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"With our crash expertise we can bring safety features into the chassis"

Electric drive systems are having a major influence on chassis design, new requirements are being added. Batteries must be installed where they are protected from collisions. Benteler is responding to the fluctuations in the sales of electric cars by developing scalable, modular platforms for battery-powered electric cars. In the ATZ interview, Ralf Göttel, CEO of Benteler, describes the advantages of this system, known as the Benteler Electric Drive System, BEDS for short, how the Chinese can ensure that the sky over their largest cities is blue, and highlights the connection between artificial intelligence and agile partner networks.

ATZ _ Ralf Göttel, you have significantly increased the size of your portfolio of electric mobility. When will we see more electric cars than conventional models being sold in German showrooms?

GÖTTEL _ We believe that electrification is definitely on its way. Experts have forecast that by 2030 a quarter of the cars that are sold will have fully electric or hybrid drives. Legislation will have a major impact on the proportion of electric vehicles. If today's plans remain unchanged, electric mobility will play a much bigger role, because we cannot achieve our CO_2 targets in any other way.

Ralf Göttel (born in 1966) has been CEO of Benteler International AG in Salzburg (Austria) since April 2017. His current responsibilities as CEO include strategy and M&A and group compliance and committee activities, together with the automotive, steel/tube, and distribution divisions. Since August 2018 he has also been CEO of the Benteler Automotive division, which is based in Paderborn (Germany). He had already headed this division from 2014 to 2017 as Chairman of Benteler Automobiltechnik GmbH. He has held a range of management positions within the Benteler Group since 2010. He studied mechanical engineering at RWTH Aachen University and began his career in 1991 as a development engineer with a major car manufacturer.

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What is this assessment based on?
This assessment is based on our experience, sharing information with car manufacturers, and monitoring the market. Another very important source of information is our discussions with employees at our various sites. They give us a clear indication of the prevailing mood.

That's what is happening in Germany. How is it that China is investing so heavily in electric cars?
There are four reasons for this. In China there is no tradition of manufacturing combustion engines dating back more than one hundred years as there is in Germany. The Chinese are attracted to new technologies and are early adopters. Driving habits there are more suited to electric transmissions because many journeys are short. Finally, environmental issues in China's megacities play a major role. These are not an ideology or a question of belief in the same way as they are in the EU. They are part of everyday life in Shanghai, for example. If the sky over the city is not blue, the Chinese opt for electric cars with zero local emissions. This is something that is very real for them. China is leading the way in the field of electric mobility, which is why we have had a presence in the country since 2002 and now have 15 plants there.

Like many other automotive industry suppliers, you have designed your Benteler Electric Drive System, known as BEDS, as a modular system solution. What are the benefits of modular, scalable platforms of this kind?
Our concept can be used as the basis for vehicles of different lengths and widths, which means that it is suitable for use in cars from all segments. The batteries are available in a standard form or as a tailor-made solution to meet customers' individual requirements. They are also scalable, depending on the range. The chassis solution, which is one of Benteler's core products, allows for electric all-wheel, front-wheel, or rear-wheel drive. Other options include an integrated battery cooling system and an inductive charging solution. This means that the BEDS provides all the functions needed for a rolling chassis. It is a series-ready platform that brings together all our technical knowledge in one product. As a global partner of the automotive industry, Benteler offers first-class engineering and metal processing competence. This covers components and modules for the chassis and body-in-white and also includes modular solutions for electric mobility.

"There are no good or bad materials"

What is the central feature of the system – its crash safety?
Yes. The BEDS is not just a collection of individual components. The chassis includes an integrated crash function to protect the battery. Passive safety is the key consideration for us and our customers. It is often neglected in electric vehicles, but it is very important in the event of a side impact or of the battery being punctured by an object on the road. With our crash expertise we can bring safety features into the chassis.

How advanced is the BEDS in technical terms? What has the initial response been from the market?
We have developed and tested a series-ready platform solution. It is currently undergoing testing at a well-known technology company. The pilot project there will evaluate its functionality and performance under real-life conditions. We are confident that parts of the solution or the complete system will go into volume production with other car manufacturers. That is precisely the idea behind it: to provide a technology platform in the form of a complete system, an individual component, or a subassembly. This is what modular design is all about. We have received positive feedback from several customers which indicates that there is a need for our BEDS on the market.

