

Press Release
September 10th 2013

Innovative human-robot cooperation in BMW Group Production.

At BMW's Spartanburg plant, collaborative robots assist assembly line staff and ensure maximum production quality.

Spartanburg/Munich. At the BMW Group's Spartanburg site, the future has already begun: In door assembly, people and robots work side by side – without a safety fence – in one team. US plant Spartanburg is the first BMW Group production facility worldwide that has succeeded in implementing direct human-robot cooperation in series production.

Four collaborative robots equip the insides of the doors of BMW X3 models with sound and moisture insulation. In a first step, the foil with the adhesive bead is put in place and slightly pressed on by assembly line workers. Prior to the introduction of the new system, workers then carried out the fixing process by means of a manual roller. Today, systems with roller heads on robot arms handle this labor-intensive task, which requires maximum precision. The sealing protects the electronics in the door and the entire vehicle interior against moisture.

Ergonomic human-robot cooperation

The decision for introducing assembly robots in Spartanburg was mainly based on ergonomic considerations. Automation as a means to assist staff is particularly suitable for simple, highly repetitive work scopes, which require considerable strength. 'Robots that assist production workers by assuming labor-intensive tasks will characterize the factory of the future. Their benefits are strength and mechanical accuracy – and they perfectly complement humans' flexibility, intelligence and sensitivity,' explains Harald Krüger, member of the Management Board of BMW AG, responsible for production. Further BMW Group production sites are currently evaluating the possibility to use collaborative robots.

Safety as the top priority

The direct interaction of man and machine requires top security standards as the robots are placed in the workers' direct surrounding without any protective devices. They run at

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a low speed within a defined environment and are stopped immediately in case their sensors detect an obstacle in their way.

Automated process ensures perfect quality

Thanks to the fully automated process, the rolling power applied to the fixing process can be measured exactly. As a result, the processing quality can be monitored on a permanent basis. In the case that the robot's work process is interrupted unexpectedly, a worker carries out the additional fixing procedure manually again – because security is key.

BMW: Successfully pioneering Industry 4.0

The preliminary work for the future-oriented application of collaborative robots at the Spartanburg site was provided by the team of Stefan Bartscher, Innovation Management Production, at the BMW Research and Innovation Center (FIZ) in Munich. Developed over two years, the project was carried out in close cooperation with the robotics producer Universal Robot. 'We regard the successful implementation of an ergonomically optimized human-robot cooperation in series production as a major step toward future automotive engineering and the world of Industry 4.0,' explains Stefan Bartscher, adding that 'collaborative robots enable us to create new forms of design in the process layout.' Further applications of collaborative robots in assembly are being evaluated; the roll-out of the existing facility at other plants in the BMW Group Production Network is currently in the planning stage.

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About the BMW Group

With its brands BMW, MINI and Rolls-Royce, the BMW Group is the world's most successful premium manufacturers of cars and motorcycles. The international Group operates 28 production and assembly sites in 13 countries as well as a global sales network with offices in more than 140 countries.

In the business year 2012, the BMW Group recorded global sales of approx. 1.85 million automobiles and over 117,000 motorcycles. Last year's pre-tax result amounted to € 7.82 billion, total sales to € 76.85 billion. As per December 31, 2012, the company employed 105,876 people worldwide.

Thinking ahead and acting responsibly have always been crucial prerequisites of the BMW Group's economic success. The company's strategy includes the full commitment to ecological and social sustainability along the entire value chain, comprehensive product responsibility, and the conservation of resources. Consequently, the BMW Group has been Supersector Leader in the Dow Jones Sustainability Indices for the past eight years.

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