LOOK INSIDE FOR DISCOUNT PROGRAM PRICING

Electricity Forum Training Institute

ELECTRICAL PROTECTION FOR INDUSTRIAL POWER SYSTEMS

April 20-21, 2020 | Mississauga, ON

April 23-24, 2020 | Winnipeg, MB

April 27-28, 2020 | Richmond, BC

April 29-30, 2020| Edmonton, AB

Gain valuable experience in utility and industrial electrical system analysis, protection, control, communication, and automation

BONUS FEATURES

- This Course Includes our Latest Electrical Protection and Control Handbook!
- **$100 Coupon** Towards any Future Electricity Forum Course
- 1.4 Continuing Education Unit (CEU) Credits
- **FREE** Magazine Subscription
- Forum Presentation Materials in Paper Format

2-DAY COURSE
$899

RECOGNIZED BY
EARN CONTINUING EDUCATION UNITS (CEUS)

Complete course details:
www.electricityforum.com/electrical-training/basic-protective-relay-training

ELECTRICAL RELAY PROTECTION FOR INDUSTRIAL ELECTRICAL POWER SYSTEMS

This 2-day protective relay training course provides a comprehensive understanding of industrial, commercial and institutional power system protection. Relay technicians, system protection engineers, consultants, and engineers and technicians working in system protection should take this course.
Our Protective Relay Training course will benefit personnel of all levels of experience because it covers a range of complexity of relay schemes, methods of testing relays and of analyzing relay operations. We discuss system protection principles, measurement devices used for relaying, basic relay schemes used, and the most common schemes used in the field. This course provides professionals with real examples from actual system protection situations.
This Protective Relay Training course will cover relay theory and operation of modern digital types from two major North American relay manufacturers (GE Multilin and SEL), covering many types of functions such as phase, ground, negative sequence overcurrent, over and under voltage, over and under frequency, reverse power, distance and bus/transformer/line differential. Topics such as complete motor protection, fault current basics and application of fuses and circuit breakers / contactors in industrial and distribution substations,

COURSE BENEFITS

- Gain valuable experience in utility and industrial electrical system analysis, protection, control, communication, and automation
- Learn the latest trends in evolving electrical protection standards, design methods, and new technologies
- Gain Valuable knowledge of electrical power system analysis and short circuit calculations, time current coordination curves, fusing fundamentals, and more!
- Learn how to keep your electrical system engineers, operators and project managers on track by using the latest relay protection techniques

WHO SHOULD ATTEND

- Industrial, commercial, institutional electrical engineers, and technologists
- Consulting electrical engineers
- Project engineers
- Design engineers
- Field technicians
- Electrical technicians
- Plant operators
- Plant engineers
- Electrical supervisors
- Managers in charge of plant communication infrastructure

AGENDA - DAY 1

SESSION 1: Power System Faults and Components of Power System Protection schemes

- Different types of faults
- Detection of faults and fault detecting relays
- Clearance of faults
- Requirements of protective relaying systems
- Modern microprocessor-based relays
- Current transformers
- Voltage transformers
- Various types of CTs, VTs and CVTs
- Application requirements of CTs for protective relaying

Accuracy classifications of CTs and VTs
Testing of CTs and VTs

SESSION 2: Microprocessor-based relays

- North American relay manufacturers and their software needed for settings and communication
- Downloading relay manufacturers software packages
- Basic steps to establish communication with microprocessor-based relays

SESSION 3: Arc-flash protection and mitigation

- Maintenance mode
- Instantaneous overcurrent protection
- Fast bus bar protection
- Fiber optic protection
- Arc-flash mitigation

SESSION 4: Feeder Overcurrent Protection

- Protective relaying requirements for radial and looped systems
- Elements of feeder protection schemes
- High-set, low-set and inverse-timed elements
- Various types of overcurrent relays
- Relay setting criteria
- Load shedding schemes

complete course details:
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• Testing of overcurrent protection schemes

