Press Release

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FEV Consulting and VDMA present study results on mobility transformation until 2040

Aachen, Germany, May 2021 – Since 2018, FEV Consulting has been conducting the study "Drivetrain in Transition" on behalf of the VDMA, the largest network organization and important voice for mechanical engineering in Germany and Europe. The study continuously highlights developments and potentials in the automotive industry. Its latest results are based on current scenarios for the electrification of passenger cars and light commercial vehicles up to the year 2040.

The automotive industry is undergoing a profound transformation process due to emissions legislation, planned bans on internal combustion engines in some countries and electrification. The most recent data evaluated in the analysis "Drivetrain in Transition" show that by 2040, around 45 percent of passenger cars sold worldwide will be battery-electric and fuel cell-powered. By then, 55 percent of units sold worldwide will be vehicles with internal combustion engines, which means their share in this sector will fall by 16 percent.

This has a significant impact on value creation and investment in the core automotive markets. "In particular, electrical systems and components such as the battery, the electric motor and power electronics, but also fuel cell components, are the growth drivers in the course of the transformation in the mobility sector. By 2040, we expect an increase of around 75 percent to 403 billion euros for electric powertrain components alone. At the same time, value

creation is shifting significantly from manufacturing-intensive activities to higher material intensity. Value creation through manufacturing is reducing and being shifted to the upstream value chain," said Prof. Stefan Pischinger, CEO of FEV Group.

Due to stricter pollutant- and CO_2-emission-legislation, the study forecasts a major shift away from technologies and components for the conventional, mature internal combustion engine toward components for the electric powertrain. In this respect, the study identifies possible scenarios, one of which deals with the possibility that new cars with internal combustion engines may no longer be sold in Europe by 2040. This could result in an 80 percent decline in conventional combustion technologies.

"The transformation of the mobility sector is in full swing. In particular, the change in drive technologies will be clearly seen in the coming years, with high shares for battery electric vehicles and fuel cell vehicles. As a technology supplier, mechanical and plant engineering is at the heart of this development," said Karl Haeusgen, VDMA President.

The preceding factors also have an impact on jobs in the automotive industry. For example, the study show that the jobs generated by new technologies (420,000) will only partially compensate for the jobs lost by mature, conventional technologies (580,000). If it takes advantage of the opportunities offered by change, the mechanical engineering sector can maintain its level of 55,000 jobs in the automotive powertrain sector.

Additional jobs will be created in the upstream processes of the supply chain, for example in the processing of raw materials for battery cells. In addition, the necessary investments in infrastructure, such as charging stations or a hydrogen supply chain, will generate new business potential in the course of the

transformation. Connected vehicles and digital services will open up further business areas - independently of the transformation.

To produce the drivetrains of the future, an annual inflation-adjusted investment volume of around 11.5 billion euros is expected in Europe. "The transformation process presents companies with enormous tasks. Public funds must be invested at the beginning of the value chain - in research and education, in professional qualification and thus also in intelligent production technologies and products," said Hartmut Rauen, Deputy Managing Director of the VDMA.

The prerequisite for a successful transformation process is openness to technology and developing the best alternative in each case for the different applications, instead of pursuing a limitation exclusively to one technology. FEV therefore recommends the use of synthetic fuels in addition to electromobility in order to achieve the climate targets. Their backward compatibility ensures CO_2-neutral operation of existing fleets with conventional drive systems.

The study results are summarized in the FEV whitepaper "Vehicle Electrification and the Transformation of the Industry," which can be downloaded here.

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Source: FEV Group

About FEV Consulting

FEV Consulting GmbH, founded in 2011, is characterized by the fact that it optimally combines many years of experience in top management consulting with the technical know-how of the FEV Group. FEV Consulting advises its customers along the entire value chain. The focus is on technology, product and growth strategies, concept studies, production planning, and cost optimization of products and processes. The company currently has around 100 employees who are active worldwide from its headquarters in Aachen and other offices in Munich, Cologne, Bilbao, Beijing and Detroit (USA).

About FEV

FEV is a leading independent international service provider of vehicle and powertrain development for hardware and software. The range of competencies includes the development and testing of innovative solutions up to series production and all related consulting services. The range of services for vehicle development includes the design of body and chassis, including the fine tuning of overall vehicle attributes such as driving behavior and NVH. FEV also develops innovative lighting systems and solutions for automated driving and connectivity. The electrification activities of powertrains cover powerful battery systems, e-machines and inverters. Additionally FEV develops highly efficient gasoline and diesel engines, transmissions, EDUs as well as fuel cell systems and facilitates their integration into vehicles suitable for homologation. Alternative fuels are a further area of development.

The service portfolio is completed by tailor-made test benches and measurement technology, as well as software solutions that allow efficient transfer of the essential development steps of the above-mentioned developments, from the road to the test bench or simulation.

The FEV Group currently employs 6,300 highly qualified specialists in customer-oriented development centers at more than 40 locations on five continents.