



INDUSTRIAL AUTOMATION



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PLC & PAC

- ⚙ Architecture of industrial controllers and It's Different Modules.
- ⚙ Industrial Controller Programming.
- ⚙ Memory mapping (IO addressing)
- ⚙ Connection (communicate), upload, download, monitoring the Process through in Controller.
- ⚙ Digital and Analog Addressing.
- ⚙ Analog scaling
- ⚙ NO/NC Concept, Forcing I/O
- ⚙ Basic and advance level programing with instruction and concepts
- ⚙ Troubleshooting
- ⚙ Selection of controller
- ⚙ Inter connection (communication with peripheral)

Field Decides

- 🔧 Field device Types digital and analog
- 🔧 Technical Terms Used In Instrumentation
- 🔧 Sensors with – Sinking, Sourcing, NPN, PNP etc.,
- 🔧 Switches, Push Button, Limit Switches, Level Sensors, Thermo Couples, Pressure Gauge, Proximity Switches, RTD Etc.
- 🔧 Final Control Elements- lamp, pilot lamp, Relay, Motor Actuators, Solenoids, Bellows, Manual Valves, Solenoid Valve, Control Valve etc.
- 🔧 Control Station Field Configuration
- 🔧 Peripheral Device Connectivity

SCADA/HMI

- 🔧 Engineering station design
- 🔧 Monitoring and Control of Process.
- 🔧 Role of SCADA in Industrial Automation
- 🔧 SCADA System Configuration, RTU, Communication Protocols
- 🔧 Tagging Internal & External with link.
- 🔧 Script Programming
- 🔧 Real Time and Historical Trend
- 🔧 Configuring Alarms
- 🔧 PLC Interfacing (communication include OPC)
- 🔧 Communication with other Software (DDE)
- 🔧 Recipe Management
- 🔧 Data File Handling
- 🔧 Security Levels Access.
- 🔧 Generating Report.
- 🔧 Interfacing with Controller.
- 🔧 FIO, industrial simulation

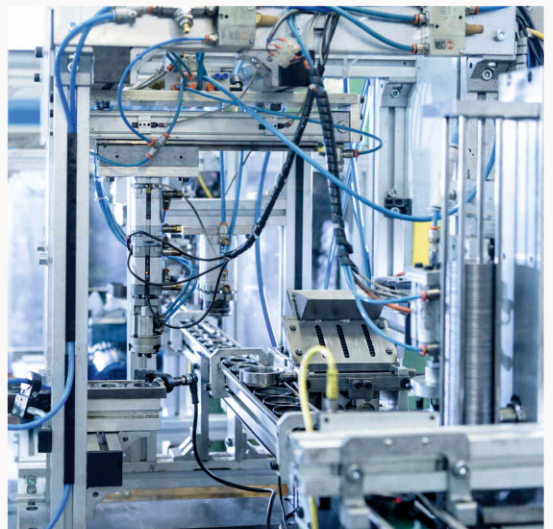


OPC

Need of OPC
Structure of OPC
Protocol
Multi brand integration
Brand value
Communication importance.
Communication Standards- DF1, Ethernet,
DH45, RS232, RS485, Profibus, proji Net etc.

HMI

Operator station design
Operator Interfaces Types
Textual, Graphical, animation
Interlocking tagging.
HMI assembling and Wiring
HMI Data Handling
Configuration and Interfacing To PLC & PC
Control Station Field.
Human Interface Station
Display Panels Operation
Human Interface System Utility Functions
Human Interface Station Configuration



VFD

- ⊗ Principle of Starters and Variable Speed Drives, soft starters.
- ⊗ Electric Motors Types.
- ⊗ Configuration and Installation of VFDs
- ⊗ Motor Drives- AC Drives and DC Drives
- ⊗ Drives Types.
- ⊗ Drives Architecture.
- ⊗ Speed Control Using VFDs
- ⊗ Signaling
- ⊗ Different Modes of Control the VFDs
- ⊗ VFD connect with PLC through field and Communication.
- ⊗ Filter installation.
- ⊗ Selection



CPDW

- ⊗ Panel and its type.
- ⊗ Power and control wiring.
- ⊗ PLC Wiring and Fault Correction
- ⊗ Power Supply Unit, external Peripheral
- ⊗ Components Installed in a Panel
- ⊗ Wiring Details of Panel
- ⊗ Physical Dimension of Components with Specification
- ⊗ Electrical panel and P&I Diagram
- ⊗ Electrical panel and Control Drawing
- ⊗ Standard Procedures with Earthing and Cabling a Panels.
- ⊗ Safety and Management Concepts of Designing a Project
- ⊗ Wiring and Commissioning for a complete Automation station.
- ⊗ Wiring and Fault Correction
- ⊗ Peripheral Device Connectivity
- ⊗ Standalone Panel designing
- ⊗ Centralized and decentralized panel Arrangement
- ⊗ Panel arrangement ideology.



Electrical Panel

- ☒ Starter for 3 Phase Motors DOL, Star Delta, Forward reverse.
- ☒ Functions and installation of Starters and Variable Speed Drives in panel.
- ☒ Contactor and relay arrangement
- ☒ Protection and measuring and metering unit installation.
- ☒ Motors Construction Operating
- ☒ Power consumption calculation and Selection of panel
- ☒ Contactor, MCB, MCCB, ELCB, ACB, SDF Etc.

