

HIGHER TECHNICAL INSTITUTE

ELECTRICAL ENGINEERING DEPARTMENT

DIPLOMA PROJECT

SPRAY FILLING MACHINE USING A  
PROGRAMMABLE LOGIC CONTROLLER

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**SPRAY FILLING MACHINE USING A  
PROGRAMMABLE LOGIC CONTROLLER**

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# **ACKNOWLEDGEMENTS**

## **SUMMARY**

## **INTRODUCTION**

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- Relating briefly to the establishments and persons who gave substantial assistance on this project
- Brief statement of the purpose of the project
- An overview of the problem to be tackled

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## SUMMARY

TITLE: "Spray filling machine using a programmable logic controller"

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This report investigates and provides the programmable logic controller's ladder program of a spray filling machine.

The report also examines the characteristics and capabilities of programmable logic controllers, by analysing the ladder diagram of the machine and by providing all the necessary details about them. It also improves this machine and finally costs the whole work.

The application program, is based on the Allen Bradley SLC 500 PLC instruction manual and the capabilities illustrated were as many as could.

The report was drafted in a form that, a person without any background knowledge, can read it and understand it. The language used, was a simple technical language and pictures and diagrams were used as much as possible.



## INTRODUCTION

Programmable logic controller is extensively used in industry in a variety of applications. The problem discussed in this report, is just one of the many applications of it. The PLC is a **need** for our industry, because of the many advantages that provides, compared to the old fashion relays. Most of our factories in Cyprus use it on their machines, resulting to an increase of productivity and also an increase of their capabilities. The fact that we are walking towards the 21st century and the demand is increasing vertically, is a reason for our industry to be modernised. The PLC gives the power and flexibility for a complete control solution with its advanced programming tools and expanded product capabilities .

This project shows, how a spray filling machine could work properly using a PLC, providing the ladder program. It gives all the steps followed, for the preparation of the program, as usually done by the technicians in industry.

It also discusses, the characteristics and capabilities of programmable logic controller in general.

It uses pictures and diagrams where possible, for better view by the reader and it is divided into eight chapters. It starts with an introduction to the project and then it discusses different topics in different chapters.

**Chapter 1** gives a brief introduction to programmable logic controller and the historical development of it. Also, a comparison is done, between PLC and other control methods.

**Chapter 2** gives a system description and a detailed coverage on the operation of the PLC.

**In Chapter 3** the ladder language and programming characteristics of Allen Bradley SLC 500 programmable logic controller are discussed.

**Chapter 4** shows the basic PLC functions, including all the instructions used in the application case study.

**Chapter 5** refers to the application case study and gives the ladder diagram of the spray filling machine.

**Chapter 6** explains this ladder diagram, rung by rung.

**Chapter 7** refers to some improvements made for the spray filling machine.

**Chapter 8** finally, shows the cost of the work done, using realistic prices.

Also,

the set of appendices at the end of the report consists of:

**Appendix 1** Programming the SLC 500 (Getting Started)

**Appendix 2** SLC 500 specifications (System Overview)