

September 11, 2018

How Bosch digitalises the Automotive Aftermarket

Manfred Baden, chairman of the Divisional Board of the Automotive
Aftermarket division of Robert Bosch GmbH

and

Dr.-Ing. Hans Peter Meyen, member of the Divisional Board of the
Automotive Aftermarket division of Robert Bosch GmbH

at the press conference at the Automechanika on September 11, 2018

Check against delivery.

Ladies and Gentlemen,

welcome to our press conference here at the Automechanika. To start with, together with my colleague Hans-Peter Meyen I would like to give you an insight into the developments at Bosch Automotive Aftermarket.

Connectivity, automation and new drive solutions will have a significant impact on our industry. The vehicles are getting more and more sophisticated. Equipped with driver assistance systems, display and infotainment systems, many of them are already safer and more comfortable on the road. Optimized and advanced combustion engines, hybridization and electrification increase the efficiency of drive systems. Bosch is working on realizing the vision of mobility without accidents, stress and as emission-free as possible. The technical paths on this way are automation, connectivity and electrification. This is a major challenge for automobile manufacturers the aftermarket alike. But at the same time, there are new opportunities. Even today, many new offers and business models are emerging. On one hand, Bosch supports the effective and efficient maintenance of the current stocks of vehicles by means of innovative service concepts. On the other hand, Bosch is preparing its partners to meet the ever-increasing challenges of tomorrow.

Before going into details about this fascinating topic, let me first present some key data on our current economic development. Bosch Automotive Aftermarket is part of the Mobility Solutions business sector, which increased its turnover by 7.8 percent to 47.6 billion euro last year. This means, that the business sector has grown stronger than the market and we expect that this positive development will also continue in 2018.

In total, Mobility Solutions currently employs 232 000 associates, of which 17 000 work at Automotive Aftermarket. As mentioned at the beginning, our industry is on the brink of an evolution which will be both a challenge and an opportunity. Opportunities exist for all companies

focusing on digitalization and connectivity in good time. Bosch Automotive Aftermarket is also focusing more than ever on the range of connected products and services.

Ladies and Gentlemen,

until 2025, more than 470 million connected vehicles will be on the roads all over the world (source: PwC). In Europe alone, the market for software and data services will also triple to about 34 billion euros by the middle of the next decade. This corresponds to an annual turnover of about 140 euros per vehicle (source: CLEPA).

I would like to use the example of our approximately 16 000 Bosch Car Service workshops in more than 150 countries around the world to describe precisely how connectivity and digitalization are changing the everyday life of our industry.

Using our “**Bosch Car Service Connect**” app plugged into the vehicle’s OBD connector by means of a connector, drivers receive driving information and information on the vehicle condition in real time. If a vehicle component reports an error, for example, the app will document it a short description. At the same time, the driver can use the app to contact the Bosch Car Service, to transmit the error codes read out, and to make an appointment directly. In that way, the Bosch Car Service is able to prepare itself for the repair work in advance.

In addition to the „Bosch Car Service Connect“ app, in a pilot phase, we have successfully launched the **MyBoschCarService online portal** in the Benelux countries and are now also rolling it out in Germany and other countries. On this service platform customers and the Bosch Car Service are connected and information such as, for example, online appointments, service history, offers or news, is made permanently available.

Both of these solutions complement each other. Whereas the **Bosch Car Service app** always keeps the driver transparently and comfortably

informed with regard to his car, the digital connection to the customer via the **MyBoschCarService online portal** opens up new possibilities for additional revenues and optimizes workshop processes for the Bosch Car Service workshops.

Our connected solutions via **Bosch Connected Repair** are yet another example. Using this solution, the vehicle identification at the workshop is required only once. Afterwards, the data will be transmitted wirelessly to all connected devices. Compared to service and maintenance without Bosch Connected Repair, this results in a time saving of 10 minutes per vehicle.

Bosch Connected Repair connects vehicle reception, vehicle information and test devices and creates a common data basis. **Test reports**, comments and images are directly stored at the digital work card and can be retrieved at any time. This means that **all associates** have easy access to the digital working card and the vehicle status at any time. This saves time and eases the workflow at the workshop a lot.

In case of connectivity, Bosch also relies on partnership. In future, open cross-manufacturer platforms and systems will be an even more important factor for success as the automotive environment faces increasing data volumes. Already at the end of 2017, the free **data marketplace Caruso** started its operation. It closes the gap between data providers and users while connecting data of different players in a **common ecosystem** and thus paves the way for several new services such as, for example, the **remote diagnosis** in case of vehicle problems or a direct **appointment** with the workshop. **Fleet managers** are supported by the automatic transmission of position data, mileage and routes. We consider the new cooperation with Caruso to be an important step for the digitalization of the automotive aftermarket.

