DEVELOPMENT OF COOLING SYSTEM MECHANISM FOR PHOTOVOLTAIC MODULE

This thesis represented in partial fulfillment of the requirement for the award of The Bachelor of Electrical Engineering (Hons)

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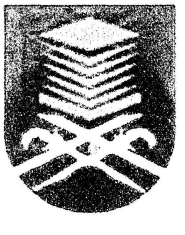

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ABSTRACT

This thesis presents about the development of cooling system mechanism for photovoltaic module. Nowadays, solar energy is one of the most important sources among the renewable energies. One of the problems occur when using the photovoltaic is that low conversion efficiency of PV modules due to the heating of PV modules. This is because of the solar radiations that have been absorbed are not fully converting into electricity but parts of it are changed over into thermal energy. It is well known that the conversion efficiency decreases with the increase of PV modules surface temperature. Therefore, this project objective is to develop a workable prototype of cooling system mechanism that attached to the PV module. This system is designed by using Fritzing software. It is controlled by a microcontroller ATmega328p which it's programmed by using Arduino software. When the surface temperature of PV modules exceeds the reference temperature which is set to 38°C, the water pump will be activated and the water will flow above the PV modules surface so that its temperature can be reduced. Then, the electrical performance of the PV module that equipped with this system is compared with the conventional PV system. The results show that the prototype of cooling system mechanism is successfully developed. The temperature of PV module that equipped with this cooling system is reduced and it resulted to an increase of open circuit voltage produced by the PV module.

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