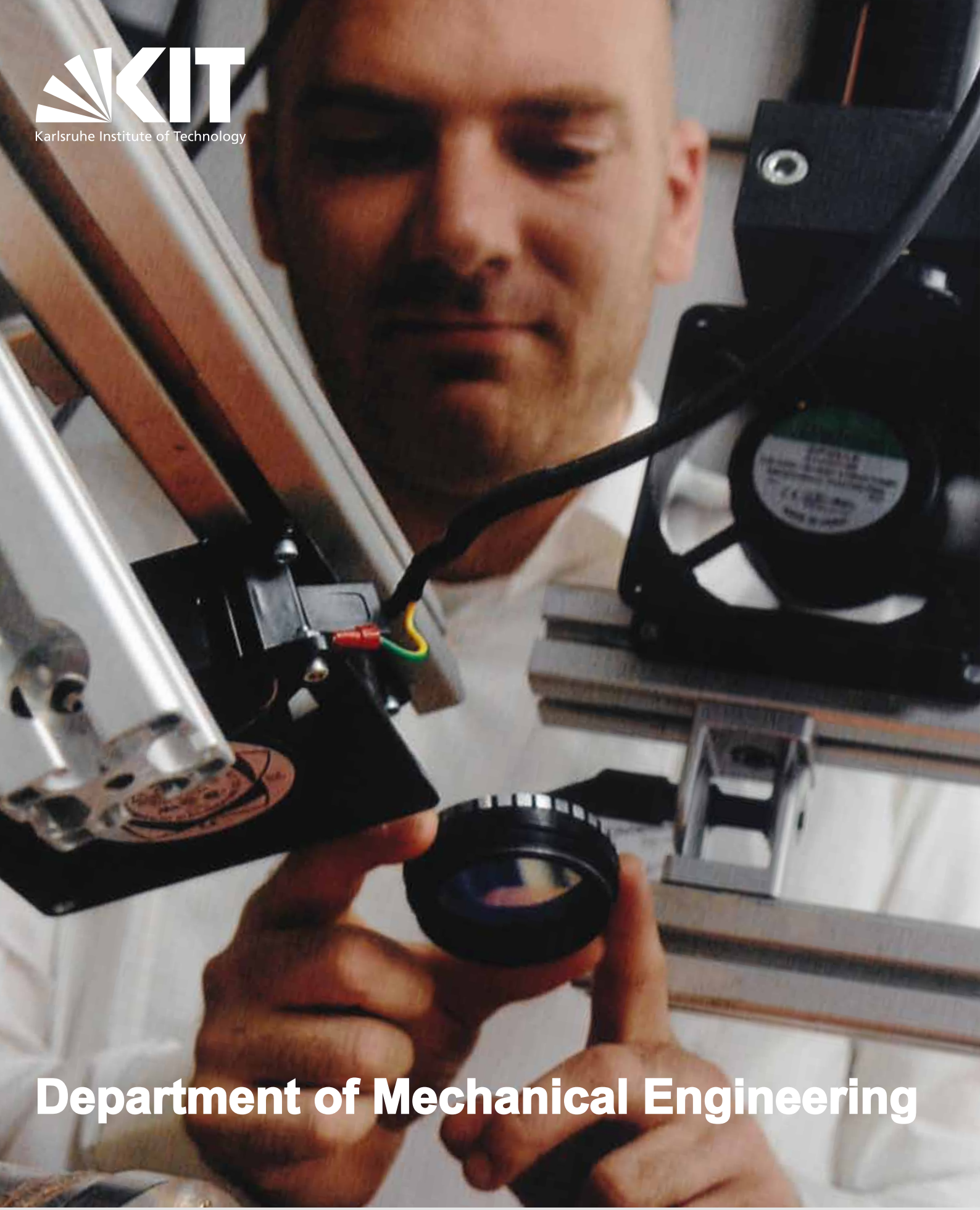

Karlsruhe Institute of Technology

Department of Mechanical Engineering

KIT – University of the State of Baden-Wuerttemberg and
National Research Center of the Helmholtz Association

www.mach.kit.edu

Photo: PKM

A Tradition of Mechanical Engineering in Karlsruhe

Mechanical Engineering at the Karlsruhe Institute of Technology (KIT) has a long and compelling history. The foundations of the department were laid by outstanding scientists and teachers. A reputation was gained early on for independent teaching and original research in a number of distinct areas. The response to these initiatives in research and education was remarkable.

Ferdinand Redtenbacher (1809-1863) raised mechanical engineering to a technological science. He showed an extraordinary talent for solving engineering problems by applying theoretical insights alongside his extensive knowledge of mechanical engineering. Franz Grashof (1826-1893), Redtenbacher's popular successor, was a similarly outstanding teacher and scientist whose influence was felt far beyond Karlsruhe. He is to be credited especially with the incorporation of the ´Polytechnikum´ (its designation since its foundation in 1825) as a Technical University. He was a co-founder of the VDI (Verein Deutscher Ingenieure/Association of German Engineers). Carl Benz (1844-1929), who had studied under both Redtenbacher and Grashof, was an honorary doctor at the former Universitaet Karlsruhe (TH) before becoming one of the founders of automotive engineering.

