jim phillips

T2G TECHNICAL TRAINING GROUP®

Power Calculations

Fundamentals of Power System Analysis Per Unit and Symmetrical Components

This is the most complex of all of Jim's classes. Per Unit and Symmetrical Component Analysis is a fundamental part of power system analysis. Unfortunately, these important subjects are not always covered in the college curriculum. Jim bases this class on his power system analysis background and takes the magic and mystery out of Symmetrical Components and Per Unit with his simplified and straight forward approach. Whether you are just learning these concepts or are preparing for the P.E. exam, this course is a must for all that want a better understanding of power system analysis. The most frequently heard comment by students is "I wish I had this class BEFORE I took the P.E. exam the first time."

1.6 CEUs or 16 PDHs - $695 per person

Register 3 people and send a 4th for FREE!

Course Agenda

DAY ONE

POWER SYSTEM ANALYSIS CONCEPTS
RLC Circuits, Series, Parallel, Delta/Wye, Complex Impedances, Per Phase Analysis, Thevenin Equivalents

PER UNIT ANALYSIS
Base Quantities, Per Unit Voltage Current and Impedance, Selecting the Appropriate Base, Changing Bases, Per Unit Problem Solving Worksheets, Per Unit Examples

IMPEDANCE DIAGRAMS
Developing the Per Unit Impedance Diagram, Labeling the Diagram, Solving Per Unit Load Problems with the Diagram

METERING
Ammeter, Voltmeter, Wattmeter, Varmeter, CTs and PTs

TRANSFORMERS
Transformer Turns Ratio, Analysis, Efficiency, Impedances, Transformer Model, Modeling Core and Winding Losses

ROTATING MACHINES
DC Machines, Separately Excited, Self Excited, Compound Induction Machines, Induction Machine Circuit Analysis, Calculating FLA, LRA and PF. Solving Machine Problems

DAY TWO

CONDUCTOR MODELING
Impedance Data, Geometric Mean Radius, Geometric Mean Distance, Capacitive Line Charging, Skin Effect

TRANSMISSION LINES
Short, Medium and Long Transmission Line Models, Voltage Drop, Sending End and Receiving End Voltage, Conductor Data a.k.a. "The Birds" Wax Wing, Blue Jay, Partridge etc.

MOTOR STARTING
Using the Per Unit System to Solve Motor Starting Problems

SYMMETRICAL COMPONENTS
Positive, Negative and Zero Sequence, Zero Sequence Diagrams, Effect of Grounding on Zero Sequence Impedance, Solving Symmetrical Component Problems Painlessly! Transmission Line Problem and Examples

SHORT CIRCUIT CALCULATIONS
Ohmic and Per Unit Calculations, Symmetrical Component Calculations for Balanced and Unbalanced Faults

POWER FACTOR BASICS
Vars, Watts, VA and Power Factor

For more information contact:
T_2G Technical Training Group® at 800-874-8883.

See sample videos of Jim's teaching style at:
www.brainfiller.com

jim phillips

T2G TECHNICAL TRAINING GROUP®

Biography

Jim Phillips, P.E.

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

Co-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 Calculation Study* available later this year.

Has a regular column in Electrical Contractor Magazine *Arc Flash - Unplugged*

Founder of the internationally known website www.ArcFlashForum.com

For almost 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 almost 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 electric power industry.

Jim does not just talk about arc flash and electrical safety - he is part of the development of the actual 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* which is the predominant method for performing arc flash calculation studies. He is Co-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”

He wrote "How to Perform an Arc Flash Study in 12 Steps" which was published by the NFPA. He just completed the book “Complete Guide to Arc Flash Calculation Studies” that will be released later this year. This book is a step by step approach for conducting the arc flash study and it answers many of the controversial questions about the codes and standards.

Jim created the internationally known website ***www.ArcFlashForum.com*** which is used by the global community for understanding arc flash and electrical safety.

He writes a regular column titled *Arc Flash - Unplugged* for Electrical Contractor Magazine and previously was one of the main contributors for the NEC Digest. He also authored several articles published in Europe as well as speaking at several European conferences about Arc Flash. You can download many of his articles at ***www.brainfiller.com*** library. Jim is also involved with arc flash testing and forensic analysis of arc flash accidents.

Throughout his career he has served on many committees including the Energy Policy Committee of IEEE in Washington DC. He is a member of The National Fire Protection Association - NFPA, The Power Engineering Society and the Industry Applications Society.

Jim earned a BSEE Degree in Electrical Engineering at the Ohio State University. After Ohio State, his first job was 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 training programs. Jim is a Registered Professional Engineer in Ohio and Kentucky.

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

Jim’s experiences have included everything from planning transmission systems, to design and analysis of industrial and commercial power systems and cogeneration plants. His teaching experience ultimately led to the creation of T2G Technical Training Group in the 1980’s which provides training programs, videos and continuing education on a wide array of electrical power system topics.

Jim, in the high power lab setting up an arc flash test on a pad mount transformer.

Fundamentals of Power System Analysis

Course Schedule - Open Enrollment Classes

This class is presently scheduled for the following date and location:

Scottsdale, AZ February 17 - 18, 2011

Registration fee is $ 695 per person.
Send 3 people together and the 4th person goes for **FREE!**

To enroll in this class or request information about on site training programs, contact Brenda at:

800-874-8883 or brenda@brainfiller.com

Call Brenda at 800-874-8883 for an On-Site Training Proposal!

Jim's schedule usually fills up months in advance!