New Degrees of Freedom

Dear Reader,

The Vienna Motor Symposium is generally seen as a mecca for engine developers, but, at least during the opening keynote speeches, the subject of the complete vehicle is playing an increasingly important role – above all against the background of the growth in electrification.

Efficiency and cost-cutting are also the key drivers here. For example, Peter Gutzmer from Schaeffler reported an improvement in efficiency of around 18 % for a turbocharged 1.4 l basic engine with a 48 V hybrid system and a four-speed automatic transmission. In the transmission as the key component for connecting the internal combustion engine and the electric motor, the number of gears is predicted to fall from today's 7 or 8 gears to 4 to 6 in the future. In this case too, the electrification of the powertrain calls for a systemic approach that considers the special features and preferences of the various markets and customers, for example on the issue of dual-clutch transmissions and CVTs.

For Rolf Bulander from Bosch, electrification is not a competitor for the internal combustion engine. He pointed out, however, that bits and bytes made mobility more efficient. 48 V technology, for example in the compact class, can not only sustainably reduce CO₂ emissions but can also cut particulate matter by up to 30 % and NO_x by up to 20 % at source. And an electronic horizon in a plug-in hybrid can improve efficiency by up to 8 % by optimising automated driving behaviour.

The interconnection of an electric motor and an internal combustion engine – such was the quintessence in Vienna – therefore offers outright new possibilities in combined operation. This conclusion also applies to the architecture of the complete vehicle. Of course, the E/E architecture presents new challenges for the design of vehicle bodies and interiors. On the other hand, it also opens up other perspectives and design opportunities. A combined drive system changes the package, while increasingly automated driving and a larger number of assistance systems are changing the vehicle's interior. Both aspects have significant effects on the body and design of the vehicle. And completely new degrees of freedom become available.

Best regards,

Dr. Alexander Heintzel
Editor in Chief