

EMERGENCY GENERATORS & STANDBY POWER SYSTEMS



October 15-16 , 2018 | Richmond, BC
October 17-18 , 2018 | Edmonton, AB
December 10-11 , 2018 | Mississauga, ON
December 12-13 , 2018 | Winnipeg, MB

Power System Design, Protection and System Studies

BONUS FEATURES

- UPS Electrical Digital Handbook
- **\$100 Coupon** Toward any Future Electricity Forum Event
- 1.4 Continuing Education Unit (CEU) Credits
- **FREE** Intelligent Power Today Magazine Subscription
- Forum Presentations in Paper Format
- Refreshments and lunch provided

2-DAY COURSE
\$799

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instruments

complete course details:

www.electricityforum.com/electrical-training/emergency-generator-standby-power

EMERGENCY GENERATORS & UPS SYSTEM TRAINING

THIS 2-DAY EMERGENCY GENERATORS & STANDBY POWER SYSTEMS TRAINING COURSE IS DESIGNED TO ASSIST ORGANIZATIONS TO IDENTIFY THE MANY SAVINGS TO BE GAINED FROM PROPER GENERATOR DESIGN, INSTALLATION, TESTING AND MAINTENANCE.

From portable electrical generators to standby power cogeneration units - from the facility manager to the maintenance technician - this Emergency Generators & Standby Power Systems training course is designed for anyone involved with electrical generation equipment in their plant or facility.

In today's industrial, commercial and institutional power systems environment, nothing can be taken for granted. Severe weather can cause power outages for a few seconds or several days. Explosions and fire can sever lines to your facility. Sometimes we simply experience blackouts because the utility power grid is overloaded and blackouts occur. Critical power situations demand 100 per cent power, 100 per cent of the time. Whatever the cause, lack of electricity at your facility can be devastating, whether you are responsible for a power system at a hospital, a treatment plant providing water for your community, or a banking or telecommunications network facility which must remain uninterrupted.

WHO SHOULD ATTEND

This course is designed for anyone involved with emergency onsite power generation systems or working in any facility where an emergency power supply is absolutely critical! In this seminar, students are invited to attend from a wide variety of industries, skill-levels, company sizes, and backgrounds. If you're not sure you'll fit in, or will benefit from this class, don't worry - you will - as long as you have an interest in onsite power generators or UPS systems!

All Electrical Maintenance Personnel in:

- Electrical Engineers
- Consulting Electrical Engineers
- Plant Electricians
- Mechanics
- Electrical Supervisors
- Electrical Maintenance Technicians
- Plant & Facility Electrical Maintenance Technicians
- Building Engineers
- Building Managers & Superintendents
- Plant & Facility Managers
- Stationary Engineers

Including:

- Plant Electrical Engineers
- Electrical Maintenance Managers
- Electrical Maintenance Technicians
- Facility/Plant Managers
- Consulting Electrical Engineers
- Emergency Preparedness Compliance Officers
- Mechanics
- Building Engineers
- Multi-craft & Cross Training Personnel
- Any person needing a basic course in emergency power and standby electrical generators

AGENDA - DAY 1

1. Generator Basic Electrical Fundamentals

- Electrical Fundamentals
- How Electricity Is Produced And Controlled In Generators And Batteries
- Understanding Single-Phase And Three Phase Generator Wiring Configurations
- Understanding Generator Nameplate Data

2. Generator Types and Construction

- Stator
- Mechanical Components
- Wye Configuration
- Delta Configuration
- Types Of Rotors
- Salient Pole
- Cylindrical Pole
- Types Of Bearings And Lubrication Systems
- Sinusoidal Voltage Output

- Motor Vs Generator Comparison
- Three-Phase Generators
- Components
- Operation

3. Generator and Engine Controls

- Paralleling and Non Paralleling Governor Control
- Purposes Of Generator Excitation
- Power To The Rotating Electromagnetic Field
- Locking Rotor To Stator
- Means Of Regulating Voltage
- Types Of Generator Excitation
- DC Exciters
- Static Excitation
- Brushless Excitation
- Concept Of Response Time Vs Voltage Levels
- Voltage Regulator Function
- Voltage Regulator Components

