Research for the energy transition

Addressing climate change is a social obligation and one of the greatest economic opportunities.

True to motto »Designing the energy transition«, we at the Fraunhofer Institute for Energy Economics and Energy System Technology IEE have been conducting research for an energy supply based on renewable energies for over 35 years – both nationally and internationally.

We develop solutions for technical and economic challenges in order to further reduce costs, secure supply, advance digitalization in the energy industry and develop new business models in the energy transition.

Fraunhofer IEE

Institute management
Dr. Reinhard Mackensen (Director (acting))
Dr. Philipp Strauß (Deputy director)

Staff and income
- Approx. 450 scientists, employees, students
- About 39 million euros per year

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Our research fields

Research and development for the successful energy system transformation

Grid Planning and Grid Operation
How can energy grid infrastructures be designed and operated to ensure resilient, secure and cost-effective supply both today and in a future decarbonized energy system?

Grid Stability and Power Converter Technology
How can power converters and drives, elec-trical grids and their operating equipment be further developed and controlled so that power systems function stably, efficiently and safely?

Energy Process Engineering
Which technology enables the efficient and economic coupling between thermal, electrical and biochemical conversion stages?

Thermal Energy Technology
On which path and with which technologies do we shape the innovative implementation of the heat transition in buildings and cities?

Energy Informatics
How can energy economics be supported by informatics to allow the energy system to run smoothly when a large amount of power is generated decentrally?

Energy Meteorology and Renewable Resources
What potential do renewables have and how can their spatial and chronological behavior be modeled and forecasted?

Energy Economics and System Analysis
How can transformation paths to a decarbonized energy system be designed in a techno- and socio-economically optimal way?

More on the topic of research fields:
www.iee.fraunhofer.de/research

Guiding themes

- **Resilience:**
  Stability and flexibility of energy systems
- **Sector coupling:**
  Hydrogen, heat grids, e-mobility
- **Digitalization**
  Smart processes for the energy industry

Fraunhofer IEE

Short Profile

Fraunhofer Institute for Energy Economics and Energy System Technology

We research and develop solutions for the sustainable transformation of energy systems through renewable energy.

Our service portfolio is oriented towards current and future challenges of the energy industry and energy system technologies.

We consider both economic and technical issues.

This puts us in a position where we can competently and actively advise our customers and partners coming from business, societal and/or political fields, and establishes the foundation for our key research and application fields.

Dr. Reinhard Mackensen
Director (acting)
Fraunhofer IEE

Fields of application

Fraunhofer IEE bundles services, competencies and offers within its fields of application in order to realize the transfer and scaling of scientific innovations effectively and purposefully in business, industry, and society.

The spectrum of topics ranges from techno-economic considerations and scenarios to the planning and operation of energy supply structures. We accompany our customers and partners from field tests to the optimization of energy system components.

The progressive integration of renewable, decentralized generators and the restructuring of grid infrastructures such as electricity and heating grids also play a particular role here. Therefore, the changing requirements arising from the system coupling of electricity, heat, gas and transport are taken into account.

The aim is to harmonize fluctuating generation and flexible demand.

Services and solutions

The institute's services include collaborative research within consortia projects, their coordination and contract research for partners from the energy industry.

In addition, Fraunhofer IEE offers testing and consulting services on specific issues, the development of prototypes and functional models, and the evaluation of field tests. The focus is generally on the advancement of the energy system and the creation of solutions in effective, decentralized and renewably organized structures.

Designing the energy transition together!«

Energy forecasts

Regional and location-specific data, forecasts, and analyses on energy consumption as well as the generation and feed-in of renewable energies.

Energy grids

Comprehensive services for the planning, development, and operation of energy transition-compliant supply grids.

Energy management

Analysis, digitalization, and optimization of safe, sustainable, and efficient energy industry processes.

Energy system technology

Application-oriented services and reliable solutions for the development, simulation, optimization, testing and integration of components and systems within energy systems.

More on the topic of business units:
www.iee.fraunhofer.de/business