



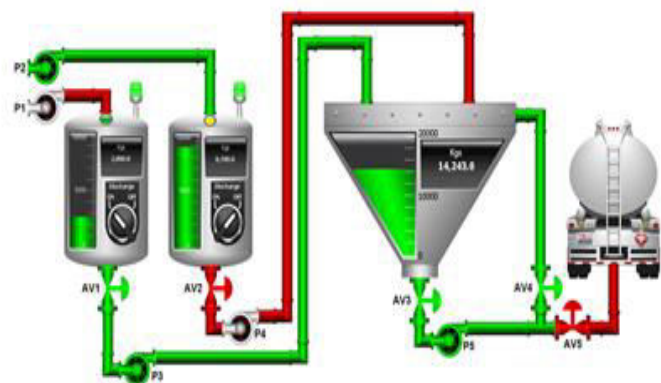
**Embedded Technosolutions**

Venture of IIT Bombay & VJTI Alumni

**3 Times IIT Bombay Robo Competition Winner**

**Industrial Certified  
PLC Automation Developer**

**All India Council For Technical Skill  
Development (AICTSD)  
In Association with  
IITians Embedded Technosolution**

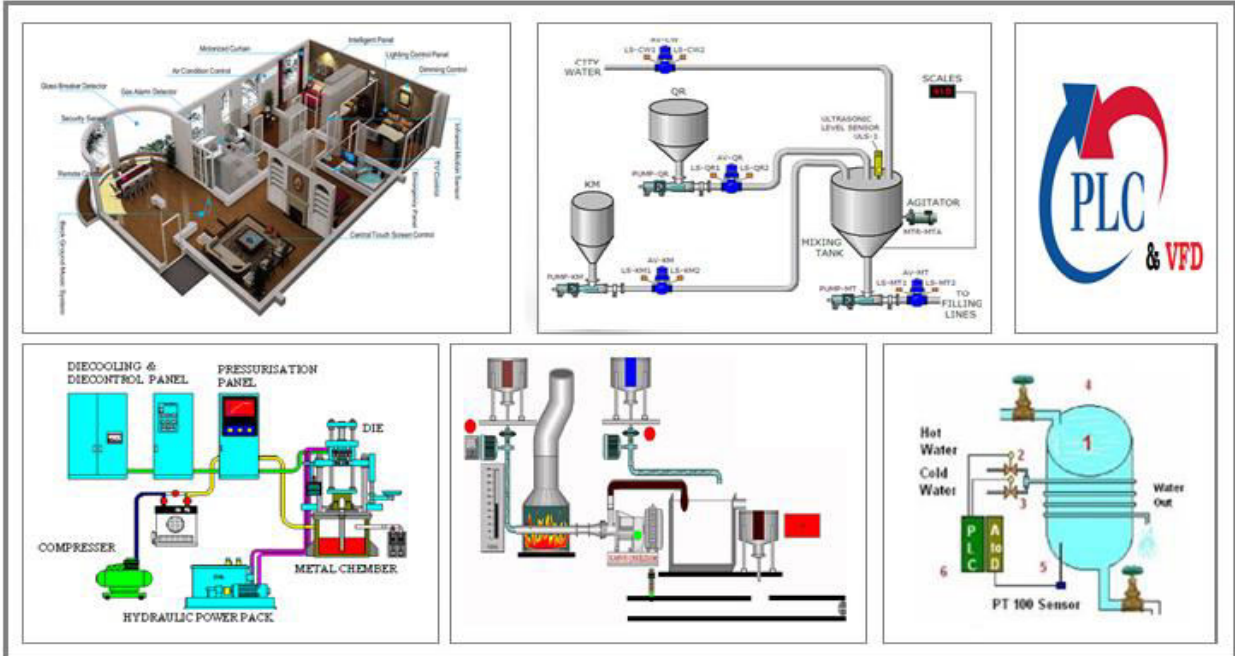




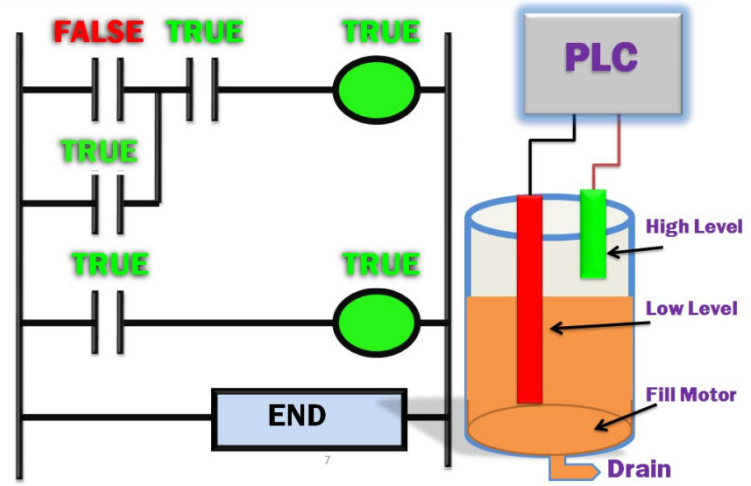
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## How Does A PLC Work?





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**B R A N D**

**PROMISE**

**We Guarantee You that, You Can Develop Your Projects by  
Your Own After This Training Program**



## **PLC Automation**

### **Module 1 - PLC Introduction**

- Introduction to PLC hardware and role in automation
- Architectural Evolution of PLC
- Introduction to the field devices attached to PLC

### **Module 2 - PLC Hardware Fundamentals**

- PLC Fundamentals - (Block diagram of PLC's)
- Detail information about PLC components → Power supply, CPU, I/Os, Communication bus
- Various ranges available in PLC's



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### **Module 3 - Hardware & Software Component**

- Identifying Logix System hardware and software Components

### **Module 4 - Source & Sink Concepts**

- Types of Inputs & outputs / Source Sink Concepts
- Wiring of the I/O devices

### **Module 5 - Timing & Scan Cycles**

- Concept of flags
- Scan cycle execution

### **Module 6 - PLC Configuration**

- Setting up PLC's/Connecting CPU, I/O modules, Rack, Backplane and Communication bus

### **Module 7 - PLC Communication Interfaces**

- Connecting a Computer to a Communications Network

### **Module 8 - PLC Software Settings**

- Installing and to starting the programming terminals
- Creating & Modifying an RSLogix new project
- Transferring a Project File to a Logix5000 Controller



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## **Module 9 - PLC Communication Interface**

- Identifying the status of PLC and communication bus

## **Module 10 - Tags & Data Monitoring**

- Creating Tags & Monitoring Data in an RSLogix 5000 Project
- Forcing of the I/O's

## **Module 11 - File Management**

- Managing RSLogix 5000 Project Files
- Back up of the programs and reloading

