

Press release  
13 October 2016

## **The Aachen Colloquium 2016: The future of driving pleasure.**

**Klaus Fröhlich, Member of the Board of Management at BMW AG, Development, outlines the forthcoming drive technologies set to take us forward into the future.**

**Munich / Aachen.** The BMW Group is a pioneer in the field of electric mobility and already offers a range of models with electrified drive systems. The all-electric BMW i3 and the five-strong line-up of plug-in hybrids – with their combination of electric motor and petrol engine – are already a sales hit with customers, and the BMW Group will develop even more models with electric drive systems in the future. Equally, though, conventional diesel and petrol engines will play a major role for a long time still.

In his talk at the 26th Aachen Colloquium Automobile and Engine Technology, Klaus Fröhlich, Member of the Board of Management at BMW AG, Development, presented the full spectrum of drive technologies possible in the future – and, in so doing, mapped out the journey ahead. One of the key messages of his speech centred on how the challenge of keeping both customers and lawmakers happy by meeting all their requirements would call for a wide variety of different drive systems. “There will be no such thing as a 'one-size-fits-all' solution,” stated Fröhlich confidently. “We see the approach of using myriad technologies continuing for many years.”

Although it is true that internal combustion engines will decline in importance in the medium term, they will play a vital role for a long time to come and still offer potential that could be tapped into with additional investment. However, a wide spread of evolutionary advances will be needed to meet future requirements with respect to CO<sub>2</sub> and other emissions, and 48V energy recuperation systems will play an increasingly important role in this regard.

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The proportion of electrified vehicles on the roads is growing steadily. In the USA and a number of European countries, demand is increasing at a faster pace than in Germany. Here, too, sales figures received a major boost from the launch of the BMW i3 with new 94 Ah battery. August 2016 saw worldwide sales of the BMW i3 rise by over 70% compared to twelve months previously. There is tremendous potential for electric mobility in China, although this is subject to considerable local variation. Electric mobility will continue to be multifaceted in nature for a long while yet, guided by the particular concept and market at hand. A total of 34,664 BMW i and BMW iPerformance models had been sold in 2016 up to the end of August. A significant fall in costs is not expected until after 2020.

It will be a few years before the battery electric vehicle (BEV) becomes the all-encompassing solution for customers and model classes across the board. Pure battery-electric drive systems allow customers whose daily journeys don't generally exceed 100 kilometres (62 miles) to enjoy zero-emission electric driving in small to medium-sized vehicles. The BMW i3 exemplifies a possible approach here, and now also offers customers an electric range of over 200 km (125 miles) in real-world use.

When it comes to medium-length journeys and mid-size vehicles, the BMW Group offers an extremely wide choice of plug-in hybrid models (PHEVs). These all-rounders offer an entry point into customer-focused e-mobility in many segments.

Meanwhile, hydrogen-powered fuel-cell electric vehicle (FCEVs) offer the ideal combination of zero-emission motoring and everyday practicality when extended ranges and high running resistances are required. The key benefit for customers of fuel-cell drive systems is their short refuelling time – which is similar to that offered by vehicles with conventional combustion engines. What is lacking here, though, is the requisite hydrogen infrastructure and production set-up, and cross-sector partnerships have been launched to accelerate the process of establishing such an ecosystem. All of which means that the large-scale manufacture of hydrogen fuel-cell technology will become viable in the course of the next ten years, putting it firmly on the radar for customer usage.



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The latest demonstrator and research vehicle with a hydrogen fuel-cell electric drive system is derived from the BMW Group's modular electrification toolkit. Partner networks, such as the one that exists between the BMW Group and Toyota, are an excellent way of arriving at objectives more quickly and cost-effectively.

Fröhlich outlines the roadmap to hydrogen-powered fuel-cell electric driving as follows: "BMW will enter the fuel cell market early in the next decade, starting with very small production runs. However, until 2025 at least costs will remain too high and the hydrogen infrastructure too sparse to allow broad-based market penetration. By the time the fundamentals are in place, the BMW Group will also have marketable products ready that are attractive to customers."

**In the event of enquiries please contact:**

Niklas Drechsler, Spokesperson Efficient Dynamics  
Telephone: +49-89-382-28149, Fax: +49-89-382-10881  
Email: [niklas.drechsler@bmwgroup.com](mailto:niklas.drechsler@bmwgroup.com)

Cypselus von Frankenberg, Head of BMW Group Innovation and Design Communication  
Telephone: +49-89-382-30641, Fax: +49-89-382-28567

Email: [presse@bmw.de](mailto:presse@bmw.de)  
Pressroom: [www.press.bmwgroup.com](http://www.press.bmwgroup.com)

**The BMW Group**

With its three brands BMW, MINI and Rolls-Royce, the BMW Group is the world's leading premium manufacturer of automobiles and motorcycles and also provides premium financial and mobility services. As a global company, the BMW Group operates 30 production and assembly facilities in 14 countries and has a global sales network in more than 140 countries.

In 2015, the BMW Group sold approximately 2.247 million cars and nearly 137,000 motorcycles worldwide. The profit before tax for the financial year 2015 was approximately € 9.22 billion on revenues amounting to € 92.18 billion. As of 31 December 2015, the BMW Group had a workforce of 122,244 employees.

The success of the BMW Group has always been based on long-term thinking and responsible action. The company has therefore established ecological and social sustainability throughout the value chain, comprehensive product responsibility and a clear commitment to conserving resources as an integral part of its strategy.

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