

Higher Technical Institute

ELECTRICAL ENGINEERING DEPARTMENT

DIPLOMA PROJECT

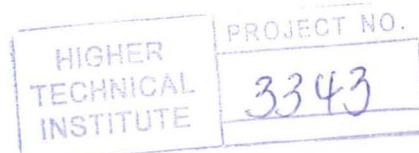
SEQUENCE CONTROL SCHEME OF A
DUST SEPARATOR USING PLC

E/1296

By
PERICLEOUS PANAYIOTIS
3EL1

Supervisor
Mr. JOHN DEMETRIOU

June 2002



Summary

This project provides a Ladder diagram for a dust separator BETH pulse bag filter in order to increase flexibility on the subordinate ladder diagram.

The first five chapters give extended information's about the programmable logic controllers, the main instruction set used, the internal components and also the communication used for the PLC's

Chapter six is referring to the procedure used for the installation of the PLC.

The operation of the BETH pulse filter and factors that affect the ladder diagram like the sequence of the valves are described on chapter seven.

Finally the analysis of the ladder diagram is concluded in chapter eight whereas the ALLEN BRADLEY SLC 5/03 is used with associate RS LOGIX 500 industrial software for programming the Allen Bradley PLC's.

The conclusion and comment for the project is in the last chapter, chapter 9

So study the valuable information about this specific application and discover the PLC on your own, it's worth of trying!

TABLE OF CONTENTS

Pages

Acknowledgements.....	2
Summary	3
Chapter 1	4
1.1 What is a PLC	5
1.2 The History of the PLC	6
1.3 The Guts Inside	8
1.4 PLC Operation	10
1.5 Response Time Concerns	11
1.6 Relays	13
1.7 Replacing Relays.....	14
Chapter 2	16
2.1 Basic Instructions	19
2.2 Output and Input Data Files (Files O0: and I1:).....	21
2.3 Status File (File S2:).....	23
2.4 XIC [Examine if Closed]	24
2.5 XIO [Examine if Open]	25
2.6 OTE [Output Energize].....	26
2.7 OTL [Output Latch]	27
2.8 OTU [Output Unlatch]	28
2.9 OSR [One Shot Rising]	29
2.10 Simple Example	30
2.11 Level Application.....	31
2.12 The Program Scan.....	33
2.13 Latch Instructions	35
2.14 Counters.....	37
2.15 Timers	39
2.16 Timer Accuracy	43
2.17 Master Controls	45
2.18 Math Instructions	47
Chapter 3	50
3.1 Move and Logical Instructions	51
3.2 MOV [Move].....	52
3.3 MVM [Masked Move]	52
3.4 AND [Logical AND Operation].....	54
3.5 OR [Inclusive OR Operation].....	55
3.6 XOR [Exclusive OR Operation]	56
3.7 NOT [Logical Not Operation].....	57
Chapter 4	58
4.1 DC Inputs.....	59
4.2 AC Inputs.....	61

4.3 Relay Outputs	63
4.4 Transistor Outputs	65
Chapter 5	67
5.1 SLC Communication Protocols	68
Chapter 6	71
6.1 Installation Procedure	72
6.2 Install the Processor	73
6.3 Apply Power to the Processor	73
6.4 Load Your Software	74
6.5 Specifications	74
Chapter 7	76
7.1 Short description.....	77
7.2 Functional description.....	78
7.3 PULSE-JET COLLECTORS.....	83
7.4 PULSE SEQUENCE	83
7.5 TROUBLESHOOTING PULSEJET CLEANING SYSTEMS	85
7.6 CAGE INSPECTIONS.....	86
Chapter 8	87
8.1 Program capabilities	88
8.2 Description of the subordinate program	90
8.3 Description of the proposed program	92
Chapter 9 Conclusions	95
APPENDIX	98