

FACULTY OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF ELECTRICAL ENGINEERING

FINAL YEAR PROJECT REPORT

MODIFIED VARIABLE FREQUENCY DRIVE THAT CONTROLS TWO MOTORS AT INDEPENDENT SPEED AND DIRECTION IN INDUSTRIES.

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A final year Project report submitted to the Department of Electrical Engineering in Partial fulfillment of the Requirement for the award of a Bachelor of Science degree in Electrical Engineering of Busitema University.

JULY, 2024

DECLARATION

I NAWOYA KANANIYA Reg No. BU/UP/2020/1231 hereby declare that this project report is my original work except where explicit citation has been made and it has not been presented to any institution of higher learning for any academic award.

This project report is done in partial fulfillment of the requirements for the award of BACHELORS DEGREE IN ELECTRICAL ENGINEERING of our curriculum.

Signature:

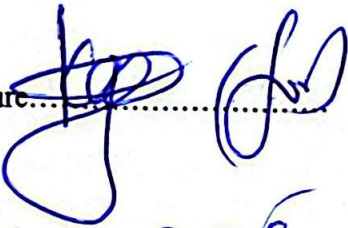
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APPROVAL

This is to certify that the project report under the title “**Modified Variable Frequency Drive that Controls two Motors at Independent Speed and Direction In Industries**” has been done under my supervision.

ENG. MUGWANYA PATRICK

Signature.....



Date.....

24/11/2018

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Almost all tasks cannot be done solely. Assistance here and there is required to accomplish a task perfectly well. On that note therefore, I thank my supervisor: Mr. Mugwanya Patrick for the great advice he provided throughout the time frame of the project. Great thanks go to the funders of the project and all associated costs; my dad: Mr. Nawoya Bruno, my mum: Mrs. Masano Esther Kaano and my siblings: Nawoya (Sarah, Maliza, Besweri and lastly Lydia).

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Above all, I cannot forget to thank the almighty for his protection and guidance throughout this period because I have finished it successfully and in one piece but not in pieces.

DEDICATION

I dedicate this report to my beloved parents, siblings, and friends.

ABSTRACT

In this project report, the design and implementation of a modified compact frequency drive that controls two motors at independent properties scheme based on sinusoidal pulse width modulation (PWM) technique for a single-phase induction motor. Our main aim is to design, implement and program a circuit drive that controls two motors each with independent commands from the Programmable Logic Circuit (PLC) to alter the speed, direction and starting time for each motor unlike the previous designs which control a single motor with some characteristics.

This report is intended to provide a basic understanding about VFD terms, VFD operations, Power Factor improvement, simulation model of our design and it's going to be simulated using Proteus software.

This variable frequency drive technique to be implemented is mainly focused in industrial applications, lifts so as to provide accurate operation of motors with improved power factor to minimize power usage and maintenance costs.

LIST OF ACRONYMS

AC	Alternating Current
BJT	Bipolar Junction Transistor
CSI	Current Source Invertor
DC	Direct Current
IGBT	Insulated Gate Bipolar Junction Transistor
MOSFET	Metal Oxide Semiconductor Field Effect Transistor
PLC	Programmable Logic Circuit
PWM	Pulse Width Modulation
STO	Safety Torque Off
VFD	Variable Frequency Drive
VSI	Voltage Source Inverter

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