

الجامعة السودانية للعلوم والتكنولوجيا

**Sudan University for Science & Technology
College Of Graduate Studies**

**Automation By Using Programmable Logic Controller
(PLC) Application on Metal Spinning Machine at YIC**

الصناعي التطبيق الصناعي للتحكم المنطوق البرمجة في
تطبيق آلة لف المعادن في مصنع

**A Thesis Submitted In Partial Fulfillment To The Requirement
For Degree Of Master Of Science In Electrical
Engineering(Control)**

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قال:

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Dedication

**To My Parents, Wife, Children & Friends. to YIC engineers.
To all those who do their best to know the new technology,**

II

Acknowledgements

I would like to express my deep gratitude to my supervisor Dr. Abed Elrasoul Gabar for his kind help, close supervision, special thanks to YIC for great help On this research.

III

Abstract

This research is to find an approach to how PLC automation control system can implemented, In designing anew PLC control automation replacing an old automation in metal spinning machine, which is composed of contactors (5) &a lot of pieces of electro-mechanical relays.(37).In this old automation a lot of difficulties in trouble shooting in repairing of .wiring connections, which add cost to production process

By using programmable logic controllers (PLC) for hydraulic metal spinning machine at YIC ,machine process gain many advantages compared to the old automation type such as reducing in space ,energy saving, product cost, working labors& losses in time due maintenance. Beside that increasing productivity, greater reliability & effectively in totally eliminating the possibilities of human errors.

New PLC automation give convenient, quick readjustment & functional parameters upon work pieces changes &precise cycle repeating which lead to high quality products &decreasing of waste.

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List of observation

MP	Microprocessor
YIC	Yarmouk industrial complex
PCI	Personal computer interface
PLC	Programmable logic Controllers
DCS	Distributed Control Systems
SCADA	Supervisory control and data acquisition
HCS	Hybrid Control Automation Systems
MP	Microprocessor systems
MCS	Microcontroller systems
I/O	Input/Output
MB	Mega Byte
Kb	Kilo Byte
CPU	Central processing unit
DC	Direct current/voltage
AC	Alternating current/voltage
LCD	liquid crystal display
LED	light emitting diode
ADC	Analogue-To-Digital Converter
LAD	Ladder Programming
STL	Logic Statements
SFC	System Flow Chart Programming
CTD	Count down
CTU	Count up
CV	Count value
CTD/U	Count down/UP
T xx	Timer
DAC	Digital to analog Converter
ASCII	USA Code for Information