

Study: Design Engineers Are Important to Industry

Acatech/KIT Study Underlines Importance of Design Engineers, Analyzes the Current Situation, and Makes Recommendations to Strengthen the Job Profile

The design engineer in engineering sciences is the driver and developer in the making of new products. He is of paramount importance to the success of producing enterprises. This is why expert design engineers are in great demand. However, only few students are interested in this career option. The latest acatech study “Faszination Konstruktion – Berufsbild und Tätigkeitsfeld im Wandel” (the fascination of design engineering – job profile and activity subject to change) was set up under the co-direction of KIT and makes recommendations to industry, universities, and politics as to how this job profile may become more attractive.

“Design engineers in racing sports are highly respected. Design engineers in everyday life, by contrast, are always in the shadow of their products,” summarizes Albert Albers from Karlsruhe Institute of Technology. Together with Berend Denkena from the Leibniz University of Hanover, he directed the study “Faszination Konstruktion – Berufsbild und Tätigkeitsfeld im Wandel” on behalf of acatech, the National Academy of Science and Engineering.

Students of engineering sciences often have no clear idea of a design engineer’s profession and hardly choose it. The problem is profession-immanent: The profession of a design engineer is blurred and not clear. Attractiveness has to be enhanced. Highly qualified design engineers are behind every German high-tech product. German companies depend on them. Design engineers assume responsible, creative, and diverse tasks. Nevertheless, design engineers are lacking. The profile might be sharpened by introducing a protected title, e.g. “Systems Designer”.

However, responsibility for the promotion of design engineers does not only lie with the universities, but also with the companies. They can make the profession of a design engineer much more attractive. Interviews revealed that esteem, financial incentives, systematic

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staff development, and career options are crucial factors.

The study also shows that apart from the rather unclear job profile, university education is based too much on individual disciplines rather than professional competences. Design engineers mostly have studied mechanical engineering. Alternative qualification programs are courses in aerospace technology, mechatronics, or vehicle technology. Not all universities offer a specialization in design engineering and if courses are offered, the contents sometimes vary considerably.

According to the study, universities should increasingly impart engineering-relevant competences and prepare students better for a later activity as design engineer. In addition, university studies should prepare students for life-long learning and enable them to independently acquire new competences. Innovative teaching and learning formats, such as team projects, open tasks, and continuous possibilities of presentation for students, should be an integral constituent of the program. Apart from classical design engineering know-how, spatial conception, and creativity, the design engineer needs knowledge of informatics and programming as well as of electrical engineering and mechatronics. In addition, design engineers have to be qualified in areas like product and project management.

The interdisciplinary project group “Konstrukteur 2020” (design engineer 2020) headed by Albert Albers (Karlsruhe Institute of Technology, KIT) and Berend Denkena (Leibniz University of Hanover) analyzed the profession of a design engineer and qualification and further training of these engineers in a very thorough manner. Based on empirical studies and two expert workshops, they studied problems and made recommendations. The investigations and results of the project are documented by the new acatech STUDIE “Faszination Konstruktion – Berufsbild und Tätigkeitsfeld im Wandel”. The recommendations are summarized by the acatech POSITION having the same title.

The study may be obtained from acatech: www.acatech.de

About acatech – National Academy of Science and Engineering

acatech represents the interests of German scientific and technology communities at home and abroad. It is autonomous, independent, and a non-profit organization. As a working academy, acatech supports policy-makers and society, providing qualified technical evaluations and forward-looking recommendations. Moreover, acatech is determined to support knowledge transfer between science and industry and encourage the next generation of engineers.

Karlsruhe Institute of Technology (KIT) is a public corporation according to the legislation of the state of Baden-Württemberg. It fulfills the mission of a university and the mission of a national research center of the Helmholtz Association. KIT focuses on a knowledge triangle that links the tasks of research, teaching, and innovation.

This press release is available on the internet at www.kit.edu.