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Your International Source for
Electrical Power Training

Grounding and Power Quality

1 Day

0.8 CEUs

Power Quality is a broad term used to describe the health of a power system's voltage and current. Spikes, sags, surges, noise and other events can disrupt the operation of critical systems. Many power quality problems can be attributed to improper or incorrect grounding. In this 1 Day class, Jim shows you the correct grounding and bonding requirements to minimize or reduce power quality problems as well as how to identify and solve common power quality problems. The class is based on Jim's years of experience in conducting power quality studies.

What you *WILL* receive:

- Training manuals containing many examples
- Discussions of proper grounding methods
- Details of how to avoid power quality problems
- Technical articles
- Many calculation examples and problems
- 8 hours of Continuing Education Credit

What you ***WILL NOT*** receive:

- A commercial to sell you products or equipment
- A sales pitch to sell engineering study services
- A class that is just an overview or teaser

What is so special about Jim Phillips' Power System Class?

Jim is not only one of the most popular and sought after instructors in the industry, he is also directly involved with the development of industry standards and practices. He is a member of the IEEE working group that develops *IEEE Std. 1584 [tm], IEEE Guide for Performing Arc Flash Hazard Calculations*. With a career spanning 30 years and having taught over 2000 training programs to people from all seven continents, Jim draws from his vast experience in the industrial, commercial and utility fields.

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Course Agenda
Grounding and Power Quality

DAY ONE

INTRODUCTION
Codes and Standards

TYPES OF SYSTEM GROUNDING
Solid and High Impedance Grounding, Grounded B Phase, Ground Detection

GROUNDING ELECTRODE SYSTEM
Ground Rod, Metal Water Pipe, Building Steel, Concrete Encased Electrode, Ground Ring Electrolytic Ground, GEC Conductor Selection, Main Bonding Jumper

EQUIPMENT GROUNDING AND BONDING
Conductor Selection, Raceways, Conductors in Boxes, Isolated Ground,

SEPARATELY DERIVED SYSTEMS
Service Entrance, Transformers, UPS, Generators and 4 pole transfer switches, Serving Two Buildings from One Source,

GROUNDING TO EARTH
Ground Resistance, Soil Resistivity, Ground Resistance Measurements, Grounding and Corrosion

OUTDOOR SUBSTATIONS
Ground Grids, Touch and Step Potential

SENSETIVE ELECTRONIC EQUIPMENT GROUNDING
Signal Reference Subsystem, Separation of Loads, Isolated Ground Design, Shielded Transformers

TELECOMMUNICATION GROUNDING AND BONDING
Telecom Main Grounding Bus bar (TMGB), Telecom Bonding Backbone (TBB),Telecom Bus Bar (TGB), Telecom Closet and Equipment Room

POWER QUALITY ANALYSIS
Wave Characteristics, Sags/Swells, Objectionable Current, Noise, EMI, Ground Loops

POWER QUALITY SITE SURVEY
Survey Objectives, Measurements, Inspection, Test Equipment, Analysis

POWER QUALITY CASE PROBLEMS AND SOLUTIONS
Internal vs. External Events, Circuit Switching, Ground Potential Difference, EMI, Isolated Ground

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On Site Training
Have This Course at Your Location!
Hold this class at your location for a greater savings. For an all inclusive fee you receive the following for each attendee:

What you *WILL* receive:

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- Discussions of proper grounding methods
- Details of how to avoid power quality problems
- Technical articles
- Many calculation examples and problems
- 8 hours of Continuing Education Credit

Call Brenda at 800-874-8883 or e-mail at: brenda@brainfiller.com for an On-Site Training Proposal!

Plan Ahead - Jim's schedule usually fills up months in advance!

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Jim Phillips, P.E.

Member of IEEE 1584 *IEEE Guide for Performing Arc Flash Hazard Calculations*

Vice - Chairman of Task Group - *IEEE 1584.1 Guide for the specification of scope and deliverable requirements for an arc-flash hazard calculation.*

Member of IEC 61482-1-2 Determination of arc protection class of material and clothing by using a constrained and directed arc (box test)

Author of the book: *Complete Guide to Arc Flash Hazard Calculation Studies*

Is a regular contributor to Electrical Contractor

Founder of the internationally known website: www.ArcFlashForum.com

For 30 years, Jim has been helping tens of thousands of people around the world understand electrical power systems design, safety, theory and applications. Having taught over 2000 seminars during his career to people from all seven continents (Yes Antarctica is included!), he has developed a reputation for being one of the best trainers and public speakers in the industry.

Jim does not just talk about arc flash and electrical safety - he is part of the development of the arc flash standards! He is also the instructor that has taught other instructors in the industry. Jim is a member of the IEEE 1584 Committee - *IEEE Guide for Performing Arc Flash Hazard Calculations.* He is Vice-Chairman of the IEEE Task Group - IEEE 1584.1 "Guide for the specification of scope and deliverable requirements for an arc-flash hazard calculation study in accordance with IEEE 1584"

Jim literally wrote the book about arc flash studies with his book titled: ***Complete Guide to Arc Flash Hazard Calculation Studies*** available from brainfiller.com and Amazon.com He also wrote "How to Perform an Arc Flash Study in 12 Steps" published by NFPA.

In addition to being a regular contributor to Electrical Contractor Magazine, he was one of the main contributors for the NEC Digest. He has authored many articles published in Europe and is a regular speaker at conferences around the world.

Jim earned a BS Degree in Electrical Engineering from the Ohio State University. His career began with Square D Company's Power System Analysis Group where he was responsible for system studies, power system software development and training at their engineering programs.

Later, Jim was in charge of the studies group of the System Protection Section of Ohio Edison Company. He was part of the adjunct faculty for Stark State College where he taught evening classes in electrical power systems.

Jim is a Registered Professional Engineer. with experience that includes everything from planning transmission systems, to design and analysis of industrial, commercial and utility power systems, cogeneration plant design, expert witness and forensic analysis.

Jim continues to travel the globe typically flying over 150,000 miles a year to work with various U.S. and international standards organizations and speak at many conferences and training events.