COURSE TABLE OF CONTENTS

Schneider Control Expert PLC Programming

OEM: Koenig Original • Duration: 6 Days (48 hrs)

COURSE MODULES & TOPICS

Module 1: Modicon M340/M580 Architecture and Control Expert Overview

- M340 and M580 hardware architecture
- EcoStruxure Control Expert environment

Module 2: Hardware Configuration

- Rack, CPU, I/O module setup
- Bus configuration

Module 3: Variables and Data Types

- Variable declaration
- Standard and basic DDTs
- Using the Data Editor

Module 4: LD and FBD Programming Basics

- Bit logic operations
- Timers and counters
- Elementary Function Blocks (EFBs)

Module 5: Simulation and Online Operations

- PLC simulator usage
- Animation and animation tables
- Download and online mode
- Basic online modification

Module 6: Application Structure and Tasks

- MAST and FAST tasks
- Sections and subroutines

Module 7: Derived Function Blocks and Advanced Data Types

- Creating and using DFBs
- Advanced DDTs

Module 8: Structured Text Programming

- Structured Text (ST) language basics

Module 9: Analog I/O and Signal Processing

- Analog input/output configuration
- Scaling and signal-processing EFBs

Module 10: PID Control and Control Library

- PID control implementation
- Using the control library

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Module 11: Ethernet Communication and I/O Scanning

- Modbus TCP setup
- I/O Scanning configuration
- DTM configuration

Module 12: System Diagnostics

- System bits and words
- Diagnostic viewer usage

Module 13: M580 ePAC Advanced Architecture

- Ethernet backplane
- Remote and distributed I/O (RIO/DIO)

Module 14: Redundancy and Change Management

- Hot Standby and redundancy concepts
- Change Configuration On The Fly (CCOTF)
- Change management

Module 15: DFB Libraries and Project Documentation

- Project-standard DFB libraries
- Documentation best practices

Module 16: Advanced Communication and SCADA Integration

- EtherNet/IP and Modbus via DTM
- SCADA system integration

Module 17: Sequential Function Chart (SFC) Programming

- SFC (Grafcet) for process sequences

Module 18: Cybersecurity and Safety Fundamentals

- M580 cybersecurity basics
- IEC 62443 fundamentals
- Introduction to Modicon M580 Safety (IEC 61508)