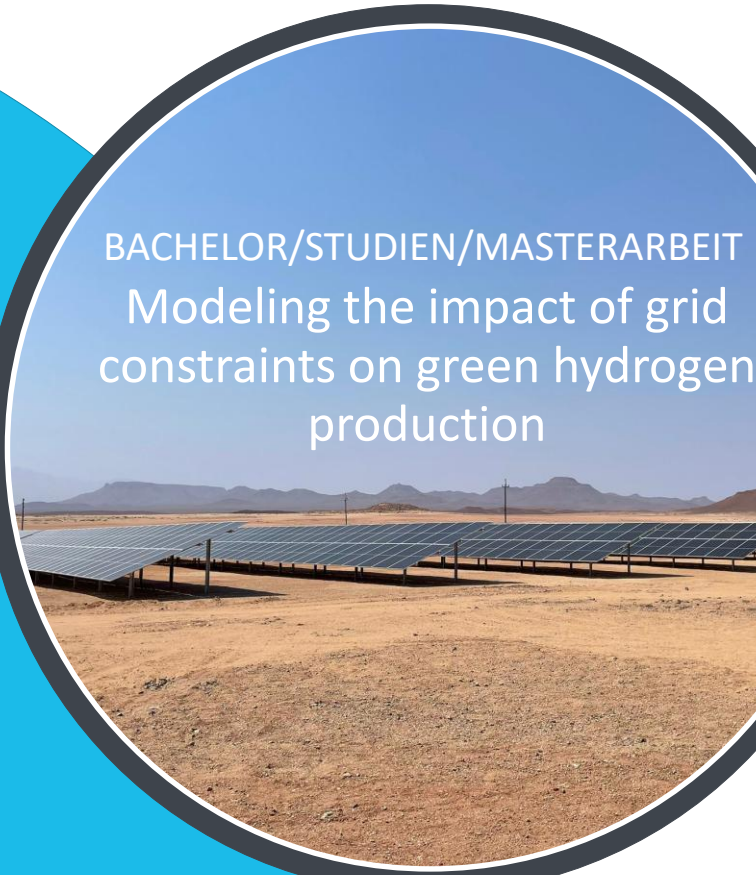
Universität Stuttgart
IER Institut für Energiewirtschaft
und Rationelle Energieanwendung

BACHELOR/STUDIEN/MASTERARBEIT

Modeling the impact of grid constraints on green hydrogen production



Modelling H2 production in renewable energy systems

In light of recent geopolitical changes, efforts to become independent of fossil fuels have gained momentum once again. Furthermore, limiting global warming to 2 °C requires a transition to renewable energy sources such as hydrogen.

Evidently, producing hydrogen from grid electricity using electrolysis poses a burden to the load of the entire system. Thus, there are policies in place aiming to limit hydrogen production to times, when there are high shares of renewable electricity available.

The objective of this study is to determine impact of hydrogen production via electrolysis on the electricity price. Therefore, the task is to review existing literature, model and optimize H2 production for an exemplary case study.

YOUR Job

Depending on your qualification your research concludes:

- Literature review on the impact of H2 production on the electricity price
- Economic modeling along exemplary hydrogen value chains
- Optimization using open source python frameworks
- Scenario and Sensitivity Analysis

YOUR Profile

- Enrolled in a Master's degree in Renewable Energy, Environmental Engineering, or other programs with similar specializations
- Analytical mindset and the ability to quickly grasp new concepts
- Experience with Python and Excel, and the use of AI tools for support
- Good written and spoken English skills
- High level of initiative and self-management skills

Interesse geweckt? Dann gerne Lebenslauf, Notenspiegel und kurzes Anschreiben an:

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