

## Finite-Element Model-Based Design Synthesis of Axial Flux PMLBDC Motors - DTU Orbit (08/11/2017)

### Finite-Element Model-Based Design Synthesis of Axial Flux PMLBDC Motors

This paper discusses design synthesis of a permanent magnet brushless DC (PMLBDC) machine using a finite element (FE) model. This work differentiates itself from the past studies by following a synthesis approach, in which many designs that satisfy performance criteria are considered instead of a unique solution. The designer can later select a design, based on comparing parameters of the designs, which are critical to the application that the motor will be used. The presented approach makes it easier to define constraints for a design synthesis problem. A detailed description of the setting up of a FE based design synthesis problem, starting from the definition of design variables, FE model of the machine, how the design synthesis is carried out, and to, how a design is finalised from a set of designs that satisfy performance criteria, is included in this paper. The proposed synthesis program is demonstrated by designing a segmented axial torus PMLBDC motor for an electric two-wheeler.

### General information

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