Study at a glance

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Master's seminar Scientific Work	Elective Course II	Elective Course I
Master's Thesis	AI Applications in Energy Systems	Artificial Intelligence Basics
	Project Course - Smart Energy Systems	LabVIEW Programming
	Optimization of Energy Systems	IoT Technologies and Data Interfaces
	Energy Entrepreneurship	Simulation of Energy Systems
	Virtual Power Plants	Energy Systems and Energy Economy

Contact

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Dates
Registration: 1-31 May
Start of studies: 1 October

Type of study	Full-time
Standard period of study	3 semesters
Language of instruction	English
Degree	Master of Engineering (M.Eng.)
Start of study	Winter semester

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master **s**mart **e**nergy **s**ystems

Energy systems of the future

HOCHSCHULE ANSBACH

Aim of the study programme

There is currently a high and increasing demand for specialists in the field of intelligent networking of decentralised energy producers and consumers.

In particular, the understanding of the information to be exchanged between the individual participants and their transmission paths and the resulting interaction of the overall system is crucial teaching content. This is accompanied by knowledge from the field of artificial intelligence and optimisation, combined with the respective possibilities from the field of information and communication technology for secure and reliable data exchange.

Example: Single-family house with PV system, battery storage, heat pump and electric car:

The car should be charged when the sun is shining and the internal consumers (incl. heat pump) need less electricity than is generated by the PV. At night, the car should NOT be charged with electricity from the grid (if possible), the remaining consumers are covered by electricity from the battery storage. If the heat pump knows the state of charge of the battery storage and the electric car, it can plan its operation in advance, taking into account the weather report.

This requires an understanding of the individual components, their networking and know-how in optimising the overall system.

The understanding of the individual generators and consumer technologies is to be sharpened and knowledge and skills are to be imparted especially with regard to the optimal operation of an entire energy system (e.g. building or neighbourhood).

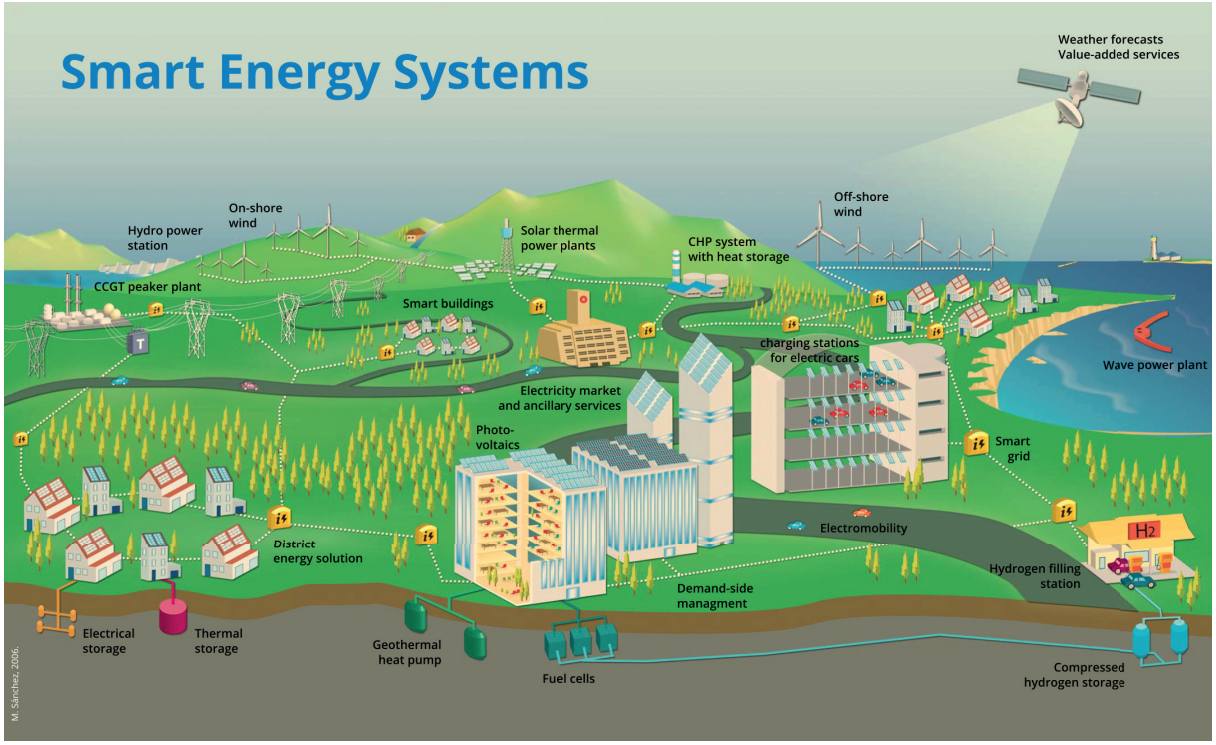
Competences

The students gain knowledge in the design, operation and optimisation of decentralised energy systems through the application of innovative and digital technologies.

Graduates excel in understanding the individual technologies for energy generation and consumption, in combination with the ability to network the individual technologies into an intelligent, decentralised energy system.

Due to the increasing complexity and interconnection of sectors, the need for qualified specialists and managers with a profound understanding of intelligent energy systems is growing. New business areas and business models arise from the networking that can be identified and implemented by SES graduates.

Energy system of the future: decentralised, renewable, networked



Occupational fields

Sectors

- Energy suppliers/municipal utilities/direct marketers
- Real estate industry and building services engineering
- Automotive industry
- Renewable generators (PV , wind, biogas, geothermal)
- Conventional/flexible generation (CHP, district heating)
- Storage (batteries, hydrogen)
- Energy-intensive industry

Fields of activity

- Management positions
- Development
- Implementation
- Business Development
- Sales
- Operations