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www.hpcnet.com

Course Information Letter ---- G543

(GE) STATIC (BUS FED, SHUNT, SCR) EXCITATION G543

This course was designed to provide the participant with the knowledge necessary for maintaining, troubleshooting and repairing GE's Potential Source and Shunt SCR Static Excitation Systems. This course provides a detailed coverage description of the equipment, principles of operation, as well as maintenance and troubleshooting. This course is a print intensive course with emphasis on expected voltage levels at the test points provided on the cards. This course is recommended for both technicians and engineers.

Topical Outline includes: System Overview, Identification of Major Components, Inner Loop Regulator, AC/DC Gate, Firing Circuit, AC Regulator, Relaying, SCR Bridge, Maintenance and Troubleshooting.

This course is designed for Engineers, Technicians, and Electricians who have a need to maintain this system.

OBJECTIVES: Upon completion of this course, participants will be able to:

1. Describe how the Static Excitation System works.
2. Location the major components making up the Static Excitation System.
3. State the purpose of each of these major components.
4. Demonstrate the ability to interpret alarms.
5. Describe corrective actions to be taken, given an alarm description.
6. Demonstrate the knowledge necessary to perform recommended operational tests.
7. Demonstrate the knowledge necessary to perform periodical maintenance.
8. Demonstrate the knowledge necessary to accurately calibrate this system utilizing the necessary OEM drawings.
9. Demonstrate the knowledge necessary to quickly and safely troubleshoot systems if a problem should occur or a component fail within the system.

COURSE DATES/LOCATION/FEE

For current dates / locations / prices, please see HPC's website, www.hpcnet.com.

WHAT YOU WILL RECEIVE:

1. 1 copy of HPC Technical Services' textbook, (GE) Static Bus Fed Excitation System
2. A "Certificate of Completion" with 2.6 CEUs, authorized for issue by the International Associate of Continuing Education/Training.

FREQUENTLY ASKED QUESTIONS

- Will HPC Technical Services bring this course to our location for our personnel only? YES, call or email Stephen Parker, stparker@hpcnet.com for a price quotation.
- Will HPC Technical Services customize the presentation at our site to suit our particular needs? Yes.
- Is HPC Technical Services' textbook available for purchase as a reference document? No. This course relies heavily on print reading and exercise.
- What is the cost for HPC Technical Service to deliver this course at our location? Well, of course that can vary, but generally speaking, if you're planning on having 6+ attend, when considering your T&L, it is to your advantage to perform the course at your plant (office). You gain from the customization and price.
- Can HPC Technical Services provide "Technical Assistance" in the maintenance troubleshooting of your excitation system? Yes we can. Call or contact Harold Parker, hparker@hpcnet.com for our rate sheets and any further information required.

COURSE OUTLINE

- I. **Major Components:** Power Potential Transformer (PPT), Regulator Section, Rectifier Section
- II. **DC Regulator**
- III. **Inner Loop Regulator**
- IV. **AC/DC Gate**
- V. **Firing Circuit Control:** Synchronizer, Reference Phasor, Trigger Generator Boards, Gate Driver
- VI. **AC Regulator:** Signal Conditioner, AC Voltage Sensor, Impedance Compensator, AC Regulator, AC SVA, Transfer and Tracking, Underexcited Reactive Ampere Limit (URAL)
- VII. **Relaying and Control Circuits**
- VIII. **SCR Rectifier Bridge**
- IX. **Maintenance:** Preventive Maintenance, Troubleshooting and Repair

GENERATOR I&C CERTIFICATION:

Those who attend this course are automatically qualified to take HPC Technical Services' Certification Examination. This examination is offered at no additional expense to the participant. An 80% passing grade is required. The examination length will not exceed 2-hours. Those who complete this examination will receive a revised "certificate of completion" that recognizes this accomplishment along with two-copies of a "To Whom It May Concern" letter that states their accomplishment. (Two copies are provided, one for the participants' employer and one for the participants' personal file.)

Consult HPC's website, www.hpcnet.com, for detail on this certification program.

HPC INSTRUCTOR / CONSULTANT (S):

Stuart Fasser. Mr. Fasser earned his BSEE from Union College, Schenectady, NY, in 1967. He retired in 2002 after 37 years of service with GE, including an early career in factory and field testing of power generation equipment and concluded with 10 years of field engineering in the installation and service of excitation systems. As a field engineer assigned to GE International he installed new GE excitation systems on generators as well as trouble shooting and maintaining existing installations. His most recent installations included 21 EX2000 exciters on units in Egypt, Thailand, Korea and the United States. In these assignments he was responsible for installation of the exciters as well as their checkout and start-up. These activities included component checks, initial calibration, pre-roll simulation of operation and both off-line and on-line alignment and checkout. Stuart is associated with HPC Technical Services in the areas of generator maintenance, testing, excitation systems and instruction.



Harold Parker is the founder & President of H Parker & Company, Inc. Mr. Parker has worked in the "Power Generation" industry for 36 years, 14-years with GE as a Field Engineer, Start-Up Engineer, Technical Training Specialist and Manager. In 1983 Mr. Parker resigned from GE and started a training company, Schenectady Learning Systems, in Schenectady NY, which evolved into H Parker & Company, Inc. today. During this post-GE period, Mr. Parker was briefly employed as Manager Turbine-Generator Services with General Physics (2-years) and as a Field Engineer with Mechanical Dynamics & Analysis (2-years). Mr. Parker is the primary contributor to the development of the text used in this course presentation. Mr. Parker holds a BSME ('69 from Lawrence Institute of Technology), a MBA ('81 from the State University of New York @ Albany) and is a member of ASME and ASTD.



John Marshall. Mr. Marshall, worked for GE 35 years in the power system service and installation business. 25 years of this time was in the international service business. During his career, Mr. Marshall's positions included Field Engineer, Service Supervisor, Technical Training Instructor and Senior Application Engineer. Mr. Marshall's work covered electrical power distribution and control of power generation equipment. His expertise is GE manufactured excitation systems for large and medium size generators used on gas and steam powered turbines. As a Technical Training Instructor for over 20 years, Mr. Marshall developed and presented training programs for GE manufactured excitation systems. As a Senior Application Engineer, Mr. Marshall's work included the upgrading/replacement of older excitation systems with GE's digital excitation system. His Field Service work was worldwide. BSEE degree from Virginia Polytechnic Institute and State University in Blacksburg, Virginia.

HPC TECHNICAL SERVICES
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Website: www.hpcnet.com

REGISTRATION FORM

Company: _____

Plant: _____

Address: _____

City/State/Zip: _____

Telephone: _____ **FAX:** _____

Course Number/Title: _____

Course Dates: ____/____/____ **Thru** ____/____/____

Course Location: _____ **Course Fee:** _____

Please enroll the following individual(s) listed below:

Student #1: _____

Student #2: _____

Taking advantage of HPC's 3-4-2 Policy: Send 3, Pay for 2 when paying in advance.

Student #3: _____

Enrolled by: _____

Date: _____

METHOD OF PAYMENT

Check to Follow: _____

Check Enclosed #: _____

MC/Visa/AMEX #: _____
Expiration Date: _____ **CV Code:** _____

Purchase Order #: _____