



**Course Information Letter ---- G706**

## **ADVANCED GENERATOR MAINTENANCE SEMINAR**

G706

This 3.5 day seminar was developed out of the recognition of the need for plant personnel to better cope with generator maintenance issues. In the total of 100+ years of experience of our presenters, we have seen too many major projects being undertaken that could have been avoided! Or too many plants have invested too many \$\$\$ only to not realize a return due to the selection of the wrong materials, or to errors in reverse engineering, or not understanding the sequence of steps associated with a particular activity. It is the belief of all our presenters that we all gain by the presentation of this seminar (that is why they volunteered to make these presentations). The participant gains as he/she gains honest technical information. We gain as we know the participant will remember who provided this honest presentation when it comes time where outside engineering or training services are needed. We all benefit. Read more, and see you in St. Petersburg FL in January 2010.

### **BENEFITS:**

1. Learn to formulate better plan regarding quality stator testing & inspection schedules.
2. Learn what to look for when conducting a visual inspection of the generator rotor and/or stator.
3. Learn the purpose of conducting generator stator electrical tests, when they should (or should not) be conducted, and how to better evaluate the collected data.
4. Generator lead boxes are need of testing too. Learn more about trouble areas in this area.
5. Partial Discharge is the latest buzzword. Learn how it works, how to collect data, and what to do with the data collected.
6. Stator re-wedging is a common major outage practice. Learn WHEN a re-wedge is needed and WHEN it is not. Also learn which wedges to use and what materials might be preferred (and why).
7. Benefit directly from a couple case studies where the "expert" engineer walks personnel through the detection of a problem, analysis of that problem, troubleshooting, thinking through collected data, and an "after-the-fact" evaluation. Case studies include both the stator and the field.
8. Learn the application of field electrical tests, when they should (or should not) be conducted, and how to better evaluate the collected data.
9. Collector rings can be a source of operating problems. Specific visual and electrical tests may be performed to evaluate these rings. Learn the "thinking" behind these tests.
10. Use of flux probes are significant in the industry. Learn why. Learn how the probe is installed and data is analyzed.
11. Is your stator core loose? We will define the term "loose", talk about how to determine looseness, and tightening methods. Learn also how to not make errors in timing of the work performed.
12. Liquid cooled stator bars are another "hot" subject today. In this seminar you will learn the root cause, how to detect, how to evaluate, and what type of corrective actions may be needed, given the evaluation of the data collected.
13. Generator Condition Monitors are an accepted instrument in large hydrogen cooled units. Learn how the instrument works, what can be done to ensure it continues to provide quality information to troubleshoot generator operational problems.
14. Some generator problems are generated due to operational practices. These practices (where they have too often gone wrong) are discussed from both a theoretical and a practical aspect.
15. There are a few vibration / balance issues that are peculiar to the generator. Learn what these are and how to recognize and evaluate the recorded data.
16. The generator auxiliary systems can be the source of operational issues. Learn what they are and what many are doing to minimize the impact of these problems.

## WHY ATTEND THIS SEMINAR?

**Make better replace/repair/reuse decisions.** This is a topic of discussion that continues throughout the 3.5-day seminar. Evaluation includes a thorough understanding of mechanical integrity, the selection and performance of electrical tests, evaluation of materials, and assembly.

**Get faulty equipment properly repaired.** We've heard horror stories that include the performance of a complete rewind (at what cost?) only to experience short life of components due to the incorrect selection or installation of materials. In this seminar we address these issues. A complete rewind may OR may not be the correction action to take. It certainly is the easiest decision (from a technical perspective) and is, by far the most expensive. More, better technical evaluation might avoid a costly error.

**Perform and analyze generator electrical tests safely and effectively.** What is the purpose of any single electrical test and when should it be performed? This is a major consideration. We discuss the value of each electrical test, the sequence that these tests should be performed (this is a major topic too often misunderstood).

