

LOOK INSIDE FOR DISCOUNT PROGRAM PRICING

MODERN ELECTRICAL GROUNDING

AND THE NATIONAL
ELECTRICAL CODE

LOS ANGELES, CA - MAY 12-13 , 2015
SAN FRANCISCO, CA - MAY 14-15, 2015



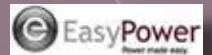
BONUS FEATURES

- ▶ 100+ Page Electrical Grounding Digital Handbook (Value \$20)
- ▶ \$100 Coupon Toward any Future 2015-16 Electricity Forum Event (Restrictions Apply)
- ▶ Course Materials in Paper Format
- ▶ Register 3 get 1 Free (see details on page 4)

2-DAY COURSE

\$799

SPONSORED BY



www.electricityforum.com/usa/electrical-grounding-nec.html



One of the most important AND least understood sections of the 2014 National Electrical Code is the section on Electrical Grounding and Bonding.

This modern electrical grounding course is founded on the National Electrical Code and is designed to give you the correct information you need to design, install and maintain effective electrical grounding systems in industrial, commercial and institutional power systems. The knowledge acquired in this course will enable the participant to apply correct electrical installation procedures according to the latest National Electrical Code, effective cabling and state-of-the-art technologies available for the protection of equipment and circuits. A code violation poses hazards to human life and equipment.

EVERY PENNY SPENT ON LEARNING HOW TO PROPERLY ELECTRICALY GROUND YOUR MISSION-CRITICAL POWER SYSTEM WILL PAY FOR ITSELF MANY TIMES OVER.



MODERN ELECTRICAL GROUNDING AND THE 2014 NEC

WWW.ELECTRICITYFORUM.COM/USA/ELECTRICAL-GROUNDING-NEC.HTML

■ DAY ONE

SESSION 1: ELECTRICAL GROUNDING – SCOPE

- Definitions
- Applications
- Electrical Grounding methods
- Ground Faults
- Why Ground Circuits and Systems
- Electrical Grounding Systems

SESSION 2: STANDARDS, CODES, GUIDES & RECOMMENDATIONS

- IEEE Standards
- API (American Petroleum Institute)
- ASTM (American Society for Testing and Materials), AASHTO,
- AGA (American Gas Association),
- AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)
- ANSI, ASCE, ASHRAE, ASME, ASSE/SAFETY, ASTM, AWS (optional), AWWA

SESSION 3: ELECTRICAL GROUNDING METHODS

- Grounding Methods
- Solidly Grounded
- Low Resistance Grounding
- High Resistance Grounding
- Reactance Grounding
- Single Point Grounding

SESSION 4: ELECTRICAL GROUNDING ELECTRODE SYSTEM

- Grounding Theory
- Parameters, Measurements and Calculations
- Manufactured Grounding Electrodes;
- Chemically Charged Rod Electrode
- Field-assembled Grounding Electrodes
- In-situ Grounding Electrodes
- High-Voltage Installations/Substation Grounding & Bonding
- Types of Grounds: Dirty Ground/Clean Ground

SESSION 5: CIRCUIT GROUNDING

- Two-wire Direct-Current Systems
- Three-wire Direct-Current System
- Alternating-Current Systems
- Circuits of Less Than 50 V
- Grounded Conductor
- Current Over Grounding and Bonding Conductors
- Grounding Connections for Direct-Current Systems
- Grounding Connections for Alternating-Current Systems

SESSION 6: HIGH RESISTANCE GROUNDING

- High Resistance Grounding (HRG)
- Neutral Grounding Resistor
- Different Types of System Grounding
- Solidly Grounded Power System
- High Resistance Grounding Resistors

SESSION 7: EQUIPMENT BONDING & GROUNDING

- Major Requirements
- Identification of the Bonding Conductor

- Bonding/Grounding and Electric Shock
- Equipment Cabinets and Hardware Items
- Ground Returns & Machine Grounding
- GFCI Need and Installation
- Isolated Grounding Systems
- Computer Systems Grounding Systems
- Types of Grounds in the Petrochemical Industry

■ DAY TWO

SESSION 8: EMERGENCY POWER SYSTEMS

- Proper Grounding of Emergency Power Systems (generators)
- Three-Pole Emergency Generator Grounding
- Four-Pole Emergency Generator Grounding
- Main Bonding Jumper
- Portable Generators
- Vehicle Mounted Generators
- UPS Systems Grounding

SESSION 9: LIGHTNING PROTECTION SYSTEMS

- Lightning Protection Subsystems
- Types of Air Terminals
- Design of a Lightning Protection System.
- NFPA 780 Standard for Lightning Protection
- Isoceraunic Maps/Predictability of Lightning Events

SESSION 10: TELECOMMUNICATION SITE GROUNDING

- Grounding Subsystems Exterior Grounding System
- Interior Ground Ring
- Telecommunications Tower Grounding & Lightning Protection
- Single Point Grounding Concept
- Master Ground Bar
- Battery Banks Grounding
- Halo Ground Grounding
- Inverters in Telecommunication Sites

SESSION 11: EMI ON ELECTRONIC CIRCUITS

- Susceptibility - Immunity
- Cable Shielding and Grounding
- Losses by Absorption and reflection
- Grounding Low- and High-Frequency Shielding
- Grounding High-frequency Shielding
- Coaxial Cables
- Twinaxial/Triaxial & Quadaxial Cables