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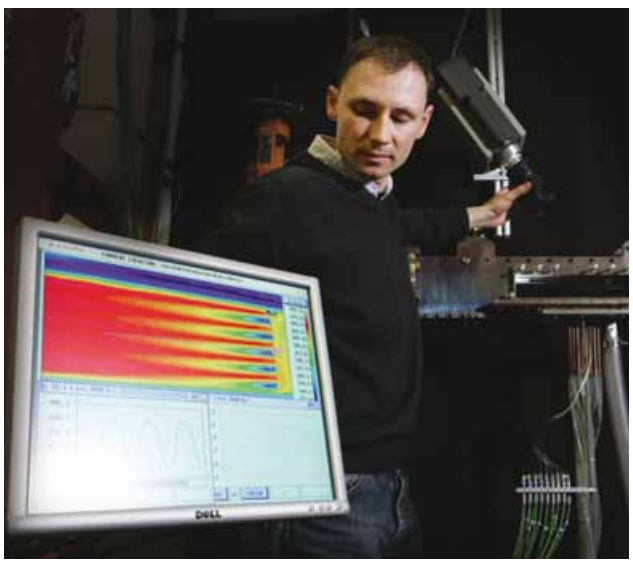
Fluidic robot hand of the Collaborative Research Center 588 ´Humanoid Robots´, Institute of Applied Computer Science/Automation

Photo: PKM

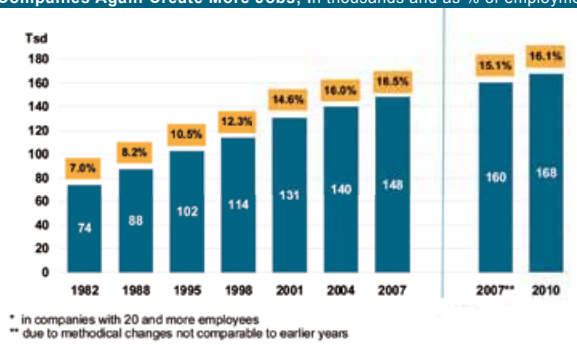
The Career Profile of a Mechanical Engineer



Analysis of film cooling of a transsonic turbine stage on a generic model.
Institute of Thermal Turbomachinery

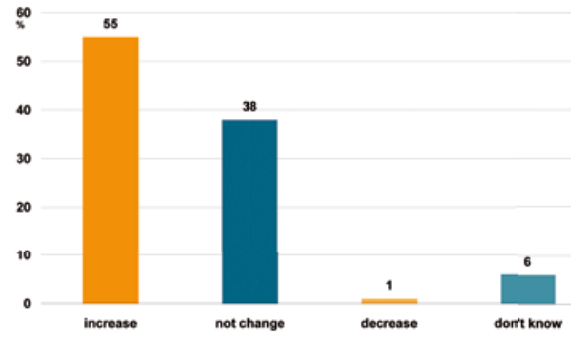
Engineers are in demand. According to a survey by the VDMA, 55 % of businesses are expecting demand for employment to continue to rise until 2015. Mechanical engineering is the branch with the most engineers and the demand for them is rising all the time. There are currently 970,000 people working in the mechanical engineering sector in Germany, of whom 167,500 are engineers, which means a proportion of over 16.1 %. This is a long-term development, brought on by demand, rather than a cyclical phenomenon. The baby-boomers are aging. Vacant positions must be occupied. New positions need to be created. Given the increasing degree of mechanization in just about every area of life, additional demand is arising for specialists – not just in the development sector but in the service sector as well.

Engineers in Mechanical Engineering Industry 2010:
Companies Again Create More Jobs; in thousands and as % of employment*

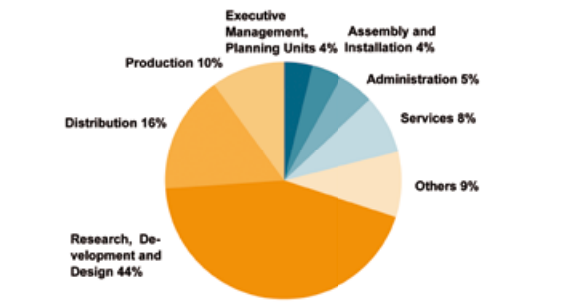


* in companies with 20 and more employees
** due to methodical changes not comparable to earlier years

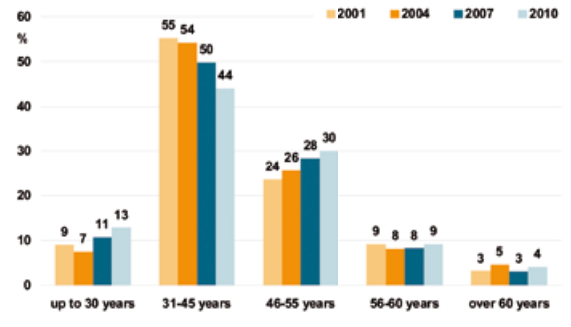
Engineers in Mechanical Engineering Industry 2010:
Expected Demand Until 2015; Employment of all engineers will ...



Engineers in Mechanical Engineering Industry 2010:
Demand According to Operating Areas; share of ´Yes´ responses in %



Engineers in Mechanical Engineering Industry 2010:
Share of Young Engineers has Increased; share of age-groups in %



Source: VDMA-Engineer Surveys 2010

Mechanical Engineers as Trend-Setters

Now, more than ever, the success of a business depends on the drive for cost-effective and innovative product development. New markets must be taken over quickly. Creativity is required just as much as the technical basics. Quality and reliability, for so long hallmarks of German products, are not enough anymore. Nowadays, competition is world-wide and new benchmarks are being set all the time. To ensure that products developed in Germany are consistently ready for international markets, it is essential to get right the process of meeting the customer's requirements with innovative and cost-effective products..

Engineers are playing a fundamental role here. They are trend-setters who create products and technologies for human requirements. Engineers evaluate economic and ecological facts, communicate with professionals in other technical disciplines, are customer-oriented and used to thinking in terms of business. They are aware of sales and marketing opportunities and work internationally. Working as a team and closely with the customer, they realize successful outcomes from the ideas stage right through to the finished product. The mechanical engineer can expect to carry out a wide range of tasks from development to recycling. In the course of their studies they'll acquire knowledge and skills to help them develop ideas, analyze problems and propose solutions. Throughout the product development process the focus is on the customer.

