IMPLEMENTATION FUZZY LOGIC CONTROL TECHNIQUE IN POWER SUPPLY USING SOLAR CHARGING SYSTEM

By

PRIHANGKASA YUDHIYANTORO
2 – 2014 – 1210

MASTER'S DEGREE
in

MECHANICAL ENGINEERING – MECHATRONICS CONCENTRATION
ENGINEERING AND INFORMATION TECHNOLOGY

SWISS GERMAN UNIVERSITY
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Revision after Thesis Defense on February 19, 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.

Prihangkasa Yudhiyantoro

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ABSTRACT

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By

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This paper presents the implementation fuzzy logic control in the battery charging system. To control the charging process is a complex system due to the exponential relationship between the charging voltage, charging current and the charging time. The effective of charging process controller is needed to maintain the charging process. Because if the charging process cannot under control, it can reduce the cycle life of the battery and it can damage the battery as well. The main idea is that, in order to get charging control effectively, the fuzzy logic control for a Valve Regulated Lead-Acid Battery (VRLA) Charger is being embedded in the charging system unit.

The paper started from the hardware development where the solar charging method and the combination of the battery charging system itself to prepare, then the study of the fuzzy logic controller in the relation of the charging control, and the determination of the parameter for the charging unit will be carefully investigated. One of the advantages of using Fuzzy Logic beside the PID controller is the fact that, we don't need a mathematical model and several parameters of coefficient charge and discharge to software implementation in this complex system.

Through the experimental result and from the expert knowledge, that is very helpful for tuning of the membership function and the rule base of the fuzzy controller.

Keywords: fuzzy logic, solar charging control system, microcontroller, VRLA battery.

DEDICATION

To Aaron

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Jakarta, February 6, 2016
Prihangkasa Yudhiyantoro

TABLE OF CONTENTS

Page