Green technologies enable almost 90 percent less greenhouse gas emissions in industrial applications

- **BCG and VDMA: Market potential of decarbonization at over 300 billion Euro per year until 2050**
- **Joint study identifies five levers to improve the ecological footprint of industry**
- **Hydrogen offers great potential for mechanical engineering**

Munich/Frankfurt, July 14, 2020 – Due to its integration in all sectors, the mechanical and plant engineering industry plays a key role in reducing global greenhouse gas emissions. The use of green technologies offers great potential here. If machine manufacturers offer green technologies to their industrial customers and promote the transition, the 35 gigatons (Gt) of industrial emissions can be reduced by up to 86 percent, or the equivalent of 30 gigatons. These are the results of the study *For Machinery Makers, Green Tech Creates Green Business*. To this end, the strategy consultancy Boston Consulting Group (BCG), together with the Engineering Federation (VDMA), has determined the greenhouse gas emissions of 14 sectors and analysed how these can be reduced by using state-of-the-art technologies.

"Due to the close ties between mechanical and plant engineering and almost all industries, the development and supply of such climate-friendly technologies offer a large market potential of over 300 billion euros per year, both economically and ecologically," says [redacted], BCG partner and author of the study. The OECD and BRIC countries produce 35 gigatons of CO2 equivalents (CO2e) every year. Although mechanical engineering itself emits only 0.2 gigatons of this figure, its technologies influence the greenhouse gas emissions of virtually all industries - from the energy sector to agriculture. The largest amount of greenhouse gases is generated by manufacturing (16.7 Gt), followed by construction (6.7 Gt), transport (5.7 Gt) and agriculture and waste disposal (4.3 Gt). "Machine manufacturers have the ability to develop and offer even more green technologies. The most important thing here is a global market perspective to generate the greatest possible benefit," says [redacted], Deputy Managing Director of the VDMA.

Green technologies reduce emissions in all industries

The study identified five technical levers that mechanical engineering companies can use to improve the ecological footprint of their customers. Each of these levers includes a wide range of individual technologies for the companies. "Already today, mechanical and

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plant engineering companies supply green capital goods. The energy industry benefits from plants for generating renewable energy, such as wind and water turbines, or optimized heating and cooling systems with heat recovery. Industrial companies are also already using highly efficient motors," explains [redacted]. The widespread dissemination and use of these technologies, which are currently economical, could reduce 13 gigatons of CO2e or 37 percent of total emissions.

Further levers will only become more important in the coming years: Methane capture in agriculture would be possible, but still too expensive to be used on a large scale in production. Processes for the production of environmentally friendly fuels, such as hydrogen and its derivatives, or for the capture and storage of CO2 in industrial production are not yet technically scaled and thus not yet economically viable under current market conditions. Simply by perfecting these technologies, a further 17 gigatons or 49 percent of current greenhouse gas emissions can be avoided. "The hydrogen economy in particular, with its great potential, for example in steel production, with manufacturing processes for fuel cells on an industrial scale, electrolysis or liquefaction, offers many opportunities here to combine green technologies with positive environmental aspects," says [redacted].

Switch to sustainable technology has huge market potential

There is no alternative to reducing global greenhouse gas emissions in order to stop global warming. This presents a great opportunity for the mechanical and plant engineering industry. The switch to green technologies creates a market potential of over 300 billion euros per year. This corresponds to 12 to 15 percent of the current total turnover in the industry and will add up to around 10 trillion Euros by 2050.

"Manufacturers who want to participate in this growth align their product and service portfolios in a climate-friendly manner and make their companies fit for the development and global marketing of future technologies. Politicians must also set the course by means of a functioning global emissions trading system, investments in research and a market framework for scaling up new technologies," says [redacted]

The results of the study can be downloaded here.

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About BCG
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To succeed, organizations must blend digital and human capabilities. Our diverse, global teams bring deep industry and functional expertise and a range of perspectives to spark change. BCG delivers solutions through leading-edge management consulting along with technology and design, corporate and digital ventures—and business purpose. We work in a uniquely collaborative model across the firm and throughout all levels of the client organization, generating results that allow our clients to thrive.

Further information: http://www.bcg.de

About VDMA
The VDMA represents around 3,300 German and European companies in the mechanical and plant engineering sector. The industry stands for innovation, export orientation, medium-sized companies and employs around four million people in Europe, more than one million of them in Germany alone.

Further information: http://www.vdma.org

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