

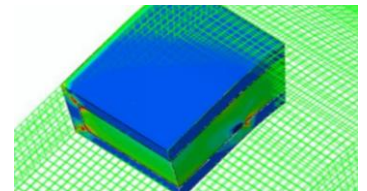
Master's Thesis

Detection of Debonding in High Voltage Insulation Systems by Non-Destructive Testing Methods

In cooperation with: **Andritz Hydro GmbH**

The growing volatility of renewable energy production demands extensive measures more than ever. Pumped hydroelectric energy storage is an important element account for the major portion of world's storage capacity. The typically large Motor-Generators (up to 450 MVA) used in such power plants are subjected to strongly varying operating conditions resulting in thermomechanical stress to the stator winding insulation.

For performance examination of new insulation materials such stresses are simulated by Thermal Cycling Tests (TCT) with stator winding samples. Under extreme TCT conditions local delamination can occur within the laminated structure of the insulation. For this reason, a non-destructive testing method based on ultrasonic has to be developed for the detection of local delaminated areas. The detection method shall localize the regions of delamination in a spatial sense. Moreover, the testing method should also be applicable for continuous monitoring during TCT.



Goals and tasks

- Adaption of existing test methods
- Proof of concept for detection of delamination in the laboratory
- Concept for continuous monitoring during TCT: Hardware/Software

Organizational matters

- Requirements: Education in Electrical Engineering, Information and Computer Engineering or Physics
- Duration: 6 months
- Workplace: EMS, Inffeldgasse 33/I, 8010 Graz
- Payment: Works contract

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