Besides connectivity, **new drives** are both a challenge and an opportunity for the workshops at once. It is important to deal with **electromobility** as early as possible. Especially the battery-related

technology is highly sophisticated and requires great expertise. Thanks to the 48 volt electrical systems, more and more power units are already decoupled from the combustion engine even today in order to relieve it. These harbingers show how individual components and thus the requirements placed on workshops will change. For this purpose, we offer the workshops comprehensive training courses empowering the associates to work on the new electric high-voltage drives and its auxiliary units in a qualified and safe manner.

By 2020, Bosch aims on being **market leader for electromobility**. In this regard, we rely on our system know-how as well as on the development and production of the key components such as the electric motor, the power electronics, and battery systems. Furthermore, Bosch also offers **customized solutions for the aftermarket**, available as modular components or comprehensive overall solution. The complete repair and maintenance will then be made by our global Bosch Car Service network. Accordingly, we also have comprehensive expertise in the field of e-mobility which reaches from the development of the technology to repairs and maintenance right from the start.

Ladies and Gentlemen, for 132 years Bosch has been one of the **innovation drivers** in the automobile industry. For half a century, Bosch Automotive Aftermarket has been the competent contact for retail trade and workshops. During this period, we were able to accompany a lot of developments concerning automobiles right from the beginning. When our business division was established **50 years ago**, for example, Bosch simultaneously launched the first electronically controlled gasoline injection system – the “Jetronic” – onto the market. Throughout the following years, this system became the decisive driving force for the increasingly widespread application of electronic systems in cars. Solutions such as ABS, ESP, airbag control, or the park assistant were created.

In parallel, increasingly powerful measuring and diagnostic systems allowed workshops to keep pace with the development of the vehicles. With solutions such as **Connected Repair, innovative training methods** for workshops using **Augmented Reality** as well as with new digital services, Bosch is still one of the pioneers on the market.

In order to continue working successfully in future, Hans-Peter Meyen will now present you the innovations we will present at the fair.

Ladies and Gentlemen,

some of you may still remember that – as pioneer – we sketched the vision of a connected workshop already back in 2014. At that time, we first presented Augmented Reality as an application. We were the first on the market and since then, we have continuously pushed this development forward. In the meantime, we have put a range of hardware and software solutions into practice. When you take a look at our stand afterwards, you will notice that we systematically continued this course. In all stages of workshop workflow, Bosch is able to offer solutions increasing both the efficiency and the customer satisfaction. From vehicle reception to diagnosis and from repairs to handing over the vehicle, we reliably and quickly support our customers all over the world with parts and offer workshop services from a single source.

Our **Workshop Management Software**, for example, contributes to substantial improvements in terms of efficiency and effectiveness. It depicts the **complete workshop process** with all economic, legal and financial aspects – from planning to management of individual modules such as finances, bookkeeping, parts identification and purchasing, RMI information and customer support. It is a **pure cloud solution** without need for any local hardware. The solution complies with the **General Data Protection Regulation**.

The user interface is **intuitive** and can be adapted flexibly. The software base is always up to date thanks to regular Microsoft, Incadea and Bosch updates and releases. The solution is simple and scalable according to the size of the workshop. The **software adjusts to the respective customer requirements** and even maps rather sophisticated requirements.

Of course we also support the workshops when it comes to increasing the effectiveness and efficiency in day-to-day operations at the vehicle and to keep up with state-of-the-art technology. After all, as Mr. Baden

has just outlined, automobiles get more and more sophisticated, and consequently the demands placed on workshops are increasing concomitantly.

With its **new Esitronic 2.0 workshop software**, Bosch now offers a version that can be used both online and offline. Among other things, it allows workshops, to **optimize repair and diagnostic processes**, **shorten vehicle handling** as well as **continuous online updates**.

With the help of a **free text search and a document preview**, users find necessary information very easily and quickly. It is possible, for instance, to search for a symptom, an error or for a certain vehicle component. As soon as the user types in the first letters of the search term, suggestions for suitable keywords are displayed. In that way, errors can be found quickly and can be resolved efficiently.

The **experienced-based repair – known errors** function provides yet another advantage. It is based on a principle called **collective intelligence**. At a database, Bosch stored more than 750 000 actual use cases collected in everyday workshop life. Once a known error is recognized at the diagnosis, a repair solution is automatically recommended which has already been assessed as a good solution by other users. In that way, users benefit from the experience of others and are able to contribute to further optimization of the "experience-based repair – known errors" function using the integrated **feedback function**.

Our developers optimized the loading times as to ensure the searched information is displayed quickly. In that way, even users with a low internet bandwidth can comfortably use Esitronic 2.0 Online.

In addition, the new Esitronic version also features an intuitive remake of the information types troubleshooting, maintenance schedules, convenient circuit diagrams and technical service bulletins. All current

users receive the **new Esitronic 2.0 Online free of charge as an update.**

The new Esitronic is also the centerpiece of the new compact **KTS 250 diagnostic tester** we are first presenting here at the Automechanika. It is suitable for smaller workshops or as an additional device in larger workshops. Its users are supported by an intuitive and Android-based user interface. Thanks to the Esitronic, about 150 passenger car brands are covered. This makes KTS 250 the fast, compact tester for the mobile control-unit diagnoses. It is **future-proof** due to its already integrated DoIP Ethernet interface. KTS 250 comes with an automatic vehicle identification supported by a **first-class VIN data basis**. And it offers comprehensive **vehicle coverage**, analogous to the large Bosch diagnostic testers with Esitronic diagnostic software.

