

Bosch Corporation

**The new R&D facility and
the Tsuzuki Ward Cultural Center (tentative name)**

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Opening remarks from Klaus Meder, President and Representative Director of Bosch Corporation, Japan

Hello, everyone. I'm glad so many of you have been able to join us today. The reason for today's event is that we have an important announcement to make. I would like to explain about our new Research and Development center. A key milestone into the future of the Bosch Group in Japan.

The automotive industry is undergoing an unprecedented transformation with SPACE. SPACE stands for Software, Personalization, Automation, Connectivity and Electrification. This is in addition to the evolution of IoT, AI, and other technologies. I am very happy and excited that Bosch can contribute and is actively shaping this transformation of the automotive industry. Bosch is working on electrification, automation, connectivity and personalization with the vision of making the mobility of the future safe, sustainable, and exciting. We are committed to further enhance our technological capabilities, expand our leadership, and demonstrate our strength in the automotive industry.

Strengthening development capabilities in Japan

On the road to future mobility, the move toward ever more sophisticated electronics and software is rapidly picking up pace. As a result, the complexity of automotive engineering is considerably increasing. In response to these trends, Bosch launched the Cross Domain Computing Solutions Division in January last year. The division is responsible for providing solutions to reduce and control the complexity of future vehicle systems through cross domain software and electronics technologies.

We are already promoting an integrated approach in this way. In order to realize the mobility of the future, it is important to share knowledge and to organize work-flows and project management integrating various fields in a cross-divisional manner.

The construction and design of our new research and development facility is based on this idea. Bosch opened its R&D facility in Tsuzuki Ward, Yokohama, in 1990. Since then, our collaboration with the Japanese automotive industry and our innovativeness have gone from strength to strength. To name just two examples, we have made gasoline engines more efficient and further modified automotive safety technologies such as the antilock braking system and

electronic stability control. Along with our success, we constantly increase the number of associates. This led to an extension of our existing facility and to leasing of several locations in Yokohama.

And now, we are constructing the new R&D facility just two kilometers from the original one. The new facility will be the key for Bosch in Japan to respond to fundamental changes in technologies and markets, and to tailor our products and services better to local customers' needs.

The new facility is located in Tsuzuki Ward, Yokohama City, about a five-minute walk from Center Kita Station. The facility has 7 floors above ground and 2 floors below ground. The total floor area will be 53,000 square meters. The total floor space is more than double the size of the existing R&D facility in Yokohama. Bosch is increasing its software engineers globally by 10 percent annually. In Japan, we are planning as well to increase the number of our software engineers by more than 200 over the next few years. The new facility will have capacity to accommodate the increasing number of software engineers and AI savvy associates that we will focus on in the future. It will house divisions and group companies in the areas of vehicle control, safety systems, driving assistance and automated driving, Human Machine Interface, in-vehicle electronic components, vehicle software, connected services, engineering and automotive aftermarket.

In addition to Mobility Solutions, divisions and group companies of Industrial Technology, Consumer Goods, and Energy and Building Technology will also move into the new facility. The new facility will also serve as the headquarters of Bosch Corporation, which is currently located in Shibuya. This means that the new facility will be a new home to about 2,000 associates. We will bring together associates from various Bosch locations that are currently scattered across eight locations in the Tokyo-Yokohama area.

Some people might wonder why Bosch in Japan is building a new large-scale facility now. Especially when many companies are reassessing their use of offices due to low office utilization caused by the coronavirus pandemic. We can name two reasons: first, by setting up our own R&D facilities with laboratories, we will have an environment where development can proceed more freely from a long-term perspective. The second reason is that Bosch is a company that values dialogue. We believe that having face to face

communication contributes to promoting collaboration among associates and enhances creativity. The new facility will provide an adequate environment for workshops, training sessions, and other activities that can only be achieved face-to-face.

The construction will be completed in September 2024. The relocation to the new facility will be completed by the end of December 2024. I am confident that this integration will promote collaboration and generate many pioneering ideas which will help Bosch to grow its business further in the country.

The existing R&D facility will continue to be used for powertrain related research and development, and as well as home to Bosch's global headquarters for the two-wheeler and powersports business. The two R&D facilities, the current and the new one in Tsuzuki Ward, will combine more than 40 percent of Bosch Group associates in Japan.

We will continue powertrain-related research and development also at the Higashimatsuyama Plant in Saitama Prefecture. And we will further strengthen our R&D operations in Japan by promoting collaboration and cooperation between business units based on these two bases in Yokohama.

