



## Foreword “Best of Gears 2022”

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Gears bear great responsibility in present times, where the conditions for mechanical engineering and especially for drive technology are changing faster than ever. Megatrends, such as circular economy, decarbonization, green pressure, digitalization, zero waste and several more represent global challenges—but at the same time they are unforeseen opportunities for drives in industry, energy generation and mobility. Gear engineers must find answers to these research questions and provide solutions.

Topics like gear efficiency improvements, performance enhancement of plastic gears, new measurement methods and additive manufacturing are in the focus of the VDI International Conference on Gears 2022 in Garching/Munich. The latest developments and research results in powertrain industry and academic research are presented and discussed by more than 300 leading experts within more than 136 contributions.

The necessity to reach to CO<sub>2</sub>-neutrality puts the research on efficiency into a key role. Measures like the application of tailored synthetic or even water-based lubrication fluids are typical. Several contributions to the conference discuss additional possibilities to reduce friction losses. Other subjects of the conference are the NVH-behavior and gear dynamics of geared transmissions, where measures to reduce excitation behavior are developed and discussed from different perspectives in numerous contributions. With smart gear systems and condition monitoring approaches pioneering technologies are also subject of expert speeches in the conference.

In addition to the complete arrangement of proceedings of the presentations during the VDI International Conference on Gears 2022 within the “VDI Berichte”, you will find 40 thoroughly selected and reviewed full papers within

this Special Issue “Best of Gears 2022”. Thanks to the support of the guest editors Prof. Dr. Dr. E.h. Bernd-Robert Höhn, Dr. Bernhard Bouché and Dr. Burkhard Pinnekamp, who facilitated a double-blind peer review process with renowned international experts from industry and academia. Based on the cooperation between the VDI Wissensforum and the Springer-Nature journal “Engineering Research” and thankful contribution of the authors and more than 82 reviewing experts, all papers were processed on time and in a very short lead time.

I wish you an instructive and enjoyable reading of this Special Issue and may it inspire your own work.

On behalf of the editors of this Special Issue  
Yours faithfully  
Prof. Dr.-Ing. Karsten Stahl

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