

Media Information
20 November 2018

A glimpse of the future: BMW Group uses virtual reality to design future production workstations

Fast and flexible collaboration between different divisions
Simple assessment of future production work processes
Planning new workstations based on 3D digitalisation of existing
structures

Munich. Virtual reality is increasingly finding use in BMW Group production. A few months before production of the new BMW 3 Series ramped up in Munich, BMW Group planners have completely laid out individual workstations in a virtual world. This includes cockpit preassembly, for example, where the cockpit is put together before being installed in the vehicle. For the first time, building, systems, logistics and assembly planners, together with production employees, were able to assess the whole of the new production area in virtual reality and test new procedures in 3D.

Matthias Schindler, responsible for Virtual Planning and Implementation in Production at the BMW Group: "Virtual reality technology has enabled us to set up cockpit preassembly workstations quickly and efficiently. Time-consuming trial installations that replicate the workstation in its actual dimensions were no longer needed. And the fact that all the specialists involved – from logistics experts to systems planners to production employees – were easily able to exchange ideas in the early stages was an important added benefit for the team. We were more transparent, more flexible and faster overall."

Production of the existing cockpit continued during preparations without any constraints, since planning only took up space in the virtual world. Being able to work with the same data and software also saved specialist departments and production staff a lot of time. Because it is so easy to use, experts were able to assess how much space the new system needed, for example, quickly and easily and incorporate production employees' know-how in planning from the beginning. Following a brief introduction and without any specialised knowledge, the team of representatives from different specialist areas was able to launch the project immediately. The software handles complex calculations for real-time rendering of all objects in virtual-reality glasses and simulations.

Media Information

Date 20 November 2018

Subject Future planning

Page 2

The basis for this kind of planning is digitalised 3D factory data. For the past several years, the BMW Group has been capturing the real structures of its plants in digital form with millimetre accuracy, using special 3D scanners and high-resolution cameras. This creates a three-dimensional image of production in the form of a so-called cloud diagram. Time-consuming, digital reconstruction of real structures and manual recording on site are no longer needed. Whether planning future workplaces or entire assembly halls, BMW Group departments can now combine existing data with a virtual "library" of shelves, lattice boxes, small load carriers and around 50 other widely-used operating resources.

If you have any questions, please contact:

Corporate Communications

Andreas Hemmerle, Communications BMW Group Production Network
Andreas.Hemmerle@bmw.de, Telephone: +49 89 382-21880

Sandra Schillmöller, Communications BMW Group Production Network
Sandra.Schillmoeller@bmwgroup.com, Telephone: + 49 89 382-12225

Media website: www.press.bmwgroup.com
Email: presse@bmw.de

The BMW Group production network

Strong customer demand and the launch of new models resulted in very high capacity utilisation for the BMW Group's production network in 2017. With 2,505,741 vehicles produced for the BMW, MINI and Rolls-Royce brands, production volumes reached a new all-time high. This figure included 2,123,947 BMW, 378,486 MINI and 3,308 Rolls-Royce units. The company's German plants, which produced more than one million vehicles, are responsible for roughly half of production volumes.

With its unparalleled flexibility, the leading-edge production system is in excellent shape for the future. Based on Strategy NUMBER ONE > NEXT, it is characterised by a high level of efficiency and robust processes. The BMW Group's production expertise represents a decisive competitive advantage and contributes to the profitability of the company and its sustainable success.

Quality and speed of reaction are key factors in the BMW production system, as well as flexibility. Digitalisation, standardised modular concepts and intelligent composite construction testify to the high level of expertise within the production network. At the same time, the production system offers a very high level of customisation and allows customer specifications to be modified up until six days before delivery.

The BMW Group

With its four brands BMW, MINI, Rolls-Royce and BMW Motorrad, the BMW Group is the world's leading premium manufacturer of automobiles and motorcycles and also provides premium financial and mobility

Media Information

Date 20 November 2018

Subject Future planning

Page 3

services. The BMW Group production network comprises 30 production and assembly facilities in 14 countries; the company has a global sales network in more than 140 countries.

In 2017, the BMW Group sold over 2,463,500 passenger vehicles and more than 164,000 motorcycles worldwide. The profit before tax in the financial year 2017 was € 10.655 billion on revenues amounting to € 98.678 billion. As of 31 December 2017, the BMW Group had a workforce of 129,932 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.

www.bmwgroup.com

Facebook: <http://www.facebook.com/BMWGroup>

Twitter: <http://twitter.com/BMWGroup>

YouTube: <http://www.youtube.com/BMWGroupview>

Google+: <http://googleplus.bmwgroup.com>