

## Minutes of the October 23, 2009 Meeting of the IEEE Materials Subcommittee of the Electric Machinery Committee

**Date:** Friday, October 23, 2009

**Time:** 12:00pm – 13:10pm

**Location:** [Virginia Beach Resort Hotel and Conference Center](#)  
2800 Shore Drive, Virginia Beach, Virginia 23451

**Room:** Cape Henry Room

### 1. Meeting call to order, Agenda, Introductions and Attendance sheet.

Introduction of all attendees – 17 present. Attendance sheet was circulated by the Chair.

### 2. Approval of the Minutes of the Last Meeting

1<sup>st</sup> Stefano Bomben, seconded Doug Conley. All in favor – Yes.

### 3. Chair's Comments:

- **The Nominating committee (Chuck Wilson, Greg Stone and Gary Heuston) nominates Stefano Bomben as Chair, Nancy Frost as Vice-chair, and Aleksandra Jeremic as Secretary. Other nominations, if any, will be accepted at the meeting. All in favor, recommendations accepted. No comments or nominations.**
- **IEEE Standards Association requires that a request be made at each WG meeting for disclosure (identification) of any patents or copyrights that may be related to this work.** The Chair or the Chair's delegate of an IEEE standards - developing working group or the Chair of an IEEE standards Sponsor shall be responsible for informing the members of the working group/ participants at a meeting that if any individual believes that Patent Claims might be Essential Patent Claims, that fact should be made known to the entire working group and duly recorded in the minutes of the working group meeting. This request shall occur at every standards developing meeting once the PAR is approved by the IEEE-SA Standards Board.  
Chair introduced the rule, and reminded that it is to be presented at each meeting. The Chair or the Chair's delegate shall ask any patent holder or patent applicant of a Patent Claim that might be or become an Essential Patent Claim to complete and submit a Letter of Assurance in accordance with Clause 6 of the *IEEE-SA Standards Board Bylaws*. Information about the draft standard will be made available upon request.
- **IEEE Dictionary** – Chuck Wilson has a hard copy from 2000 and Stefano has a .pdf copy of the same.  
ACTION: Stefano Bomben to inquire about permission to forward it to the Members.

### 4. Standards Coordinator Report and Discussion

- *Innocent Kamwa is the Standards Coordinator for the Electric Machinery Committee.*  
ACTION: Chuck Wilson will forward Meeting Minutes to him after this meeting.

- 95-2002 (reaff 2007) *IEEE Recommended Practice for Insulation Testing of Large AC Rotating Machinery with Direct Voltage*. No work needed at this time.
- 286-2000 (reaff 2006) *IEEE Recommended Practice for Measurement of Power Factor and Power Factor Tip-up of Rotating Machinery Stator Coil Insulation*. No work needed at this time.
- 304-1977 (reaff 1991) *IEEE Standard Test Procedure for Evaluation and Classification of Insulation Systems for Direct-Current Machines* **This document has been administratively withdrawn. We can consider this permanent.**
- 433-1974 (1991) *IEEE Recommended Practice for Insulation Testing of Large AC Rotating Machinery with High Voltage at Very Low Frequency* - **Soo Kim has document.**  
**ACTION: Stefano will keep working with Ms. Kim to close the “unresolved comment”. The fourth re-circulation was closed on Oct 21/09. Final document will be ready soon.**
- 434-2006 *IEEE Guide for Functional Evaluation of Insulation Systems for AC Electric Machines Rated 2300 Volts and Higher*. No work needed at this time.
- 522-2004 *IEEE Guide for Testing Turn-to-Turn Insulation on Form-Wound Stator Coils for Alternating-Current Rotating Electric Machines*  
**Chuck Wilson got it reaffirmed, and this Standard was approved at the September 2009 meeting of RevCom.**
- 1043-1996 (reaff 2003) *IEEE Recommended Test Procedure for Performing Voltage-Endurance Testing of Form-Wound Coils and Bars*. We need to consider working on this standard. Greg Stone suggested it should be reaffirmed – group agrees.  
**ACTION: Sudhakar Cherukupalli (DEIS) was to move forward with paperwork for re-affirmation. However, due to the other commitments, Sudhakar has had to resign. Hugh Zhu will carry this work forward. Hugh reports that the document has been reaffirmed.**
- 1107-1996 *IEEE Recommended Practice for Thermal Evaluation of Sealed Insulation Systems for AC Electric Machinery Employing Random-Wound Stator Coils* – **This document has been administratively withdrawn.** Information to be included as annex to 117.  
**ACTION: Nancy Frost to follow up.**
- 1434-2000 (reaff 2005) *IEEE Guide to the Measurement of Partial Discharges in Rotating Machinery* Chair: William McDermid
  - This Standard is up for activity next year.
  - Chair will be Bill McDermid.
  - Members to provide the input if any to Mr. McDermid.
  - Chuck Wilson contacted Soo Kim of IEEE headquarters regarding the question about standard life extension longer than five years. There is a ten year stabilization ballot available for “mature” standards. Please find the response, an insert from SA Ops Man under 9.3, included bellow:

