

Student engineer project: Inverter simulation model

Are you looking for a project for engineer internship or a final thesis/project? - Here is your opportunity!

Project: Inverter Simulation model

Background

Simulation is an important tool when developing power electronics and simulation can bring several benefits to the product development. The ability to predict the product behavior in the early design phase is the key to make reliable and efficient products with a short time to market.

For an inverter model, the goal is to predict and optimize key parameters like:

- EMC performance and harmonic performance.
- Power loss and cooling.
- Lifetime estimation, e.g. Power cycling of power modules.

The challenge is the high complexity of a typical system. This means that a complete system simulation with traditional simulation tool like PSpice will be difficult and very time consuming. On the other hand, system level simulation tools like Simulink and Plecs do not provide the necessary details.

Lodam uses the Simetrix simulation software and Verilog-A, a hardware description language. Verilog-A is used to make accurate behavioral models. Typically, behavioral models are less complex than physics based models. This improves simulation speed and makes it possible to simulate complex systems with a high degree of detail.

Project description

Continuing and improving on the work already done on the simulation models used at Lodam.

Projects may be done with in one or more of the following topics:

- Behavioral models - Improving the accuracy of Lodam IGBT behavioral adding temperature dependence.
- Parameter extraction - Improving the setup for extracting IGBT model parameters for the IGBT behavioral model.
- Compressors – Implementing a behavioral model of a compressor based on compressor polynomials and modeling the current ripple of compressor.
- Motor model – Implementing a detailed motors model for different motor technologies.

Further information

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Lodam in short

Lodam electronics a/s develops and produces electronic control solutions for the HVAC&R markets worldwide, and our solutions support our customers' goals for energy efficiency and less environmental impact. Lodam is a semi-large company with more than 100 dedicated employees.

Lodam is part of the BITZER Group, a worldwide leading manufacturer of refrigeration compressors, with more than 3,500 employees worldwide. Lodam is located in Sønderborg in the southern part of Jutland in Denmark.

Read more at www.lodam.com

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Lodam – A Great Place to Work

Lodam has since 2010 constantly been voted as one of Denmark's best places to work on the Great Place to Work® Institute's list of the best work-places in Denmark. In 2014 we were also nominated for the Great Place to Work® Institute's Work-Life Balance Award.