SQUAREWAVE
AUTOMATION TECHNOLOGIES PVT LTD

YSPM
Yashoda Technical Campus, Satara
Faculty of Engineering

ISO 9001:2015 Certified Company

www.squarewavetech.in

PLC | HMI | IoT | Servo Drive
VFD | Pneumatics | Control Hardware |
Control Panel Design & Software |
Electrical Drawing Preparation |
Robot | SCADA

INSPIRING THE FUTURE OF INDUSTRIAL AUTOMATION

Training for Diploma, Graduates, Engineers & Working Professionals

"सध्याचे युग हे तंत्रज्ञानाचे युग आहे. आपण पहातोच आहे की रोज नवनवीन विकसित तंत्रज्ञान आपल्या समोर येत आहे. रोबोटिक्स, आर्टिफिशियल इंटेलिजन्स, आय ओ टी यासारख्या स्वयंचलित यंत्रणांचा वापर करून आपल्या रोजच्या जीवनातील बऱ्याच गोष्टी सोप्या झाल्या आहेत. मग ते उद्योग, वाहतूक, मेडिकल, शेती, बँकिंग ह्या आणि अशा अनेक क्षेत्रात त्याचा वापर होताना दिसतोय. बऱ्याच लोकांचा असा देखील समज आहे की या ऑटोमेशन तंत्रज्ञानाच्या वापरामुळे रोजगाराच्या संधी कमी होतात, हे काही अंशी जरी खरे असले तरी या तंत्रज्ञानासाठी कुशल मनुष्यबळ विकसित होणे गरजेचे आहे, आणि त्या कुशल मनुष्यबळाची मागणी संपूर्ण जगभरात वाढत आहे. एकीकडे आपली पारंपारिक शिक्षणपद्धती आणि दुसरीकडे रोज नवनवीन विकसित होणारे तंत्रज्ञान याचा ताळमेळ बसत नाही. कुशल दर्जाचे मनुष्यबळ आपल्या ग्रामीण तसेच निमशहरी भागात तयार करणे आणि अतिशय कमी किमतीत उपलब्ध करून देणे यासाठी आम्ही कटिबद्ध आहोत.

म्हणूनच आम्ही आमच्या प्रदीर्घ अनुभवावरून **"Squarewave Automation Technologies Pvt Ltd"** या कंपनीची स्थापना केली. पश्चिम महाराष्ट्रात इंडस्ट्रिअल ऑटोमेशन या तंत्रज्ञानातील कुशल मनुष्यबळ तयार करणे आणि या तंत्रज्ञानाने लोकांच्या आयुष्यात बदल घडवून आणणे यासाठी आम्ही कायम प्रयत्नशील राहू."

Squarewave Automation Technologies Pvt Ltd

COURSE CONTENT

1 Electrical Drives and Controls

Working details of different types of electric motors | Motor Drives - AC Drives and DC Drives | Programming and installation of VFDs | Various techniques to control VFD-two wire, three wire, analog output etc | Discrete and continuous speed control using VFDs | VFD control using PLC | Configuration of VFD using modbus protocol | Application with mitsubishi D 700 drive

2 Field Instrumentation

Different types of sensors - analog and discrete | Technical terms used in instrumentation | Introduction to different process controls | Thermo couples, RTD, pressure gauge, level sensors, proximity switches, limit switches etc | Final control elements - solenoid valve, control valve, motor actuators, solenoids, bellows, manual valves etc | Concept of process control techniques | process controller tuning methods | Wiring & commissioning of plant with PLC

3 Programmable Logic Controllers (PLC)

Architecture of PLC- different modules, power supply unit etc | Programmable logic controllers (PLC). – siemens S7-1200, delta, Mitsubishi FX-5U PLCs | Prgrammming language-TIA portal, GX works 3, WPL soft. need of PLC In designing | Different types of sensors - sinking, sourcing, NPN, PNP | Programming of PLC using different ladder diagram, function block | Maintenance and troubleshooting of PLC and modules | RS232-422-485, ethernet standards for programming | Monitoring the process through sensors - connection details | Analog addressing, continues process monitoring and control | Different types of controllers - ON/OFF, proportional, derivative, integral and PID control | PLC programming of branded PLCs. | NO/ NC concept | Data file handling - forcing I/O | Wiring and fault correction | Programming practices | Analog input/output control and scaling

4 Supervisory Control And Data Acquisition (SCADA).

SCADA packages-concept | Role of SCADA in industrial automation | SCADA system configuration, RTU, communication protocols | Real time and historical trend | Configuring alarms | Real time project development with PLC interfacing | Recipe management | Accessing different security levels | PLC SCADA communication

5 Human Machine Interface

Different types of operator interfaces, textual, graphical | Wiring practice of HMI | Data handling with HMI | Configuration and interfacing to PLC | Communication ethernet, Rs232 | Alarms, trends, security on HMI, data loging | Recipe management | Live project of HMI

6 Control Panel Designing

Different types of panels. | Basic components to be installed in a Panel | Wiring details of panel | Basics of relays, contactor, MCB, MCCB, ELCB, ACB etc | Designing of control circuits using contactors, relays, timers etc | DOL, star delta starter designing for 3 phase motors with specification | Earthing and cabling of panels - standard procedures | P&I diagram preparation with designing software

7 Pneumatics

Theories of compressed air | Operation & function of Pneumatic system components | Design & drawing of air symbols | Dryers, air receivers | Compressorso Pneumatic actuators | Air distribution systems | Directional valves | Flow valves | Fault-finding & trouble shooting of compressed air control circuits | Guidelines for industrial safety

8 Servo Drives

Introduction to servo drives | Difference of AC servo drive and DC servo Drive | Sections on AC servo drive | AC servo drive operation and different modes (speed, torque) | Analog /digital inputs and outputs of AC servo drive | Controlling of servo drive with PLC | Configuration of servo system

9 Robot

Introduction to robot | Axis over view | Basic programming | robot teaching | Robot referencing | Hands on practical on physical robot

10 Raspberry pi with Python Language

Basic electronic components / analog & digital electronics· basic python programming | Python programming (python syntax / print / data types / keywords / variables / condition statements (if/ if else/ else if)/ loops (for / while/do while) etc,) | Raspberry pi 3b | LED / push button interfacing | 7 segment interfacing | LCD interfacing | Sensors interfacing | Camera interfacing | Data loging on cloud network

11 Arduino Programming

Introduction to IoT | Fundamental study | Arduino basic | Arduino –consist of 2 small projects

KEY ELEMENTS

▸ **Customised cources available**
▸ **Expert faculties**
▸ **Dedicated placement cell available**
▸ **Well equipped automation lab & infrastructure**

**Course: Certified Automation Engineer
Duration: 150 Hrs.**