



Main Focus

- Power Generation and Distribution
- Real-time Plant Operation and Drive Technology
- Biosensors and Medical Devices
- Machine Learning
- Control of Complex Systems
- Model Identification and State Estimation

©istockphoto/DuxX

System Analysis, Prognosis and Control

What does your department deal with and what constitutes its research work?

We develop digital twins for real-time monitoring, predictive maintenance and energy-efficient control for production plants and drive trains. Together with our customers, we develop and adapt customized solutions using artificial intelligence methods. In doing so, we make use of the large toolbox with methods from signal analysis, system and control theory, automation, and machine learning.

What potential does your department’s research have for a better future?

Many companies are ready for digitalization. The volume of different data and information that this generates opens up the possibility for us to develop innovative, precisely tailored solutions for the sustainable operation of production plants and drive trains. This enables the simultaneous optimization of quality and quantity, the efficient use of energy and raw materials, and the condition-oriented operation of production plants and drive trains.

Where do you see your department in five years?

In Five Years, the department will offer even more holistic solutions – from supporting the integration of sensors and actuators to implementing custom-fit methods and algorithms on embedded systems or in microelectronic devices.

Which three keywords best describe your department?

- Innovative – close to hardware – experienced

Department topics in this report:

- District Heating – Math Heats Up S. 54
- Digitalization and Artificial Intelligence for Energy Management 2.0. S. 56

Contact

Dr. Andreas Wirsén
 Head of Department “System Analysis,
 Prognosis and Control”
 Phone +49 631 31600-4629
 andreas.wirsén@itwm.fraunhofer.de

