

Universität Stuttgart Institut für Elektrische Energiewandlung

Measurement and further development of a flexible prototype of an axial flux machine in YASA design

In this thesis, a modular and flexible concept for an axial flux machine (AFM) with a segmented and yoke-free stator structure (YASA design) is to be constructed, measured and further developed.

An existing design is to be constructed and measured. A concept for improving the design is to be developed from the knowledge gained.

The final concept should ideally allow the number of phases, the number of pole pairs, the number of stator segments, the pole shoe shape and the number of stators/rotors to be changed. The CAD design should also be flexibly adaptable.

For a configuration with several stators and rotors of the AFM, the prototype is to be set up, put into operation and measurements carried out.

Working packages

- ightarrow Familiarization with the basics of AFM
- \rightarrow Development of an existing prototype design
- \rightarrow Measurement of the prototype design
- → Creation of a concept to improve the existing design
- → Design and construction of the optimized design
- \rightarrow Measurement and validation
- \rightarrow Documentation



Your profile

- ightarrow Very good knowledge of CAD
- ightarrow Very good knowledge of FDM/FFF 3D printing
- → Knowledge or great willingness to familiarize yourself with manufacturing processes for electrical machines (sheet metal forming, coil winding, etc.)
- → E-laboratory knowledge (soldering, wiring, etc.)
- → Basic knowledge in the field of electrical machines and great interest in the subject area
- → High expectations of initiative, independent working style and ability to work in a team
- → Fun and extensive previous knowledge in the field of practical work

eV

→ Skilled craftsmanship



Fig. 3: Existing design as a starting point for further development

Adrian Schäfer (adrian.schaefer@iew.uni-stuttgart.de)