

## Masterthesis: Modelling of Part-Load Emissions for Large Gas Turbines Using AI-Based Methods

**Description:** The objective of this master thesis is to develop an AI-based modelling approach for predicting part-load emissions of large Siemens Energy gas turbines. Existing operational and test data will be used to train and validate the model. The results will support optimized part-load operation strategies with reduced emissions.

**Partner:** Siemens Energy

**Location:** Berlin, Germany (Remote work possible),  
**Willingness to attend approx. 2-3 on-site appointments**

### Scope of Work:

- Analysis and structuring of existing part-load and emission datasets ((CO, NO<sub>x</sub>)
- Development of an AI-based model for emission prediction under part-load operation
- Evaluation of model accuracy and sensitivity to key operating parameters
- Derivation of part-load operation strategies based on model results
- Support in the preparation and evaluation of combustor rig tests to generate additional high-quality data for model improvement

**Language:** German or English

### Requirements:

- Enrolled Master student in Mechanical Engineering, Energy Engineering, Data Science or similar
- Basic knowledge of gas turbine technology and combustion desirable
- Experience with data analysis and machine learning (e.g. Python, MATLAB)
- Structured and independent working style

### More Information:

Chair of Reactive Flows  
E-Mail: [lehre@rf.uni-hannover.de](mailto:lehre@rf.uni-hannover.de)