

**THE EFFECT OF SURFACE WATER ON THE PERFORMANCE
OF PV MODULE**

This thesis is presented in partial fulfillment for the award of the Bachelor of
Engineering (Hons) Electrical



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ACKNOWLEDGEMENT

Foremost, all praise to Allah for giving me strength and health to complete this project. Without the strength and health given throughout the project progress, the project might not complete within the time frame specified.

I would like to take this opportunity to express my grateful to my Final Year Project supervisor, Dr Ahmad Maliki Omar for his supervision and advices throughout the entire project. His provisions and willingness to assist me in the problem or complications throughout my project have given great contribution to my project.

Last but not least, I would like to give express my gratitude and appreciation to my family and fellow friends for giving me inspiration and support directly or indirectly so that this project can be accomplished.

ABSTRACT

This thesis introduces the probability of increasing the performance in terms of output power and efficiency using passes running water on the surface of PV module. Lifespan of photovoltaic cells is estimated around 20-25 years. The rate of degradation will increase rapidly if the temperature goes beyond the certain limit. The increase of working temperature of photovoltaic (PV) cell through absorption solar radiation is inversely proportional to the electrical efficiency. With the purpose of increase the PV efficiency, it is crucial to keep the PV cell temperature at minimum level. Results gained from this method are compared with the unaltered PV module. The results show that it manage to bring down the operating temperature of PV module but the water itself interfere with the solar absorption and dropped the efficiency of the PV module. All the data was recorded using solar module analyzer (PROVA 200) and from the short circuit current of module shows that the electrical performance is worsen.

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CHAPTER 1

INTRODUCTION

1.1 PROJECT BACKGROUND

Fossil fuels contribute large amount of energy generation nowadays. Environment is affected greatly by fossil fuels and it cannot be renewed. In order to cope with this situation, renewable energy was introduced. Currently, renewable energy supply somewhere between 15 percent and 20 percent of world's total energy demand [1].

Solar energy provides another option for generation of electrical energy although it has pro and cons but it gives great contribution to the environment. One of the commonly known types of renewable energy is solar energy. Solar energy is being use all over the world and main to the development of renewable energy [2]. The development of solar technology is expanding rapidly and extensive research currently has been made so that utilization of the energy is more efficient.

The world leading solar technology nowadays is Germany. Renewable energy in Germany contributes around 20% and solar energy is close around quarter of it [3]. Every resident in Bavaria, southern of Germany uses 3 photovoltaic panels as a source of energy every day [3].