- Voltage Regulator Operation
- Reactive Power Control For Parallel Operations
- Auxiliary Regulator Functions
- Voltage Regulator Troubleshooting
- Onsite Generator Controls Including PLCs And SCADA Systems

4. Auxiliary Systems

- Fuel Systems
- Cooling Systems
- Exhaust Systems
- Vibration Attenuation
- Sound Attenuation
- Engine Starting Systems
- Load Banks
- Emissions Control

complete course details:

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5. Generator Protection

- Short Circuit Protection
- Ground Fault Protection
- Overload Protection
- Thermal Protection
- Overspeed Protection
- Low Field Excitation Or Loss Of Field Excitation Protection
- Generator Motoring Protection
- Protection Against Unbalanced Faults
- Overexcitation Protection

6. Generator Applications

- Cogeneration
- Emergency Power Systems
- Legally Required Standby Systems
- Optional Standby Systems
- Applicable Codes And Standards

7. Generator Loading And Control

- Effects Of Various Type Loads On Generator Control: Lighting, Motors, UPS Systems
- Parallel Operation
- Protection And Transfer Of Power

8. The Gas, Natural Gas And Diesel Engines As Prime Movers

- Prime Mover Types And Fuel Considerations
- Mechanical Systems Operation: Fuel, Intake Air, Lube Oil, Cooling, Governors
- Typical Manufacturers, Ratings And Operation Of Diesel Generator Sets.

AGENDA - DAY 2

9. Troubleshooting And Maintenance Of Standby Generators

- Recommended Maintenance Practices From: IEEE, NFPA, NETA, EGSA
- Recommended Generator Maintenance Practices
- Developing A Logical Systematic Approach To Troubleshooting
- Common Generator Problems
- Electrical Testing Of Generators
- Starting Battery Maintenance
- Troubleshooting Frequency Control Problems
- Troubleshooting Voltage Control Problems
- Troubleshooting Grounding Problems

10. Basic Generator Installation Requirements

- Marking Requirements
- Overcurrent Protection
- Selecting And Sizing Cables And Conductors For Generator Output
- Protecting Live Parts
- Loads Supplied – Practical Applications

11. Transfer Switch Equipment

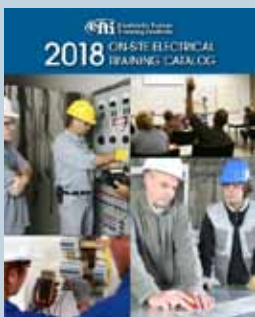
- Types And Applications Of Transfer Switch Equipment
- The Automatic Transfer Switch (ATS)

- Load Shedding Operations
- Bypass Operation
- Protection Considerations
- Transfer Switch Equipment Maintenance Safer

12. Review Of Safety Issues With Emergency And Standby Power Generation

- The Importance Of Code And Standard Requirements
- The Three Hazards To Protect Against
- Selection Of Personal Protective Equipment (PPE) For Work On Standby Power Systems
- Safe Work Practices To Follow Safer

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WHEN & WHERE**Richmond, BC - October 15-16, 2018**

Holiday Inn Vancouver Airport
10720 Cambie Road
Tel: 604-821-1818

Edmonton, AB - October 17-18, 2018

Sawridge Inn Edmonton South
4235 Gateway Blvd NW
Tel: 780-438-1222

Toronto, ON - December 10-11, 2018

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

Winnipeg, MB - December 12-13, 2018

Sandman Hotel & Suites Winnipeg Airport
1750 Sargent Ave.
Tel: 204-775-7263

ATTENDEE INFORMATION

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

NAME _____

TITLE _____

COMPANY _____

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METHOD OF PAYMENT **Bill My Credit Card** **AMEX** **VISA** **MasterCard**

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The registration fee to attend the two-day Emergency Generators & UPS System training course is \$799.00 + GST/HST. The fee includes Course presentation materials, CEU Credit, refreshments, Lunch Is Included.

Register and prepay 14 days before forum date and receive an early bird discount of \$50.00

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