

Graz University of Technology
Electric Drives and Machines Institute

Bachelor's Thesis

Thermal Modeling and Analysis of Water-Jacket and Direct-Liquid Stator Bar Cooled Electric Machines

Motivation

The change from a water jacket to a directly cooled stator winding is cost and maintenance intensive. Consequently, the effects on performance characteristics such as power density and acceleration capacity must be significant. This thesis aims to model and analyze the thermal behavior of different cooling topologies for permanent magnet synchronous machines.

Tasks

- Development of a model to calculate the thermal behavior of different cooling topologies for permanent magnet synchronous machines (Water-Jacket and Direct-Liquid Stator Bar Cooling).
- Analyze of different winding arrangements and insulation materials.
- Design of a suitable slot design and bar arrangement for high power applications.

Organizations Matters

- In cooperation with AVL List GmbH
- Start: asap.

Contact

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