

Topic Description

Master's Thesis / Research Internship

Peak Load Technologies for Geothermal Heat Supply Systems

Background

In order to become Germany climate-neutral by 2045, not only the power, transport and heating sector individually but also urban areas as a whole require low emissions solutions. As urbanization continues to accelerate, cities are grappling with the need to meet the rising energy demands of their growing populations while minimizing their environmental footprint. Most of urban heat demand can be covered by geothermal energy in combination with district heating systems. However, geothermal systems are only economical in high utilization and cover the basis heat demand. For this reason, additional climate-neutral heat technologies are necessary to fulfil the peak load demands. This research can contribute to the transformation of the German energy system to become climate-neutral by 2045.

What are the goals of the work?

The goal of this work is to investigate suitable heat technologies that can be combined with geothermal systems. The analysis consists of two steps: first, research of heat technologies based on literature and current research. Second, implementing these technologies into our urban optimization framework to evaluate how these technologies can be combined with geothermal systems in a cost-minimal way. Finally, the optimization results can be used to make a statement about the usability of each technology.

What should you bring with you?

- Interest in energy systems, climate-neutral technologies and optimization
- Please attach your CV and grade report to your application

Contact

Prof. Dr. Thomas Hamacher, Patrick Buchenberg M.Sc.

Beginn: June 2023

Lichtenbergstr. 4a, 85748 Garching b. München, Raum 2018

Telefon +49 (0) 89 289-52748, E-Mail patrick.buchenberg@tum.de