

Dedication

The author dedicates this work

To her father, mother, brothers and sisters

To her friends and colleagues

*And finally to the staff of Electrical Engineering of the
Sudan University of Science & Technology*

*And to all those who are dreaming of a better future for
themselves and their country*

Acknowledgment

The author humbly thanks Allah Almighty, the Most Gracious, the Most Merciful WHO provides her with uncountable blessings and gifts for equipping her with the capability and patience to pursue her M.Sc. degree thesis.

She wishes to express her deepest gratitude to her supervisors, Dr. Abdelrasoul Jabar Alzubaidi from the Sudan University of Science & Technology who was abundantly helpful and offered invaluable assistance, support and guidance throughout her study. She would like to thank him for his leadership, enthusiasm, encouragement and resolute dedication to her work.

She also would like to record her deeply-felt gratitude to her teaching staff and her M.Sc. colleagues in the control program for their respectable and unconditional support from the beginning of the program.

Abstract

Renewable energy is a very important topic to study to find new sources of energy to produce electricity. The main advantages of renewable energy are available, clean, low cost and continuous energy. This project investigates wind energy system in general form, which is a part of renewable energy.

The aim of this thesis is to design a maximum power point tracking for wind turbine. This study concentrates in control of turbine blades through control in position of the blades to face the wind and take the maximum energy from it.

The control in position of blades done by microcontroller, stepper motor and appropriate speed sensor.

In this study we will use optical sensor to enter the wind speed to the microcontroller which direct the stepper motor in the appropriate angle.

Wind turbine blades was installed in the top of the stepper motor, by moving the stepper motor to the appropriate angle the blades also move to the appropriate position.

المستخلص

الطاقة المتجددة موضوع هام للدراسة وذلك لإيجاد مصادر طاقة جديدة لتوليد الكهرباء من أهم مميزات الطاقة المتجددة أنها متوفرة ،نظيفة ،قليله التكلفة و طاقة مستمرة. هذا المشروع يتناول طاقة الرياح بالعموم والتي تعتبر أحد أشكال الطاقة المتجددة .

الغرض من هذا المشروع هو تصميم اعلى نقطه طاقة عن طريق توربينات الرياح. هذا المشروع يركز على التحكم في ريش توربينه الهواء من خلال التحكم في وضع الريشة في موقع مناسب لواجهه الرياح وتأخذ منها اكبر قدر من الطاقة.

تم التحكم في موقع الريشة عن طريق المتحكم الدقيق ومحرك الخطوة وحساس سرعة مناسب. في هذا المشروع سوف نستخدم حساس ضوئي لإدخال سرعة الرياح للمتحكم الدقيق الذي يقوم بدوره بتوجيه محرك الخطوة في الزاوية المناسبة.

تم تثبيت ريشة توربينة الرياح في اعلى محرك الخطوة ، بتحريك محرك الخطوة للزاوية المناسبة يتم تحريك الريشة للموقع المناسب.

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