ANALYSIS OF REGENERATIVE BRAKING USING BRUSHED DC MOTOR

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BACHELOR'S DEGREE
in

Mechanical Engineering - Mechatronics Concentration
Faculty of Engineering and Information Technology

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Revision after Thesis Defense on 19 January 2018

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

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The purpose of this study is to analyze and develop a Regenerative Braking System using a Permanent Magnet DC Motor. The aim is to create a system capable of triggering a Regenerative Braking event and then boosting that energy to charge a storage element. The system utilizes an H-bridge circuit to drive the DC motor, with a Boost Converter to regulate the input to the battery load. Gate drivers are implemented to allow faster switching of the semiconductors. DC motor parameters will be analyzed to better understand the behavior of the motor. Back-emf measuring will also provide extra insight on the braking energy that can be potentially recovered during each regenerative phase.

Keywords: Regenerative Braking, Permanent Magnet DC Motor, H-Bridge, Gate Driver, Metal-Oxide Semiconductor Field Effect Transistor

DEDICATION

I dedicate this work to God,

My dearest Mom and Dad,

For providing me with unfailing support,

And continuous encouragement throughout my years of study.

ACKNOWLEDGEMENTS

I am grateful to God for the good health and wellbeing to complete this thesis. I would like to thank Marshanette Regina Maramis for all the love and support she has given me throughout this thesis.

I also wish to express my sincere thanks to Benny Widjaja, my advisor, for giving me the chance to finish the research and provide me with all the necessary inputs for the succesfulness of this thesis.

I also thank my parents and sisters for the never-ending encouragement, prayer, support and attention.

Not to forget, I also place on record my sense of gratitude to everyone, who directly or indirectly have contributed their support by giving encouragement and support in this venture. And lastly I would like to thank my fellow classmates for all their support and insight in which has helped me to finish this study.

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