Given the fact of new limit values according to the Euro 5 and 6 emissions standard, the accurate testing of injectors of common-rail systems is of increasing importance for the workshops. For this purpose, Bosch developed a new **DCI 700 diesel test bench** allowing for the accurate testing of all – Bosch and third-party manufacturer – injectors. Four connected injectors are tested easily and fast. There is no need for high-pressure hoses and the test cycle lasts only 20 minutes. Compared to conventional procedures, this significantly shortens the test.

The calibration works of radar and video sensors via the **Advanced Driver Assistance System** is also much faster. With its technology, this system provides for short set-up times and exact results. Here, the Esitronic software controls the vehicle-specific calibration and adjustment procedures. Our Advanced Driver Assistance System – abbreviated ADAS – is another example of how it is possible to efficiently check, mount and service sophisticated vehicle systems using innovative solutions.

The ADAS series includes the height-adjustable precision measuring bar SCT 415, for example. It supports all calibration methods for

camera sensors and magnetically records data for vehicle-specific calibration targets. SCT 415 comes with specific installation instructions, now also available for VW, Audi, Škoda, SEAT and alignment with the longitudinal vehicle center line. The triple mirror SCT 815, however, universally supports all Kia, Hyundai, Honda, Mazda, Toyota, and Lexus models for the calibration of radar sensors.

Mr. Baden already mentioned it: Bosch offers a comprehensive program of high-quality spare parts worldwide. From new part to series-remanufactured replacement parts and repair solutions, Bosch supplies the right spare part for almost any type of vehicle. Concomitantly, workshops benefit from the high competence based on decades of experience concerning original equipment. This means that every part stands out for its excellent functionality and is perfectly geared to optimum interaction with the vehicle's other technical components. At this point, I would like to mention the example of our Bosch wiper blades. They always fit perfectly – under all weather conditions, on any vehicle and thanks to the comprehensive product portfolio also for the most diverse market and customer requirements. In this case our commitment is: **safe, durable and quiet**. We offer **99% coverage**. Bosch wiper blades fit almost any vehicle from the latest passenger car model to commercial vehicles and classic cars. And with the help of the **Bosch wiper app** it is easy to identify the correct wiper for each vehicle.

The range of Bosch spare parts does not only meet the needs of current models. With our **Bosch Classic** section, we also cover the supply for classic cars with more than 60 000 products such as, for example, spark plugs, electric fuel pumps or components for Jetronic injection systems. And we offer additional alternatives by means of **remanufacturing** and repair of electric components and control units at the Bosch Electronic Service.

In addition and in cooperation with Bosch Service workshops, Bosch Classic also established a **network for modern-era classic and**

classic cars currently comprising 71 workshops in Germany, Austria, Switzerland and France having the necessary know-how for the maintenance on historic vehicles.

As already mentioned, Bosch pioneered using **Augmented Reality** in workshops. At a field study realized at Bosch Car Service workshops, we have now determined the benefits of these applications for everyday workshop activities. The result has shown that using Augmented Reality applications, time savings of 15 percent in average per step taken are possible even on common vehicles and less sophisticated repair tasks. By means of the Augmented Reality application, the mechatronics see and locate the position of hidden components. Work instructions or necessary special tools are also integrated into the real image. In that way, the next work steps are clear and unnecessary assembly works can be avoided.

Bosch also further develops **technical trainings for workshop associates using the Augmented Reality technology** – currently this is, for instance, the case in the area of electromobility. Here at the Automechanika, interested car mechatronics can extensively test the new trainings technology visiting a workshop on high-voltage engines. With the support of Augmented Reality, participants – amongst other topics – learn the differences between hybrid and fully electric vehicles, the functions and characteristics of different high-voltage components as well as strategies for troubleshooting. At the end of this year, Bosch will offer the first service training using Augmented Reality, the two-day training “High-voltage technician – working on self-protecting vehicles”. The training will take place at the Bosch’s Service Training Centers in Plochingen/Germany and in Ballerup/Denmark. This morning we have been awarded with the Innovation Award of the Automechanika fair for the application of Augmented Reality technology in technical service trainings – as winner of the category “Alternative Drive Systems & Digital Solutions”.

Let me repeat it again: the **profound expertise** of the staff **is the key for success** for every workshop. The current Bosch training portfolio at our Training Center in Plochingen offers more than 100 different trainings and has now been expanded by new interesting offers.

Ladies and Gentlemen, as you can see, we have created the necessary conditions for our trading partners and workshops to continue successfully mastering digitalization and connectivity. Convince yourself with a visit of our stand. Thank you for your kind attention, also on behalf of Mr. Baden. Now we are both looking forward to your questions.