Ministère de l'Enseignement Supérieur et de la Recherche Scientifique

Université M'Hamed BOUGARA - Boumerdès-

Institut de Génie Electrique et Electronique

PRESENTATION D'HABILITATION

Mr **KHELDOUN Aissa**   présentera   publiquement   ses travaux **d'habilitation :**

    Filière   : Génie électrique et électrotechnique

    Option : Contrôle des Machines Electriques

Le Mercredi 12 Décembre 2012 à 10h00 dans la Salle de Conférence de l'institut de Génie Electrique et Electronique (Bloc C 113).

    <u>**Devant le Jury:**</u>

Président :	Mr BENAZZOUZ Djamel	Professeur, UMBB, Boumerdés
Examinateur :	Mr DJENNOUNE Said	Professeur, l'UMMTO, Tizi Ouzou
Examinateur :	Mr MOULAHOUM Samir	MC/A, Université de Médéa
Rapporteur :	Mr ZEROUG Houcine	Professeur, l'USTHB, Alger
Rapporteur :	Mr HABI Idir	MC/A, UMBB, Boumerdés
Rapporteur :	Mr BENTARZI Hamid	Professeur, IGEE, UMBB

Soutenance d'Habilitation Universitaire de Mr KHELDOUN Aissa, 12/12/2012, IGEE, UMBB.

Brief Biography

My Name is KHELDOUN Aissa. I graduated as an Engineer (Ingénieur d'Etat) in 1997 from the former National Institute of Hydrocarbon and Chemistry, major: électromécanique. I got my Magister and Doctorate degrees both in electrical engineering from Boumerdes University (UMBB) in 2001 and 2007 respectively. I was a lecturer at the former Department of Electrical and Electronic Engineering (DGEE) from 2003 to 2008 and assistant professor since 2008. Since April 2010 and up till now I am the Head of Power and Control Department, Institute of Electrical and electronic Engineering (former DGEE), UMBB. My fields of interest are electrical drives, renewable energies and application of artificial intelligence techniques in electric energy systems.

Research Activities Summary

My research activities are focused on the control of induction machines and particularly the squirrel cage one. Two different axes were investigated, namely:

1) the use of the induction motor in variable speed drives and

2) the use of the induction machine as a standalone generator.

Regarding the first axis, different aspects were investigated including: modeling taking iron loss into account, application of different techniques to control the induction motor speed, and to minimize power losses. It has been also undertaken the application of fuzzy logic to improve the performance of the speed control and adapt the rotor time constant. Others aspects have been investigated also such as sensorless speed control, and diagnosis of certain faults which may arise during the operation of IMs.

Concerning the second axis, I have been interested to the use of optimization techniques to analyze the performance of squirrel cage self-excited induction generator in steady state. Two global optimization techniques (Genetic Algorithm and the DIRECT Algorithm) have been developed, applied to the machine and compared with an algorithm available in the library of Matlab (Matlab built-in functions such as: "*constr*" , "*fmincon*", *"fsolve"*).