## **Module 12 - PLC Programming Logics**

- Creating various Tasks
- Organizing Data
- Entering, Editing, & Verifying Ladder Logic
- Configuring Logix5000 Controllers to Share Data
- Configuring a Message
- Documenting & Searching for Project Components



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## **Module 13 - PLC Programming**

- Identifying Programming Strategies & Techniques
- Documenting & Searching Ladder Logic
- Programming Basic Instructions
- Programming Timer & Counter Instructions
- Programming Program Control Instructions
- Programming Compare Instructions
- Programming Compute & Math Instructions
- Programming Move Instructions
- Programming with Advance Instruction Set

## **Module 14 - PLC Programming & Instructions**

- Creating a Function Block Diagram
- Programming Logical Function Block Instructions
- Programming Timer & Counter Function Block Instructions
- Programming Analog Function Block Instructions
- Programming Timing Modes in a Function Block Instruction



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- Programming & Monitoring an RMPS (Ramp/Soak) Function Block Instruction
- Controlling Program Flow Using Function Block Instructions

## **SCADA - Automation & Simulation**

### **Module 1 - SCADA Introduction**

- Introduction
- Industrial Automation Basics
- Basic Knowledge
- Data & Communications

### **Module 2 - Various SCADA Options**

- Types of SCADA & Different SCADA Products.
- Project overview
- Project Management
- Running the Project

### **Module 3 - SCADA Animation**

- Graphical Animation
- Web Buttons



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- Slider Movement
- Visibility
- More Animations

### **Module 4 - SCADA Scripting**

- Server-side Scripting
- Client-side Scripting
- Many side scripting

### **Module 5 - HTML & Database**

- HTML Basics
- Database





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## Embedded Arduino

### Module 1 - Introduction

- Introduction to Embedded System with Arduino
- Scope of Arduino in Embedded Systems

### Module 2 - Arduino Architecture

- Introduction to Arduino series
- Hardware architecture of Arduino controller Series
- Controller I/O ports
- Memories of controller
- Concept of Serial communication ,Interrupt etc.