SESSION 5: Coordination of Electrical Protection Systems

• Computer software packages for protection coordination studies
• Auto-reclosing of circuit breakers
• Breaker Failure Protection
• Back-up protection

AGENDA - DAY 2

SESSION 6: Bus Protection

• Types of bus protection schemes
• Basic concept of differential protection
• High impedance relays for bus differential protection
• Low impedance relays for bus differential
• Bus bar blocking schemes
• Application to various bus configurations
• Testing of bus protection schemes

SESSION 7: Motor Protection and Starting

• Applicable motor standards
• Methods of starting
• Thermal protection
• Differential protection, phase unbalance, overcurrent
• Ground fault protection
• Transfer Schemes
• Microprocessor-based motor control and protection devices

SESSION 8: Transformer Protection

• Overcurrent and ground fault protection
• Application of differential protection to transformers
• Restricted ground fault protection
• Gas relays, pressure and gas accumulation
• Winding temperature and oil temperature devices
• Testing of transformer protection schemes
• Modern microprocessor-based multi-function relays - available functions, application and testing

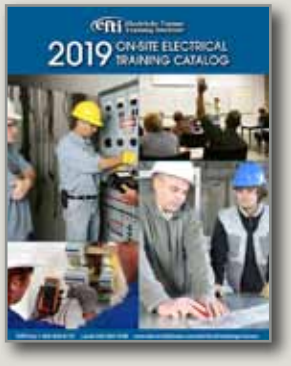
SESSION 9: Generator Protection

• Differential protection
• Reverse power, 100% stator ground fault, out-of-step
• Loss of field, field ground, overexcitation, inter-turn, etc.
• Over-frequency, underfrequency, overvoltage, undervoltage
• Negative phase sequence or phase unbalance
• Voltage controlled and voltage restricted overcurrent protection
• Synchronizing systems, synchro-check relays
• Testing of generator protection schemes
• Microprocessor-based multi-function generator protection relays - available relays, application and testing

SESSION 10: Cogeneration and Non-Utility Generation (NUG) Protection

• Protection requirements for non-utility generating stations
• Requirements for the interconnection of NUGs to utility power systems
• Typical protection schemes for non-utility generators
• Low-cost microprocessor-based multi-function relays

"Our motivation is your education."



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WAYS TO REGISTER

1 (855) 824-6131

(905) 686-1078

ON-LINE:
www.electricityforum.com/electrical-training/basic-protective-relay-training

MAIL:
The Electricity Forum
1885 Clements Rd., Unit 218
Pickering, ON L1W 3V4

ATTENDEE INFORMATION

To receive registration fee discounts, you must **REGISTER AND PREPAY** prior to the course date.

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TITLE _____

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The registration fee to attend the Electrical Relay Protection Seminar is $899.00 + Tax. The fee includes forum participation, refreshments. NOTE: LUNCH IS PROVIDED WITH THIS COURSE.

Register and prepay 14 days before forum date and receive an early bird discount of $100.00

REGISTER 3 DELEGATES AT FULL PRICE AND GET THE 4th REGISTRATION FREE!

WHEN & WHERE

Mississauga, ON - April 20-21, 2020
Hampton Inn and Suites
3279 Caroga Drive,
Mississauga, ON
Tel: 905-671-4730

Winnipeg, MB - April 23-24, 2020
Sandman Hotel & Suites Winnipeg Airport
1750 Sargent Ave.
Winnipeg, MB
Tel: 204-775-7263

Richmond, BC - April 27-28, 2020
Sandman Signature Vancouver Hotel & Resort
10251 ST. Edwards Drive
Richmond, BC
Tel: 604-278-9611

Edmonton, AB - April 29-30, 2020
Sawridge Hotel Edmonton South
4235 Gateway Blvd N
Tel: 780-438-1222

COURSE INSTRUCTOR
JAKOV VICO, P.ENG
PROTECTIVE RELAY CONSULTANT, THE ELECTRICITY FORUM

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