Nearly half of all mechanical engineers work in research and development. Together with scientists they research the potential for applying scientific principles to technical problems. They might be trying to improve the efficiency of energy conversion or reduce emissions. If it is technically possible to realize the idea, the development engineers will create the functioning product. There is already close cooperation between the engineers and the production sector in the construction phase. Working together, they consider how components should be designed in order to make the manufacture possible. Is a new manufacturing plant going to be needed? What sort of logistics are required to save time in the production? What sort of price is going to be reasonable? The business aspect is fundamental to success. Other specialized engineers such as assembly engineers take responsibility for installing and commissioning the complete device on-site. Engineers act as service providers in all operations requiring computer-controlled processes as they up-date software for the latest requirements.

Photo: PKM

The Department of Mechanical Engineering

With currently around 4,300 students the Department of Mechanical Engineering is the largest of the eleven departments that make up KIT.

It comprises more than 20 institutes which manage student courses and research in the various branches of engineering. Outstanding rankings and evaluations vouch for the standard of research and education at KIT. The Department of Mechanical Engineering is consistently awarded top marks for all its activities.

More than 700 personnel are engaged in our department to promote and develop this status further, including 33 Professors, 460 research assistants and 200 technical and administrative co-workers. In addition the department employs several hundred undergraduate research assistants and tutors.

About 21 Mio EUR third-party funds are evidence of intensive research activity and high innovative capacity in our department.

Our Department of Mechanical Engineering and its counterparts in other major universities cooperate to generate an evaluation process which is designed to maintain standards in education and research. The outcomes of this process contribute to strategic advancement.

The SCM (Student Center Mechanical engineering) actively supports students, helping them to pursue their studies as efficiently and successfully as possible. It is a central contact point for mechanical engineering students seeking help, advice or counselling. Problems are addressed in as timely and straightforward a way as possible.

The mechanical engineering practised at Karlsruhe contributed significantly to the development and realization of KIT. Several institutes of our department are conducted conjointly since many years. Within KIT, the Department of Mechanical Engineering is mainly involved in the centers and focuses of Energy, Mobility Systems, NanoMicro as well as Climate and Environment.

Our Institutes – Motors for Research and Teaching

Fundamental research, especially in the technical field, helps education stay oriented towards the future, which is a further instance of the application of science. Our institutes exemplify the close relationship between the theory and practice of science and academic course development.

Institute Overview

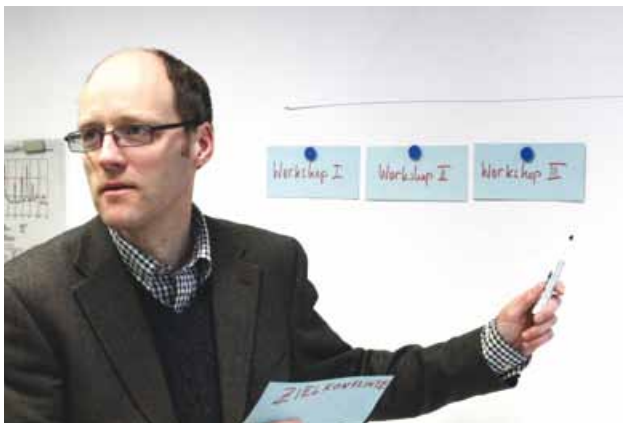
AIA	Institute of Applied Computer Science/Automation
FAST	Institute of Vehicle System Technology
FSM	Institute of Fluid Machinery
IAM–AWP	Institute for Applied Materials – Applied Materials Physics
IAM–KM	Institute for Applied Materials – Ceramics in Mechanical Engineering
IAM–WBM	Institute for Applied Materials – Materials- and Biomechanics
IAM–WK	Institute for Applied Materials – Materials Science and Engineering
IAM–ZBS	Institute for Applied Materials – Reliability of Components and Systems
ifab	Institute of Human and Industrial Engineering
IFKM	Institute of Reciprocating Engines
IFL	Institute for Conveying Technology and Logistics
IFRT	Institute of Fusion and Reactor Technology
IMI	Institute for Information Management in Engineering
IMT	Institute of Microstructure Technology
IPEK	Institute of Product Engineering
ISTM	Institute of Fluid Mechanics
ITM	Institute of Technical Mechanics
ITS	Institute of Thermal Turbomachinery
ITT	Institute of Technical Thermodynamics
MRT	Institute of Measurement and Control Engineering
wbk	Institute of Production Science

Photo: PKM

Teaching at our Department

Demonstration of aerodynamic forces strong enough to allow a ball to hover. Department of Fluid Machinery

Mechanical engineering is a very attractive course of study for young people interested in science and technology. Top rankings in academic league tables and repeatedly high applicant numbers bear witness to the high reputation of mechanical engineering here at Karlsruhe. An effective admissions procedure ensures that new students are well equipped to complete their chosen courses successfully. Particular attention is paid to striking a balance between core knowledge, familiarity with methodology and practical skills. The students are given ample scope to decide for themselves what and how they will study. Many students take advantage of opportunities to enrich their studies with international experience. Besides courses conducted in German, our students can attend many lectures in English too. The Carl Benz School of Engineering offers mechanical engineering courses in English to students from all over the world. In addition, the German-French course (KIT-DeFI) leads to the double degree in collaboration with leading French engineering universities. A number of exchange programs with universities with international reputations also provide opportunities for international experience. Research and teaching are closely allied in mechanical engineering studies. With their final thesis, students get an opportunity to participate actively in current research activities. With modern teaching models students study current knowledge. Teaching quality for all courses is continuously reviewed and evaluated in an open and transparent process.



Master Degree Program

Mechanical Engineering

Looking at the complexity of future energy systems soon-to-be engineers have to be equipped with a distinct interdisciplinary knowledge. The Master Degree Program Energy Technologies, cooperation between faculties, addresses Bachelor graduates from various fields of study. This course offers a solid fundamental education and based on that, options to deepen learned knowledge. Aiming to widen career possibilities of the graduates the education is diversified. Students especially benefit from the multifaceted competences of the KIT Center Energy.

New Study Course

Mechatronics and Information Technology

The new bachelor course “Mechatronics and Information Technology” was introduced in the Winter Semester 2012/13. After graduating this bachelor course students can proceed to the established master courses “Mechanical Engineering” and “Electrical Engineering and Information Technology”. Additionally, a consecutive master course “Mechatronics and Information Technology” is in the works.

