

Master's Thesis

Sensor-less Control of Single-Phase BLDC Drives

Motivation

Sensorless control of permanent magnet machines is a reliable and cost-effective alternative for the conventional control drives with the mechanical encoder or Hall sensor. In single-phase BLDC machines for sub-fractional horsepower applications, the minimum cost is usually the primary design criteria as long as the functionality is not compromised; therefore, sensorless control approaches can be effectively used in this application. Besides, these machines suffer from the error of position detection, as it is highly affected by the accurate placement of the Hall sensor, which is not always implementable in a low-cost mass-production lines. This project intends to investigate the conventional sensor-less control approaches, which mostly have been presented for three-phase machines, and present a proper approach to be used in single-phase BLDC machines.

Tasks

- Investigation of the state-of-the-art of sensor-less control of BLDC machines.
- Research on the proper sensor-less approaches for single-phase BLDC machines.
- Experimental study of control approaches on an example case single-phase BLDC machine.

Further Information

Research questions and tasks may be changed ad libitum, adding simulation and/or experimental work. Special interests, strengths, and experience of the student will be considered.

Contact

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