Chair of Renewable and Sustainable Energy Systems
Department of Electrical and Computer Engineering
Technical University of Munich

TITI

EWG

Master's Thesis in cooperation with Energie-Wende-Garching

Analysis of the impact of demand side management on existing buildings

Background

Heating of households represent a significant part of the overall energy consumption in Germany. In order to reduce CO_2 emissions one of the options being imposed is the deep geothermal energy, which is utilized through district heating networks.

In the city of Garching, such a network is operated by the Energie-Wende-Garching. However, the existing deep geothermal plant is limited. Thus, it will not be possible to satisfy the expected heat demand in the future with the current operating strategy.

One possible solution is to install a demand-side-management (DSM) system, which will 'shift' the loads in a favorable way for the heating network.

Goals

In order to analyze the impact of shifting heating loads on the temperature level of a building, a detailed building model must first be created. Therefore

- Research on existing building models
- Selection of the most suitable model
- Applying model to various existing test objects
- Validation with real data in order to identify further necessary adjustments
- Definition of different scenarios to show the possibilities and limits of heat load shifting within a building.

September 2020 your results will be used empirically by another thesis.

Requirements

- Interest in renewable energy systems
- Knowledge of energy system modelling
- Basic knowledge of building models, especially modelling the heating system
- Programming skills: Python and/or MATLAB
- Motivational letter (one DIN-A4 page), CV, grade report

Contact

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