Bachelor and Master Degree Programs

Mechanical Engineering

Our department introduced the consecutive Bachelor and Master courses in the Winter Semester 2008/2009. The Master of Science academic degree is equivalent to the Diplom-Degree engineering program (Diplom-Ingenieur). The Bachelor courses offer a broad basic knowledge of Mathematics and Natural Sciences and of subjects related to Mechanical Engineering which is then gone into in greater depth in special courses and applied to more complex problems. The Bachelor thesis, with its provision for concentrating on a special subject, gives students the chance to pursue issues more in line with their particular skills and interests. In addition, many interesting laboratory-based courses are on offer. Once they have demonstrated a mastery of the requisite skills, students are awarded the degree of Bachelor of Science. Students can organize their Master studies as a General Mechanical Engineering course or choose one of the following special subjects:

- Energy- and Environmental Technology
- Automotive Engineering
- Mechatronics and Microsystem Technology
- Product Development and Engineering Design
- Production Technology
- Theoretical Mechanical Engineering
- Materials and Structures for High-Performance Systems

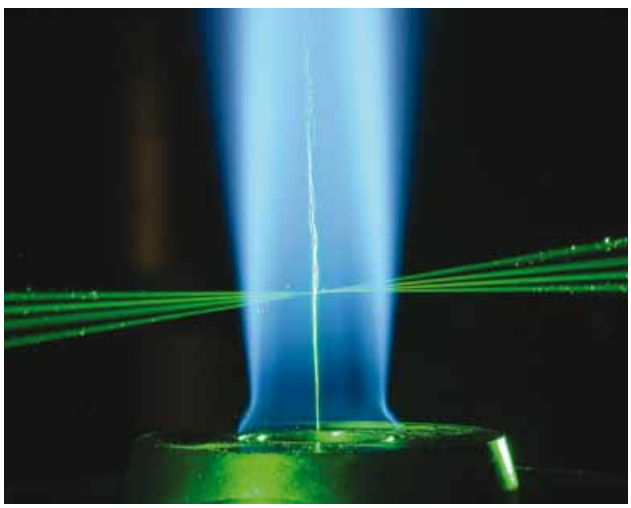
Many institutes collaborate in the compiling of the curriculum, where professors, research assistants and students work in their special areas of mechanical engineering. Students can take part in the life of the institute as scientific assistants and thus gain deeper first-hand insight into research activities. Students are allowed to choose which area they wish to specialize in and, by choosing two further main subjects and the subject of their Master thesis, organize their Master studies to suit their own areas of interest. The normal length of study is six terms for the Bachelor degree and a further four terms for the Master degree. The course of studies also includes an 18 week internship in industry, which can of course also be undertaken abroad. Through in-depth industrial experience students learn how to apply the skills which they have been taught. Sometimes it is there that students meet their future employers for the first time.

Materials Science and Engineering

The KIT is one of the leading research institutions in Materials Science and Engineering. Modern technologies are driven by the continuous improvement of existing materials and by the development of new materials such as composites for fuel-saving lightweight structures in the automobile industry, high performance functional materials for information and energy-storage systems, and bio-compatible materials for medical technology, to name but a few. Since the Winter Semester 2011/2012 the Department of Mechanical Engineering at KIT offers an interdisciplinary Bachelor and Master Degree Program in Materials Science and Engineering. This program is designed especially for prospective students interested in the natural sciences but who at the same time have a practical bent. The master program is a continuation of the bachelor program under the same title. It is also open to graduate students from other natural sciences and engineering programs.

Photo: PKM

Research in our Department



Raman spectroscopy in a natural gas flame with droplet injection. The measurement provides information about temperature and chemical species in the focal point of the laser beams. Fundamental research of this kind helps to improve internal combustion engines and air jet engines in the future. Institute of Technical Thermodynamics

Nationwide, KIT is one of the universities most strongly engaged in research. In all the research and teaching activities of our department the importance of practical relevance is stressed. Main aspects are energy and environment-friendly technologies, automotive research and technology, materials science and technology, product design and development, production technology and mechatronics, and microsystems technology. A particular specialty is theoretical mechanical engineering. This fundamental and methodological research in mechanical engineering at KIT is counterbalanced and complemented by application-oriented research. Our department benefits greatly from its international connections, its many research collaborations with industry, and close cooperation between KIT Campus North, KIT Campus South and Fraunhofer institutes.

Transient temperature distribution on the surface of a rotating tire. Measurements are made by an internal drum test bench, the first of its kind in the world, designed for laboratory snow experiments at the Institute of Vehicle System Technology.

Single cylinder engine for fuel injection experiments in a specially adapted detached cylinder head. A second injector has been attached at the side of the main injector. Institute of Internal Combustion Engines

Trigeneration: an absorption chilling system charged with hot exhaust gases from micro turbines for a distributed and environment-friendly energy supply for an island in the Caribbean. Institute of Thermal Turbomachinery in cooperation with the European Institute for Energy Research (EIfER)

Main Areas of Research

Vehicle and Propulsion Technology – basis of a mobile society

The prospect of a mobile future means continually growing demands for improvements in driving safety, comfort and efficiency. Innovation and the constant development of the most up-to-date technologies help to ensure intelligent driving functions, noise reduction, best engine and power-train systems and management, tire and chassis design, light weight construction and environment-sensing systems and electronics for improving vehicle operation and the prevention of accidents. Unique test beds with high-precision measuring instruments, test vehicles and state-of-the-art analysis, simulation, and development tools and procedures facilitate the researching of vehicle system technology for cars, trucks, rail vehicles, mobile machines, and many other kinds of automotive systems.

