

Interdisciplinary Research Projects



GIGAWIND life deals with the lifetime of offshore wind turbine support structures tested in the offshore test field alpha ventus. It joins three individual research projects and is co-ordinated by Prof. Schaumann, Institute of Steel Construction, and funded by BMU.



MOBIL4e is one of three LUH projects of Lower Saxony's „Showcase Electromobility“. It is funded by BMBF and co-ordinated by Prof. Ponick, Institute for Drive Systems and Power Electronics. The project has launched an education offensive in the metropolitan area with the aim to develop a modular and cross-university training and education program in the field of electromobility.



CRC 871 „Regeneration of Complex Capital Goods“ – In the second funding period, the CRC 871 aims to develop scientific basics for the maintenance of complex capital goods in order to maintain or regenerate as many components as possible of the respective total system, so that functional characteristics of the capital goods will be restored or even be improved. The project is co-ordinated by Prof. Seume, Institute of Turbomachinery and Fluid Dynamics and funded by the DFG.



Smart Nord – Aim of the interdisciplinary research project Smart Nord is to provide for a co-ordinated, distributed supply of active power, controlling power and reactive power to the distribution systems. This requires a novel ICT infrastructure that incorporates all components. Project co-ordinator is Prof. Hofmann, Institute of Electric Power Systems.

The Research Center

LiFE 2050 unites more than 300 scientists of Leibniz Universität Hannover with the aim of a joint trans- and interdisciplinary research in the energy sector.

The research center is supported by 23 institutes, associated institutes and working groups from altogether six faculties of Leibniz Universität:

- ▶ Faculty of Architecture and Landscape Sciences
- ▶ Faculty of Civil Engineering and Geodetic Science
- ▶ Faculty of Economics and Management
- ▶ Faculty of Electrical Engineering and Computer Science
- ▶ Faculty of Mathematics and Physics
- ▶ Faculty of Mechanical Engineering

LiFE 2050 is based on five efficient research lines in the field of engineering and applied sciences. It is supported by scientists working in a network on cross-cutting topics related to economy and environmental planning.

Intensive co-operations with regional, German, and international partners: LiFE 2050 co-operates with more than 100 partners and networks from research, economy and politics.

Comprehensive third-party-funded research: Among others, LiFE 2050 is funded by the EU, DFG, Germany and the Land Lower Saxony.



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Teaching



LiFE 2050 focuses on interdisciplinary teaching.

Energy-related degree courses

Additionally to the energy-oriented areas of specialization in the courses Mechanical Engineering, Electrical Engineering and Industrial Engineering, the degree course "Power Engineering" has been introduced. Moreover, Leibniz Universität Hannover is offering the trans- and interdisciplinary Master's degree course "Wind Energy Engineering", the first university course in this field in Germany.

Transformation of the energy system

The cross-faculty series of lectures involves presentations given by university lecturers as well as by external lecturers coming from research, industry and politics. The aim is to investigate the process of transformation within the energy system from different perspectives as well as to discuss problems and possible solutions.

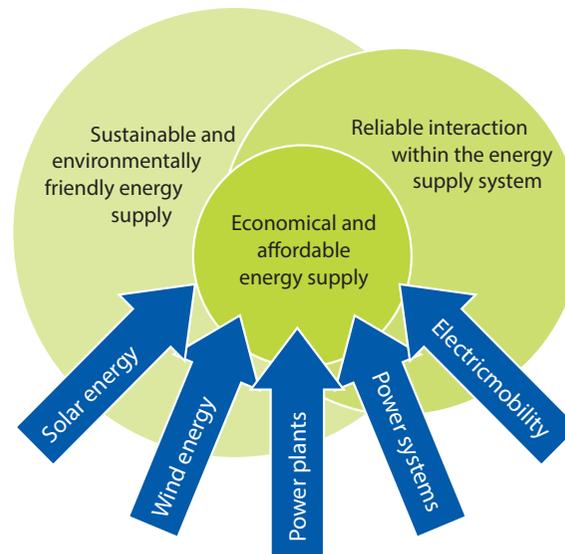
Colloquia for solar energy

Series of lectures of the Institute for Solar Energy Research Hamelin (ISFH). On the occasion of the colloquia, taking place on a regular basis, national and international lecturers from industry or research are lecturing on topics which are close to solar research. The focus is especially on the role of solar energy within the transformation of the energy system.

Research Lines

Presently, the focus is on the following research lines:

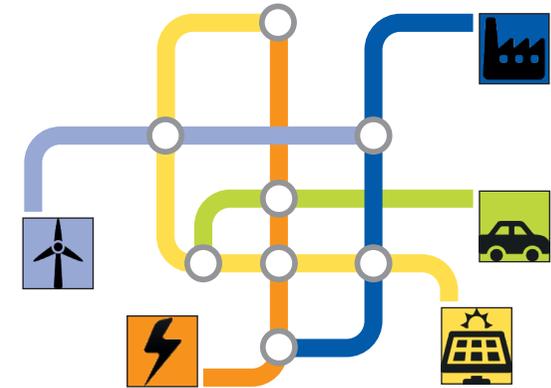
- ▶ Research on wind energy, especially with respect to offshore applications, in co-operation with FORWIND.
- ▶ Research on solar energy in co-operation with the Institute for Solar Energy Research Hamelin (ISFH).
- ▶ Security of energy supply and system stability of power plants.
- ▶ Enlargement of power and gas supply systems as well as of large energy storage systems.
- ▶ Electric and hybrid mobility for a climate-neutral mobility by means of renewable energy carriers being consistent with the needs of society.



The research lines are complemented by the cross-cutting topics "Economy" and "Environmental Planning". Through these topics, trans- as well as interdisciplinary contexts in the energy system are explored:

- ▶ Control of the interactions of decentralized components of energy conversion used in increasingly converter-fed power distribution grids.
- ▶ Investigation of the economic efficiency and financial viability in accordance with a reliable, sustainable and an environmentally sound supply of energy.

Interdisciplinary Approach



The trans- and interdisciplinary approach of LiFE 2050 is especially expressed by the promotion of :

- ▶ a topic-related network of researchers, industrial partners, organizations and politicians involved in the energy sector,
- ▶ co-ordination of joint projects with several research partners of Leibniz Universität Hannover,
- ▶ bundling of the infrastructure available for joint research projects,
- ▶ initiation and organization of interdisciplinary conferences and events.