We will invest some 39 billion Japanese yen for this construction project. This is the largest single capital expenditure of the Bosch Group in Japan, since we started our business in 1911. By setting up our own R&D facilities, we will have an environment where development can proceed more freely from a long-term perspective. The establishment of the new R&D center shows Bosch's commitment to further strengthen its presence in Japan. And it also illustrates the importance the company attaches to the Japanese market and its customers.

In addition to the Bosch facility, we are constructing the Ward Cultural Center on the premises, since we were selected by Yokohama City as the project owner.

While we conduct business in practically every corner of the globe, this is the first time that Bosch has taken part in creating a new city block as a corporate citizen in a public-private-partnership.

Furthermore, we are expected not only to construct the Ward Cultural Center,

but also to create a lively community. Now I will hand over to Jun Shimoyamada, who is leading the project. He will give you an explanation in terms of how we will contribute in creating a vibrant community.

Initiatives to create a lively local community

My name is Shimoyamada and I am responsible for the FUSION project.

We call the new R&D facility and the Ward Cultural Center the "FUSION" project. The project concept of FUSION is "to create a cultural hub of the future through a fusion of the historic culture of Tsuzuki and Bosch as a global technology company." With this concept at the core of the project, we will realize a synergistic effect between the new facility and the Ward Cultural Center that will lead to invigorating the local community. With the construction, we will not only focus on the growth of our own business. We also want to meet the expectations of Tsuzuki Ward residents and contribute to the creation of a community that nurtures the culture of Tsuzuki for the future.

In 1911, Bosch started its business, in the Yokohama area. In 1990, Bosch selected a site in Tsuzuki Ward in the Yokohama area for its R&D facility. Since then, Bosch has grown its business together with this area. Tsuzuki Ward is home to many associates from Germany and their families. And they are well integrated into the community. It is a great honor for us to establish a new R&D facility and which will also serve to promote our brand, in such a familiar place for Bosch.

In 2015, Bosch opened its first branding location site in Japan, "café 1886 at Bosch" on the ground floor of the Shibuya headquarters, which includes a showroom to introduce the latest Bosch products, technologies, and services. This was the first time in the world for the Bosch Group to operate a commercial café for the general public as part of its brand communication activities. The café was set up with the aim of making the Bosch brand more familiar to Japanese people. To date, some 400,000 people have visited the café.

This time, we are working on a unique project that combines a Bosch office building with a public facility, the Ward Cultural Center. It is both the first time for the Bosch Group to undertake a real estate project in such a public-private partnership, and to be involved in creating a lively community. With the

number of visitors projected to reach 200,000 annually, the Ward Cultural Center will have significantly more visitors than the “café 1886 at Bosch” in Shibuya. Therefore, through this entire FUSION project, we would like to make it a destination where people in Japan can get to know Bosch on a grander scale than “café 1886 at Bosch.”

In addition to the Bosch R&D facility, we were also entrusted with the construction of the Ward Cultural Center, a place for the residents of Tsuzuki Ward to gather. We also promised the city of Yokohama that we would make this area a vibrant place and contribute to the enrichment of the lives of local residents and visitors. We will be promoting a variety of initiatives to make this a place that not only visitors to the Ward Cultural Center, but also the general public can enjoy throughout the year.

Now, let me introduce the Ward Cultural Center and our planned initiatives in more detail.

We will design and build the Ward Cultural Center based on specifications set by Yokohama City. It will have four floors above ground and one floor below. The Ward Cultural Center will have a hall with approximately 300 seats on the second floor, and a gallery, a rehearsal room and others on the first floor. In addition, there will be an overpass connecting the Bosch new facility and the Ward Cultural Center. The building will feature a seismically isolated structure and will also incorporate a barrier-free and disaster-resistant design so that people of all ages can spend their time in safety and comfort. The construction of this ward cultural center will be completed in September 2024 and will be sold to Yokohama City. It is scheduled to be open by the end of fiscal year 2024, or March 2025.

On the ground floor of the Bosch R&D facility, we plan to open “café 1886 at Bosch” for the public to relax. The café will offer a menu tailored to local target groups in a comfortable setting that incorporates elements of German culture and Bosch. The ground floor will also feature a Bosch showroom that will showcase the latest Bosch products, services, information and concepts.

Between the Ward Cultural Center and the Bosch R&D facility, there will be an all-weather plaza. The design allows for year-round community events such as the German Christmas Market in Tsuzuki Ward, which Bosch has

participated since its first event. We will create an environment where people can freely and happily come and go in their daily lives, creating a lively atmosphere centered on the plaza and contribute to activating community interaction. In order to realize these plans, we will work closely with all related parties and seek their cooperation.

