 4). We will have fully automated parking for production before fully automated driving.

Automated driving is not just happening in Germany. Japan is also heavily involved. In Japan this year, we began applying automated valet parking technology and conducted the world's first pilot project of low-speed unmanned transport for the Bosch Group. It aims to improve the efficiency of the logistics process, and we are planning next verification testing in order to make further progress toward practical use.

And, in order to succeed in automated driving, the vehicle must always have information that senses the exact position of the vehicle. To achieve this, Bosch has been working since 2017 in Japan to develop Road Signature, a vehicle localization technology that uses vehicle-mounted video and radar sensors. In addition, Bosch has been working since October this year to collect Road Signature data on expressways in the Kanto region, such as the Tomei Expressway, the Chuo Expressway and the Kan-etsu Expressway. We expect to complete acquisition of map data on those major expressways that can be integrated into a highly precise 3D landscape for automated driving in the Kanto region in 2020.

Self-driving without drivers and automated valet parking play an important role in shaping future mobility. Ahead of others on this point, Bosch is an innovative leader in the field of automated driving.

So far, I introduced how Bosch is a leader in innovation, in the fields of Electrification and Automation. Now Bosch is also becoming a leading provider of connected mobility services, serving both automotive manufacturers and new market players such as mobility service providers. Let me pass on to Markus Heyn to introduce our achievements in connected solutions for Fascinating Mobility as well as the new element of Personalization.

Thank you Stefan.

Cars of the future will be connected. By 2025, some 470 million vehicles are expected to be linked to the internet around the world. In recent years, many companies have entered this connectivity area and the market has become active. But there is no global company other than Bosch, that has experience and expertise on every level of the IoT including hardware – such as sensors and control units, software, services, as well as artificial intelligence and the connectivity infrastructure.

A typical connectivity solution where we demonstrate this set of capabilities is “Perfectly Keyless”. It allows the smartphone and vehicle to communicate, allowing the door to be locked and unlocked and the engine to start without an actual key. While offering the convenience of being able to exchange keys on a smartphone, the solution guarantees a level of safety that is not possible with conventional keyless entry systems. It can be used for privately owned passenger cars, car-sharing vehicles, and vehicles owned by operators such as logistics companies.

We see that the number of packages handled by courier services has increased rapidly in Japan. If Perfectly Keyless is used by courier services, there is a possibility that the trunk of a vehicle can be used as a delivery box. Solutions like Perfectly Keyless will positively impact issues caused by shortage of drivers in the logistics industry in Japan and reduce the effects on the environment.

Finally, I would like to introduce our new approach to personalization. First of all, Bosch is supporting mobility service providers’ adaptation to the multi-modal urban transportation infrastructure so that they can develop their businesses smoothly. With this new approach to personalization, Bosch supports the personalization of people's movement while reducing the burden on driv-

ers, cities and the environment. For example, we are beginning to offer solutions that help to meet the needs of the individual, such as the electric scooter sharing service “COUP” in Berlin, Madrid, and Paris, and the ride-sharing service “SPLT” in Europe, the United States and Mexico. In addition, the cloud service to supplement the battery management called “Battery in the Cloud” that Bosch provides to DiDi in China, monitors the battery status based on real-time data. The smart software in the cloud constantly analyzes the battery, directs the optimal charging process in each case, and therefore makes it possible to extend the use-time of the battery. In Japan, we are proposing implementation and pilot tests of Battery in the Cloud for Japanese OEMs and Mobility Service Providers.

Since its founding, Bosch has been focused on providing solutions that enrich people's lives and society in line with the corporate slogan “Invented for life.” Bosch will continue to shape the new era of mobility with PACE, which is the addition of Personalized to the three elements that we have been focused on: Automated, Connected, and Electrified. Stay tuned to Bosch.

Thank you for your attention.