

Drive technologies: Visionaries vs. Defenders

**9th German Equipment Manufacturing Summit, Berlin*

At the 9th Equipment Manufacturing Summit it became clear how the issue of electric mobility and the possible ban of combustion engines are driving the industry. At the same time, visionaries collided with defenders. Mahle showed how to focus on different scenarios.

How massively the industry is affected by e-mobility showed a TED survey among the 480 summit participants. According to this, 42 percent of companies are affected by the change of drive technology, and a good third even directly. Only 24 percent have not been impacted. No wonder the opinions here vary greatly.

"We are on the path to a pollutant-free combustion engine," said Prof. Michael Bargende. The chairman of the board of directors at the Research Institute for Automotive Engineering and Automotive Engines (FKFS) in Stuttgart believes that the combustion engine will meet the EU target, after permitting only use of emission free engines starting 2030. New devices are available to measure emissions.

"Hybridization is required and must be, so we tap into the potentials of the combustion engine. These hybrids do not need any charging infrastructure and do not suffer from insufficient mileage range," the scientist added. From Bargende's viewpoint, the drive theory subject is open, as China proved after discovering large natural gas deposits and developing a program to promote natural gas engines.

Bargende had not much good to say about battery powered vehicles. When using the heater, a 380 kilometer reach capacity will shrink to 200 kilometers. In addition, the plugs are all different and until the end of 2016 there were only 7000 charging stations available.

Hybrid concepts and a mix of drive types are being discussed more frequently in the last months. It remains unclear whether this is a desired projection, with which the threat of disruption for the car industry and its suppliers, above all machine manufacturing, does not feel too painful. But it's clear that the market will not wait. As soon as Chinese, Korean, or even Indian manufacturers scale cars so that the price is attractive, consumers will create facts.

"I am worried about the future positioning of the German auto industry and as a result the medium-term consequences of machine manufacturing," explained Stefan Roßkopf, CEO of Teamtechnik Maschinen und Anlagen GmbH, Freiberg. "We are currently experiencing a common failure in economic policy and automotive industry," said Roßkopf, who warned of severe consequences in the next ten years. Strategic mistakes in the automotive industry, will have a serious outcome: The automotive industry is the machine manufacturer's largest customer, both industries are linked to prosper or perish.

"600,000 jobs and 13 percent of industrial added value in Germany depend on automotive combustion technology," noted Roßkopf. In the case of electric cars, however, 35 to 40 % of the added value is in the battery – yet there is not a single German battery-cell factory. Not a single company here is involved in the most know-how-intensive aspect of electromobility.

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All German manufacturers reject the idea of having their own battery cell production. "I think this is a fatal strategic mistake: Without Japanese, Korean and future Chinese batteries, we cannot build any cars," says Roßkopf. At the same time, the most value-adding element regarding range is also the most important differentiating feature. One would now depend on other manufacturers. In the future, a significant volume of added value would be lost in the drive train.

Risk of loss

He also had not heard from any car manufacturer about any objective to produce a new drive train in house. If the production of these aggregates does not take place in Germany, "sooner or later the ability to create production technology, meaning, machine manufacturing will be lost". The Teamtechnik CEO pointed out another problem, the lack of charging infrastructure. The auto industry could not afford this infrastructure. This is why political engagement is necessary instead of trying to stay out of the picture by using the argument that the best and most cost-effective technology in the industry will prevail.

The dispute as to when the development takes place is pointless. "The combustion engine will lose massively in importance sooner or later. Just let 20 to 30 percent break out without adequate replacements - what do you do then?" asked Roskopf.

After the VDMA had clearly spoken out against a ban on combustion technology at the beginning of the congress, Roßkopf wished the association had positioned itself differently. It is essential to have a vision for Germany to use e-mobility as the world's largest megatrend.

"Instead of hesitating and procrastinating and making fun, we could turn this megatrend into a new business model for Germany," criticized Roßkopf. No country in the world possesses better prerequisites for this because we have a lot of experience with decentralized generation, storage and distribution of electricity. These technologies should be networked and should flourish over the next 15 years. "Then we can sell this technology - including investments for capital goods for their production," says Roßkopf.

E-mobility will come - but when?

"The future of drive engine is indeed electric, based on renewable energies," Dr. Klaus Bonhoff also agreed. The managing director of NOW GmbH (National Hydrogen and Fuel Cell Technology Organization) said: "Electric vehicles will come, the question is not if but how quickly and whether they will come from Europe." In addition to battery concepts, they will also require technologies such as fuel cells, especially for large vehicles which will have to cover long distances.

"We will do ourselves a great favor thinking about how to scale the fuel cell stack and not make the same mistakes as with battery manufacturing," says Bonhoff. This will also benefit the combustion engine supplier industry, since the old components are also found in fuel cell technology. It is estimated that by 2023, H2 Mobility will see 400 international standard hydrogen stations equipped with a uniform "nozzle".

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