

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.

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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 throw 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، قليلة التكلفة و طاقة مستمرة. هذا المشروع يتناول طاقة الرياح بالعموم والتي تعتبر احد أشكال الطاقة المتجددة .

الغرض من هذا المشروع هو تصميم اعلي نقطه طاقة عن طريق توربينات الرياح. هذا المشروع يركز علي التحكم في ريش توربينه الهواء من خلال التحكم في وضع الريشة في موقع مناسب لتواجه 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 ترينيه الرياح في اعلي محرك الخطوة ، بتحريك محرك الخطوة للزاوية المناسبة يتم تحريك الريشة للموقع المناسب.

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