### Module 3 - Arduino IDE

- Introduction of Embedded Arduino Software
- Introduction of Embedded C Programming and programming concepts for Arduino
- Introduction of program flashing and error correction



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## **Module 4 - Arduino IO Interface**

- I/O interfacing concept
- Led Blinking logic and delay generation routine

## **Module 5 - LCD Interfacing**

- Character LCD 16x2 interfacing logic and concept
- Introduction of LCD command and data signals
- LCD based programming
- Practical project based on character LCD

## **Module 6 - Keypad Interfacing**

- Matrix keypad interfacing logic and concept
- Introduction of key pad interfacing using polling method
- Matrix keypad programming
- Practical project based on matrix keypad

## **Module 7 - Serial Communication**

- Introduction to serial communication
- Serial communication concept
- Introduction of serial communication firmware and registers



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- Serial communication programming
- Practical application based on Serial communication

### **Module 8 - Interrupt & Execution**

- Introduction of interrupts in controller
- Interrupt logic and concept
- Interrupt routines / programming
- Key interfacing using interrupt
- Practical application based on interrupt

### **Module 9 - ADC Interfacing & Applications Designing**

- Introduction of ADC
- ADC interfacing
- ADC programming

### **Module 10 - LDR Interfacing & Applications Designing**

- Introduction of LDR technology
- LDR technology interfacing in real application
- LDR programming
- Practical project design based on LDR technology with Arduino



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## **Module 11 - RFID Interfacing & Applications Designing**

- Introduction to RF & RFID communication
- RFID technology interfacing in real application
- RFID module programming
- Practical project design based on RFID technology with Arduino

## **Module 12 - I2C Protocol Interfacing & Applications Designing**

- Introduction of I2C Protocol
- I2C protocol interfacing in real application
- I2C module programming
- Practical project design based on I2C protocol with Arduino

## **Module 13 - Bluetooth Interfacing & Applications Designing**

- Introduction of Bluetooth Communication
- Bluetooth technology interfacing in real application
- Bluetooth module programming
- Practical project design based on Bluetooth technology

## **Module 14 - Project Designing & Development**

Practical designing of a project based on above technology with Arduino



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	<b><u>Live Projects</u></b> :
	<b>PLC Automation Based</b>
<b>1</b>	Traffic Light System Designing
<b>2</b>	Water Level Control System Design - Logic 1
<b>3</b>	Water Level Control System Design - Logic 2
<b>4</b>	Water Level Control System Design - Logic 3
<b>5</b>	Building Pump Automation Designing
<b>6</b>	Auto Control Sequential Systems - Logic 1
<b>7</b>	Auto Control Sequential Systems - Logic 2
<b>8</b>	Auto Control Sequential Systems - Logic 3
<b>9</b>	Emergency Trapping System Designing
<b>10</b>	Bottle Filling Machine Designing
<b>11</b>	Both Hand Controlling System
<b>12</b>	Burglar Alarm System



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	<b><u>Live Projects</u></b> :
	<b>SCADA Development Based</b>
<b>1</b>	Tank Filling
<b>2</b>	Building Water Management System
<b>3</b>	Password Protected System
<b>4</b>	Hydraulic Press (Both Hand Logic)
<b>5</b>	Bottle Filling System
<b>6</b>	Practical Interfacing of SCADA Systems to PLC Hardware to control Plant from remote Locations.



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## **Live Projects :**

### **Embedded Arduino Based**

<b>1</b>	Traffic Light System
<b>2</b>	RFID Security System Based Door Authentication
<b>3</b>	Bluetooth Controlled Home Automation
<b>4</b>	Wireless Appliance Controlling System using Android App
<b>5</b>	Notice Board
<b>6</b>	Room Temperature Controlling System with PC Interface
<b>7</b>	Password Protected Locker System
<b>8</b>	Motor Controlling System
<b>9</b>	Light Intensity Operated System