



Content
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Industrial Relay Protection - Advanced

Course details: <https://electricityforum.com/electrical-training/advanced-industrial-relay-protection>

COURSE DATES AND TIMES

Advanced Industrial Relay Protection Training - This 18-hour, 3-Day live online instructor-led training course provides students with a practical understanding of protective relay device applications and protective relay schemes for industrial, commercial and institutional electrical power systems.

This in-depth course covers industrial system relay protection techniques, including fault analysis and overvoltage assessment. Students will learn how to develop relay settings and thoroughly understand the philosophy of relay protective systems. Real world examples will be shown, illustrating various techniques in present use, which highlight particular approaches used by experienced relay protection system designers.

Students will enhance their experience with power system protection problems generally faced, and solutions successfully adopted. By the end of the course, students will understand how to apply microprocessor-based multifunction relays for the protection of various power system equipment and apparatus.

COURSE BENEFITS

The Advanced Protective Relay 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 Discussions On The Use Of Protective Devices With Respect To Electrical Code Requirements, And Appropriate ANSI/IEEE Standards

WHO SHOULD ATTEND

- Industrial, Commercial, Institutional Electrical Engineers, And Electrical Maintenance Personnel

- Consulting Electrical Engineers
- Project Engineers
- Design Engineers
- Field Technicians
- Electrical Technicians
- Plant Operators
- Plant Engineers
- Electrical Supervisors
- Managers In Charge Of Plant Communication Infrastructure

STUDENTS RECEIVE

- This Course Includes Our Latest Electrical Protection And Control Handbook!! (Value \$20)
- **\$100 Coupon** Toward Any Future Electricity Forum Event (Restrictions Apply)
- 1.2 Continuing Education Unit (CEU) Credits
- **FREE** Magazine Subscription (Value \$25.00)
- Forum Presentation Materials In Paper Format

COURSE OUTLINE

Advanced Industrial Relay Protection 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 configurations

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

Protection relay components and operation

Substation and GND protection

Feeder Protection

- Protection Elements
- Relay Coordination
- Phase TOC (51)
- Phase IOC (50)
- Ground Relaying Elements
- Fault Simulation Event Log
- Oscillography
- Hi-Z Faults
- Co-Ordination of Feeder Fuses and Relays

Feeder protection relay view

DAY TWO

Case study: Sequence component calculation

Bus Protection

Bus protection elements

Bus protection requirements

Bus common configurations

Bus configurations pro and cons

Bus protection schemes

- High Impedance
- Linear Couplers
- Interlocking
- Bus Differential protection
- Percent Differential element
- LO and HI Impedance Microprocessor-Based relaying

Bus protection relay view

Transformer Protection

- Transformer Theory
- Transformer Protection Elements
- Differential Transformer Current Protection
- Differential Transformer Magnitude Compensation
- Differential Transformer Phase Compensation
- Volts/Hz
- Sudden Pressure Change Detection
- 2nd Harmonic Inhibit consideration
- 5th Harmonic Inhibit consideration
- Transformer Protection relay view

DAY THREE

H.V. Feeders / Transmission Lines Protection

- **Introduction to Transmission Lines**
- **Distance Protection Theory (21)**
- **Stepped Distance**
- **Pilot Aided Schemes**
- **DUTT, PUTT, POTT, Directional Blocking**
- **Power Swings Blocking**
- **Line Current Differential Protection**
- **Current Differential element**

Transmission line protection relay view

Motor Protection

- Main Protection Elements to Consider
- Motor Nameplates
- Thermal Overload Protection
- Thermal Capacity Protection
- Acceleration Limits and Curve
- Phase and Ground Fault Protection
- Protection Elements
- Setting Considerations

Motor protection relay view

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.

<https://electricityforum.com/onsite-requestforquote>