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SCADA Training - T&D Automation

Course details: https://www.electricityforum.com/electrical-training/scada-training

SCADA Training for Electric Utility T&D Systems. This comprehensive 12-Hour Live Online, Instructor-led training course is designed to provide you with an in-depth understanding of SCADA systems, their applications, and the essential skills required to successfully implement and maintain SCADA technology in the electric utility Transmission and Distribution (T&D) industry.

In today's fast-paced, increasingly interconnected world, the reliable and efficient operation of electric utility T&D systems is of paramount importance. SCADA systems play a crucial role in achieving this, enabling real-time monitoring, control, and optimization of the complex networks that form the backbone of our power grid. With the growing integration of renewable energy sources, distributed generation, and smart grid technologies, the importance of skilled professionals who understand SCADA systems in the T&D industry has never been greater.

This course is designed for engineers, technicians, operators, and other professionals who are involved in the planning, design, implementation, or maintenance of SCADA systems in the electric utility T&D industry. It is also suitable for those who seek a comprehensive understanding of the technology and its applications in this sector.

Throughout the course, you will gain hands-on experience with SCADA system

components, communication technologies, and protocols, as well as practical insights into their application in substations, power distribution networks, and transmission networks. You will also learn about the critical aspect of cybersecurity, system maintenance, and troubleshooting.

By completing this SCADA training, you will be equipped with the knowledge and skills necessary to contribute to the success of your organization, ensuring the stability, efficiency, and security of our power grid. With the practical experience and industry-specific expertise gained in this course, you will be well-prepared to face the challenges and opportunities that lie ahead in the ever-evolving landscape of electric utility T&D systems.

Learning Outcomes

Upon successful completion of this SCADA Training for Electric Utility T&D Systems course, participants will be able to:

- Understand the fundamental concepts, components, and architecture of SCADA systems in the context of electric utility T&D systems.
- Identify and explain the roles of Remote Terminal Units (RTUs), Intelligent Electronic Devices (IEDs), Programmable Logic Controllers (PLCs), and Human-Machine Interfaces (HMI) in a SCADA system.
- Demonstrate knowledge of common SCADA communication technologies, protocols, and cybersecurity considerations for electric utility T&D systems.
- Apply SCADA system design principles in the context of substation automation, power distribution networks, and transmission networks.
- Configure and set up a basic SCADA system, including creating HMI screens and data points for monitoring and control.
- Analyze and implement advanced SCADA functions, such as data acquisition, logging, trending, alarms, events, and reporting, in electric utility T&D applications.
- Develop strategies for SCADA system maintenance, troubleshooting, backup, and disaster recovery planning in T&D environments.
- Assess and apply best practices for SCADA cybersecurity, ensuring the protection of critical infrastructure and compliance with relevant industry standards.
- Evaluate real-world case studies, identifying challenges, solutions, and lessons learned

from the implementation of SCADA systems in electric utility T&D systems.
- Demonstrate the ability to integrate SCADA systems with other enterprise systems, such as Energy Management Systems (EMS) and Advanced Metering Infrastructure (AMI), for improved efficiency and coordination in electric utility T&D operations.

WHO SHOULD ATTEND

This course is designed for engineers, technicians, operators, and other professionals who are involved in the planning, design, implementation, or maintenance of SCADA systems in the electric utility T&D industry. It is also suitable for those who seek a comprehensive understanding of the technology and its applications in this sector.

STUDENTS RECEIVE

- **FREE** 100-Page Digital Electrical Safety Handbook (Value $20)
- **$100 Coupon** Toward Any Future Electricity Forum Event (Restrictions Apply)
- 1.2 Continuing Education Unit (CEU) Credits (12 Professional Development Hours)
- **FREE** Magazine Subscription (Value $25.00)
- Course Materials In Paper Format

COURSE OUTLINE

SCADA Training Outline for Electric Utility T&D Systems

DAY ONE

Introduction to SCADA in Electric Utility T&D Systems

- Definition and history of SCADA
- Overview of SCADA components and architecture
- Applications of SCADA in electric utility T&D systems
- Key benefits and challenges of SCADA systems in the electric utility industry

SCADA System Components for T&D Systems

- Remote Terminal Units (RTUs) and Intelligent Electronic Devices (IEDs)
- Programmable Logic Controllers (PLCs)
- Human-Machine Interface (HMI)
- Supervisory and control servers
- Communication networks and protocols

SCADA Communication Technologies and Protocols for T&D Systems

- Wired and wireless communication technologies
- Industrial Ethernet
- Common SCADA protocols (Modbus, DNP3, IEC 61850, OPC UA, etc.)
- Cybersecurity considerations

SCADA Applications in Substations

- Substation automation and control
- Integration of protection relays, IEDs, and RTUs
- Data acquisition, monitoring, and control
- Alarms, events, and disturbance recording

Hands-on Exercise: Basic SCADA System Setup for T&D Applications

- Setting up a simple SCADA system with a RTU and HMI

- Creating a basic HMI screen and data points for a substation
- Monitoring and controlling the SCADA system

DAY TWO

SCADA Applications in Power Distribution Networks

- Distribution automation and control
- Fault location, isolation, and service restoration (FLISR)
- Volt/VAR optimization and conservation voltage reduction (CVR)
- Integration with advanced metering infrastructure (AMI)

SCADA Applications in Transmission Networks

- Transmission system monitoring and control
- State estimation and situational awareness
- Wide area monitoring, protection, and control (WAMPAC)
- Coordination with energy management systems (EMS)

SCADA Cybersecurity in Electric Utility T&D Systems

- Importance of cybersecurity in SCADA systems
- Common security threats and vulnerabilities
- Best practices and security standards (IEC 62443, NERC CIP, etc.)
- Security technologies and solutions for SCADA systems

SCADA System Maintenance and Troubleshooting for T&D Systems

- Preventive and corrective maintenance strategies
- Diagnostics and troubleshooting techniques
- Backup and disaster recovery planning
- System upgrades and migration considerations

Case Studies and Lessons Learned

- Real-world examples of SCADA systems in electric utility T&D systems
- Challenges faced and solutions implemented
- Lessons learned and best practices

Hands-on Exercise: Advanced SCADA System Configuration for T&D Applications

- Configuring advanced SCADA functions (data logging, alarms, etc.)
- Integrating a SCADA system with other enterprise systems
- Implementing basic cybersecurity measures

COURSE TIMETABLE

Both days:
Start: 10:00 am Eastern Time
Finish: 4:00 pm Eastern Time