Research focus areas



FACULTY OF ENGINEERING

Chair of

Engineering Design Prof. Dr.-Ing. Sandro Wartzack



Dimensional management



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 G_{g} : $J_{k}(x-n)^{i}d_{5(x)}$ $M_{(x)}$ $M_{(x)}$ $M_{(x)}$

Virtual product development and design methodology



Machine elements and component design



Mechatronic systems in mechanical engineering

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Dimensional management at KTmfk

The quality of technical products is significantly influenced by geometric manufacturing deviations. Restricting such deviations by applying tolerances is therefore essential during product development. Comprehensive dimensional management is therefore a prerequisite for economic success in international competition. It has been an integral part of all research activities at the Chair of Engineering Design for over 25 years.



Research focus areas

Dimensional management research at KTmfk involves considering all manufacturing deviations which can have a negative impact on quality in virtual product development. KTmfk develops tools and methods which support engineers in effective tolerance specification.

In the early stages of dimensional management the challenge is to perform tolerance analyses with limited information on the manufacturing process and component geometry (for example based on skeleton structures). KTmfk is developing methods to produce reliable results based on limited information. In the later stages of virtual product development, diverse data on geometrical deviations must be analysed to meet the evergrowing demands for accuracy and quality of technical products. To this end, KTmfk is developing methods and tools which enable results from manufacturing simulations and measurement data to be processed during tolerance analysis.



The application of these methods in the context of tolerance analysis for moving systems also allows the evaluation of the effects of tolerances, deformations and joint mobility on the motion of mechanisms. In addition, statistical tolerance synthesis offers an optimal specification of component tolerances, taking into account the manufacturing costs and following the principle 'as much as possible, as restrictive as necessary'.

Collaboration with research and industry

In addition to achieving outstanding research results, strengthening international collaboration and partnerships with industry is at the forefront of KTmfk's work. Successful collaborations are a vital aspect of dealing with future challenges in dimensional management.

Dimensional management teaching and training

Dimensional management is essential to studying at the Department of Mechanical Engineering from the first day. Starting with standard-compliant technical drawing to complete tolerance specification from a statistical point of view KTmfk students are introduced to all facets of dimensional management.



To strengthen research and teaching and the exchange with industrial practice, as well as inspire students for dimensional management, KTmfk has organised a Summer School in dimensional management since 2013.

