

FZI LIVING LABS: A NEW SERVICE IN RESEARCH TRANSFER

Living Labs present a new research paradigm placing technology transfer and the application environment in the lime-light of interdisciplinary research and development. FZI Living Labs are a new FZI service that transforms ideas from research and development into marketable products. In the FZI Living Labs, project partners work together with FZI professors and scientists to design, discuss, evaluate and test concepts, tools, software and systems under real life conditions prior to market launch.

THE IDEA BEHIND OUR FZI LIVING LABS

Technology and knowledge transfer with a broad range of positive effects:

- Participative research by scientists, experts from industry and users
- Concentrated provision of interdisciplinary, scientific know-how
- Practical trials for engineering and IT applications before market launch
- Thorough tryout of innovative concepts for your products
- Offering feedback of market knowledge into research
- Triggering innovative impulses
- Encouraging exchange between technology and application
- Environment for open innovation



THE FZI HOUSE OF LIVING LABS

The FZI House of Living Labs incorporates all FZI Living Labs in one building and offers a modern infrastructure for development, evaluation and demonstration of trend-setting technologies. Researchers from FZI and partners from industry and society can exchange across fields of application and develop interdisciplinarily integrated solutions in information and communication technology. Profit from our FZI Living Labs as a platform for integration and technologies!

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FZI LIVING LAB smartENERGY

Efficient and economic solutions for the future energy system



FZI LIVING LAB smartENERGY

The FZI Living Lab smartEnergy offers an interdisciplinary research environment to develop solutions for the future energy system. The FZI House of Living Labs was equipped with modern technologies to provide, store and use thermal as well as electrical energy in a flexible way. Therefore, in the FZI Living Lab smartEnergy newly developed methods can be evaluated and presented in practice.

Due to efficient application of ICT and based on an interconnected infrastructure in buildings, smart energy management systems can make a great contribution to the energy system – before, during and after the energy transition.

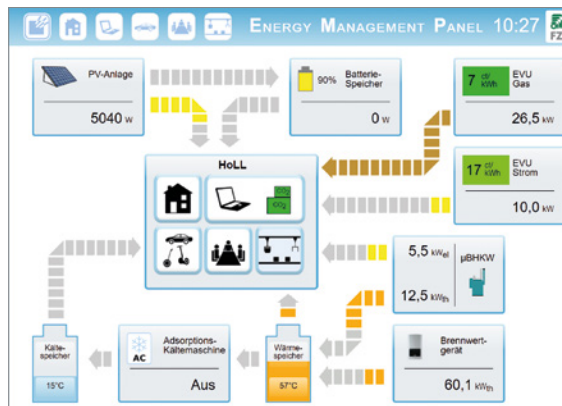
In order to do so, appropriate methods for load management and decentralized provisioning of energy are necessary. Economic coordination mechanisms could create additional incentives for load management in order to facilitate an efficient use of renewable energies.

Apart from standardized device interfaces, technologies for the automation of load management and efficient optimization methods, user interfaces are an essential research topic at the FZI Living Lab smartEnergy.

The integration of hybrid devices into the overall system as well as the efficient interconnection of buildings and the smart grid are addressed in current research projects. The intelligent connection between different devices, plants and systems throughout the building and our lab are an essential prerequisite for the development of energy management systems, which we pursue together with our partners from industry and research.

EQUIPMENT

In the FZI House of Living Labs, electricity is generated by decentralized generators. Therefore, a photovoltaic system with a storage system and a modern inverter was installed. A thermal power station provides additional thermal energy used for heating in winter and for driving an absorption refrigerator in summer. Due to thermal buffer storages, energy generation and consumption can be decoupled. Individual components are connected by different communication systems, for example KNX, HabITEQ, EnOcean, EEBus.



In the FZI Living Lab smartHome, home appliances, smart plugs and gateways are extended by communication interfaces for integration into the energy management system.

An energy management panel visualizes energy flows throughout the building and works as a user interface for the energy management system.

This way the FZI Living Lab smartEnergy offers optimal equipment for research and development projects regarding energy management systems.

COOPERATION OPPORTUNITIES

The following topics are ideal for cooperation concerning smart grids and smart homes:

- Decentralized energy management for an efficient optimization of energy flows in buildings and smart grids
- Efficient communication between devices and plants in smart buildings
- Standardization of device interfaces
- Load management, peak shaving, self-generated energy usage
- User interaction mechanisms
- Integration of energy management in building automation systems
- Market mechanisms for decentralized load management
- Energy monitoring and implementation of smart metering infrastructures
- Provisioning of system services with decentralized generators

