Better Energy Systems Thanks to Data Analysis

The German Research Foundation (DFG) Funds New Research Training Group on Energy Informatics at Karlsruhe Institute of Technology (KIT)

The new research training group will also focus on photovoltaics as a major source of energy in the future. (Photo: KIT/Markus Breig)

Monika Landgraf
Chief Press Officer

Kaiserstraße 12
76131 Karlsruhe, Germany
Phone: +49 721 608-47414
Fax: +49 721 608-43658
E-mail: presse@kit.edu

For further information, please contact:

Nils Ehrenberg
Press Officer
Phone: +49 721 608-48122
Fax: +49 721 608-43658
E-mail: nils.ehrenberg@kit.edu

Extension of futureproof energy systems is one of the major challenges faced by society in the next decades. These energy systems will have to be able to flexibly cope with different inputs from renewable energy sources and fluctuating demands. For this purpose, complex computerized solutions will be required. Within the framework of a new research training group funded by DFG, young researchers of KIT will develop methods to evaluate data from complex energy supply systems and identify optimization options.

Energy systems that are to ensure power supply in the future produce large amounts of data. Young scientists working in the new research training group "Energiezustandsdaten – Informatik-Methoden zur Erfassung, Analyse und Nutzung" (energy data – computerized methods for their acquisition, analysis, and use) will apply these data to understand processes taking place in the different components of energy supply systems. For example, aging of batteries may probably be understood better by analyzing appropriate measurement data. On this basis, scientists hope to optimize

existing systems and, thus, to contribute to a more efficient energy supply. "A major prerequisite for reducing energy consumption is to determine it precisely. Thanks to the digitization of energy systems, this is possible. Now, we have to find ways to study the data volumes such that potential problems are identified and solved and energy systems are improved," the spokesperson of the research training group, Klemens Böhm, professor at the KIT Institute for Program Structures and Data Organization (IPD), explains.

Research to be conducted under the new research training group is aimed at analyzing data to find weaknesses of the energy system and to make the latter more flexible, more efficient, and more fail-safe. "But we should not lose sight of user friendliness. When analyzing personal consumption data, it is important to secure privacy," Böhm says. To achieve the ambitious objectives, the research training group pursues an interdisciplinary approach. Ten KIT institutes of various disciplines are involved. The consortium of scientists includes experts in the area of big data as well as scientists specialized in IT security, information legislation, and electrical engineering.

Good Conditions for Energy Informatics at KIT

For many years now, research into innovative energy concepts has been conducted under various projects of KIT. Thanks to interdisciplinary cooperation, the researchers involved in the new research training group will profit from the excellent energy research infrastructure of KIT. Findings from large-scale research projects can be incorporated directly in their work. An example is the "EnergyLab 2.0", a platform to test innovative energy concepts. When operating this platform, real data will be produced that may then be used by the researchers for analysis. Methods developed by computer scientists can be tested under real conditions. Vice versa, the evaluation results can be considered in the EnergyLab 2.0 project.

Research Training Group to Start in May 2016

Through research training groups, DFG funds high-quality education of young scientists. The new research training group will offer doctoral students of KIT a challenging research and qualification program in the still young area of energy informatics. Pooling of activities to acquire, analyze, and use data will push research in this area. The research training group will start on May 01, 2016.

Karlsruhe Institute of Technology (KIT) is a public corporation pursuing the tasks of a Baden-Wuerttemberg state university and of a national research center of the Helmholtz Association. The KIT mission combines the three core tasks of research, higher education, and innovation. With about 9,400 employees and 24,500 students, KIT is one of the big institutions of research and higher education in natural sciences and engineering in Europe.

Since 2010, the KIT has been certified as a family-friendly university.

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

The photo of printing quality may be downloaded under www.kit.edu or requested by mail to presse@kit.edu or phone +49 721 608-4 7414. The photo may be used in the context given above exclusively.