**Manage generator repair projects to your benefit.** Manage cost. Do so by writing quality contract (bid) specifications. Do so by selecting proper materials. Do so by carefully managing the environment under which the outage is performed. Do so by evaluating data. Do so by carefully analyzing all variables. In this seminar, experts discuss these topics and more.



Jan 2006 Seminar in Lido Key, FL



Technical Demonstration @ Lido Key FL (January 2007)



Presentation by Mike Bresney, January 2006



## CONFERENCE DATE/LOCATION/FEE

January 11-14, 2010 .....St Petersburg Beach, FL, USA ..... US \$1,795  
\*\* Conference ends noon on Thursday \*\*

## WHO SHOULD ATTEND?

This seminar has been designed for Maintenance Superintendents, Supervisors, Engineers, and others with responsibility for generator maintenance. Attendance will provide the attendee with a thorough understanding of design, operations, and maintenance of generators. This seminar is for those who want serious discussion of their generating units!

In our first seminar (July 2003) one of the participants, an engineer from a nuclear power plant in the Midwest, made a statement that this investment saved him (his company) hundreds of thousands of dollars! Why? He learned how to avoid a major error that may have otherwise been made. He learned one significant item and the payoff could be phenomenal. This is the type of person we hope attends this seminar.

## RECENTLY SATISFIED CLIENTS:

AECI, AES Corporation, Allegheny Energy, Alstom Power, America On Line, American Electric Power, Aquila Energies, Aspin (City of), Associated Electric Cooperative, ATCO Power, Black Hills Power, Calpine Corporation, Canada National Defense, Centraltermica Esmaraldes (Equador), Cinergy, Cinergy Solutions, Conectiv, Copper Energy Company (Zambia), Dairyland Power, Dominion Resources, DTE Energy, Duke Energy (Allen and Dan River Stations), Dynegy Northeast (Danskammer, and Roseton), Dynegy South Bay, Eastman Chemical, Empresa Energecia Cortino (Nicaragua), EPCOR (Canada), Exelon Corporation (Dresden and Quad Cities Plants), FM Global (Australia), First Energy Corporation, Georgia Power, Great River Energy (Coal Creek, Stanton and North CT Stations), Hydro Quebec, Iberdrola Ingenieria y Consultoria (Spain), Intermountain Power, International Power America, JR Simplot Company, Mirant Corporation (Bowline, Canal, Chalk Point, Dickerson & Kendall Stations), New York Power Authority, NRG, Nuclear Management Corporation (Palisades and Duane Arnold Nuclear Plants), Ontario Power Generation, Otter Tail Power, Owensboro (KY) Municipal Utilities, Portland General Electric, Progress Energy, Public Service of New Hampshire, Reliant Energy, SaskPower, Southern Company, South Texas Project, Sunbury Generation, Suralco LLC (Surinam), TECO Power Services, Texas Utilities, The Gund Company, Vattenfall Generation (Denmark), Weyerhaeuser, Wisconsin Public Service, Wolf Creek Nuclear Corporation, Wood Group (Venezuela)

## WHAT YOU WILL RECEIVE:

1. Printed color copies of the presenters Power Point Presentation for your note taking.
2. One certificate of completion with 2.2 CEU as authorized by the International Association of Continuing Education / Training.
3. Coffee Breaks and Snacks
4. Poker Night (social event) on Monday Evening

**2010 TOPICAL OUTLINE (MINOR CHANGES MAY OCCUR AS THE 2010 DATE APPROACHES):**

**Monday**

Registration

- *Welcome / Introductions*
- *Review of Generator Fundamentals & Construction*
- *Stator Test & Inspection Recommendations*
- *Lunch*
- *Stator Visual Inspection*
- *Generator Bushing Box Testing / Inspection / Repair*
- *HV Bushing Manufacturing / Repair*
- *Stator Testing*
- *Stator Core Tightening and Repair*
- *Texas Hold 'Em "Get Acquainted Dinner and Party"*

