

PhD presentation at ISEA

Thursday, October 15, 2020

Online via Zoom. **Registration:** Veranstaltungen@isea.rwth-aachen.de

2:00 p.m. Nurhan Rizqy Averous, M.Sc.

“Analysis of the Application of a Grid Emulator to Conduct Grid Compliance Tests of Multi-Megawatt Wind Turbines
– A Contribution towards Ground Testing of Wind Turbines“

Abstract

Nacelle test bench is an attractive alternative to the inefficient in-situ test method to conduct grid compliance verification tests of wind turbines (WT). Nevertheless, such a test method is not fully covered in the present standards and guidelines. This thesis deals with the application of a multi-megawatt grid emulator to conduct flicker measurements as well as low-voltage ride-through (LVRT) tests on a system test bench for wind turbine nacelles. Firstly, the thesis discusses a detailed analysis on the design criteria for the grid emulator. Next to the regulatory framework, the behavior of wind turbines under various scenarios is also considered in this analysis. The second part of the thesis elaborates the application of a multi-megawatt grid emulator concept employing interleaved medium-voltage power electronic converters. Beside the design, the interaction between the grid emulator and the device under test at the point of common coupling is also presented. The analysis within this thesis considers a 2.75 MW research nacelle as a reference wind turbine which is developed at the Center for Wind Power Drives (CWD), RWTH Aachen University.

