

## Student Assistants (HiWi Job) at Energy Lab

### Developing Three-Phase Dynamic Load Model using Extension of Instantaneous Power Theory

#### Job Description:

In the search for new and advanced technologies for the energy transition, the Energy Lab offers a Power Hardware-in-the-Loop environment, in which new developments can be tested under realistic conditions. These conditions need to be simulated by real-time digital simulator running sophisticated models of grids or power devices. You will be part of a team, developing and testing such models, especially concerning the investigation of power electronic devices in the modern power system. This job can pose challenges exploring uncharted waters, but also offer a great chance in gaining new insights into the world of electrical power systems and the research landscape in general.

#### Your Tasks:

- Developing Matlab/Simulink based three-phase dynamic load model by extending the concept of instantaneous p-q theory for balanced and unbalanced grids
- Validate the developed model using simple power system network
- Perform Power Systems analysis to validate the developed model using standard IEEE-118 node test feeder and IEEE-34 node test feeder
- Conversion of the validated networks into real-time compatible models and perform computational analysis using OPAL-RT real-time simulator

#### Your Profile:

- Pursuing or completed Masters in Electrical Engineering
- Experience with Matlab/Simulink
- Basic knowledge of Power Systems network modelling
- Bonus: Experience with Real-time simulators, LabView and Python programming

#### You will learn:

- Developing mathematical models of Power networks
- Hands-on experience with real-time simulators
- Simulating scenarios and analyzing data

#### Contact:



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**Workload:** 20-40h per month

**Start:** From now on

**Duration:** 6 months

