

الآية

بسم الله الرحمن الرحيم

﴿قُلْ هُوَ اللَّهُ أَحَدٌ ۝ اللَّهُ الصَّمَدُ ۝ لَمْ يَلِدْ وَلَمْ
يُولَدْ ۝ وَلَمْ يَكُنْ لَهُ كُفُوًا أَحَدٌ ۝﴾ .

(صدق الله العظيم)

سوره الإخلاص

Dedication

- **First I dedicated
to my families specially my parents**
- **To my college and teachers and my colleagues in the
university and my teachers in my every step**
- **To my friends**

Acknowledgement

I would like to express my deepest gratitude to my supervisor **Dr. Nagm Eldeen Abdo Mustafa Hassanin** for his invaluable, inestimable guidance and support advice throughout the study.

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ABSTRACT

An induction generator is a type of electrical generator that is mechanically and electrically similar to an induction motor. Induction generator produce electrical power when their shaft is rotated faster than the synchronous speed of the equivalent induction motor. To excite the generator, by feed reactive power can be supplied from the grid as it used in double feed induction generator or from the external capacitor bank connected on its terminal as it used in squirrel cage (self excited induction generator) .

In this thesis, control schemes for the self-excited induction generator are developed using MATLAB/SIMULINK. The mathematical model of IM is developed and capacitor excitation is determined .Two control scheme are applied one for The extracting maximum power from the wind turbine from cut-in to rated wind velocity by sensing only dc link power, (boost converter). Second control strategy is developed to regulate voltage and frequency to give constant voltage-constant frequency to an isolated load. The results are obtained and discussed .

المولد ألحي هو نوع من أنواع المولدات الكهربائية يعمل علي تحويل الطاقة الميكانيكية إلي طاقة كهربائية. المولد ألحي ينتج الطاقة الكهربائية عندما يدار عضوه الدوار بسرعة اكبر من سرعة التزامن. تثار المولدات الحثية إما بواسطة تغذيتها من الشبكة كما في حالة النوع ذو الحلقات المنزلقة أو بواسطة مكثفات خارجية توصل علي أطرافه كما في حالة النوع ذو القفص السنجابي .

في هذه الأطروحة، تم التحكم في المولد ألحي الذاتي الإثارة باستخدام برنامج MATLAB/SIMULINK. حيث تم تمثيل النموذج للماكينة الحثية بمعادلات رياضية وطورت المعادلات، كما تم حساب قيمة المكثف المناسبة لإثارة الماكينة ، تم استخدام متحكمتين الأولي لإعطاء أقصى طاقة ممكنة في حالة تغير سرعة الهواء وذلك من خلال سرعات التوليد المتاحة ، بعد تحويل الجهد المتردد إلي جهد مستمر باستخدام مقوم لتقويم الموجة المترددة، و الثانية لتنظيم الجهد والتردد لإعطاء جهد وتردد ثابتين لحمل معزول . تمت مناقشة النتائج .

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