SESSION 12: GROUNDING FOR PROTECTION AGAINST STATIC CHARGES

- Electrostatic Charges
- Containers Handling Flammables Grounding
- Piping Systems Grounding
- Tank Car Grounding
- Antistatic Bonding and Grounding
- Hazard Areas Static Control
- Static Ground Clamps
- Reducing Static Risks

CASE HISTORIES. Telecommunications, Gas & Oil, Industrial, Commercial, Institutional

COURSE BENEFITS

The participants will come away with a sound understanding of:

- The fundamental characteristics of proper and effective electrical grounding
- How to control corrosion through secure electrical grounding
- The role of the 2014 NEC, NESC, and other codes and grounding standards
- Earth grounds and soil characteristics
- How to provide for a common bonding network in critical facilities
- The participants will understand the requirements of the NEC and TIA/EIA/ANSI “Commercial Building Grounding (Earthing) and Bonding Requirements for Mission-Critical Facilities”
- Students will understand the concept of “equal potential grounds” that the industry tries to achieve in data center environments

COURSE INSTRUCTOR

Pablo Diaz, Grounding Systems Technologies, Inc.

Pablo Diaz is president of Grounding Systems Technologies, Inc. Mr. Diaz holds a Bachelor’s Degree in Electromechanical Engineering from Riverside University, California. Mr. Diaz has extensive experience with the National Electrical Code and all of its recent changes. He is a grounding consultant with numerous American industrial, commercial and institutional companies.

ON-SITE TRAINING
AVAILABLE
FREE
QUOTATION

Why not request a FREE Electrical Grounding On-Site Training Course quotation directly for your company??

http://www.electricityforum.com/On-Site_Training_Requests/

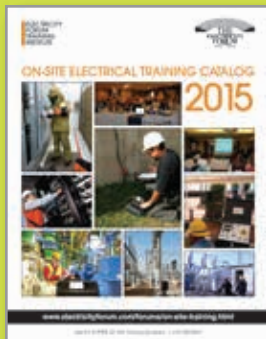
Our on-site training courses are tailored to meet your company’s specific requirements and conducted on your own premises for your employees.

Save the cost of travel and hotels and save on our regular public enrollment registration fees. Plus, our instructors can work with you in advance to determine the level of electrical training and experience of your employees and the specific applications that you would like covered.

Electrical on-site training courses are best because they are delivered using the equipment your electrical technicians use every day. This maximizes the educational value of your electrical training investment. For more information, contact:

Randy Hurst,
President, The Electricity Forum
randy@electricityforum.com

“Our motivation is your education.”



**Download Our FREE 60-Page
On-Site Electrical Training Catalog TODAY!**

THE
ELECTRICITY
FORUM
TRAINING
INSTITUTE

ON-SITE TRAINING BENEFITS:

- Affordable and Cost Effective
- Course Customization
- Flexibility of Schedule
- Convenience for Employees
- CEUs/PDHs

<http://www.electricityforum.com/catalog/>



(315) 789-8323



(315) 789-8940



ON-LINE:

www.electricityforum.com/usa/electrical-grounding-nec.html



MAIL:

The Electricity Forum
One Franklin Square, Suite 302
Geneva, NY 14456



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

SAVE \$50

REGISTER AND PREPAY

14 Days prior to course date and receive an early bird discount of \$50 off the full price.

ATTENDEE INFORMATION

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

NAME _____

TITLE _____

COMPANY _____

ADDRESS _____

CITY _____

STATE _____

ZIP CODE _____

E-MAIL _____

TEL () _____

FAX () _____

METHOD OF PAYMENT

Bill My Credit Card

AMEX VISA MasterCard

Card # _____

Exp. Date _____

Signature _____

Card Holders Name _____

REGISTRATION FEES

The registration fee to attend the two-day Electrical Grounding And the 2014 National Electrical Code Course is \$799.00.

The fee includes forum participation, 100+ Page Electrical Grounding Digital Handbook, refreshments. Lunch is included.

WHEN & WHERE

(Please check the date/location where you want to attend the course)

ELECTRICAL GROUNDING AND THE NATIONAL ELECTRICAL CODE COURSE

Los Angeles, CA - May 12-13, 2015

Four Points By Sheraton LAX Airport Hotel
9750 Airport Blvd, Los Angeles, CA 90045
Tel: 310-645-4600

San Francisco, CA- May 14-15, 2015

DoubleTree by Hilton San Francisco Airport
835 Airport Blvd., Burlingame CA 94010-9949
Tel: 650-373-2223

ACT NOW!

Limited Seating! Register Today!

CANCELLATION AND REFUND POLICY

Registration fees are refundable only upon receipt of written notification 10 days prior to the conference date, less a 10 per cent service charge. Substitution of participants is permissible. The Electricity Forum reserves the right to cancel any conference it deems necessary and will, in such event, make a full refund of the registration fees.

INTERESTED IN ON-SITE ELECTRICAL GROUNDING TRAINING?

Cost Effective On-Site Electrical Training

Save the cost of travel and hotels AND save on our regular public enrollment registration fees. For more information, contact Randy Hurst, President, The Electricity Forum (315)789-8323. You can write to randy@electricityforum.com or you can go to our on-site electrical training quotation page and ask for a FREE quotation: www.electricityforum.com/on-site-training-feedback.htm