AUSTRIAN INSTITUTE OF TECHNOLOGY

MASTER THESIS PROJECT

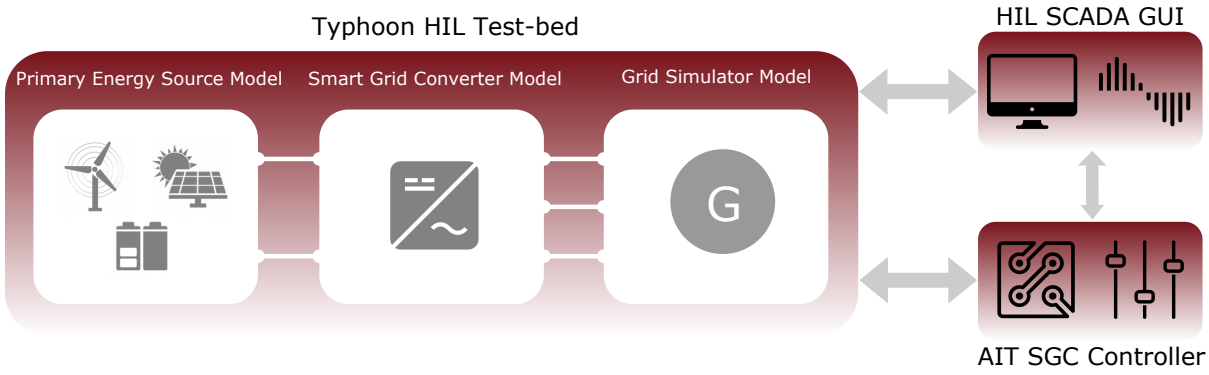
January 17, 2019

HIGH-FIDELITY HARDWARE IN THE LOOP VALIDATION OF ADVANCED CONVERTER CONTROL STRATEGIES

BACKGROUND AND THESIS GOALS

As the share of renewable-based generation in the modern power system is increasing, more and more traditional combustion-powered synchronous generators are being replaced by power electronics converters. This transition brings immense challenges in terms of grid stability, as well as grid operation and control. The reduced system inertia coupled with the faster frequency and voltage dynamics require new control strategies and architectures.

This master thesis project aims for the implementation of the most recent converter control techniques proposed in the literature for tackling low-inertia power systems. While aiming for a high-fidelity validation methodology, you will use a controller in the loop (CIL) approach based on the latest technological developments and tools used at AIT, such as the AIT Smart Grid Converter Control Board, Typhoon HIL, etc.



REQUIRED QUALIFICATIONS

- Enrollment in a master program preferably in the fields of power electronics, control, or embedded systems
- Familiarity with power-electronics converters
- Solid C programming skills, ideally for embedded systems
- Working proficiency in English
- Team player with a curious and determined attitude

DESIRED QUALIFICATIONS

- Sufficient familiarity with linear and non-linear control systems
- Basic understanding of hardware and controller in the loop testing and validation approaches is a plus

WHAT TO EXPECT

- EUR 1046 gross per month for 30 hours/week and additional company benefits
- Exploring a cutting-edge research topic in an international research environment
- Benefit from the scientific support provided by AIT Electric Energy Systems competence unit experts

APPLICATION

Send your resume/CV, degree diploma, transcript of records, list of relevant publications and projects in PDF format via email to Adolfo.Anta@ait.ac.at.

• Starting date: as soon as possible • Project duration: 6 months • Location: AIT GmbH, Vienna, Austria.