

Minutes of the Meeting for the Materials Subcommittee of the Electrical Machinery Committee

Date: October 26, 2005

Location: EIC/EMCW Conference, Indiana Convention Center, Indianapolis, Indiana

A meeting of the Materials Subcommittee was held from 3:00 p.m. to 5:00 p.m.

1. Meeting call to order

With the absence of the Chair Doug Conley, the meeting was called to order by the Secretary Gary Heuston. Thirteen members and four guests attended this meeting.

2. Minutes of the Last Meeting

The Minutes of the April 12, 2005 meeting in Boston, Massachusetts were circulated. A motion for approval was offered by Dr. Lori Rux and seconded by Dr. Greg Stone.

3. Chair's Comments

No comments were offered at this time

4. Standards Coordinator Report and Discussion

- *95-2002 IEEE Recommended Practice for Insulation Testing of Large AC Rotating Machinery with Direct Voltage*
- *433-2006 IEEE Recommended Practice for Insulation Testing of Large AC Rotating Machinery with High Voltage at Very Low Frequency*
- *434-2006 IEEE Guide for Functional Evaluation of Insulation Systems for AC Electric Machines Rated 2300 Volts and Above*
- *522-2004 IEEE Guide for Testing Turn-to-Turn Insulation on Form-Wound Stator Coils for Alternating-Current Rotating Electric Machines*
- *1043-1996 (reaff 2003) IEEE Recommended Test Procedure for Performing Voltage-Endurance Testing of Form-Wound Coils and Bars*
- *1107-1996 IEEE Recommended Practice for Thermal Evaluation of Sealed Insulation Systems for AC Electric Machinery Employing Random-Wound Stator Coils.*

The Subcommittee tentatively decided to allow this document to remain administratively withdrawn. An annex will be added to the IEEE 117 document that addresses the immersion test issues included in the IEEE 1107 document.

- *1434-2000 (reaff 2005) IEEE Guide to the Measurement of Partial Discharges in Rotating Machinery*

- *1553-2002 IEEE Test and Acceptance Criteria for Voltage-Endurance Testing of Form-Wound Coils and Bars used in Hydroelectric Generators and Large Pumped Storage Motors*

5. Working Group Reports and Discussion

- *43-2000 IEEE Recommended Practice for Testing Insulation Resistance of Rotating Machinery, Chair: Andy Brown*

Acting Chair Greg Stone provided the report. This document was submitted for reaffirmation. One negative ballot with comments was received. A Working Group, established to oversee this affirmation process, reviewed these comments at this meeting.

This document will be reaffirmed. This Working Group will submit a PAR to revise this document as necessary to reflect the comments received during this reaffirmation process.

- *56-1977 (reaff 1991) IEEE Guide for Insulation Maintenance of Large Alternating-Current Rotating Machinery (10,000 kVA and Larger), Chair: Doug Conley*

Acting Chair Meredith Stranges provided the report. This Working Group continued to review this document. The Acting Chair assigned various sections for writing. Revision 12 will be distributed before the next meeting. This Working Group is also reviewing the IEEE 62.2-2005 document to avoid duplication of material.

- *117-1974 (reaff 1991) IEEE Standard Test Procedure for Evaluation of Systems for Insulating Materials for Random-Wound AC Electrical Machinery, Chair: Nancy Frost*

The Working Group agreed on the title, scope, and purpose. A PAR will be submitted. This WG is referring to an IEC equivalent document, 61857 - 1, - 21 and - 22, for guidance in revising this IEEE document.

- *275-1992 (reaff 1998) IEEE Recommended Practice for Thermal Evaluation of Insulation Systems for Alternating-Current Electric Machinery Employing Form-Wound Pre-Insulated Stator Coils for Machines Rated 6,900 V and Below, Chair: Chuck Wilson*

Acting Chair Nancy Frost provided the report. A PAR was submitted. Various sections of this document will be revised to better clarify the details of this procedure. Three subcommittees were created to review various sections of this document.

This document is for machines with form-wound stator coils rated 6,900 volts and below. There was some discussion about expanding the scope of this document to include higher voltage machines or creating a new document for these higher voltage machines. It was the general position of this subcommittee that an additional document should be created for the higher voltage machines.

- *286-2000 IEEE Recommended Practice for Measurement of Power Factor and Power Factor Tip-up of Rotating Machinery Stator Coil Insulation, Chair: Tim Emery*

It was agreed to submit this document for reaffirmation.

There was some discussion about clarifying the test voltage levels. There was also some interest in adding a pass-fail criteria to this document for modern coils and bars (not assembled windings).

- *304-1977 (reaff 1991) IEEE Standard Test Procedure for Evaluation and Classification of Insulation Systems for Direct-Current Machines, Chair: Bal Gupta*

The scope and purpose were reviewed at this first meeting.

- *429-1994 IEEE Recommended Practice for Thermal Evaluation of Sealed Insulation Systems for AC Electric Machinery Employing Form-Wound Pre-Insulated Stator Coils for Machines Rated 6,900V and Below, Chair: Chuck Wilson*

Acting Chair Nancy Frost provided the report. This document is very similar to IEEE 275-1992. A PAR has not been submitted for this document. This document will be reviewed after the completion of the IEEE 275 document.

- *1310-1996 (reaff 2004) IEEE Recommended Practice for Thermal Cycle Testing of Form-Wound Stator Bars and Coils for Large Generators, Chair: Greg Stone*

Reviewed proposed revisions to this document. A new PAR has not been submitted.

- *New Document for Test and Evaluation of Stator Cores, Chair: Glenn Mottershead*

A title, scope and purpose were created for this document. An outline structure will be developed at the next meeting.

6. Liaison Reports

- IEC
 1. TC98 (Insulation Systems) and TC15E (Insulation Testing) have merged to create TC112 (Insulation Materials and Testing?)
 2. TC2 has 3 active Working Groups
 - a) IEC 60034 Part 18 – 41 and – 42
 - 41 is for random-wound machines and has been distributed for vote. This document defines test procedures to qualify the insulation system used in inverter-duty motor windings with PWM drives. This document specifies aging and diagnostic tests. Greg Stone will seek approval to also publish this document as an IEEE document.
 - 42 is a similar document for form-wound windings. It is estimated that it will take another 2 years or more to complete this document.
 - b) IEC 60034 Part 27 is a new document concerned with off-line PD testing of stator windings. It does not include a pass-fail criterion. This document has been distributed for vote.

c) A third document has been distributed for vote which describes test procedures for measuring PD under surge voltages.

- CIGRE

No report was provided.

7. Old Business

No discussion.

8. New Business

With the term of the current officers expiring at the close of this meeting, the nominating committee presented their recommendation for a new slate of officers for the next two years. This following slate of officers was approved unanimously by this subcommittee.

Chair: Gary Heuston
Vice Chair: Chuck Wilson
Secretary: Lori Rux

9. Next meeting

The next meeting will be held during the ISEI Conference in Toronto, Ontario, Canada 11- 14 June 2006.