In the development of thermal fluid-flow machines, flight propulsion has the highest priority. Pride of place is given to specialist technologies for improving the cost-effectiveness of flight propulsion and reducing polluting emissions. Particular studies of the performance of combustion chambers and turbine cooling systems, secondary air and two-phase flow systems are ongoing. The creation of the KIT Center ´Mobility Systems´ and of the Rolls-Royce University Technology Center Karlsruhe (UTC) bears witness to the importance attached to these research activities.

Energy and Environment – securing the future

Securing a sustainable and ecology-friendly supply of energy and maintaining mobility are key tasks of a modern industrial society. Other essential assignments ahead involve energy and environmental technology for combustion engines, gas, steam, wind and water turbines, pumps, fans, energy conversion installations, atmospheric transport processes, nuclear fusion and fission, and reactor reliability. The improvement of methods and strategies to design and develop efficient and sustainable energy conversion machines is based on sound thermodynamic principles and state-of-the-art techniques for the numerical modelling of fluid flows and combustion processes and high-precision measurement and analysis technology. Energy-efficient operation guidelines, fuel mixture generation and exhaust gas treatment of internal combustion engines, CFD (Computational Fluid Dynamics), high temperature turbines, laser measurement techniques, and acoustics are just a few instances of the broad spectrum of research and teaching at the Department of Mechanical Engineering in Karlsruhe.

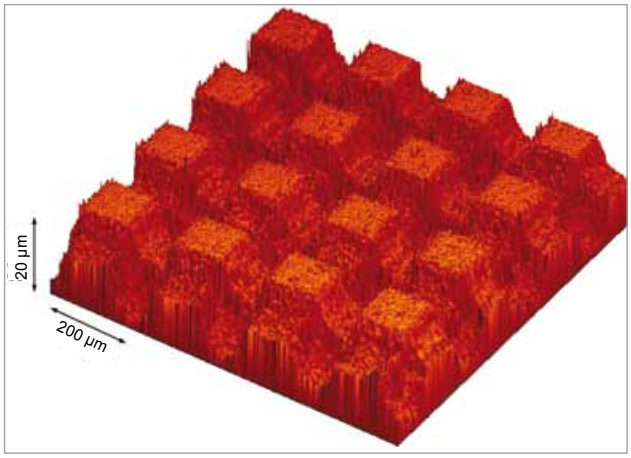
Materials Science and Engineering –
a magic toolkit for engineers

Emerging technologies in mechanical engineering require novel, efficient materials such as engineering ceramics, lightweight alloys, high-temperature superalloys, and composites. Materials are improved to make them more resistant to thermal and mechanical stress as much as to wear and tear and corrosion. They are the key to making efficient and durable products, especially in automotive engineering (for engines and power trains), power engineering (gas turbines), aeronautical engineering (fuselage and engines), microelectronics, and sensor technology.

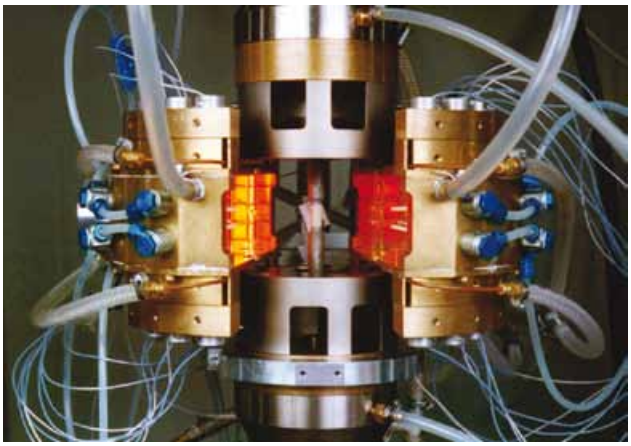
Our research is focused on the development of novel high-performance materials, processes for tailoring the microstructure and topography of functional surfaces, the mechanisms of deformation and damage, and failure analysis. Modelling and the numerical simulation of materials are opening up promising vistas. Our laboratories are equipped with state-of-the-art instruments and devices for testing and analysing materials. This equipment is the key to successful research. The work in the field of material science and engineering is underpinned especially by intense and long-term cooperation with the Fraunhofer Institutes and between KIT Campus North and KIT Campus South.

Micro System Technology –
big roles for tiny parts

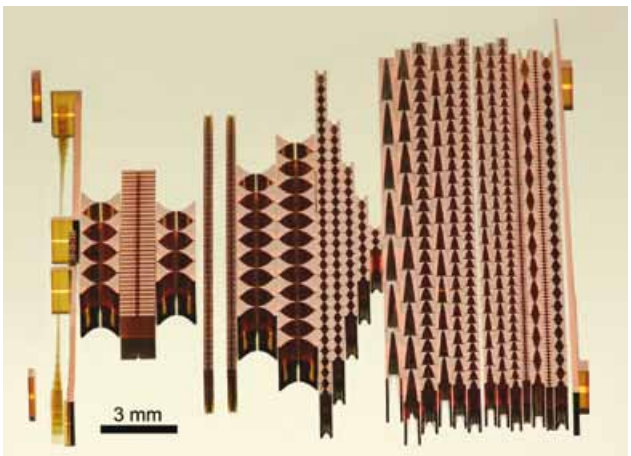
Micro system technology is part of both partners within KIT, the Department of Mechanical Engineering of the former Universitaet Karlsruhe (KIT Campus South) and the former Forschungszentrum Karlsruhe (KIT Campus North). The design, fabrication, and characterization of micro and nano structured parts and elements are the main objects of study in this discipline. A high degree of interdisciplinary study is a feature of micro system technology, ranging from the development of processes for the fabrication of flexible, chip-scale scaffolds for tissue engineering to the design of systems and sensors based on photonic and optical elements and systems as well as micro fluid structures. Micro technology is used to engineer nano scale effects. For example, metal gears with the lowest possible tolerances (surface roughness of between 10 and 20 nano meters) for use in high-end watches are made using the LIGA technique (X-ray lithography, electroforming and replication), a process chain invented in Karlsruhe. Institutes of the Department of Mechanical Engineering form the core of the Karlsruhe Nano Micro Facility (KNMF) whose home is the KIT Campus North. KNMF offers the entire portfolio of nano and micro technologies to external users and is well placed with its unique technological and scientific infrastructure to assist high-end research projects.



