

Less is more: BENTELER develops pioneering door concept without B-pillar

- As a leading manufacturer of structural components, BENTELER Automotive now also offers lightweight door solutions without the need for a B-pillar.
- BENTELER already meets market requirements for the crash structure of tomorrow's doors and bodies.
- In-house expertise in metal processing and materials competence combined with product system understanding helps protect occupants and the environment.

Paderborn, July 22, 2021. BENTELER not only makes mobility lighter, safer and more sustainable – but also more convenient: to make vehicle entry easier, the metal processing specialist has developed a new door concept that removes the need for a B-pillar. This production-ready product is even lighter than existing solutions on the market and offers improved safety and material features.

Lightweight crash structure already meets tomorrow's market requirements

Due to megatrends such as electrification and automated driving, the development departments of automotive manufacturers are increasingly looking at different structures for vehicle interiors. BENTELER Automotive is responding to this development. Christian Hielscher, R&D Manager Advanced Structural Systems, explains: "We have developed an integrated solution that meets all dynamic crash and static load requirements. In this way, we are making a significant contribution to lightweight construction."

Environmentally friendly aluminum alloy

In addition to its materials competence, BENTELER also contributes its expertise in metal processing. The know-how for crash-tested lightweight solutions is evident in the use of the key aluminum alloy for increased protection of occupants and the environment. "The aluminum used makes an active contribution to environmentally friendly vehicle recycling. With the production of the structural components, for example, we ensure that the door can be recycled into equivalent products at the end of the vehicle's life cycle. This is achieved by using a single grade of aluminum alloy," says Dr.-Ing. Jörn Tölle, R&D Teamleader Lightweight Technologies. As a result, the solution not only saves resource-intensive development time, but also brings decisive weight and CO2 savings.

Crash-proven concept brings decisive lightweight advantages

The aim of the concept and structural development was to integrate the B-pillar function into the door structure – while meeting all crash and static requirements. The aim was to find the lightest possible solution. This was the starting point for the virtual development of the crash structures. The BENTELER engineers used the full vehicle model from the EU-funded ALIVE project. BENTELER Automotive was involved in this from 2012 to 2016. The aim was to develop key

technologies for lightweight vehicle construction based on advanced metal and hybrid materials for future electric vehicles.

Materials expertise combined with findings from EU ALIVE project provide a modern development platform

The innovative door concept based on an aluminum structure made of AlSiMg grade alloy exhibits very good properties in all load cases and meets or exceeds even the requirements from the ALIVE reference vehicle. It shows that the optimization of the body is particularly important: especially in terms of torsional stiffness and roof crush as well as the door structure with regards to side crashes. Furthermore, this result was achieved with only very little additional weight of the vehicle, which is a great success compared to the few solutions currently in series production. Automotive manufacturers and engineering service providers thereby benefit from a pre-developed crash structure that creates more space in the vehicle interior thanks to the new structure with the B-pillar integrated in the door. In addition, it can be adapted and transferred to series production with little effort.

References:

<https://cordis.europa.eu/project/id/314234/de>

Tölle, J.: Realization of a new mixed material concept for a BEV within European funded project ALIVE, Material in Car Body Engineering, Bad Nauheim, 09.-11.05.2016

Photo and caption:

BENTELER_Integrated_B-pillar: BENTELER's new door concept with integrated B-pillar makes vehicle entry easier and provides more space in the interior.

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In the 2020 financial year, Group revenues were €6.358 billion. Under the management of the strategic holding BENTELER International AG, headquartered in Salzburg, Austria, the Group is organized into the Divisions BENTELER Automotive and BENTELER Steel/Tube. Our around 27,000 employees at 98 locations in 28 countries offer first-class manufacturing and distribution competence – all dedicated to delivering a first-class service wherever our customers need us.

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BENTELER Automotive is the development partner for the world's leading automobile manufacturers. With around 23,000 employees and more than 70 plants in about 25 countries we develop tailored solutions for our customers. Our products include components and modules in the areas of chassis, body, engine and exhaust systems, as well as solutions for electric vehicles.

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