#### “9.3 Stabilized standards

A standard meeting the criteria for stabilization (see 1.2) is eligible for stabilization if the standard has been reaffirmed at least once, and at least ten years have passed since the initial approval (in instances where no subsequent changes were made to the standard), or last revision or amendment of the standard.

An initial stabilization ballot is required before the standard can be submitted to the IEEE-SA Standards Board for approval as a stabilized standard. The ballot shall meet all the criteria of 5.4 and shall be conducted so that balloters can confirm that the standard meets the criteria for stabilization. Prior to the initial stabilization ballot, a Mandatory Editorial Coordination review of the document to ensure eligibility for stabilization is required.

If the stabilization ballot is completed successfully, the Sponsor will be able to submit a request for stabilization and applicable ballot results to RevCom, which will make a recommendation to the IEEE-SA Standards Board. Upon approval, notification shall be made informing interested parties of the stabilization action. Stabilized standards are required to be confirmed by stabilization ballot on a routine ten-year cycle.

Recommendations to change the status of a stabilized standard may be submitted at any time by any materially affected and interested party. Any recommendations that are submitted should include a rationale as to why a revision or withdrawal is required. However, a recommendation shall not be dismissed due to the fact that the recommendation does not necessarily suggest a specific revision or change to the standard. All recommendations shall be submitted or confirmed in writing to the Secretary of the IEEE-SA Standards Board, who shall forward the request to the appropriate Sponsor.

If a recommendation is made at any time to revise or withdraw a stabilized standard, then that recommendation shall be considered by a designated group identified by the Sponsor within a maximum of 60 days from receipt. The submitter of such a recommendation shall be responded to in writing by the Sponsor within 60 days of the receipt of the recommendation and advised of the decision relative to the maintenance status of the standard. A copy for IEEE records shall be forwarded to the Secretary of the IEEE-SA Standards Board, together with a list of the members of the designated group that considered the recommendations.

If the Sponsor is unable to reach consensus on a stabilization response, the Sponsor can respond to the requestor that the recommendation will be forwarded for consideration during the next stabilization ballot. Such stabilization ballot shall then be initiated within 60 days of the notification to the requestor that the Sponsor was unable to reach consensus. The stabilization ballot shall highlight the requestor's recommendation and the fact that the Sponsor was unable to reach consensus.

If the stabilization recommendation requires an interpretation, the interpretation process shall be used to develop a response.

If maintenance of a stabilized standard is justified, a revision project shall be initiated. The stabilized standard shall be superseded upon IEEE-SA Standards Board approval of the active, revision standard.”

Chuck Wilson will also try to obtain permission to forward an Article from Electrical Apparatus magazine about MSC standards.

- *1553-2002 (reaff 2007) IEEE Test and Acceptance Criteria for Voltage-Endurance Testing of Form-Wound Coils and Bars used in Hydroelectric Generators and Large Pumped Storage Motors.* Reaffirmation was completed in 2007 by Aleksandra.
- *EMC-GSC P1665 IEEE Guide for the Rewind of Synchronous Generators, 50 and 60 Hz, rated 1 MVA and above.* The document has been approved.
- *1776 (2008) IEEE Recommended Practice for Thermal Evaluation of Sealed or Unsealed Insulation Systems for AC Electric Machinery Employing Form-Wound Pre-Insulated Stator Coils for Machines Rated 15000 Volts and Below.* No work needed at this time.

