



GENERIC SOLUTION FOR WASTE GENERATION ON SHORT PERIOD POWER DROPS AND FLUCTUATIONS

This thesis was submitted to the department of Electronics and
Telecommunication Engineering of the University of Moratuwa in partial
fulfilment of the requirements for the degree of Master of Science

By

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Abstract

The research project was conducted in connection with the Waste Project of the candidate's work place, Stretchline Holdings - Global. Stretchline is a multi national company with seven Strategic Business Units (SBU) around the world, manufacturing a variety of Narrow Fabrics (Elastic). The research targeted to minimise waste generation in one of the uncontrollable waste categories at Stretchline.

The objective of this project is to design and implement an Intelligent Automatic Switching Device for machinery in the event of power fluctuations (drop span within 3 seconds) and secondly introducing the generalised concept to the industry. For this purpose, I have developed a device which reactivates the machinery automatically in the case of short term power dips and cuts. The project highlights the three main advantages of automation such as minimising waste generation, increasing productive time and minimising customer complaints.

Essentially, the project focuses on Weaving, Jacquard and Fortitube Looms. Extracts show that nearly 100kg of waste is generated in a month and 65h1's of time wasted on tagging damaged parts of the elastic on power dips' and cuts. As per the information gathered in the month of August, there were 30 power cuts recorded and operator idle time was 1950Hrs per month. The lost production and tagging time waste of the machine operators could be minimised in significant terms by implementing-the concept to the company machinery.

The concept developed through the research was applied to automate Weaving looms. It attempts to further conclude how the concept could be used to automate machinery in the industry by generalising the concept.

As further future work, the device could be converted to a computer system hence could be improved at any length. Therefore, I believe the concept could be further enhanced to suit many industries and minimise the cost of production by reducing



waste generation due to A power fluctuations, which will maximise profits of the target industry.

DECLARATION

The work submitted in this dissertation is the result of my own investigation, except where otherwise stated.

It has not already been accepted for any degree and is also not being concurrently submitted for any other degree.

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I endorse the declaration by the candidate.

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LIST OF SYMBOLS AND NOTATIONS

TIP	-	Machine Motor moves as far as the this switch is being pressed
START	-	Main motor starts running continuously by pressing TIP and START both switches together
STOP	-	Machine stop switch
CLUTCH	-	Motor clutch activating switch
T	-	Transformer
M	-	Machine
mm	-	Weaving machine



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LIST OF ACRONYMS

SBU	-	Strategic Business Unit
KW	-	Kilo Watt
SPDA	-	Short-period Power Drop Actuator
UPS	-	Uninterrupted Power Supply
AC	-	Alternative Current
RC	-	Resistor Condenser
DC	-	Direct Current
PCB	-	Printed Circuit Board
LED	-	Light Emitting Diode



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