DEVELOPMENT OF POWER QUALITY MEASURING DEVICE FOR NET POWER METERING AND LOAD MONITORING

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11112084

BACHELOR'S DEGREE
in

MECHANICAL ENGINEERING – MECHATRONICS CONCENTRATION
FACULTY OF ENGINEERING AND INFORMATION TECHNOLOGY

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August 2016

Revision after the Thesis Defense on 27 July 2016

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

DEVELOPMENT OF POWER QUALITY MEASURING DEVICE
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When a building is equipped with a power generator form renewable energy such as wind or sun power, it is possible to feed excess capacity back to the local mains electrical grid. The power quality of the power should also be monitored to ensure good quality of power which will be supplied to the grid. However in Indonesia, the existing metering device does not support this possibility and it cannot measure power quality thoroughly since they only measure energy. That is the reason this thesis will develop a net metering device that can be installed on a building with power generator. The device should be able to measure all the parameters needed to determine power quality such as the rms of voltage and current, power factor, frequency, individual and total harmonics distortion. In this thesis, a front-end energy measurement IC is used and both measurement and communications will be done digitally. The data obtained will then be processed further to give information about the characteristic and quality of the electric power. To improve the device, a user interface is also developed and load monitoring ability is also added. Electric isolation is also installed to ensure the safety of the user.

Keywords: renewable energy, power quality measurement, net metering, load monitoring, energy measurement, electric isolation.

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DEDICATION

I dedicate this work for the development of renewable energy to preserve our mother earth.

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ACKNOWLEDGEMENTS

I give the biggest gratitude to Jesus Christ for all his blessing during the process of doing this thesis work. All glory only for Him who always give me strength.

I would like to thank my family, my mom and dad, and also my sister. They are always there to support me and give me encouragement in the completion of this thesis work.

I give my thanks to Ir. Arko Djajadi, Ph.D., my thesis advisor. His guidance is the reason I can finish this thesis work. Thank you for giving me your knowledge and support.

I would also like to thank all my friends for all their advice and support. I will cherish all the good time we have spent over the years.

Last but not least, I would like to thank everyone whose name cannot be mentioned one by one. Thank you for the advice, support, and encouragement.

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