You won't be allowed to give us names of your customers? But is your system being used in a car or a truck and in which country?

"The battery tray forms a very stiff stiff structure with the flexframe, which shows an optimal deformation behavior in the event of a side impact," explains Göttel (left), in conversation with Michael Reichenbach, Deputy Editor in Chief of ATZ

You will understand that discretion is very important to us and our customer, but I can tell you that the system will be used in China in a C-segment and D-segment car. As has been the case with many new systems, electric mobility is being introduced via premium models.

But cities with major air pollution problems need small electric cars, not large models, so that they can reduce exhaust emissions.
The situation is the same as with many other technologies. New developments first come onto the market in high-priced premium cars and then move into the mid-sized and small models. This was also true of ABS, safety belts, and airbags.

The BEDS has electric front and/or rear axles which form a so-called e-chassis. Do you design and manufacture the electric motors and power electronics yourselves?
We work with strategic partners who include automotive industry suppliers and car manufacturers. This allows us to make the best use of everyone's expertise to produce a complete system. We select our partners based on the individual customer needs. This means that we can offer our customers tailor-made electric mobility solutions from individual components through to complete series-ready systems. As a result, we can help our customers save several years of development time and support fast growth acceleration.

Many of the presentations at our 10th chassis.tech plus conference, which is taking place at the end of June, will highlight the fact that AI will soon be making its way into the chassis. How does a traditional steel tube manufacturer like Benteler develop the necessary knowledge of algorithms?
Artificial intelligence is an important subject for us and we have resolved this problem by entering into agile partnerships. We are heavily involved

"All-wheel drive will not achieve full market penetration"

with start-ups that provide us with support in the area of AI and algorithm development. We work with them and our customers to analyze the signals from the variety of sensors used in cars and to identify correlations with the results of chassis behavior that we are familiar with.

Which AI projects is Benteler currently working on? How does the company stay at the cutting edge in this area?
Some of our employees are involved in the Start-up Autobahn project and also in other start-up scenes. We have acquired some very interesting experience in the field of AI. A start-up network has grown up in the region around Paderborn in Germany, because of the strong tradition of the university and the influence of Siemens-Nixdorf, and this is proving very useful to us. We get a constant supply of new ideas that help us to anticipate trends and increase our ability to innovate.

The BEDS will be available in both steel and aluminum. In what situations do the Benteler engineers recommend a specific material to the car manufacturer?
I always say that there are no good or bad materials, there is just the wrong and the right application. When it comes to choosing the material, we follow well-worn paths. If a lightweight structure is needed, then aluminum is the first choice. If a low-cost solution is required, then steel is the better option. The third major criterion is the local availability of the material. Depending on the market, import duties, and other restrictions on a raw material, we can take a quite different approach to the development process.

Does that mean that aluminum is now on the back burner?

We see the situation differently. This lightweight metal is used slightly less often for two reasons. One is that steel has caught up with it in terms of its technical performance. It is now possible to produce lighter-weight structures in steel. The other is that it is no longer essential to make the entire vehicle lighter. Often it is only the weight of the front-end or rear-end that needs to be reduced.

Electric motors in cars make it relatively simple to develop all-wheel drive systems. Will they become much more widely used?
I don't think that we will see full market penetration for all-wheel drive systems. Just because something is cheaper does not necessarily mean that more end customers want to buy it. We think that there is a trend for rear-wheel drive in electric cars. This improves the weight distribution, because now the battery has to be taken into consideration. However, electric all-wheel drive systems are much lighter in weight than their mechanical equivalents. Our BEDS makes it possible to have drives of the same size on the front and rear axle, which allows for both front- and rear-wheel drive.

Do you drive an electric car yourself?
I sometimes get behind the wheel of an electric car. I like to book electric cars from carsharing schemes, partly out of curiosity. And my next company car will be a plug-in hybrid. We also give our employees the opportunity to use electric vehicles. For example, we have had an electric car in the company pool at our Talle plant in Paderborn since 2017. Anyone can drive it and I am one of the people who enjoys taking it out on the road.

Ralf Göttel, thank you for this interesting conversation.

You can read more of the interview in German on the ATZ online portal at www.springerprofessional.de.

INTERVIEW: Michael Reichenbach