## 5. Working Group Reports and Discussion

- *43-2000 (reaff 2006) IEEE Recommended Practice for Testing Insulation Resistance of Rotating Machinery, Chair: Ian Culbert*
  - There were 22 people in attendance of this meeting;
  - This Standar has an approved PAR.
  - A few issues are still unresolved, but addition of new curves for temp correction was accepted.
  - It was greed to add Annex to deal with measuring discharge current and benefits.
  - Chuck Wilson provided some words for green coils/ windings.
  - Ian Culbert informed that lots of useful discussions took place and that most of the issues from the last meeting were resolved; Appendix C will be looked at the next meeting;
  - Ian was expecting the ballot in December 2009, and the title to be changed in 2009.
  - Ian Culber was advised to change it as soon as possible.
  - Ian should place this document into the IEEE format; there is a new template available on the IEEE website;
  - Ian Culbert will request Eric David to provide the write-up on the green coil test;
  
- *56-1977 (reaff 1991) IEEE Guide for Insulation Maintenance of Electric Machines Rated 35 kVA and Higher, Chair: Doug Conley*
  - **This document has been administratively withdrawn. After the editorial work is completed, which is expected before the next meeting, it will go to full ballot.**
  - No meeting was held during this session.
  
- *117-1974 (reaff 1991) IEEE Standard Test Procedure for Evaluation of Systems of Insulating Materials for Random-Wound AC Electric Machinery, Chair: Nancy Frost* **This document has been administratively withdrawn.**
  - No meeting was held during this session.
  
- *1310-1996 (2004 reaffirmed) IEEE Recommended Practice for Thermal Cycle Testing of Form-Wound Stator Bars and Coils for Large Generators, Chair: Greg Stone*
  - No meeting was held during this session.
  
- *P1719 IEEE Guide for Evaluating Stator Cores of AC Electric Machines Rated 1 MVA and Higher, Chair: Glenn Mottershead*
  - There were 25 attendees.
  - Attempt made to quantify evaluation and action items for several members assigned.
  - Proposed Evaluation Table was reviewed and it seems it will be adopted as part of this Standard;
  
- *P1798 IEC 60034, Rotating Electrical Machines – Part 18-41: Qualification and Type Tests for Type I Electrical Insulation Systems Used in Rotating Electrical Machines Fed by Voltage Converters. Chair: Meredith Stranges*
  - This meeting was conducted by Meredith Stranges.
  - Moving to adopt the document as is, with a title change.
  - One negative comment on straw ballot from Marty Zraggen through Jeff Hudson.
  - Meredith intends to move it to ballot
  - Meredith shall attempt to resolve potentially negative ballots.

- *P1799 IEEE Recommended Practice for Quality Control Testing of External Discharges on Form-Wound Coils, Vacuum Pressure Impregnated Stator Insulation and Fully Assembled Stator Windings.* **Chair: Remi Tremblay**
  - There were 21 attendees.
  - A new draft and the PAR have been issued.
  - - Moving forward nicely, discussions through the document resulted in need to do some rearranging – latest draft passed through and agreed on the voltage test levels
- *Short Meeting to determine if we should create a standard similar to 1310, but focusing on turn insulation rather than ground insulation.* **Chair: Chuck Wilson**

There were 21 attendees at the meeting. Bal suggested that he could go over the background of work done on this subject and Chuck agreed. After about one hour of presentation/ discussion, the group voted (almost unanimously) to continue with the development of a guide for this sort of testing. Bal agreed to develop a proposed guide for the meeting in June of 2010 and to chair this Working Group. Chuck will assist with the details. Glen offered copies of Bal's papers obtained from the IEEE Xplore, but we decided not to use them because of possible copyright issues. Glenn will obtain copies directly from Bal.

After Bal presents the proposed document next June, there will be a vote on whether to proceed.

- Awards and Recognition. **Chair: Hugh Zhu**
  - There were no nominations since last year from this Subcommittee
  - There is a need to know about outstanding papers
  - Available awards for EMC - three (3) are available (Service Award, Paper Prize for the outstanding technical paper on energy conversion, and Standards Award – P1665 is recommended)
  - There is a need to increase number of awards from this Subcommittee
  - papers, fellowship, service
  - ACTION - Hugh Zhu will send out an email with details of awards to the MSC to ask for nominations.
  - Major revision of the existing or the new Standards may be subject to Awards.
  - Deadline is in two weeks, November 6, 2009.
  - Hugh will send out a "Call for Nominations" early next year.
  - Dakin Award – Hugh Zhu to follow up and inform Chuck on what is happening in the EMC.

