

BATTERY STORAGE SYSTEM DESIGN FOR STAND-ALONE ROOM LIGHTING POWERED BY WIND ENERGY

This project thesis is presented in partial fulfilment for the award of the

Bachelor in Electrical Engineering (Honours)

**UNIVERSITI TEKNOLOGI MARA
MALAYSIA**



**MUHAMMAD KHUDRI BIN HALIM BASHAH
FACULTY OF ELECTRICAL ENGINEERING
UNIVERSITI TEKNOLOGI MARA
40450 SHAH ALAM
SELANGOR DARUL EHSAN**

ACKNOWLEDGEMENTS

All praises be to mighty Allah S.W.T., the Most Gracious, Most Merciful and Most Beneficent for giving me strength and blessing throughout the entire research and completion of this project. Peace upon our Prophet Muhammad S.A.W. who has given light to mankind.

Firstly, I would like to convey my deepest gratitude and appreciations to my project supervisor, **Prof. Ir. Dr. Shah Rizam Binti Mohd Shah Baki** and co-supervisor, **Pn Rahmatul Hidayah Binti Salimin** for his patience and invaluable suggestion, guidance and advice for the completion of this project.

I also would like to thank to my parent for their support and understanding to me in order to do this project. Without them, I would never to finish-up this project. Lastly, not forget to my project partner, **Mohd Amin Bin Amran** and **Mat Nizam Bin Mahmud** who has been involved directly and give support, commitment, and opinion in completing this research. Their contribution is really appreciated and grateful. Thank you. May Almighty Allah bless and reward them for their generosity.

ABSTRACT

Renewable energy sources such as wind and solar energy for electric power supply generation and energy shortages have receive the attention recently. In many communities, the cost of energy is largely determined by the cost of the diesel fuel. The idea is derive from Prof .Ir.Dr. Shah Rizam that proposed to build cheapest renewable system. This project consist three sections that is blade design, Charge Controller, and Rechargeable battery design. The main focused is the integration of a battery storage system with room lighting during wind speed variation at different room size. The energy storage battery required for room lighting powered by wind energy system. The battery storage system which makes its integration with vertical blade wind energy system for power supplied that controlled by charge controller. This project focus on design battery system for stand- alone room lighting in the room with a blade, DC generator, charge controller, Battery storage.

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CHAPTER 1

INTRODUCTION

1.1 BACKGROUND OF THE PROJECT

Many remote communities are supplied with electrical energy produced by diesel generators. In many of these communities, the cost of energy is largely determined by the landed cost of the diesel fuel. The urgent need to reduce the cost of energy has led to the investigation of the use of renewable energy sources, such as the wind, to replace some or all of the fuel consumed. The small wind turbines in conjunction with battery storage, can replace the electrical energy produced by diesel generators in electrical applications [1]. Wind Power has been the fastest growing energy in the developed countries across the globe due to its increasingly attractive economics, its substantial environmental advantages and supportive energy policies [2]. Wind resources are good alternatives to provide energy power. Winds are also the most available renewable energy resources.

Wind is a readily available and renewable source of power. Small wind energy conversion systems have the potential to replace the current power source for battery charging systems [3]. Many types of new battery energy storage systems suitable for large-scale energy storage applications have been under development. Since 1985, Sumitomo Electric Industries has developed redox-flow batteries in collaboration with Kansai Electric Power Co. [4-5].

The stand-alone room lighting powered by wind energy should be used to replace the old system that can provide a better renewable energy and high efficiency of using energy. This stand-alone room lighting powered by wind energy is build with a battery storage