

Industrial Automation Using PLC Training

Description

Course Description

This course is aimed at benefiting those engineers and technicians who need to design, commission and maintain automation and process control systems using Programmable Logic Controllers (PLC's).

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The objective of the course is to provide the practicing engineer and technician with the necessary tools to design, specify, configure, install and commission a complete PLC system. The main challenge today is for engineers and technicians to make optimum use of their plant and equipment through automation and process control techniques.

The result of effective automation and process control are products, which cost less and have more controllable quality levels. The PLC is one of the key components in achieving this productivity improvement. PLCs in the past have differed widely in their programming and hardware structure. However there has been a rapid convergence today between different systems from the different manufacturers.

The intention of this course is to approach the PLC as a tool in automation and process control with an emphasis on the different techniques and approaches that should be followed in using it effectively. This approach is distinct from other course, which concentrates on the PLC fundamentals such as the basic instruction sets and the hardware requirements.

Course Objective

The issues that will be discussed are:

- The basic components of a PLC system.
- The fundamental operating principles behind using a PLC.
- Good installation practice.
- Discussion on programming PLCs.
- The PLC as part of a complete Local Area Network The PLC and the operator interface.
- High Security PLC systems.

- Guidelines to troubleshooting of PLCs.
- PLC project specification

Course Outline

- A brief review of each of the chapters in this course is given below. It should be noted that the contents are broken into four main divisions.

Review of the Programmable Logic Controller

- This serves to introduce the PLC and review the fundamentals of PLCs. This comprises:

Introduction

- An introduction to the objectives and summary of the contents of the manual and the essentials of a PLC and related systems

Fundamentals of PLC's

- The specific details of a typical PLC examined mainly from a hardware point of view.

Programming Techniques

- The typical software used on a PLC, comparing different Techniques – similarities and differences.

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Good Installation Practice

- Attention to good installation practice of a PLC system results in an effective system.

System Techniques

- The combination of a variety of techniques and modules of hardware and software products or systems

Data Communications

- The RS-232/RS-485/Ethemet interfaces and software protocols are considered.

Operator Interfaces

- Overall consideration from a design point of view and the interface to the PLC

High Security PLC Systems

- PLCs used in an ultra reliable situation

Troubleshooting

Problem Isolation, Troubleshooting and Maintenance

- An examination of all aspects of identifying and locating problems of a PLC system but from a hardware and software point of view

The Project

- No matter how small or large a PLC system is, there is a methodical way of putting the system together to minimize the overall costs and to achieve an effective control system.

Functional Specification of the System

- A detailed description of the hardware and software required for implementing the system.
- Also, a set of appendices provides the necessary background reference material to the material contained in the main chapters:
- APPENDIX “A” Numbers and Data
- APPENDIX “B” Ladder diagram instructions

APPENDIX “C” PLC Programming Examples

- APPENDIX “D” PLC applications
- APPENDIX “E” Combined Glossary of Terms

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