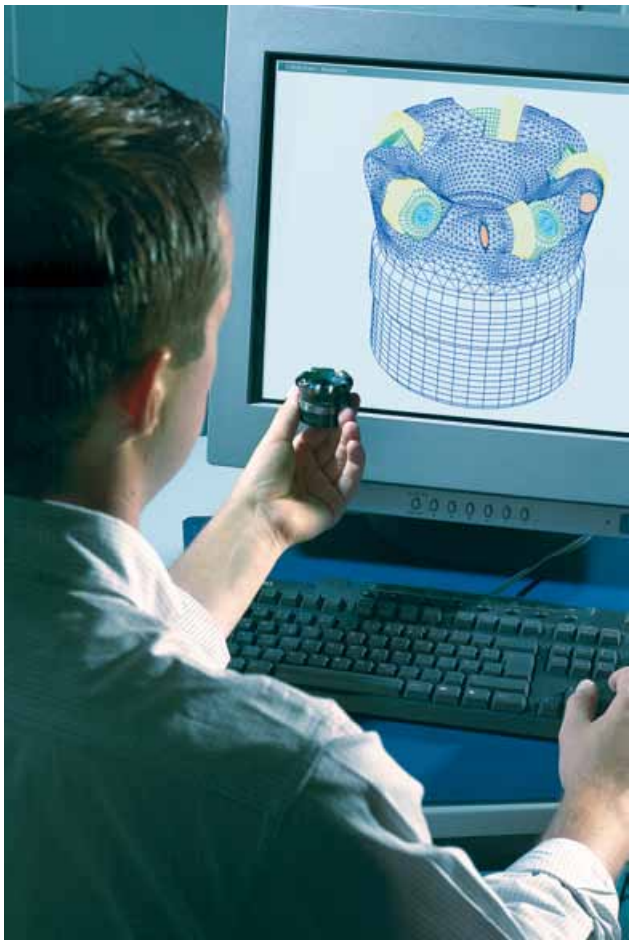
Laser-assisted micro textured ceramic surface.
Institute for Applied Materials



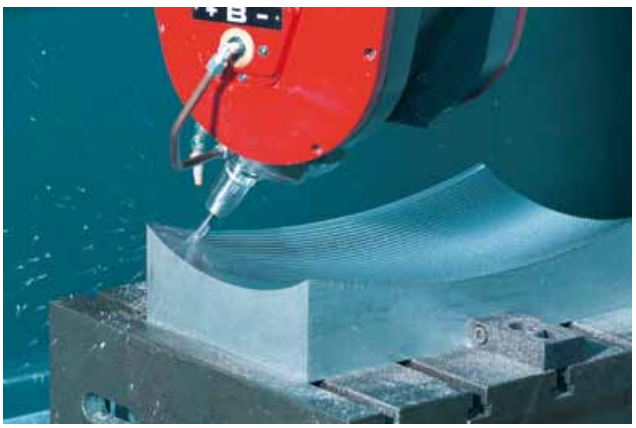
Testing high temperature materials for gas turbines in the laboratory.
Institute for Applied Materials – Materials Science and Engineering



Refractive X-ray lenses made from X-ray-resistant epoxy SU-8, used for high resolution X-ray microscopes. Institute of Microstructure Technology



Computer simulation of cutting tools.
Institute of Production Science



Five axis milling tool.
Institute of Production Science

Production Science –
taking the holistic view

Production science teaching and research at Karlsruhe are centred on the holistic analysis of products and their creation in the context of international interdependencies. Besides the manufacturing process itself, operation, maintenance and repair, and recycling are also taken into consideration. As national economic areas open up to the world, the need to shorten development times and make more intensive use of technical models and computer simulation is becoming ever more urgent. At the same time, there is growing pressure to increase the degree of automation. The teaching and research of our department institutes involved in production science and of the institutes from the field of product engineering cover almost the entire product creation process all the way through to recycling.

Among the main fields are product planning, design, production planning, production, assembly, quality management, materials handling and logistics, business organization, and industrial science. Progress in dry machining, for example, has been both ecologically and economically beneficial. In micro technology there has been major progress regarding the cutting of hardened steel materials.

Product Development and Design –
the innovative element

In product design and development, the focus is on the investigation of the theoretical foundations in methodical development processes and the computer systems associated with them (CAD/CAE Computer Aided Design/Engineering). By researching particular systems such as drive units and components, mechatronics, and micro technologies, scientists find ways of describing the product development process holistically. Thus the entire product development process is accompanied step by step with supportive methods set up at each stage to ensure that an innovative product will be developed. Scientists working closely with industry solve multidisciplinary development problems and provide whatever information management may be necessary. The emphasis is on the complete process chain of product development from strategic and environmental product planning through the generation of ideas right up to the development of complete three-dimensional CAD designs and simulations and the manufacturing of prototypes.

The use of CAD systems gives rise to new tasks such as the coupling of different systems or the development of knowledge based learning CAE systems.

Mechatronics –
the symbiosis of three engineering disciplines

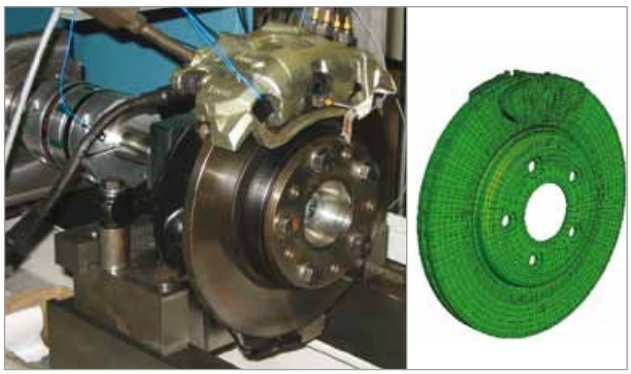
The interaction of components taken from the different worlds of mechanics, electronics, and information technology enriches our daily lives. Mechatronic systems are making ever deeper inroads into manufacturing, transportation, and our private lives. Automation in production, cars, and propulsion technology, for instance, promises a vast potential for the application of mechatronic systems. And the very idea of mechatronics suggests a blurring of the classical border lines between academic disciplines. Mechanical engineering, electrical engineering, and information science are all coming together to form a single integrated unit.

