

# Certified Courses



# SIMATIC S7 PLC Programming - Basic Level based on S7-1500

## Why Attend

- The main aim of this course is to provide the participants with basic knowledge about Siemens PLC Programming, to create or to modify Step 7 PLC programs and to find PLC program faults.

## Course Methodology

- The course is hands on with great emphasis on the practical aspects of Programmable Logic Controller applications. The course is based around Siemens S7-1500 range of PLCs using TIA Portal.

## Course Objectives

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

- The course objectives are to provide the participants with the knowledge and skills to enable them to work with Siemens S7 (1500 / 1200 controller series).
- On completion of this course the participant will be able to do the following:
- Understand the fundamentals of interaction of the TIA components
- Solve simple programming tasks using elementary STEP 7 instructions
- Reliably operate the "TIA Portal" engineering platform
- Program simple plant functions with basic STEP 7 instructions predominantly in ladder diagram (LAD)
- Perform simple commissioning of TIA components
- Monitoring PLC software using Code or Variable Tables
- Forcing Variables

## Target Audience

- Electrical and instrumentation technicians and engineers

## Target Competencies

- Oil & Gas
- Food & Beverage
- Cement
- Chemical Industry
- Mining
- Fertilizers
- Pharmaceutical Factories.
- Water and Waste Water station
- Customers who already have in their plants S7-1200 / 1500

Overview of the SIMATIC S7 system family

The components of the TIA Portal: STEP 7, WinCC

The basic structure of a SIMATIC S7-1500

Role of input and output modules

Presentation of programming languages LAD, FBD, STL programming in TIA Portal

Global variable categories, data types and addressing modes

Elementary logic instruction set

Numerical Instructions

Arithmetic Instructions

Program execution in automation systems

Hardware configuration and parameterization of the SIMATIC S7-1500 modules, a PROFINET IO system

STEP 7 block types and program structuring

Binary and digital operations based on TIA Portal

Programming of different block types FCs / FBs

Error organization blocks

Output diagnostic messages

Distributed Peripherals

Data management with data blocks

Programming organization blocks

Test tools for system information, troubleshooting and diagnostics

Using TIA PORTAL software for troubleshooting

Detecting and eliminating software errors, that lead to the CPU Stop state

Detecting and eliminating logical software errors

Saving and documenting program changes that were made

Program documentation and saving

Deeper understanding of contents through practical exercises on TIA system model

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