KOENIG
step forward

KOENIG SOLUTIONS · COURSE OUTLINE

Integrated Training Program: SCADA, Communication, and Control Systems: Part B - Communication and Control Systems

Learn to program PLCs, configure industrial communication protocols, and collect and analyse data in a water treatment control system.

9	37
MODULES	TOPICS

COURSE OVERVIEW

This course is designed to provide a comprehensive understanding of communication and control systems used in industrial automation. Participants will gain foundational knowledge of control strategies, programmable logic controllers (PLCs), and communication protocols. Hands-on exercises will equip participants with the skills to program a basic PLC and configure communication for data collection in a simulated water treatment plant environment.

WHO THIS COURSE IS FOR

This comprehensive training program delves into the intricacies of communication and control systems, specifically focusing on Programmable Logic Controllers (PLCs) and their integration into industrial environments. Participants will gain hands-on experience in designing, programming, and troubleshooting PLC-based systems, along with an understanding of communication protocols crucial for seamless operation. Through a combination of theoretical knowledge and practical exercises, learners will be equipped to tackle real-world challenges in SCADA, communication, and control systems.

PREREQUISITES

- Participants are expected to have a basic understanding of electrical systems, automation concepts, and programming fundamentals.
- Familiarity with PLCs or similar control systems will be beneficial but not mandatory.

LEARNING OBJECTIVES

What You Will Learn

- Understand the fundamentals of control strategies, including continuous, sequential, and relay-based systems
- Gain proficiency in PLC systems, programming formats, and logical continuity
- Familiarize with PLC architecture, memory types, and scanning algorithms
- Master PLC programming basics, addressing schemes, and data types
- Develop skills in creating and implementing PLC programs, including timers, counters, and analog signal handling
- Learn about communication protocols such as Profibus, Profinet, and Ethernet, and configure communication settings
- Explore data collection techniques in water plants, including field measurement types, totalizers, and system performance analytics
- Acquire the ability to simulate, analyze, and predict system behavior for improved performance and resilience

COURSE SYLLABUS

9 Modules, 37 Topics

01

Introduction to Control Strategies

TOPICS

Continuous Control Systems · Sequential Control Systems · Relay-Based Systems · Relay-Based Programming Examples

02

Introduction to PLC Systems

TOPICS

- PLC vs. Relay Systems
- Programming Formats
- Logical Continuity
- Software Familiarization
- Introduction to Industry Standard PLC Programming Software
- Construction of Test Programme

03

PLC Architecture

TOPICS

System Architecture · Memory and I/O Types · Scanning Algorithms · Program Scan Cycle

04

PLC Programming Basics

TOPICS

Overview of Programming Languages · Addressing and Data Types in Siemens PLCs · Basic Programming Instructions

05

Creating a Simple PLC Program

TOPICS

Setting up a New Project · Creating Tags and Variables · Writing and Downloading a Basic Program

06

Working with Timers and Counters

TOPICS

- Introduction to Timers and Counters
- Programming Timers and Counters in Siemens PLCs

07

Analog Input and Output Handling

TOPICS

Understanding Analog Inputs and Outputs · Configuring Analog Modules · Programming Analog Signals

08

Communication Protocols

TOPICS

- Introduction to Communication Protocols in Siemens PLCs
- Profibus, Profinet, and Ethernet Communication
- Configuring Communication Settings

09

Data Collection in Water Plant

TOPICS

- Field Measurement Types
- Continuous (Analog) vs. Discrete (Digital) Measurements
- Totalizers
- Physical vs. Logical Points
- Interaction and User Data
- Process Event Frequency
- System Performance Analytics
- Simulation and Predictive Analysis
- Data Path Robustness and Resiliency

WHAT IS INCLUDED

Everything You Need to Succeed

- Koenig course material for every module
- Delivery by certified instructors and subject matter experts
- Hands-on exercises throughout the course
- Course completion certificate from Koenig

ABOUT KOENIG

Who We Are

Established in 1993, Koenig Solutions is a globally recognised training provider with 35+ technology partnerships, 5,000+ training programmes and a network of certified instructors and subject matter experts, supporting individuals and enterprise teams worldwide.

FLEXIBLE DELIVERY

Learn the Way That Suits You

Classroom Training | Live Online Classes (ILO) | Fly-Me-A-Trainer (FMAT) | Flexi (Self-Paced) | 1-on-1 Training

Ready to Get Started?

Talk to a learning advisor about schedules, group training and customised delivery.

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