Publications

1. Détermination Rapide d'un Modèle Thermique de Machine à Synchro Réluctance

Revue 3EI-SEE, No. 74, pp. 67-72, Octobre 2013 / Journées des Jeunes Chercheurs en Génie Electrique 2013 (JCGE 2013) June 5, 2013

Authors: Mohd Azri Hizami RASID

Abstract: La construction d'un modèle thermique d'une machine électrique devient aujourd'hui souvent nécessaire pour pouvoir intégrer le comportement thermique dès la phase de conception. Dans les applications pour accessoires automobiles où sont réalisées plusieurs prototypes un vue de grande série, cette étude propose l'utilisation d'un premier prototype combiné avec une méthode de calage expérimental afin de permettre une réalisation d'un modèle thermique rapide et suffisamment précis.

2. Simple Lumped Parameter Thermal Model with Practical Experimental Fitting Method for Synchronous Reluctance Machine

Power Electronics and Applications (EPE), 2013 15th European Conference on , vol., no., pp.1,10, 2-6 Sept. 2013; published by IEEE Xplore September 2, 2013

Authors: Mohd Azri Hizami RASID, Lanfranchi Vincent, Khadija El Kadri, Alejandro Ospina

Abstract: With the ever increasing pressures in automotive industries to develop smaller and more efficient electrical motors for their applications, it becomes necessary to have a thermal model at the design stage. This study proposes a fast, precise and practical thermal model construction that requires minimal development time for a synchronous reluctance machine which is to be used in automotive applications. It uses a method we call "practical experimental fitting method" which corrects a basic and simple thermal model by adding corrector coefficients into the model in order to fit it to experimental results obtained from the first machine prototype.

3. Thermal Model of Stator Slot for Small Synchronous Reluctance Machine

Electrical Machines (ICEM), 2014 International Conference on , vol., no., pp.2199,2204, 2-5 Sept. 2014; published by IEEE Xplore September 2, 2014

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Abstract: Machine slot thermal behavior is one of the most complex issues in electrical machine thermal modeling. It may however take advantages of various studies on composite winding homogenization to make the slot modeling less complex. In order to reduce computation time of winding, many has developed and adopted Page3 winding homogenization method. The composite windings are assimilated to a single homogenous body with an equivalent thermal conductivity, using either analytical or numerical approach. A direct application of these winding homogenization methods on the slot of an electrical machine thermal model has however several limitations. In this paper, a winding homogenization method are chosen and applied on a Syncrel machine stator slot model. Experimental results obtained using the machine prototype submitted to direct current test has shown that modifications have to be made to the homogenized slot model. The proposed modifications on the slot model are presented and the model was tested with different thermal operating points so as to validate the modifications.

4. Experimental investigation of contact resistances for small TENV electrical machine

Sensors & Transducers Journal, March/April 2016, International Frequency Sensor Association (IFSA) Publishing

Authors: Olfa Meksi, Mohd Azri Hizami RASID, Alejandro Ospina, Lanfranchi Vincent

Abstract: In this paper, a thermal study of Synchronous Reluctant motor is proposed. A specific experimental method is applied in order to identify the thermal parameters, this method focus on the study of contact resistances and total thermal capacity. Generally, in the classical thermal modeling, the thermal contact resistance (TCR) is estimated by empirical values and the thermal capacities are calculated by analytical solutions. The originality of the proposed model is based on the complementarity between experimental procedure (machine at rest), thermal modeling and model reduction technique in order to determine these important parameters and validate results (thermal contact resistances and capacities).