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Electrical Distribution System Protection - Distributed Energy and Renewable Energy Resources

View Course Details

COURSE DATES AND TIMES

Electrical Distribution System Protection Training - This 12-hour Live online instructor-led Distributed Energy Resources (DER) and bulk power integrated system protection training course will provide a practical understanding of protective device modern applications and protective relay schemes for electrical power systems and equipment.

Refresh your knowledge of the industrial and utility system protection techniques including fault analysis and overvoltage assessment. Develop your own relay settings and thoroughly understand the philosophy of protective systems. Study actual cases illustrating various techniques in present use and highlighting particular approaches used by experienced system designers. Enhance your experience with power system protection problems generally faced, and solutions successfully adopted, by industry. Understand how to apply microprocessor-based multifunction relays for the protection of various power system equipment and apparatus.

Power System Protection Training teaches students how to make sure that downstream devices (breakers/fuses) should activate before upstream devices and therefore protect their electrical systems. By doing this, it minimizes the portion of the system affected by a fault or other disturbance. At the substation level, feeder breakers should trip before the main. Likewise, downstream panel breakers should trip before the substation feeder supplying the panel.

DER Integrated Power System Protection and Coordination of various electrical equipment and apparatus requires a good understanding of phase and ground short circuit currents, detection, and safe clearing of the faulted equipment. This DER integrated Power System Protection and Coordination Training Course provides a practical and comprehensive description of the principles and concepts of analysis, application and operation of protection schemes for various power system elements such as feeders, transformers, motors, buses, generators, etc.

The Power System Protection And Coordination Training course starts with an overview of power system fundamentals, design and short circuit calculations which lead to the understanding of protection scheme requirements and their applications. Protection requirements for industrial plants, cogeneration, and interconnection with the utility power system are explained in detail. This course covers the subject of power system protection from a practical perspective, and includes important functional aspects such as testing and coordination of protection systems.

This course is designed for individuals who are involved with industries and utilities which depend on proper system protection for operational efficiency and minimizing damage to equipment.

WHO SHOULD ATTEND

- Electrical Power Distribution Engineers;
- Electrical Power System Planners;
- Electrical Power System Engineers;
- Plant Managers;
- Consulting Engineers;
- Electrical Engineers and Technical Staff entering the protection field,
- Engineers and technicians involved with design, operation, maintenance, testing, and troubleshooting of high and medium voltage electrical systems and equipment.
- Technicians and technologists in the industrial, consulting, and utility fields involved in design, operation and maintenance who require knowledge of electrical system protection techniques.

STUDENTS RECEIVE

The Power System Protection And Coordination Engineering Training Course:

- Will Reduce Unnecessary Downtime!
- Provide Recommended Settings For Adjustable Trip Circuit Breakers And Relays.
- Will Increase Coordination (Selectivity) Between Devices.
- Identify Deficiencies In System Protection.
- Will Provide Recommended Solutions To Help Correct Your Problem Areas.
- Reviews And Discussion On The Use Of System Devices With Respect To Electrical Code Requirements, And Appropriate ANSI/IEEE Standards

COURSE OUTLINE

Electrical Distribution System Protection Training Course Outline

DAY ONE

Distribution and industrial power electricity

Power systems grid fundamentals

System design considerations

• Safety

• Reliability & Flexibility

System Planning

• Utility service & requirements

• Protection consideration

• Special Loads

Distribution Power system con?gurations

Equipment selection

• Circuit Breakers

• Voltage Transformers

• Current Transformers

• Relays & Protection Schemes

• Microprocessor and Electro-mechanical relays

Distribution Power system analysis

Short circuit calculations

• E?ects of Short Circuit

• Sources of Fault Currents

• Sensitivity & speed

• Voltage Considerations

• Limiting short circuit currents

Case study calculation using the MVA method

Distribution System grounding design considerations

Principles of power system protection Ground fault protection

• System grounding methods

• Zero-Sequence currents

• Ground Fault concerns

Case study: Sequence component calculation

Distribution Feeder Protection

• Main protection elements to consider

• Fuse characteristics

• Time-current coordination curves

• Relay-fuse-relay TOC, IOC selectivity & coordination

• Main-Tie-Main transfer schemes

• Radial systems, Loop systems, Selective systems

Distribution Bus Protection

• Main protection elements to consider

• Principles of Bus applications

• Bus topologies

• Protection Schemes

• Hi-ampacity current detection

• Hi-impedance relaying

DAY TWO

DER - distributed Energy Resources

• Protection Challenges posed by renewable energy sources

• Microgrid technology developments

• Power Stability issues & the associated impacts on Protection

Transformer Distribution Protection

• Main protection elements to consider

• Substations components

• Protection philosophies

• Ground fault protection

• Neutral grounding systems

MV Distribution Transmission Line Protection

• Main protection elements to consider

• Line protection

• Line Distance protection relaying

• Line di?erential communication

• Non-pilot schemes

• Pilot wire & schemes

Motor Protection

• Main protection elements to consider

• Motor nameplates

• Thermal overload protection

• Thermal capacity relaying

• Acceleration limits

• Phase and Ground Fault Protection

• Protection elements

• Setting considerations

Case study: A complete relay setting calculation

COURSE SCHEDULE:

Both days:

Start: 10 a.m. Eastern Time
Finish: 4:30 p.m. Eastern Time

Contact us Today for a FREE quotation to deliver this course at your company's location.

Request Quote