

THESIS PROPOSAL for 2020 (MASTER'S DEGREE – LAUREA MAGISTRALE)

Electric motor thermal modelling through GT-SUITE to provide reliable models for automotive issues solution

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Keywords: design of synchronous Permanent Magnet electric machine; thermal modelling and component thermal protection; FE mesh, 1D and Real Time models

Description

In the next years, the diffusion of the electrified vehicles will pave the way to new challenging tasks. One of these is the thermal optimization of electric components, in order to protect them and to optimize their performance. The focus of this thesis is the evaluation, by means of a dedicated tool, GT-SUITE, of different thermal modelling possibilities.

Considering a Permanent Magnet electric machine, the candidate will evaluate the wide offer by GT-SUITE: simplified FE mesh modelling, 1D lumped masses and real time approaches. Each of these models have a specific use, according to the detail level required by the vehicle development task.

The thesis project is a collaboration between FCA/Centro Ricerche Fiat and Politecnico di Torino. During the thesis period the student will have the opportunity to apply to a real case the knowledge learned in the Electrical engineering courses as well as to acquire high level skills on a professional software used in almost all the main OEMs and supplier of the automotive sector.

Expected timeframe: **6 months**. Specific GT-SUITE training by CRF experts included, if necessary.

The student will conduct the activities related to this thesis project at the FCA/CRF offices located in Strada Torino 50, 10043 Orbassano (TO).

For further details and information, please contact by e-mail Silvio Vaschetto.

