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Realizing a Zero Carbon Economy

The measures to mitigate global warming that were agreed in Paris (France) in 2015 stipulate the almost complete elimination of worldwide CO₂ emissions by 2050. As far as transport solutions are concerned, the main focus in Europe and Germany is on electrification. There is virtually no energy lost during the transfer of electricity into batteries, where it is used very efficiently. As long as the electricity is generated from carbon-free sources this ensures a sustainable operation. Here at Deutz we too are focusing on electrification, with the first applications of 360-V systems now approaching series production. For mobile machinery, electrification makes most sense in low powered machines and machines that are subject to varying loads.

Electric power, however, still represents only a relatively small share of overall energy consumption: 17 % in Germany in 2019 – 40 % of which was generated from sustainable sources. This is only a minor fraction of total energy consumed. We generate around 80 % of the energy we need from oil, gas and coal. The share produced from wind and photovoltaics is only 5 %. Wind energy production has to be increased by 70 % just for the compensation of nuclear power in the next years – a challenge in the light of the current discussion on the installation of additional wind turbines.

Electrification can therefore only be part of the solution for the transition toward a zero carbon economy. We require large-scale carbon-free energy imports that can replace the 80 % of fossil fuels. Green hydrogen from North Africa and the Middle East could be a solution for Europe – and in the short term, during the transition, also blue hydrogen which is generated from natural gas and where the carbon emissions are captured and stored underground.

For Deutz as a manufacturer of drive systems, this means a focus on developing new engines for a range of fuels, including hydrogen, in addition to electrification. We have made significant advances with hydrogen engines in terms of efficiency and power density in recent years. The production of hydrogen engines is economically viable in the short term and utilizes existing value chains, making this the ideal bridging solution on the way to the fuel cell.

The transition from carbon requires a quick shift away from fossil fuels. Electrification is one important element in this. The transition can clearly not be achieved without chemical energy sources – above all hydrogen. The necessary technologies are already available – and for the sake of the global climate they need to be utilized. Now!