Research focus areas



FACULTY OF ENGINEERING

Chair of

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Assistance systems







Virtual product development and design methodology



Machine elements and component design



Mechatronic systems in mechanical engineering

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Assistance systems at KTmfk

In addition to having a job and income, education and knowledge are gaining ever increasing importance in today's society. Companies have also recognised the significance of knowledge as the fourth production factor. The fact that knowledge doubles within a period of five years and 50% of it becomes obsolete within three to four years is particularly challenging for product designers, making it more difficult to identify and specifically apply knowledge during product development. That is why KTmfk supports the product designer strategically with knowledge based assistance systems. SLASSY (self-learning assistance system) and ALARM (assistance system for noise-reducing design of rotating machines) are examples of assistance systems developed at KTmfk. Separate flyers are available for both assitance systems.

Knowledge-based product simulation

By using assistance systems, the efficiency of virtual product and process development can be increased considerably. Methods to create and analyse FE simulations are being developed by the research association FORPRO² (efficient product and process development through knowledge-based simulations) which is funded by the Bavarian Research Foundation. Part of this research includes acquiring and structuring expert knowledge in a suitable manner using automated text and data mining mechanisms. A further aspect is developing methods for automated plausibility checks of existing FE simulation results.

A knowledge base where all knowledge and rules from product and process simulation can be pooled and from which context-sensitive knowledge can be retrieved will be set up as a central hub within the research association.



Designing in virtual environments

Virtual environments provide endless possibilities for simulating intuitive human-computer interaction and realistic visualisation of complex data. Integrating virtual reality into a product designer's tools or work process holds enormous potential. One of the priorities of this research area is the development of intuitive methods of interaction with the virtual product. Furthermore, the design engineer's tools can be extended with functions that allow complete integration into virtual environments.



Evaluation and process management

In the development stage, supposedly minor product modifications can affect numerous features, which often lead to wrong decisions and unnecessary iterations. That is why matrix-based methods are used to model interactions between requirements, product characteristics and properties. Thanks to this approach, product maturity and iterations can be managed holistically. KTmfk also develops methods, procedures and computer-aided tools for multicriteria analysis and supporting decision-making processes.