IE150:
PLC Architecture Instructions
Programming
Training Description:

This intensive course covers PLC or Programmable Logic Controller was an intelligent system of modules which were introduced in the Control & Instrumentation Industry for replacing relay based logic. Exact history is not known to me but this is an accepted belief. Over a period of time, better I/O handling capabilities and more programming elements have been added along with improvements in communication and thus this product (PLC) is capable of doing almost anything in I&C.

Soft PLC is a product. Soft PLC if you mean Software PLC is a PLC implementation on a PC. The only difference here should be the use of commercial PC’s instead of prop. Hardware designs. The second design difference (on theory) should be that in Software PLC the OS is commercial and there is a user program, while PLC has an embedded firmware. So, any SOFTWARE PLC which embeds its software into the PLC and it becomes a firmware should then become a PLC. PLC has proven itself in the market in very critical applications. Please note that here critical does not mean the same critical as in PC systems and servers. PC automation is still in its infancy stage and reliability is an issue.

In this course PLC Fundamentals and Technologies will be covered. Course is aimed at PLC Architecture Design, Programing and Maintenance of Installation, Designs and Trouble shooting. This course is ideal for Engineers, Highly Qualified Technicians who want to know PLC with Industrial Applications.

Training Objective:

By the end of the training, participants will be able to:

- Understand Fundamentals of PLC and Tips of Installation
- Understanding the Wiring Diagram of PLC and how to approach any fault
- Understanding Program Control Instruction and PLC Futures
- Identify if the PLC is still active and that there are no communication errors with the I/O or other coupled PLC’s, and SCADA applications
- Determine that the signal of the ‘suspected’ unit will show at the correct PLC reference
- Start the programming software and to make the internal I/O status of the signal visible to call the ‘suspected’ section in the program and to make timer and counter files visible
- Read the documentation, understand the structure of the PLC and be aware of the most commonly used PLC Instructions
- Cross reference electrical drawings to a PLC program and to make links or to develop connections that change the program conditions. Programming a counter and time measurement is desirable

Training Designed for:

This course is intended for Industrial Engineers, Plan Supervisors those involved in Planning, and Maintenance Department.
Training Program:

**DAY ONE:**
- PRE-TEST
- Introduction
- **Module (01): Basic Hardware of PLC**
  - PLC Definition & its Requirement in Automation
  - PLC Components
  - Different Terms used in PLC
  - Selection Criteria for PLC
  - Block Diagram of PLC
  - Function of Each Module
- **Module (02): Wiring Diagram & PLC Software**
  - Wiring Diagram
  - Sink and Source Concept
  - Software Switching on Process
  - Different Features Available in Software
  - Different Symbols used in Program

**DAY TWO:**
- **Module (03): Programming Concepts**
  - Basic Ladder Language Rules
  - Ladder Diagram
  - Instruction List
  - Function Blocks
  - NO & NC Concept
  - Software Logic (Program) Writing
  - Logic Gates
  - Timer Concept its use in Programming
- **Module (04): Programming & Communication**
  - Timer concepts and its use in programming
  - Software development of real time project
  - Programming with Mathematical Instruction
  - Real time Program Practice

**DAY THREE:**
- **Module (05): PLC Timers & Counters**
  - Types of PLC Times
  - On-delay Timers
  - Off-delay Timers
  - Pulse Timers
  - Functions of PLC Timers
• Types of PLC Counters
• Examples for using PLC Counters

❖ Module (06): Faults and Documentation
• Troubleshooting of Different Faults
• Documentation of PLC Projects
• Concept of Flag
• Concept of Force

DAY FOUR:
❖ Module (07): PLC Features
• Different Features Available in PLC
• CPU Indicators
• Bit Shift Instructions
• Programming on Bit Shift
• Interrupt Function

❖ Module (08): PID and System Bit
• PID concept
• PID addressing and programming
• System bit and its use in program
• Real time projects practice

DAY FIVE:
❖ Module (09): Ladder Diagram for PLC Applications
• Ladder Logic Rung Format.
• Examples of relay type instructions.
• Ladder for Logic functions.
• PLC communications.
• Connection of PLC input sensors
• Connection of PLC output coils.

❖ Module (10): Practical Examples on Real PLC
• Introduction to the Real PLC Software.
• How to write your PLC Ladder Programs
• Implementation the example programs
• Down Load and up Load the Programs
• Program Execution and Monitoring
• Example Programs for Logic Functions
• Start-Stop Motor
• Motor Reverse Direction
• Other Applications

❖ Course Conclusion
❖ POST-TEST and EVALUATION
Training Requirements:

“Hands-on practical sessions, equipment and software will be applied during the course if required and as per the client’s request.”

Training Methodology:

This interactive training course includes the following training methodologies as a percentage of the total tuition hours:

- 30% Lectures, Concepts, Role Play
- 30% Workshops & Work Presentations, Techniques
- 20% Based on Case Studies & Practical Exercises
- 20% Videos, Software & General Discussions
- Pre and Post Test

Training Certificate(s):

Internationally recognized certificate(s) will be issued to each participant who completed the course.

Training Fees:

As per the course location - This rate includes participant’s manual, hand-outs, buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

Note: The 5% VAT (Value Added Tax), will be effective starting 01st of January 2018 as per the new regulation from the UAE Government. The VAT applies for all quotation both for local and abroad.

Training Timings:

Daily Timings:
- 07:45 - 08:00  Morning Coffee / Tea
- 08:00 - 10:00  First Session
- 10:00 - 10:20  Recess (Coffee/Tea/Snacks)
- 10:20 - 12:20  Second Session
- 12:20 - 13:30  Recess (Prayer Break & Lunch)
- 13:30 - 15:00  Last Session

For training registrations or in-house enquiries, please contact:
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Training & Career Development Department