

Advanced SCADA and Substation Automation Systems

COURSE OVERVIEW

This course offers a technical overview of advanced SCADA systems, communication protocols, real-time data acquisition, and automated substation control. The program highlights digital substation development, IEC 61850 standards, cybersecurity, and interoperability between legacy and modern components. Participants will study the integration of smart sensors, RTUs, IEDs, and HMI systems to build efficient and secure automation networks. Through practical sessions and applied learning, participants will gain the skills to design, operate, and troubleshoot SCADA and substation systems for improved reliability and performance.

WHO SHOULD ATTEND?

This course is designed for electrical engineers, SCADA system operators, substation automation specialists, instrumentation and control engineers, and grid maintenance personnel involved in monitoring, protection, and automation of power systems. It is equally valuable for power utility managers, project engineers, system integrators, IT/OT professionals, cybersecurity experts, and energy consultants seeking to deepen their knowledge of digital substations and remote operations.

COURSE OUTCOMES

Delegates will gain the skills and knowledge to:

- Configure and manage communication protocols such as IEC 61850, DNP3, and Modbus.
- Develop and implement automation strategies for monitoring and control of power systems.
- Analyze and troubleshoot communication failures and data inconsistencies in SCADA systems.
- Design and interpret Human-Machine Interface (HMI) dashboards for real-time data visualization.
- Implement cybersecurity measures to protect SCADA and SAS from threats and vulnerabilities.
- Apply predictive analytics and AI tools for automated decision-making and fault detection.

KEY COURSE HIGHLIGHTS

At the end of the course, you will understand;

- The functional architecture of advanced SCADA and substation automation systems.
- How real-time monitoring and data acquisition enhance power system reliability.
- Techniques for integrating and configuring IEDs and RTUs within substations.
- Methods for developing intelligent control and protection schemes for substations.
- How cybersecurity frameworks protect critical infrastructure from digital threats.
- The use of AI and predictive analytics in automating substation operations.
- How digital twins and cloud-based SCADA solutions revolutionize system monitoring.

All our courses are dual-certificate courses. At the end of the training, the delegates will receive two certificates.

1. A GTC end-of-course certificate.
2. Continuing Professional Development (CPD) Certificate of completion with earned credits awarded.