
ELECTRICAL NETWORK AUTOMATION AND COMMUNICATION SYSTEMS



YOU WILL LEARN:

- The requirements for data communications in an electrical environment
- The suitability of different communication protocols for automation of power distribution and transmission networks
- New techniques in electrical protection, leading to increased reliability, performance and safety to personnel
- How to obtain extensive real-time information of your power network via SCADA, leading to informed decisions and productive use of manpower
- How to implement local and remote control of switchgear, including interlocking and intelligent load shedding
- How to effectively compare and critically analyse different products and systems available for protection, control and automation of electrical power networks

WHO SHOULD ATTEND:

- Electrical Engineers
- Control Engineers
- Project Engineers
- Design Engineers
- Consulting Engineers
- Power System Engineers
- Protection Engineers
- Technicians
- Maintenance Supervisors

The Workshop

Power System Automation is the cutting-edge technology in electrical engineering. It means having an intelligent, inter-active power distribution and transmission network including:

- increased performance and reliability of electrical protection
- advanced disturbance and event recording capabilities, aiding in detailed electrical fault analyses
- display of real-time substation information in a central control centre
- remote switching and advanced supervisory control over the power network
- increased integrity and safety of the electrical power network, including advanced interlocking functions
- advanced automation functions e.g. intelligent load-shedding

Workshop Objectives

This practical 5-day workshop will enable you to:

- identify the suitability of different communication protocols for the electrical environment
- evaluate the communication requirements for your specific circumstances
- apply new protection techniques to increase reliability and performance while reducing costs
- implement advanced real-time monitoring and metering techniques of your electrical network by implementing local and remote control
- specify the requirements for SCADA regarding your electrical network and substations
- recognise and evaluate the practical and economic benefits automating your power network can bring to your workplace

Practical Sessions

Participants will be given the vital hands-on experience needed to confidently work with this cutting-edge technology. On the second day of the workshop, there will be a demonstration of a Substation Automation System at work and the opportunity to configure a multi-function relay, communication link and SCADA system.

The Program

INTRODUCTION

- Discussion of concepts involved in automating power distribution and transmission networks

HISTORICAL DEVELOPMENT

- Short overview of technical developments in related industries

ELECTRICAL PROTECTION

- Short overview of the fundamentals of electrical protection
- New techniques in protection using intelligent relays
- Designing more advanced and economical protection schemes

CONTROL, MONITORING AND METERING

- Local intelligence and Intelligent Electronic Devices (IEDs)
- Limitations of conventional RTU systems and PLCs
- Modern trends

DATA COMMUNICATIONS IN AN ELECTRICAL ENVIRONMENT

- Basics of Data Communications
- Different communication protocols used for power networks
- Communication requirements for substations
- Suitability of different protocols for substation communications
- Standardisation of communication in substations: goals and status
- Radio and satellite communication
- Trends in technology

SCADA FOR ELECTRICAL MONITORING AND CONTROL

- Requirements of SCADA for electrical networks
- Hardware and support requirements
- Software and configuration

COMPARISON OF POWER SYSTEM AUTOMATION SYSTEMS

- Types of power system automation systems
- Discussion of leading manufacturers' systems
- Advantages and disadvantages of various systems

PRACTICAL CONSIDERATIONS

- Benefits of power system automation systems
- Capital expenditure and maintenance issues
- Cost savings
- Evaluating your requirements
- Choosing a system and supplier

PRACTICAL DEMONSTRATION

- Demonstration of a power system automation system at work
- Configuration of IEDs