

2/2021

1/14/2021

VDE presents Mobility, Logistics and Energy 2030 study

- **Batteries remain the driving energy source for electromobility**
- **Fuel cell to serve as alternative in heavy-duty and long-distance transport**

(Frankfurt/Main, 14.01.2021) In the vehicle sector, the currently dominant gasoline and diesel fuels are set to fade into the background and make room for alternative drive systems. The two major alternatives are the battery and the fuel cell, each with different application scenarios in the drive portfolio of the future. However, the shift to electromobility in the mobility and logistics sector affects not only the underlying drive technology, but also the energy industry as a whole. In its new meta-study "Logistics, Energy and Mobility 2030" (German: "*Logistik, Energie und Mobilität 2030*") the technology organization VDE examines the possible developments up to 2030. "The existing players, some of which such as oil companies and power generators are established in other areas, must adapt to the new environment. If they are to meet the changed demand for drive energy and be competitive with new players on the market, their only option will be to adapt existing concepts. The logistics and mobility of the future will be driven by renewable energy. In the study, we therefore also describe different, sometimes competing, logistics scenarios for urban areas in order to show how the future can be designed to be practical for users," explains Nora Dörr, project manager of the meta-study. The expert team additionally examined fuel cell applications as an alternative in long-distance transport along with the potential of other alternative fuels.

The key results of the study from the energy field:

The importance of electromobility will continue to rise. In 2019, the number of electric vehicles (BEV, PHEV, FCEV, etc.) worldwide was 4.79 million. By the year 2030, this number could increase by a factor of 30 to a total of 150 million vehicles. Batteries have already been developed to a sufficient level for use in the areas of mobility and logistics. Further optimizations in the area of production and material costs can be expected thanks to optimized and



automated production processes as well as through new material innovations, which often also bring increases in energy efficiency.

Fuel cells will be a flexible and technically mature drive energy by 2030, especially for heavy-duty and long-distance traffic. Hydrogen vehicles are then expected to penetrate the automotive market from 2030 to 2050. Fossil-fuel vehicles will still be on the road in 2030, as additional alternative fuels will not be available at a sufficient scale to entirely replace combustion vehicles by that time.

The energy market will become more heterogeneous in the future. Different drive energies will exist side by side in 2030. However, a fundamental transformation process towards battery and fuel cell use is expected to have taken place.

The infrastructure must also be geared towards the new mobility parameters. Charging technologies and infrastructure for both battery electric vehicles and fuel cell vehicles will have to be expanded to meet the rising demand. The steady increase in electric vehicles represents a significant but manageable challenge for the electricity grid of 2030.

The most important results of the study in the areas of mobility and logistics:

Traffic volumes will increase steadily between now and 2030. In view of the increasing transport capacity, it is crucial to strive for better utilization regardless of the mode of transport. The most important roads and railways, especially around major urban centers, are increasingly congested. Unlimited expansion is impossible, so work must be done to optimize the utilization of existing networks. Concepts and technologies for higher density are required. Otherwise, the volume of transport will no longer be able to grow due to congestion on highways, stationary freight trains and backed up inland freight ships. In order to enable mobility and logistics while maintaining the same distribution networks and infrastructure requirements, existing modes of transport must be better utilized.

The number and scope of logistics operators and mobility service providers will be more varied in 2030, with the offerings largely shaped by digitalization in the future. All in all, this will make it possible to better coordinate supply and demand in passenger transport. Especially in view of the expected population increase in German metropolitan regions, which is forecast to rise from the current 16 percent to 19 percent of the country's total population by 2030, innovative solutions must be found to meet the ever increasing demand for transportation.

About the study:

The meta-study "Logistics, Energy and Mobility 2030" was developed as part of accompanying research within the ICT for Electric Mobility technology program of the Federal Ministry for Economic Affairs and Energy (BMWi). The program aims to promote intelligent applications for

mobility, logistics and energy. The program has existed (in a slightly modified form) since 2010 and has funded numerous projects throughout Germany during this time.

The study is available free of charge (in German) in the VDE shop at www.vde.com/shop.

About VDE:

VDE, one of the largest technology organizations in Europe, has been regarded as a synonym for innovation and technological progress for more than 125 years. VDE is the only organization in the world that combines science, standardization, testing, certification, and application consulting under one umbrella. The VDE mark has been synonymous with the highest safety standards and consumer protection for 100 years. Our passion is the advancement of technology, the next generation of engineers and technologists, and lifelong learning and career development "on the job". Within the VDE network, 2,000 employees at over 60 locations worldwide, more than 100,000 honorary experts, and 1,500 companies are dedicated to ensuring a future worth living: networked, digital, electrical. We shape the e-digitalistic future.

The headquarters of the VDE (Association for Electrical, Electronic & Information Technologies) is in Frankfurt am Main. For more information, visit www.vde.com.

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