



Institute of New Energy Systems (InES)

As research institution for applied energy research, the Institute of new Energy Systems (InES) forms part of Technische Hochschule Ingolstadt. At InES, five professors and more than 40 researchers are working on future-oriented technologies in the field of renewable energies and rational use of energy. They focus on industrial and domestic energy systems, energy systems technology as well as on technology transfer and international projects. Bachelor and master students will find excellent career opportunities with InES. For more details about our research activities please visit <https://www.thi.de/energie>.

PhD-Project

Development of Methodology for Assessing "Conservation Voltage Reduction"

Research Project and Background

The electrical network topology is subject to a continuous change today: Heat pumps, electrical vehicles, and decentralized electricity generation are some of the ongoing trends of new grid connected devices. To cope with these novel devices, electric grids require new control challenges and hardware, e.g. *Voltage Regulating Distribution Transformers (VRDT)*. For precisely simulating VRDTs and their interaction with the grid as well as to assess their ability to stabilise the grid in a grid-supportive manner, detailed models are required.

Aim of the Project

The aim of this project is to investigate the influence of voltage changes to the active and reactive power flow within the grid. For evaluating of the voltage interaction, a new methodology has been developed. This methodology has to be extended and used with new data sets.

Tasks:

1. Literature Review: State of the art of VRDTs
2. Conservation Voltage Reduction Assessment
3. Evaluation Algorithm Development
4. Methodology Validation and Sensitivity Analysis
5. Analytic Tool Automation
6. Web Application Development
7. Data Evaluation and Analysis
8. Documentation
9. Writing of Funding Applications

Successful candidates hold a Master degree related to fields mentioned below with an affinity for solving complex electrical and mathematical problems:

- Electrical Engineering,
- Renewable Energy Systems,
- other relevant fields

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Location: The work will be done at InES, which is located in Ingolstadt, Germany