Cooperation in research in mechatronics and micro systems technology (AMKA), involving our department, the Department of Electrical Engineering and Information Technology, and the former Forschungszentrum (KIT Campus North), offers a platform for interdisciplinary research projects.

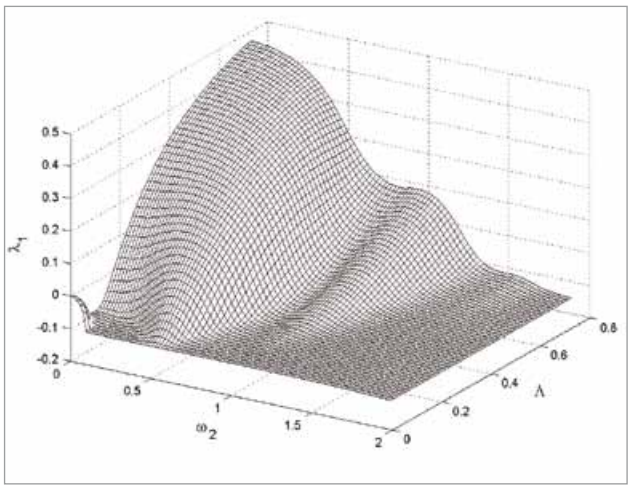
Design of a multifunctional prosthetic hand.
Institute of Applied Computer Science/Automation

Theoretical Basics –
fundations of engineering skills

Mechanics, thermodynamics, automated control engineering, and fluid dynamics constitute the indispensable and timeless fundamentals of engineering skills. Only by mastering these basic subjects in conjunction with the corresponding practical knowledge of methods and processes can an engineer look forward to a successful professional career. Research in mechanics, machine dynamics, control engineering, fluid dynamics, and thermal process technology is closely coupled with areas of study concerned with applications.

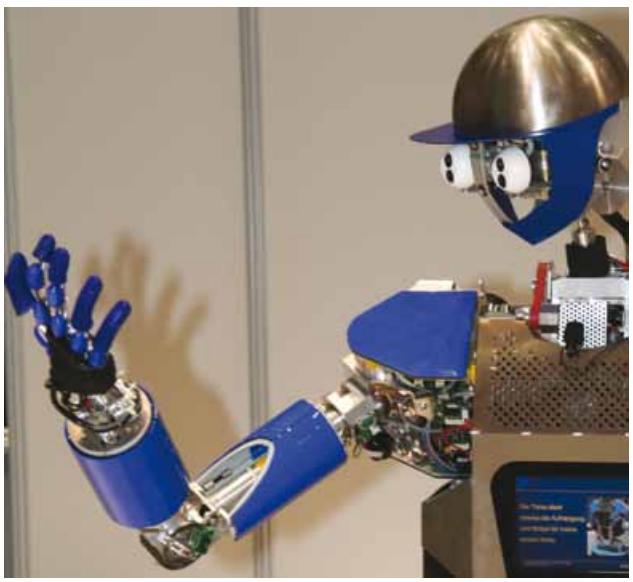


Vehicle brakes: research activities range from modelling and analysis of vibrations induced by friction to the development of mechatronic systems.
Institute of Engineering Mechanics



Variation of the top Liapounoff exponent. This is a measure for the stability of a vibration absorber. Institute of Engineering Mechanics

The AnnieWay team took part in the DARPA Grand Challenge in the USA. Institute of Measurement and Control Engineering

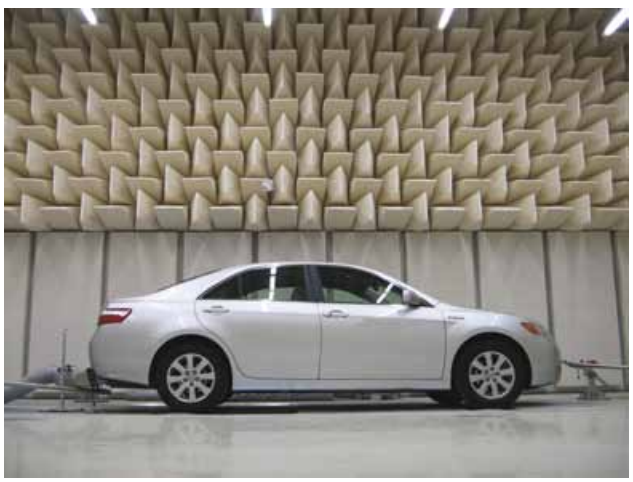


Humanoid robot,
Institute of Product Development

CVD/PVD (Chemical Vapour Deposition/Physical Vapour Deposition) hybrid coating facility and multiple layer thin film coating.
Institute for Applied Materials

Virtual prototypes in LESC: an increasing number of enterprises are relying on interactive simulation in a virtual environment with entirely integrated users. Institute for Information Management in Engineering

Latest Developments in our Department



Comfort analysis of modern hybrid electric vehicles (HEVs) concerning vibration and acoustics (noise/vibration/harshness - NVH). Institute of Product Development

Lifecycle Engineering Solutions Center

The Lifecycle Engineering Solutions Center (LESC) is part of the Institute for Information Management in Engineering (IMI) and Germany's unrivalled facility for state-of-the-art information technology. It is here that research-intensive engineering solutions for product lifecycle management are developed and engineers receive their training and qualification. Serving as a platform for the entire product life cycle, LESC offers a professional environment for technology transfer and a continuous exchange of knowledge between research and industry (see figure above).

