➢ Brief Description

This workshop and accompanying manual is intended for engineers and technicians who need to have a practical knowledge for configuration and programming of SCADA applications development.

The objectives of the workshop and manual are for you to be able to:

- Be able to recognize SCADA development environments.
- Be able to design SCADA Application for a specific project
- Be able to communicate with different Hardware and recognize their protocols.
- Be able to design, Develop and trouble shoot SCADA Applications.
- Be able to acquire data from voltage sensor, current sensor, temperature and pressure sensors attached with different PLCs.
- Be able to learn data formats and their inter conversion for certain tasks.
- Understand the analog to digital conversion and display of data and Scaling data.
- Be able to backup and restore a SCADA program when required.
- Be able to perform basic system diagnostics when a problem occurs
- Be able to use OPC Servers, DDE, ODBC, API and Industrial data Bridge in SCADA Applications
- Be able to interface PLCSIM Simulator for S7-PLCs with WinCC.
- Be able to learn advance and efficient SCADA programming techniques.
- Be able to program and configure different brands of HMI Panels.

➢ Course Documentation

- Training material documents (Hard form at the time of registration)
- Course Exercises
- Post Course open Book test

➢ Software installation and Setup

- SCADA WinCC Explorer v7.3
- HMI Panels Software

➢ Course Equipment

- S7 300 or 400 PLC and Analog Module
- S7 200 highest specs PLC 226 and analog Module
- S7 1200 or 1500 PLC
- ALLEN BRADLEY PLC (1747 SLC-500)
- Siemens, Wecon and Wientek HMI panels

Course Contents

➢ Introduction

- Background of SCADA
- SCADA as a system
- Supervision vs. control
- Applications of SCADA.
- Different SCADA software and their introduction such as WinlogPro, LabVIEW-DSC, WinCC explorer and Indosoft Web Studio as a SCADA.
- Advantages and Disadvantages of the above mentioned SCADA software.
- Project Development techniques of SCADA.

➢ WinCC Explorer

- Background to WinCC.
- Main features and applications.
- Basic design concepts installation of the integrated development environment.

- General settings. The integrated development environment as a tool for uniform project development.
- Development methods.
- Project structure and components.
- **Exercises:**

➢ **Project Configuration**

- Project Settings.
- Communications Protocols.
- Adding Devices to the Project.
- Tag management: Using Internal Tags, simulations with Simatic Tag Simulator
- Adding the Starting Picture of the Project.
- Making a simple HMI (HMI visualization of data).
- Training project demonstration and analysis.

➢ **Creating Gates/Tags**

- Tag management in Detail.
- What is Tag? Types of Tags.
- Creating Tags & its Connections with the Field Devices.
- Digital Tags & Applications.
- Numerical Tags & Applications.
- Compound Tags & Applications.
- String Tags & Applications.
- Events/Alarms Tags & Applications
- Tags Logging and archiving
- Horns
- Administrator Groups and its Accessing Power of Authentications.

➢ **Creating Pictures**

- Setting of the Picture according to the requirement of the Project.
- Adding Controls to the Screen.
- Property and Events Editor of the Controls.
- Assigning Tags to the Controls.

➢ **SCADA Script languages**

- Writing Functions in VBS and C.
- Global Script.

➢ **SCADA Security of the projects**

- Creating different access groups
- Creating Login IDs and passwords.
- Adding access authentications to the Controls

➢ **Images and Animations**

- Adding Images from Symbol Factory and Process Animations.
- Performing tasks on images
- Creating animated graphics

➢ **Reports & Charts/Graphs**

- Creating customized reports
- Creating dynamics controls to reports
- Creating different charts and graphs

➢ **Alarms and Recipe**

- Types of Alarms
- Alarms View & Creating , saving and display of recipe Items

➢ **Data Base Connectivity**

- OPC Servers and OPC simulators
- OBDC & DDE connectivity with Microsoft Access & Excel
- Logs and Archives database.

➢ **Totally integrated Automation features of Siemens**

- Integrating PLCs and SCADA
- Complete Project Tags Transfer from Simatic Manager to SCADA.

- **Smart and efficient programming techniques**
  - Plant level Programming for PLCs and SCADA i.e. Process control system (PCS7)
- **HMI Panel Programming**
  - Wecon, Wientek & Siemens HMI Panels
  - Complete project development for HMI Panel
- **More Than 10 Demo Projects developed in WinCC interfaced with s7-300 and S7-1200 training Kits.**