Permanent Magnet Machines: Structures and Modeling

1. ABSTRACT

Altought industrial developement of rare earths permanent magnet (PM) machines has experienced a slowdown these last years, due to concerns about costs and availibility, it is commonly agreed that PM machines have the best potential to cope with the different requirments of a large scope of applications. Indeed, PM machines have the higher power density within the different electrical machines technologies, which should push academic and industrial communities to keep the research efforts as high as possible. We can quote for exemple the research efforts for the development of high energy permanent magnets without rare earths or less rare earths materials, and their replacement by cheap and available materials.

2. RATIONALE

In addition to arguments presented above, the special session will focus on the structures of PM machines and their modeling. New PM machines structures will be discussed: rotating and linear structures, stator excited PM machines, hybrid excited PM machines, novel applications in renewable energies conversion, new applications in transportations systems, ... etc. Research efforts on modeling techniques used for analysis and design purposes will also be discussed.

3. PROPOSED SPEAKERS

Speaker	Institution	Topic
Pr. Ahmed MASMOUDI	RELEV, University of Sfax (Tunisia)	On the maximization of the thrust production capability of LPMSMs: application to ropeless elevators
Pr. Ahmed MASMOUDI	RELEV, University of Sfax (Tunisia)	Analytical model-based approach to reduce the detent force of LPMSMs
Pr. Noureddine TAKORABET	GREEN, Université de Lorraine (France)	L'utilisation des aimants permanents dans les machines électriques
Dr. Sami HLIOUI	SATIE, Conservatoire Nationale des Arts et Métiers (France)	Machine à double excitation : état de l'art et exemples d'applications
Pr. Yacine AMARA	GREAH, Université Le Havre Normandie (France)	Linear Tubular PM machines

4. ORGANIZERS

Pr. Rachid IBTIOUEN: Ibtiouen Rachid graduate as an engineer, Magister and Doctorate in Electrical Engineering from "Ecole Nationale Polytechnique" of Algiers, Algeria. He then obtained a Ph. D. Degree from "ENSEM-INPLorraine", Nancy, France, in 1993. Since 2000, he is with the "Ecole Nationale Polytechnique", Algiers, Algeria, where he currently heads the "Electrical Machinery Design" team within "Laboratoire de Recherche en Electrotechnique" LRE-ENP.

Pr. Yacine AMARA : Yacine AMARA obtained his engineering diploma in electrical engineering from "Ecole Nationale Polytechnique" of Algiers, Algeria, in 1997. He then obtained his Ph. D. Degree in applied physics from "Université de Paris Sud", Paris, France, in 2001. After a period at "University of Sheffield" (UK) (2003 – 2004), he joined the "Université de Technologie de Belfort-Montbéliard" at Belfort, France, in 2004. Since 2008, he is with the "Université Le Havre Normandie", Le Havre, France, where he is currently leading the "Electrical Machines and Drives" team within "Groupe de Recherche en Electrotechnique et Automatique du Havre" GREAH.