UNIVERSITI TEKNIKAL MALAYSIA MELAKA

A DEVELOPMENT OF VERTICAL WIND TURBINE BY USING DC MOTOR AS A GENERATOR

This report is submitted in accordance with the requirement of the Universiti Teknikal Malaysia Melaka (UTeM) for the Bachelor of Electrical Engineering Technology (Industrial Power) with honours.

by

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2019

UNIVERSITI TEKNIKAL MALAYSIA MELAKA

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Tajuk: A DEVELOPMENT OF VERTICAL WIND TURBINE BY USING DC MOTOR AS A GENERATOR

Sesi Pengajian: 2019

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I hereby, declared this report entitled A DEVELOPMENT OF VERTICAL WIND TURBINE BY USING DC MOTOR AS A GENERATOR is the results of my own research except as cited in references.

Signature: ……

Author : MOHD NASIP BIN AGUS

Date:

APPROVAL

This report is submitted to the Faculty of Electrical and Electronic Engineering Technology of Universiti Teknikal Malaysia Melaka (UTeM) as a partial fulfilment of the requirements for the degree of Bachelor of Electrical Engineering Technology (Industrial Power) with Honours. The member of the supervisory is as follow:

Signature: …….

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ABSTRAK

Turbin angin merupakan satu cara untuk menghasilkan tenaga elektrik dengan menggunakan angin sebagai tenaga sumber tenaga utama. Tenaga angin akan di tuai oleh bilah turbin angin. Ketika bilah menuai angin, bilah tersebut akan berpusing dan akan menghasilkan tenaga mekanikal dan seterusnya motor arus terus yang berfungsi sebagai penjana akan menukarkan tenaga mekanikal kepada tenaga elektrik. Projek ini akan menunjukkan operasi tentang bagaimana turbin angin menghasilkan tenaga elektrik. Fokus projek ini adalah untuk menghasilkan 5V arus terus supaya ia boleh digunakan untuk mengecas telefon mudah alih ataupun barang elektronik yang lain. Selain itu, objektif projek ini adalah untuk menghasilkan turbin angin menegak dimana bilah yang digunakan tidak mendatangkan kecederaan terutamanya bagi kanak-kanak. Projek ini juga membincangkan tentang kepentingan sumber tenaga dan impak positif menggunakan sumber tenaga yang boleh diperbaharui sebagai sumber tenaga. Oleh kerana turbin angin menggunakan tenaga yang bersih untuk menghasilkan elektrik, projek ini akan menunjukkan cara bagaimana untuk memanfaatkan tenaga yang boleh diperbaharui di sekeliling kita supaya ia boleh dimanfaatkan untuk masyarakat dan alam sekitar. Bahan-bahan yang digunakan untuk menghasilkan projek ini ialah dari bahan-bahan yang ringan supaya ia senang di bawa kemana-mana. Oleh itu, untuk memastikan projek ini mencapai kesemua objektif, hasil data eksperimen akan direkodkan dan akan di analisis berdasarkan skop kajian sebagai rujukan.

ABSTRACT

Wind turbine is a one of many ways to produce electricity power by using wind as main energy resources. The wind energy will be captured or harvest by the wind turbines blades. As the blades harvest the wind, the blades will rotate and produced a mechanical energy and hence the DC motor which work as a generator will convert the mechanical energy into electrical energy. This project will show the operations of how the wind turbine can produce the electrical energy. The main focuses of this project is to produce a 5V direct current so that it can be used to charge the mobile phone or other electronic gadget. Beside that the objective of this project is to develop a vertical wind turbine where the blades does not produce any harm to a user especially the children. This project also discussed about the important of source energy and the positive impact of using renewable energy of source energy. Since a wind turbine used a clean energy to produce electricity, this project will shows on how to utilize the renewable energy around us so that it can be useful for society and environment. The material that is used to develop this project is basically from a light material so that it can be easy to carry around. Therefore, in order to make sure that this project achieved all the objective, the experimental result is obtained and analyzed with accurate way by using the scope as a reference.

DEDICATION

Alhamdulillah thanks to Allah, I have finished this Final Year project. Without those who closed to me I would not achieved this achievement. First of all I would like to give a full appreciation to my parents and my family for always supporting me throughout my education for the last 6 semester. A lot of thanks to my supervisor, Nurbahirah Binti Norddin for all the guidance and all the advice that she gave me so that I can achieve all the accomplishment today. Thanks also to all my friends for always gave the idea and help me to solve the problem that I had faced while doing this final year project. Throughout my final year project journey, I had gained a lot of knowledge and new information. It also shapes my capability and my characteristic on how to counter the problem in a creative possible way.

ACKNOWLEDGEMENTS

In order to complete this report, I was in contact with many individuals that come from a different background. They have given me a lot of inspiration and information regarding to my final year project. Specifically, I wish to give a full of gratefulness to my supervisor, Nurbahirah Binti Norddin for guidance, critics, idea, and support throughout my final year project. My sincere gratefulness extends to all my dear colleague and other people who involved directly and indirectly in my final year project. Honestly, without all this particular figures this project would not come into reality. Not forget to mention to Technical University Malaysia Malacca (UTeM) for all the convenience that had been given to us and also to all the lecturer that is involved to gives us the guidance throughout the Final Year Project. Without them who sincerely contribute in this project we will never achieve this accomplishment. Sadly, it isn't conceivable to list the entire person who contributes in this project in a limited space. I am thankful to all my relatives.

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D, d	-	Diameter
F	-	Force
g	-	Gravity = 9.81 m/s
I	-	Moment of inertia
1	-	Length
m	-	Mass
N	-	Rotational velocity
P	-	Pressure
Q	-	Volumetric flow-rate
r	-	Radius
T	-	Torque
Re	-	Reynold number
V	-	Velocity
w	-	Angular velocity
x	-	Displacement
z	-	Height

q	-	Angle

LIST OF PUBLICATIONS