

## Models for Customized Energy Systems

**KIT Coordinates “Energy Systems Integration“ Project Under the “Key Future Research Topics“ Program of the Helmholtz Association**

The new “Energy Systems Integration“ project is aimed at customizing environmentally compatible, efficient, flexible, and stable energy systems for the future. The project headed by Professor Veit Hagenmeyer of Karlsruhe Institute of Technology (KIT) concentrates on interactions of the energy systems components, namely, producers, storage systems, and consumers. It also considers processes of metal processing, cement processing, and petrochemical industry. The Helmholtz Association will fund the “Energy Systems Integration” project under its “Key Future Research Topics” program with EUR 5 million.

“KIT possesses outstanding competences in research relating to energy systems and their interfaces with economy and society,” says Professor Holger Hanselka, President of KIT and Research Field Coordinator Energy of the Helmholtz Association. “Together with six other Helmholtz Centers, KIT will develop customized models for future energy systems under the “Energy Systems Integration” project and thus contribute to the success of the energy transition.” Within the framework of its Initiative and Networking Fund, the Helmholtz Association has decided to finance the project as a “Key Future Research Topic” with EUR 5 million in the next three years. The partners involved will fund another five million euros for research in this area. The project partners are KIT, Helmholtz-Zentrum Berlin für Materialien und Energie (HZB), Forschungszentrum Jülich, the German Aerospace Center (DLR), the Max Planck Institute for Plasma Physics (IPP), Helmholtz-Zentrum Dresden-Rossendorf (HZDR), and the Helmholtz Centre Potsdam – German Research Center for Geosciences (GFZ). The project is headed by Professor Veit Hagenmeyer of KIT.

Energy systems integration addresses those aspects of the energy system that make all individual components form a whole, i.e. all physical and IT-based interconnections as well as their structures and functions. “To ensure reliable, economically efficient, and environmentally compatible energy supply, it is essential to combine and in-



*KIT Energy Center: Having future in mind*

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tegrate all components and sectors in an intelligent way,” Veit Hagenmeyer explains. The scientists working under the project will develop models of the technological, economic, and ecological interactions on various levels, from components to processes to integrated systems.

The project comprises three work packages: The first package covers coupling of power, gas, and heat networks as well as materials flows with IT infrastructures in sustainable, multi-modal energy systems. The second work package focuses on possibilities of flexibilizing processes in energy-intensive industries, such as metal processing, cement processing, and petrochemical industries. The third work package deals with market and regulatory issues of future energy supply that will be based primarily on regenerative sources and centralized-decentralized infrastructures and whose demand will be highly flexible.

**More about the KIT Energy Center:** <http://www.energy.kit.edu>

**Karlsruhe Institute of Technology (KIT) pools its three core tasks of research, higher education, and innovation in a mission. With about 9,300 employees and 25,000 students, KIT is one of the big institutions of research and higher education in natural sciences and engineering in Europe.**

**KIT – The Research University in the Helmholtz Association**

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