Technische Hochschule Ingolstadt
Institut für neue Energie-Systeme

Zukunft in Bewegung

Innovative. Cosmopolitan. Responsible.

The Institute for New Energy Systems (InES) is one of three institutes for applied research at Ingolstadt University of Applied Sciences (THI). It bundles the research activities in the fields of Building Energy Systems, Industrial Energy Systems, Energy Systems Engineering, Geoenergy and Technology Transfer & International Projects within THI. Outstanding bachelor and master students have the best development opportunities at InES.

Bachelor / Master thesis

Energy management system for the digital farm of the future

Background:

Agricultural businesses often generate electrical energy themselves and often have larger consumers themselves, which are, however, not coupled with each other. Since the consumers would all have to be measured individually, an optimization of the energy flow is not directly possible.

Therefore, the project deals with the development of algorithms for the evaluation and optimization of energy flow on farms.

To this end, AI models are being developed to identify selected electrical loads on farms based on the equipment-specific power signature and trained with self-measured data. With this data, an energy management system is designed, developed and tested at a facility.

Thus, with the help of the developed algorithms and the results based on them, the performance of agriculture can be optimized in terms of energy and the use of resources in agriculture can be ensured sustainably in the future.

Aim of the work:

Creation of an energy management system for a concept operation that takes into account various electric generators, storage and sector coupling, based on previous research.

Tasks:

- Familiarization with the topic
- Literature research
- Design and implementation of the energy management system
  - Mathematical optimization
  - Programming by means of Matlab
- Documentation, presentation

Requirement Profile:

- Students in technical programs
- Reliable and independent way of working
- Experience in one or more of the following:
  - Modeling of real systems
  - Mathematical optimization
  - Programming skills
  - Power Engineering
  - Literature research

***Period**:* *As of now*

***Supervision**:* *Julian Braun, Akhilesh Yadav*

Contact: abschlussarbeiten_ines@thi.de