

TIA University- TIA Test Drive

Totally Integrated Automation Test Drive

General Information

Event Code: TBD
Length: 1 Day

Audience

This event is for Engineers and Automation Specialists requiring an introduction to the fundamental aspects of engineering automation solutions by applying Totally Integrated Automation concepts in accordance with recommended best practices.

The event assumes experience in other manufacturers' product and in the overall knowledge of automation system engineering, applications, and the associated tasks required to implement a solution.

Profile

Prerequisite for this event is a solid background in automation system engineering, including PLC configuration and programming, HMI configuration, and integration of these components into a system-centric solution.

This event introduces the primary hardware and software products from Siemens, including the TIA Portal engineering framework, SIMATIC S7-1200 and 1500 PLCs, STEP7 PLC engineering software, SIMATIC Comfort Panel HMIs, WinCC Comfort/Advanced HMI Engineering software, PLC Sim, TIA Selection Tool

This event is virtual (no live hardware) PLC Sim integrated into the Totally Integrated Automation framework is used for completing the lab exercises.

Learning Objectives

Upon completion of this event, the student shall be able to:

- Complete a system hardware configuration in the context of a Scenario Based Learning exercise using the TIA Selection tool to create the Control System Architecture.
- Import AML file, Develop, Expand, & Document a structured STEP7 program using Project Libraries & PLC SIM to test, debug & evaluate code
- Use essential PLC instructions within all Block types OB's, FC's, FB's. Work with I/O Tags, Global DB Tags and Tag structures.
- Integrate HMI, Link HMI Tags to PLC Tags, Develop HMI screens, Trends, Slide Ins & Pop Ups
- Use Technology Object to control GP G120 Drive, Integrate Safety, Distributed I/O over Profinet

Study Guide Topics

1. Siemens TIA Philosophy
 - a. TIA Defined
 - b. Siemens Terminology
 - c. Siemens Factory Automation Portfolio
2. Overview of the TIA Portal
 - a. Project Components
 - b. Project Structure
 - c. Creating a Project
3. S7 Hardware Selection & TIA Selection Tool
 - a. S7 CPU Families
 - b. ET200 I/O Families
 - c. Using the TST to create a BOM
4. Hardware Configuration
 - a. Importing a TST configured Station
 - b. Adding hardware devices manually
 - c. Using the Devices and Networks editor
5. Introduction to programming the S7 PLC
 - a. CPU Memory and Address areas
 - b. The PLC Scan
 - c. Program Structure
6. Efficient Program Management
 - a. Managing Large Programs
 - b. User-Created Program Elements
 - c. Local Variables and Parameter Passing
7. WinCC Introduction
 - a. Adding a new HMI to the project
 - b. Defining connections and Tags
 - c. Runtime Options
8. Adding Drives & Motion
 - a. Configure & Commission G120 VFD
 - b. Use Technology Object & PLC Open MC Blocks
9. Integrate Safety
 - a. Configure Safety PLC, Safety I/O, Safety Logic
 - b. Test & Verify Safety Functions

Hands on Exercises

- Complete a Series of 10 Labs using a practical Scenario Based learning exercise.
- Use TIA Selection tool to generate base configuration, Import AML file to TIA Portal
- Expand TIA Portal Project to include: S71515F, S71200, ET200SP, TP900, & G120 VFD
- Create Control code & interface for each device
- Download & test after each step using PLC Sim
- Develop a fully functional Control System Architecture using TIA Portal & PLC Sim