BMW GROUP THE NEXT 100 YEARS

Corporate Communications

Media Information
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BMW Group plans Additive Manufacturing Campus: Technological expertise in industrial-scale 3D printing to be consolidated at new location

Total investment worth over €10 million
Additive Manufacturing Campus to go on stream in early 2019

Munich. The BMW Group is to invest more than €10 million in a new Additive Manufacturing Campus. Located in Oberschleissheim, just north of Munich, the facility will allow the company to continue developing its expertise this field of work.
Udo Hänle, Head of Production Integration and Pilot Plant: "Our new Additive Manufacturing Campus will concentrate the full spectrum of the BMW Group's 3D printing expertise at a single location. This will allow us to test new technologies early on and continue developing our pioneering role."
Jens Ertel, Head of the BMW Group's Additive Manufacturing Center and the future campus director, adds: "Our new facility will be a major milestone in additive manufacturing at the BMW Group. The team there will evaluate new and existing technologies in both plastics and metals printing and develop them to series maturity. Our goal is to provide the optimum technology and process chain, be it for individual components, small production runs or even large-scale manufacturing."
Within the BMW Group production network, the new Additive Manufacturing Campus will foster the latest technologies in this field in much the same way as a pilot plant and make them available for use within the network. Much of the work carried out there will focus on parts manufacturing for prototype construction, series production and customised solutions. The facility will also act as an interdisciplinary training and project area, for instance for development engineers. When it goes on stream in early 2019, it will accommodate up to 80 associates.

Major potential in series production for customised vehicle components

Additive manufacturing is an integral part of the BMW Group production system and harbours significant potential for series production. Most recently it has been used to generate parts for the BMW i8 Roadster*. Jens Ertel: "With the BMW i8 Roadster, the

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BMW Group became the first carmaker to 3D-print a production run of several thousand metal parts. The component concerned is a fixture in the tonneau cover for the soft-top." Made of aluminium alloy, the printed item is lighter than the normal injection-moulded equivalent but significantly more rigid. Its 'bionic' geometry, inspired by forms found in nature, was optimised for 3D printing purposes.
Additive manufacturing is also gaining importance for customised components. The new MINI Yours Customised programme, for example, allows customers to design certain components themselves. Indicator inlays and dashboard trim strips, for instance, can be 3D-printed to their precise specifications.

Decentralising manufacturing – production follows the market

The BMW Group expects that, with time, it will become possible to produce components directly where they are ultimately needed – an idea that harbours tremendous potential. Jens Ertel: "The 3D printers that are currently operating across our production network represent a first step towards local part production. We are already using additive manufacturing to make prototype components on location in Spartanburg (US), Shenyang (China) and Rayong (Thailand). Going forward, we could well imagine integrating it more fully into local production structures to allow small production runs, country-specific editions and customisable components – provided it represents a profitable solution." This would make additive manufacturing a useful addition to existing production technologies.

Investments through BMW i Ventures

For the BMW Group, investments in start-ups have proved promising not only in strategic but also in commercial terms. In addition, they represent a sustainable strategic value add. In September 2016, for example, the BMW Group's venture capital arm, BMW i Ventures, invested in the Silicon Valley-based company Carbon, whose DLS (digital light synthesis) printing technology was a breakthrough in the production of parts with high-quality surfaces. The technique allows significantly larger areas to be processed more rapidly than would otherwise be possible with conventional selective 3D printing. Carbon and the BMW Group have been partners since 2015.

A further investment in additive manufacturing came in February 2017, this time in the start-up Desktop Metal. Desktop Metal specialises in the additive manufacturing of metal components and has developed highly productive and innovative methodologies. It now works closely with the Additive Manufacturing Centre at the BMW Group.
In June 2017 the BMW Group invested in a company called Xometry, which works in the supply chain industry. Xometry is a web-based platform that networks suppliers and manufacturers from different sectors with each other. Pilot projects are already underway in a range of areas including spare parts manufacturing.
Cooperations with innovative partners such as these aim to speed up the adoption of additive manufacturing technologies.

Digital production methods for vehicle development and manufacturing

Thanks to its tremendous scope for the rapid manufacture of quality parts of almost any geometry, additive manufacturing has been in use in the construction of concept cars at the BMW Group since 1991. Components are realised purely using digital data, eliminating the need for classic tools such as press tools and injection moulds. At present, the technology is most commonly used for small production runs of customised and often highly complex components.

* BMW i8 Roadster fuel consumption and emissions data:
Combined fuel consumption 2.1 l/100 km; confined electricity consumption 14.5 kWh/100 km; combined CO2 emissions 46 g/km.
(All figures based on EU test cycle using standard tyres).
Figures shown here for fuel and electricity consumption, CO2 emissions and range were determined according to the European Regulation (EC) 2007/715 in the version applicable at the time of type approval.
The figures refer to a vehicle with basic configuration in Germany. Ranges shown allow for the different wheel and tyre sizes and optional equipment.
Values shown here are already based on the new WLTP test cycle and have been translated back into NEDC-equivalents for purposes of comparability. [For these vehicles, different CO2 values from those cited here may be applied to determine the rate of taxation or other vehicle-related duties.]
CO2 efficiency specifications are determined according to Directive 1999/94/EC and the current Pkw-EnVKV, and use fuel consumption and CO2 values identified in the NEDC cycle for classification purposes.
For more information on official fuel consumption figures and specific CO2 emission values of new passenger cars, please see the “Leitfaden über Kraftstoffverbrauch, die CO2-Emissionen und den Stromverbrauch neuer Personenkraftwagen” (Guideline for fuel consumption, CO2 emissions and electric power consumption of new passenger cars), which is available free of charge from all dealerships and at https://www.dat.de/en/offers/publications/guideline-for-fuel-consumption.html

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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 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.

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