## 6. Liaison Reports

- **IEC** Meredith Stranges and Gregory Stone are representatives. No report received.
- **CIGRE** - Remi Tremblay supplied a report included as Annex A.

If any of the members are interested in working on these Standards, please contact Remi.

- **Electric Machinery Committee**

- Meeting Minutes were not issued yet, Chuck will forward upon its release. The new Chair is Mike Brimsek, and the Generator sub-committee Chair is Mike Sedlak.
- On-line Monitoring on Turbo and Hydro Machinery Standard – Chair: Izzy Kirsbaum , Secretary: Geoff Klempner. This Group meets at the PES. Glenn Mottershead will follow up with Izzy regarding the location/timing of meetings and possibly provide the copy of Izzy's On-line document.
- 492 – Maintenance and Operation Guide for Hydro Machinery – Robert Bramend meets at EMC meetings.
- Chuck will send out the EMC Organization Chart (not up to date) and the list of all Standards.

- **Generator SC**

**7. Old Business None**

**8. New Business**

There was a discussion regarding the Schedule of the Program for CEIDP Conference which was published **very** late. This should not be the case with Conference programs.

**9. Next Meeting**

The spring meeting will be at the ISEI 2010 <http://ewh.ieee.org/conf/isei/index.html> - June 6-10, 2010 at the Sheraton San Diego Hotel & Marina 1380 Harbor Island Drive, San Diego, California 92101 Phone: (619) 291-2900.

[San Diego Hotels: Sheraton San Diego Hotel & Marina Reservations at sheraton.com](http://www.sheraton.com)

We may have meetings on Sunday and Thursday.

- Stefano Bomben will follow up with the Fall's Meeting venue;

**10. Adjournment**

Richard Huber made and Remi Tremblay seconded the motion.



Aleksandra Jeremic



Chuck Wilson  
/caw

## ANNEX A - Cigre Report

# Turbo Generators

### *Active Working Groups*

- Guide: Generator Coil Retaining Ring – A Literature Survey and General Guideline – To be published in ELECTRA
- Guide on Stator Water Chemistry Management – Last revision to be done before ELECTRA publication
- Update on On Line Monitoring – To be published in ELECTRA
- Guide on Stator Winding Grounds – To be published in ELECTRA
- Guide on Economic Evaluation Refurbish/Replace Decisions – Works on progress
- Guide on Over fluxing Generators – Works on progress
- Guide on Generator/Power System Interrelationship Issues – WG not approved yet
- Guide- Consideration of Duty on Windings – WG not approved yet
- Questionnaire – State of the Art and Capability for Robotic Inspection of Turbo-Generators – WG not approved yet

# Hydro Generators

### *Active Working Groups*

- Intermittent operation experience – To be published in ELECTRA
- Survey of generators failures – To be published in ELECTRA
- Generator fire protection – Works on progress
- Questionnaire on the use of plastic thrust bearings– WG not approved yet
- Generator Stator Winding Stress Grading Coating Problem – Works on progress
- State of art of Hydro generators efficiency – Works on progress
- Guide for Prevention of and Minimizing the Damage from Stator Winding Grounds – Works on progress
- Guide on Generator/Power System Interrelationship Issues – WG not approved yet
- Hydro generators cleaning – WG not approved yet

# New Technologies (Partial information)

### *Active Working Groups*

- Works on Wind Turbine and technological watch on superconductor generators and other new technologies
- Plenary session on Wind Turbines generators – Presentation by major manufacturers in Paris in 2010

## Large Motors

### *Active Working Groups*

- Motors for nuclear applications – To be published in ELECTRA
- Perception of large motors – To be published in ELECTRA
- Power Station Large Motors Requirements in the Field of Standard – Works on progress
- Guide of Methods of Determining the Condition of Stator Winding Insulation and their Effectiveness – Works on progress
- Extending Life of Large Motors in Nuclear Power – Works on progress
- Motor Failure Survey – Works on progress

Next meeting-Paris 2010 as part of the Biannual CIGRE Congress and the SC-A1 meeting, 22-27 August 2010.

Remi Tremblay, eng.