**Tuesday**

- *Stator Inspection / Repair Case Study*
- *Stator Rewedge*
- *Stator Bar Manufacturing*
- *Stator / Field Insulating Materials*
- *Stator Winding Vibration Sensors*
- *Lunch*
- *Liquid Cooled Machine Testing / Leak ID & Repairs*
- *Partial Discharge Analysis*
- *Stator Rewind Case Study*
- *Field Visual Inspection and Electrical Test*

**Wednesday**

- *Field Dovetail Preventative Maintenance*
- *Flux Probe System*
- *Field Rewind / Repair Case Study*
- *Lunch*
- *Gas Dryers and Purity Analyzers*
- *Core Monitor and Generator Tagging*
- *Hands-On Activities*

**Thursday**

- *Collector Rings*
- *Alterrex™ Rectifier Maintenance*
- *Generator Operations*
- *Balance Issues*
- *Conclusion*
- *Conference is expected to end at noon!*

## WHERE HELD

Sirata Beach Resort and Conference Center  
5300 Gulf Blvd.

St. Petersburg Beach FL 33706

UNITED STATES

Reservations: 800-344-5999 (reservations must be made by telephone, NOT thru the internet, in order to receive HPC's group rates as listed below.)

## ROOM RATES

- Run of House - US\$109.00
- Studio - US\$119.00
- One Bedroom Suite - US\$129.00
- A "Run of House" room will guarantee the guest a room in the resort but does not specify bed type, location, or view. Please let Sirata's Reservation Representative if you have any specific bed type needs.
- A specific number of rooms are being held at this rate until December 7, 2009. After this date, all requests will be subject to rate/room type availability OR at group rate, subject to availability. Please make your reservation as soon as possible.

At the Sirata Beach Resort in St Pete Beach, Florida, warm Gulf breezes, beautiful white sand, impeccable service combine for a casual relaxing experience. Stroll miles of white sandy beaches with cabanas, parasailing and brilliant West Coast sunsets. Relax in the many hammocks and enjoy multiple pools, whirlpools and miles of sand and dunes. Enjoy the gentle sounds of the surf and softly swaying sea oats along the dunes. With thirteen acres of unspoiled beachfront that surrounds Sirata, it is one of St. Pete Beach's finest casual resorts and hotels.

## DIRECTIONS

- Take I-275 South to St. Petersburg to exit 17 (old #4) the Pinellas Bayway
- Go west across the Bayway (toll) to St. Pete Beach
- Turn right on Gulf Blvd. Go north approximately 1 mile
- Sirata Beach Resort is on the beach side of the island



**HPC TECHNICAL SERVICES**  
**500 Tallevast Road, Suite 101, Sarasota, FL 34243**  
**Telephone: 941-747-7733 .... FAX: 941-746-5374**  
**Website: [www.hpcnet.com](http://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: \_\_\_\_\_ Email: \_\_\_\_\_  
Student #2: \_\_\_\_\_ Email: \_\_\_\_\_

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

Student #3: \_\_\_\_\_ Email: \_\_\_\_\_

**ENROLLED BY:** \_\_\_\_\_ **Email:** \_\_\_\_\_

**Date:** \_\_\_\_\_

**METHOD OF PAYMENT**

Check to Follow: \_\_\_\_\_  
 Check Enclosed #: \_\_\_\_\_  
 MC/Visa/AMEX #: \_\_\_\_\_  
Expiration Date: \_\_\_\_\_ CV Code: \_\_\_\_\_  
 Purchase Order #: \_\_\_\_\_

**Please advise how you found out about this course initially.**

- Website search
- Fax advertisement
- Magazine advertisement
- Familiar with HPC
- HPC mailing
- Other: \_\_\_\_\_

**Please fill out the next page for information about your equipment.**

## Advanced Generator Maintenance Seminar – G706

[www.hpcnet.com](http://www.hpcnet.com)

Company: \_\_\_\_\_

Plant: \_\_\_\_\_

Below please describe unit #, OEM, type of cooling system, recent upgrades, and type of excitation.