The area is originally developed based on the Green Matrix System, an urban plan that links forests, waterfront areas, and historical heritage with greenways. As a result, the rich nature of the local area is preserved at the same that the city developing as a livable place of comfort. In Germany, there are many places where we can enjoy the richness of nature. For this reason, we are very sympathetic to this idea. The site of the FUSION project will be landscaped in the same way with plants and greenery to provide a relaxing space for visitors.

The sustainability efforts of the FUSION project are not limited to greening. Now Klaus Meder will talk about Bosch's efforts in sustainability and those related to this project.

Bosch's commitment to sustainability at the new facility

Bosch achieved carbon neutrality worldwide in the spring of 2020, and was the first global operating industrial enterprise to do so. The group is working now on reducing emissions generated along its supply chains and during the lifecycle of its products by 15 percent by 2030. In terms of volume, this is 67 million metric tons, a figure roughly twenty times greater than what our locations emitted in our baseline year of 2018. We are seriously taking measures against climate change. It is not only our obligation – we see it as a chance to create our future.

We will incorporate many of our technologies and initiatives into our R&D facility that make the most use of natural resources. It illustrates Bosch's commitment to sustainability.

For example, Bosch believes that hydrogen has a bright future as an energy source. We are not only proceeding with development of our product portfolio for mobile fuel-cell applications. We are also developing stationary solid oxide fuel cell systems. So called SOFC. SOFC generates electricity and heat, and can be operated with various energy sources from city gas, over bio gas to

hydrogen. If the fuel cell is operated with hydrogen, there are no direct CO₂ emissions at all.

For our new building, we will install city-gas based SOFC systems and generate electricity. Bosch is already introducing SOFC systems as pilot projects at several locations in Germany. However, this is the first time that the Bosch Group has decided to install SOFC systems at a location in the Asia Pacific region.

When the facility opens in 2024, we plan to install the first SOFC units. By this, it is possible to reduce CO₂ emissions and electricity costs by 20 percent using city gas in the Yokohama area, compared to the power provided by a typical thermal power plant. A further benefit will be expected, by making use of waste heat from SOFC as a heat source for air conditioning. In 2026, we are looking to expand the power generation to up to several hundred kW.

We will also install solar panels on the rooftop. This will generate 50 megawatt-hours (MWh) of green energy per year through 50kW solar panels.

In addition, the facility will also feature louvers and an automatic ventilation system for an comfortable and environmentally friendly air conditioning system. By installing louvers on the windows and tilting them by 30 degrees, the amount of solar radiation received from the sun is reduced to about half of that of conventional systems. This suppresses the rise in indoor temperature and reduces the load on the air conditioning system.

For the automatic ventilation system, that automatically opens and closes the windows, we will install Bosch sensors. On sunny days, the sensors will automatically detect temperature, humidity, pollen and PM_{2.5} conditions and automatically open and close the windows for ventilation. As a result, the total electricity demand for cooling and mechanical ventilation will be reduced by approximately 68 megawatt-hours (MWh) per year.

The facility will also promote environmentally friendly initiatives in areas other than electricity demand. Bosch sees water as the basis of life, and we believe that it is our responsibility to preserve it. The facility also has an underground rainwater tank with a capacity of 330 cubic meters to store, filter, and reuse rainwater. It will lead to a 13 percent annual reduction in water use. In this

way, the facility will be environmentally friendly, making use of natural resources to generate energy, reduce CO₂ emissions, and make effective use of water resources.

In the construction process, we will use digital twin technology for the first time as the Bosch Group in Japan. This technology was also introduced at our semiconductor fab in Dresden, Germany, which we opened in June last year.

In all processes from planning and design to construction and post-completion management, Building Information Modeling (BIM) enables us to realize a digital twin by integrating various information related to buildings. That information includes such as infrastructure and cable ducts, into a 3D model of the building. This makes it possible to plan process optimization and simulate repair work without affecting the actual work in progress. It eliminates construction waste, reduces costs, resource use, and carbon footprint, and promotes sustainability and a circular economy.

In conclusion, the FUSION project will start the launch of a variety of new initiatives. This includes the creation of new innovations for the automotive market, the creation of new liveliness in local communities, and new initiatives in sustainability. In other words, this is the beginning of a new chapter for the Bosch Group in Japan.

In the future, therefore, Bosch will not only continue to play a leading role as a supplier to the Japanese automotive industry, but will also contribute to an active and lively community in Tsuzuki Ward.

The Bosch group in Japan has a great future with the new facility in Yokohama. Bosch will continue to create innovations that will drive the future of mobility for the next 100 years and beyond.

Thank you for your time.