Causes and consequences of manufacturing deviations

What causes manufacturing deviations, and how do they affect the quality of technical products? Since 2016, the research group FOR2271 ‘Process-oriented tolerance management with virtual assurance methods’ has been investigating these issues at Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU). The German Research Foundation (DFG) has now decided to provide FOR2271 with a total of 1.7 million euros in funding for a further three years.

Gear wheels, shafts, bearings – complex machines only work as well as their individual components. Accordingly, the definition of admissible manufacturing deviations has a decisive role to play in the manufacturing process. Since 2016, a research group at the Department of Mechanical Engineering at FAU has focused on the optimisation of tolerance management. This group is working in five different sub-projects to investigate how geometric deviations in the manufacturing process come about and how they affect the function and lifespan of technical products, using both computer simulations and practical methods, concentrating specifically on the production of metal and plastic gear wheels. The aim is to develop methods and tools for reliable tolerance management.

The DFG has now granted the research group FOR2271 ‘Process-oriented tolerance management with virtual assurance methods’ funding of 1.7 million euros for a further three years. The group coordinator is Prof. Dr. Sandro Wartzak from the Chair of Engineering Design, and he is joined by Prof. Dr. Kai Willner, Chair of Applied Mechanics, Prof. Dr. Marion Merklein, Chair of Manufacturing Technology, Prof. Dr. Tino Hausotte, Chair of Manufacturing Metrology, and Prof. Dr. Dietmar Drummer, Chair of Polymer Technology.

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