Relay Logic

- ☒ Relays and it's types
- ☒ Latching and unlatching ideology.
- ☒ Start and stop with 2c and 3c.
- ☒ Preprogrammed Controllers – On/Off, Proportional, Derivative, Integral and PID Control
- ☒ Control Circuits Using Contactors, Relays, Timers Etc.,
- ☒ Automation system using only Relay and External preprogrammed controllers
- ☒ Standalone system design.

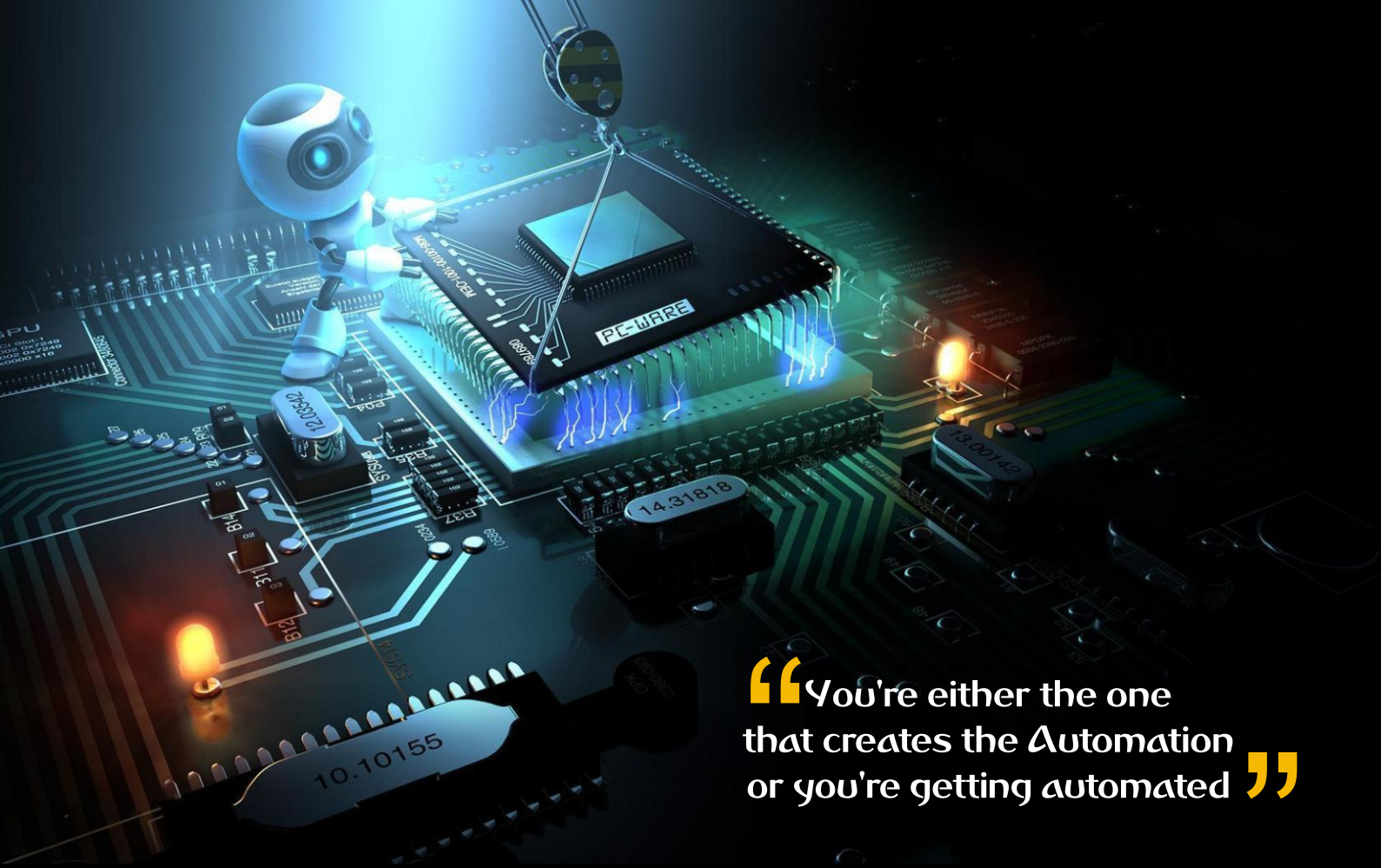
DCS

- ☒ Architecture of DCS
- ☒ Comparison of PLC with DCS
- ☒ Programming Languages for DCS
- ☒ Cards Types and Their Functions

Industrial 4.0

- ☒ Smart field devices
- ☒ Industrial Controller
- ☒ Drives and system operation control
- ☒ Visualization
- ☒ Interfacing devices
- ☒ Remotely accessing methodology (include IIOT, HART etc.,)





“You’re either the one that creates the Automation or you’re getting automated”

KEYENCE

DELTA
Smarter. Greener. Together.

**Rockwell
Automation**

Citect

SIEMENS

**MITSUBISHI
ELECTRIC**
Changes for the Better

OMRON

**Schneider
Electric**

Wonderware

Allen-Bradley

WinCC
Professional

iFIX
HMI/SCADA Automation Software

FACTORY I/O


Ex KEPServerEX

Altivar

PowerFlex
525



AMBIT AUTOMATION

 1st Floor, Raja Arcade, pullepady, Chittoor Road
Cochin, Kerala, India - 682035

 **+91 484 486 3886, +91 799 42 55 999**

 **training @ambitautomation.in**