



**AUTOMOTIVE  
ENGINEERING  
EXPO 2019**

**CAR BODY  
PROCESS CHAIN**

FROM CONCEPT TO FINAL ASSEMBLY

**Nürnberg, Germany  
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## PRESS RELEASE

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### Creation of the digital twin

The central core of body construction in recent years has been the increasing digitalization of engineering in all its facets. The **AUTOMOTIVE ENGINEERING EXPO (AEE)** and its congress on 4 and 5 June 2019 at the Nuremberg Exhibition Centre will focus on this topic: **"With digital development and flexible production to new lightweight body structures". But what does this mean in practice? Virtualization is the magic word.**

New drives and mobility concepts are expanding automotive diversity at a rapid pace. For the car body industry this means: New structures and variants are required, established processes must be redesigned - at manageable costs, of course. In order to avoid errors and make processes predictable, engineering is increasingly shifting to the virtual. The motto is: more software, less hardware.

Computer Aided Engineering (CAE) helps to simulate components, car bodies or entire vehicles and to make reliable predictions, such as how a new longitudinal beam will absorb crash energy or how new alloys will behave. Process steps also become simulatable - right up to ergonomics in assembly to protect the health of employees.

#### Consistent virtual

The industry is very interested in depicting the entire production process as a digital twin. The major goal is to combine sub-sections into a complete representation, a continuous virtual process chain, and thus to allow feedback between the individual steps. In this way, possible deformations in the joining process or in the paint baking oven can already be taken into account in the forming process. This eliminates the need for time-consuming

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hardware tests. Another important topic in digitization is Big Data Management: Smart Factory production processes, generate huge amounts of data. But which data should be used sensibly? Which help OEMs increase efficiency and reduce costs?

### **X-ray the car body**

At the AEE, developers, manufacturers and institutes will be presenting the latest approaches to solutions. For example, researchers from Fraunhofer IIS will present the world's largest computer tomograph, which can be used to X-ray complete electric cars after a crash test without dismantling them. Structure and materials that were previously inaccessible can be analyzed in detail. The strong X-rays even make structures in densely packed batteries visible.

### **Engineering from the sofa**

At the AEE Congress, EDAG-PS will present its "Sofa Collaboration", which is also a contender for the AEE Innovation Award. Engineers can literally participate in production engineering from the sofa - from planning to maintenance, no matter where they are in the world. The user applies VR/AR glasses to project a virtual cell around a real interference contour. With a real teach pendant he has the possibility to program the digital twin of the robot. Further users can collaboratively "dial into" the scene using VR glasses.

### **That's what Daimler says:**

"In car body construction, many processes can only be checked using hardware up to now - and that is time-consuming and causes high costs. Digital processes accelerate these development processes: They digitally map product functions and manufacturing steps and show at an early stage whether a product meets the required properties. In the search for the best possible solution, various options can be played through without consuming real resources. The aim is to map the entire process chain digitally. In this way, test runs over several 1000 kilometers can be simulated and evaluated.



Corresponding approaches are already available - and will be THE topic of discussion at the AEE".

**Dr. Thomas Rudlaff, *body shop Mercedes Benz Cars / pre-development, Daimler AG***

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