

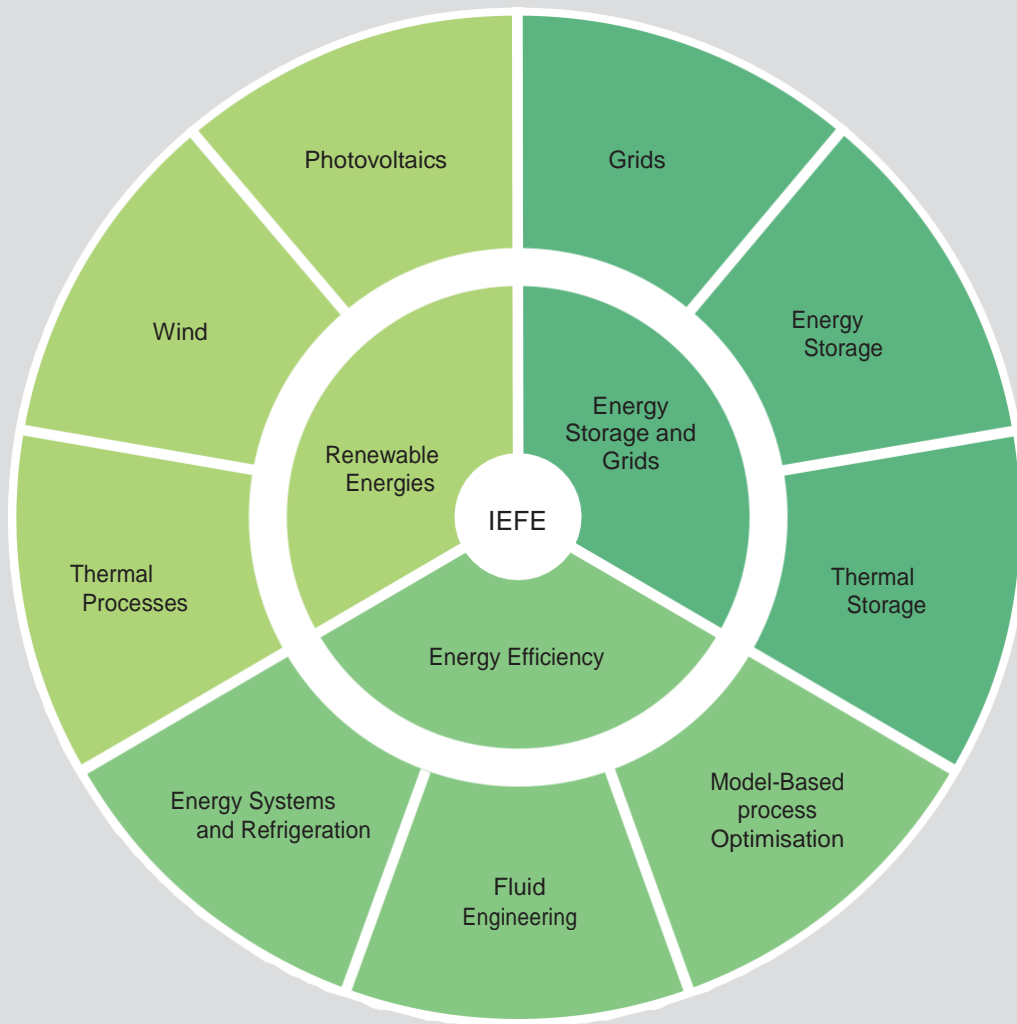


School of
Engineering

**Institute of Energy Systems and
Fluid Engineering (IEFE)**

Your innovation partner for
energy solutions





Institute of Energy Systems and Fluid Engineering (IEFE) Thanks to its technical expertise, the IEFE is making an important contribution to the development of new energy-efficient systems, methods, processes and equipment. The IEFE focuses its work on three strategic areas:

- Energy efficiency
- Renewable energy
- Energy storage and networks

Work in these areas is carried out by specialised groups in the fields of photovoltaics, wind power, thermal processes, energy systems and cooling technology, fluid engineering, model-based process optimisation, thermal and electrical energy storage and networks. Besides being enhanced through work on applied research projects with industry partners, this know-how is also systematically imparted to students.



Energy Efficiency



«Solution-oriented, targeted and constructive – these few words summarise the collaboration with IEFE throughout the project.»

Roland Schmid, Polytechnic
Engineer, Engineering Director,
Schmid Gruppe

Optimising and developing energy-efficient industrial processes and equipment

Society and industry today are technology intensive and their demand for energy is constantly rising. In order to prevent energy shortages, the Swiss Confederation plans a massive reduction in energy usage in Switzerland. The IEFE is using its specialised knowledge and modern laboratories to assist its industrial partners in meeting these binding objectives. Improved energy efficiency is an ideal method for achieving a lasting reduction in energy consumption while also saving costs. The IEFE is developing systems for evaluating the energy consumption of industrial infrastructure and for optimising the thermal and electrical energy efficiency of industrial production processes and equipment. In close collaboration with its part - ners, the IEFE is working on solutions which make the best possible use of energy, thus minimising energy waste.



Our project example:
Increasing efficiency
in CO₂-refrigeration plants

Renewable Energy



«Technical expertise in everything related to photovoltaics and always developing new, innovative approaches – that is what we like about IEFE in Winterthur.»

Gian Diem
dhp, acting partner

Increasing installed renewable-energy capacity

Sustainable energy supplies are in greater demand than ever. That is hardly surprising, since renewable energies regenerate themselves quickly and are inexhaustible. The IEFE has recognised this trend and is engaged in a wide range of projects aimed at optimising the processes which use renewable energy. The Institute's main activities here are in the areas of photovoltaics, thermal processes and wind power. Through its work on projects such as state-of-the-art solar modules, the IEFE is playing its part in developing sustainable renewable energy solutions. Besides making the Institute's industry partners independent of fossil fuel and imported energy, these projects also respond to society's greater awareness of the need for environmental and climate protection.



Our project example:

Performance test for solar modules

Energy storage and networks



«IEFE supported us throughout the project with an extremely competent team, valuable ideas and the latest technologies at the laboratory.»

Daniel Clauss, EKS,
Member of the Executive Board

Improving the integration of fluctuating renewable- energy output into the energy-distribution system

Renewable energies will be a major component in the energy mix of tomorrow. Their output is, however, subject to fluctuation. In the case of solar and wind power, for example, the amount of electricity fed into the grid depends on the weather. Since the demand for energy, on the other hand, is constant, the IEFE is looking for economically viable and environmentally sustainable solutions which will balance out the time intervals between energy production and consumption. The IEFE's work in this area is focused on finding better ways of integrating fluctuating renewable energy output into the energy supply system. Thus, in the field of energy storage and networks, the IEFE is also working on increasing the proportion of total Swiss energy consumption which is provided by renewable energies.



Our project example:
Power-to-gas in
the mains system

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