



**Lkode Automation**

*Think To Automate*



# **Diploma In Advanced Industrial Automation**

## **Purpose**

The purpose of the above exercises is to introduce to students for Diploma In Advanced Industrial Automation.

For Engineers who want to understand the basics of automation and may wish to have a career in automation Engineering or to establish spectrum to learn in depth the intricacies of automation, Course starts from the basics and the greater time duration ensures perfection

## **Who Should Attend?**

Now days it is requirement of every engineer who works in the field of engineering needs the knowledge of automation engineering, today's engineer shall be a multi skill and multidisciplinary There is no scope than Automation in any engineering process operation

This Workshop will benefit those who will be programming, installing equipment, maintaining equipment, purchasing or implementing cost reduction and automation programs, or maintaining and troubleshooting PLC based Automation Systems Manufacturing Engineers

Industrial Engineers, Plant Operations Managers, Maintenance Personnel or other personnel involved in planning, design and setup of manufacturing facilities and personnel who encounter control systems in their course of daily functions should also attend

## **Recommended Prerequisites:**

The attendee should have an understanding Of Process Instrumentation, Conceptual Knowledge of PLC Analog and Discrete Processing in Ladder, Data types used in PLC, We recommend the student attend / prepare either Electrical Fundamentals or Basic Industrial Electronics & Process Instrumentation before attending the PLC seminar The attendee should also have elementary knowledge of personal computers in a Microsoft Windows@ environment

# Study Of Components

- Sensors ( PNP, NPN, Proximity, Inductive, Capacitive, Magnetic, Optical)
- Analog Sensors (Temperature, Pressure, Capacitive)
- Relays ,Contactors, OLR SSR,PID,
- Temperature Controller
- Circuit Breakers,
- Timer, Counter. Rate Indicators
- Switchgears (Limit s/w, ss, pb,)

## PLC

- Introduction to PLC hardware
- START/STOP LOGIC
- Architectural Evolution of PLC
- Role of PLC in Automation
- Introduction to the field devices attached to PLC
- AB PLC fundamentals
- PLC component ( Power supply, CPU, I/O Modules, Communication Cards )
- Various range available in PLC
- Type of inputs & Outputs
- Source sink Concept in PLC
- Scan cycle execution
- Introduction of PLC software
- Addressing Concepts
- Programming instructions
- User & Bit (XIC, XIO, OTE, Latch, Unlatch, ONS,OSR OSL)

- All About Timers & Counters.
- Compare, Compute / Math Instruction
- MOVE/ Logic Instructions, File Handling
- Program Control
- Analog Scale With Parameter
- Upload, Download, Monitoring programming
- Standard Procedure For Ladder Drawing
- Hands on experience on writing programs
- (Basic To Expert Level)
- Forcing I/P & O/ P
- Troubleshooting and fault diagnostics of
- PLC
- PLC Communication

## **SCADA**

- Introduction To SCADA
- SCADA Architecture.
- Selection and Requirements of Components.
- Introduction To SCADA Software.
- Creating a new SCADA application,
- Creating Database of Tags,
- Creating & editing graphic display with animation
- Creating Real-time & Historical Trends
- Creating Alarms & Events
- Writing logic through script
- Connectivity with the different hardware
- Connectivity between software

- Commissioning the network nodes
- Troubleshooting the application
- Security

## **HMI**

- Interfacing & Networking with PLCs
- Creating Screen
- Creating Tag Database
- Navigation between Screens
- User Input / Outputs Display
- Generating Alarms Security
- Historical & Real Time Trends, Recipes
- Uploading / downloading Application Communication & Troubleshooting

## **DRIVE**

- Motor Basics.
- Basics of Drives.
- Selection of Variable Frequency Drive
- VFD Parameters As per requirement.
- Selection of Peripheral Devices,
- Fault Identification and Troubleshooting.
- Servo : Selection
- Position Control.
- Homing Methods
- Troubleshooting,

## **PID**

- Introduction To P&ID.
- Symbols used in P&ID
- Process Flow
- Reading P&ID
- Drawing P&ID

## **Pneumatics**

- What is Pneumatics.
- Terminology & Symbols used in Pneumatics.
- Compressed Air.
- Compressor Types, Working & Operations
- Air Dryers,
- Filters.
- Water Separators,
- Air Distribution System.
- Direction Control Valves.
- Flow & Pressure Control Valves.
- Filters Regulators & Lubricants.
- Standard Circuits
- Practical on PLC Based Pneumatic System.
- Troubleshooting Pneumatics System.

## **Hydraulics**

- Introduction To Electro-Hydraulics.
- Terminologies & Symbols.
- Basic Hydraulic System
- Hydraulic Components (Pumps, Actuators

- Cylinders, Direction Control Valves, Flow
- Control Valves, Pressure control Valve,
- Pipes, Hoses, meters, Accumulators etc.)
- Practical Experiments on Hydraulic System
- Troubleshooting In Hydraulic Industrial

## **Electricals & Electronics:**

- Basics Of Electronics
- Introduction To Electrical Hardware.
- Single & Three Phase System.
- Electrical Components
- Basic Concept of Electromagnetic Relay.
- NO NC Contacts.
- Hold On Circuits,
- Power And Control Circuits.
- Star Delta Starter
- Interlocking hooting.

## **Electrical Drawings**

- Basics of Control Panel Drawings.
- Symbols Used In Drawing.
- Reading Electrical Drawing
- Introduction To Software
- Editing & Managing Projects
- Using Graphical Editor
- Dimensions,
- Editing Schematics



- Editing Terminals, Cables, Plugs & PLC Info
- Practical Examples
- Hands on Experience on Drawing