

**You are invited to an IEEE Meeting on Thursday, December 3, 2009**

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Title: " **Recent Problems Experienced with Motors and Generator Stator Windings**"

Speaker: **Greg Stone, Dielectrics Engineer, Iris Power**

Date: Thursday, December 3, 2009

Time: No-host social at 5:30 pm; Presentation at 6:15pm; Dinner at 7:15 pm;  
Presentation continues at 8:00 pm; Adjourn by 9:00 pm.

Place: Marie Callender's Restaurant - The Garden Room; 2090 Diamond Blvd in Concord  
(near the Concord Hilton Hotel). Call 925-827-4930 if you need directions.

RSVP: Please make reservations by Dec. 2, by contacting Gregg Boltz at  
email: gboltz@brwncald.com or telephone: (925) 210-2571

Cost: The cost of dinner is \$20 for IEEE members; \$25 for non-members.

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The December 3<sup>rd</sup> meeting of the Industry Applications Society for Oakland East Bay Section will feature a talk entitled "Recent Problems Experienced with Motors and Generator Stator Windings". The speaker will be Greg Stone, Dielectrics Engineer, Iris Power.

In many respects, large motors and generators in utility and petrochemical plants have become a commodity product with intense competition amongst manufacturers from around the world to secure orders. This has resulted in intense pressure on machine designers to reduce manufacturing costs. Some of the methods employed to accomplish this include:

- Reducing the copper cross section
- Reducing the insulation thickness
- Reducing the amount of steel core material.

Each of these methods tends to increase the operating temperature of the stator winding as well as put additional stress on the electrical insulation. Many design innovations have been successfully implemented. However, there is both anecdotal and statistical data that indicates that there are more problems with stator windings made in the past 10 years, as compared to machines made before then.

This presentation will outline some of the problems recently seen, including rapid thermal aging, deterioration of the stress relief coatings and end-winding partial discharge problems. The paper will concentrate on 60 Hz machines, but some examples from modern variable speed drive motors will be also given. Some ideas for mitigation of risk of experiencing these problems will be suggested.

#### **About the Speaker:**

**Dr. Greg Stone** was one of the developers of on-line partial discharge test methods to evaluate the condition of the high voltage insulation in stator windings that are used on most large generators and many large motors throughout the world. From 1975 to 1990 he was a Dielectrics Engineer with Ontario Hydro's Research Division. Since 1990, Dr. Stone has been employed at Iris Power in Toronto Canada, a partial discharge instrument manufacturing company he helped to form. He is a past-President of the IEEE Dielectrics and Electrical Insulation Society, and continues to be active on many IEEE standards working groups. He is also active on several IEC rotating machine standards working groups, and since 2007 was elected to the IEC's Council Board, its main governing body. He has published two books and many papers concerned with rotating machine insulation. Greg Stone has a PhD in Electrical Engineering from the University of Waterloo (Canada), is a Fellow of the IEEE, a Fellow of the Engineering Institute of Canada and is a registered Professional Engineer in Ontario, Canada.

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