Vehicle-in-the-Loop Test Facility

The new Vehicle-in-the-Loop test facility at the Institute of Product Engineering is emerging as an important component in KIT's focus on mobility. Its equipment includes acoustic coating, a 3D laser scanning vibrometer, and simulation systems including a virtual driver and traffic as well as traffic infrastructure. This test facility offers a unique environment for validating automotive engineering functions and noise/vibration/harshness (NVH) development.

The AirBUS A380 is equipped with the Rolls Royce Trent 900 turbine engine.
Institute of Thermal Turbomachinery

Institute of Vehicle System Technology at IAA.

Lightweight construction: car dashboard.
Fraunhofer Institute for Chemical Technology, Pfinztal

Rolls-Royce UTC in Karlsruhe

Rolls Royce has been collaborating successfully with our University for many years in the field of turbomachinery. In 2007 this partnership resulted in the establishment of the Rolls Royce University Technology Center (UTC) Karlsruhe. This is the fourth such UTC to be set up in Germany and the twenty-ninth worldwide. UTC Karlsruhe works closely with several British UTCs, especially those at Universities of Surrey, Loughborough, Nottingham and Cambridge and Osney Laboratory in Oxford. Furthermore, cooperations with Purdue (USA) and Pusan (Korea) exist. Professor Dr. Hans-Jörg Bauer, Institute for Thermal Turbomachinery, is the head of the Rolls Royce UTC Karlsruhe.

KIT Center Mobility Systems

The KIT Center Mobility Systems co-ordinates activities all around automotive engineering. To date, more than thirty institutes of different departments have joined. All of them emphasize the importance of finding holistic solutions to problems of mobility. Its ambitious aims include ecology-friendly, safe, and attractive vehicles for all purposes. Professor Dr. Frank Gauterin of the Institute of Vehicle System Technology is speaker of the KIT Center Mobility Systems.

Lightweight Technology

With the development of innovative lightweight systems with integrated functions, the use of fiber composites has considerable potential. They complement traditional materials in many areas. The increasing application of fiber composites and lightweight materials requires a scientific and technological investigation of their specific properties. In collaboration with the Fraunhofer Institute for Chemical Technology in Pfinztal, a professorship of lightweight technology has been created.

Karlsruhe School of Optics and Photonics

The Karlsruhe School of Optics and Photonics (KSOP) offers comprehensive, state-of-the-art MSc and PhD programs in optical technologies. The first KSOP doctoral researchers began their studies in December 2006 and since then the number of students taking these programs has been growing steadily. The official admission date for the MSc in Optics and Photonics is the start of the Winter Semester. The Departments of Physics, Chemistry and Biosciences, Electrical Engineering and Information Technology, and Mechanical Engineering at KIT and associated partner institutions contribute to the multidisciplinary approach. As a graduate school, KSOP is one of the cornerstones of Karlsruhe's record of excellence.


Photo: PKM

The City of Karlsruhe and the Campus

With its 280,000 residents Karlsruhe is the third largest city in Baden-Wuerttemberg. It is located at the edge of the Black Forest, close to France and Switzerland. ´Faecher´ is the German word for ´fan´. Owing to certain peculiarities of its layout, Karlsruhe is known as ´Faecherstadt´ (City of the Fan). The streets fan out from the center at the baroque palace, an appropriate home for exhibitions of the State Museum of Baden.

The more than 35,000 students resident in Karlsruhe lend a particular flavour to life in the city. The many and varied opportunities for taking part in sport, music, and theater offered by the many student organizations leave little to be desired when it comes to recreation. The city boasts a distinctive night life and there are events and parties going on all the time on campus.

The ´Schauburg´ offers a special kind of movie theater experience and receives awards for excellence on a near-yearly basis. Then there's the Center for Art and Media Technology (ZKM) with its distinctive collection of modern media art. The State Theater of Baden and the Multiplex movie center are other examples of the cultural offerings of Karlsruhe.

´Faecherstadt´ Karlsruhe from the air. KIT Campus South is highlighted.

The baroque palace with its garden.

Street cafes are found in nearly every part of the city. The Ludwigsplatz in the city center is shown here.

The campus of the oldest technical university in Germany (KIT Campus South) extends over an area of nearly 70 hectares and is located in the center of the city. Nearby, spacious parks and forest areas offer splendid opportunities for walks. Our students have always used the close-by palace garden as a place to relax and discuss. Walkers, joggers, Frisbee players, unicyclists, and jugglers are all part of the social life in the garden. The palace garden is not only important as a place for recreation, it also plays a role in the academic life too. The palace and its parks have provided spectacular settings for many KIT events.

In comparison with other cities of its size, the availability of student accommodation in Karlsruhe is good. The Studentenwerk (student union) and private associations act as agents for inexpensive rooms and apartments close to the campus. There's a comprehensive public transport system with a reasonably-priced ´Studiticket´ available so that it is easy to get to the University from the suburbs. The eleven Departments of the KIT Campus South are housed in a mixture of historical and modern buildings and they are all within walking distance of each other. There is a free bus shuttle service for students and staff members between KIT Campus South and KIT Campus North. The bus stops are located directly on the campus itself.

The Steinbuch Center for Computing, a corporately supported institute, was founded in February 2008. This facility has its origins in the Rechenzentrum of the former University (URZ, KIT Campus South) and the Institut fuer wissenschaftliches Rechnen (IWR) of the former Forschungszentrum Karlsruhe (KIT Campus North), which have now merged to form the new Information Technology Center of KIT. The institutions combined by the SSC are two of the most capable computing centers in Germany and are successfully active in the fields of supercomputing and, in recent years, of grid computing. This latter allows the use of computer resources spread over a wide area and can thus provide solutions to whole new classes of problems.

If you would like to experience the fascination of mechanical engineering, why not come and visit Karlsruhe? Attend an Open Day or even a typical day of lectures and get a sense of what life could be like for you here.

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