

**CONSTRUCTING A WIFI-BASED MAXIMUM POWER POINT TRACKING  
SYSTEM TO IMPROVE AND RECORD THE PERFORMANCE OF SOLAR  
PV MODULE**

By

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### STATEMENT BY THE AUTHOR

I hereby declare that this submission is my own work and to the best of my knowledge, it contains no material previously published or written by another person, nor material which to a substantial extent has been accepted for the award of any other degree or diploma at any educational institution, except where due acknowledgement is made in the thesis.

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## ABSTRACT

### CONSTRUCTING A WIFI BASED MAXIMUM POWER POINT TRACKING SYSTEM TO IMPROVE AND RECORD THE PERFORMANCE OF SOLAR PV MODULE

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Solar PV module is one of the most viable options for harvesting the ever resourceful form of renewable energy in Indonesia, as Indonesia is a tropical country. Processing the electricity generated from solar PV modules demands proper methods to produce higher efficiency. Among known methods, maximum power point tracking (MPPT) is the most interesting yet challenging as it can produce much higher efficiency compared to traditional PWM or no controller.

This thesis is focused on developing and testing WiFi-based MPPT controller that is capable of wireless monitoring and controlling of solar PV power plant. MPPT uses a buck converter to regulate the voltage input from the solar PV module to a voltage level demanded by the load with minimum loss. The voltage is regulated to dynamically depending on the charging state of the battery, while still tracking for peak power. The battery is used to power the loads, which can be turn on and off electronically or wirelessly. The MPPT method is successfully implemented and is able to achieve efficiency as high as 88% - 94.7%.

*Keyword: MPPT, PWM, Solar PV Modules, Efficiency, Buck Converter.*



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## **DEDICATION**

I dedicate this thesis to God, family and my friends, also for my country, and my campus.



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First and foremost, thank God for all His blessings to me, thus this thesis is created. Second, I would like to thank the members of my family who always supported me with this thesis. Also thank for Ir. Arko Djajadi, M.Sc., Ph.D. as my advisor, who always there to help me when I got trouble with my thesis. Last but not least, I would like to thank to my entire friend, especially Aditya, Ardi, Edo, Benedict, Benarivo, Ryendra, Aldi, Yudha, Franklin, Felix, Nico, Kevin Tantra, Rega, Michael, Kevin Inar, and Mechatronics 8A batch 2011 for always supported me from the beginning until the end of making this thesis. Last but not least, thank also for Mr. Mochtar and team from Adyasolar, the company that lend item for making this thesis.



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