

[Email This Letter](#)

06 December 2006

Innocent Kamwa
Hydro Quebec Technology Group (IREQ)
Logiciels de Reseaux
1800 Lionel Boulet
Varenes, Quebec J3X 1S1
Canada
kamwa.innocent@ireq.ca

Re: P117 - Standard Test Procedure for Thermal Evaluation of Systems of Insulating Materials for Random-Wound AC Electric Machinery

Dear Innocent:

I am pleased to inform you that on 06 December 2006 the IEEE-SA Standards Board approved the above referenced project until 31 December 2010. A copy of the file can be found on our website at <http://standards.ieee.org/board/nes/projects/117.pdf>.

Now that your project has been approved, please forward a roster of participants involved in the development of this project. This request is in accordance with the IEEE-SA Operations Manual, Clause 5.1.2i under Duties of the Sponsor which states:

"Submit annually to the IEEE Standards Department an electronic roster of individuals participating on standards projects"

For your convenience, an Excel spreadsheet for your use has been posted on our website at <http://standards.ieee.org/guides/par/roster.xls>. Please forward this list to me via e-mail at s.hampton@ieee.org no later than 06 March 2007.

Please visit our website, IEEE Standards Development Online (<http://standards.ieee.org/resources/development/index.html>), for tools, forms and training to assist you in the standards development process. Also, we strongly recommend that a copy of your draft be sent to this office for review prior to the final vote by the working group to allow for a quick review by editorial staff before sponsor balloting begins.

If you should have any further questions, please contact me at +1 732 562 6003 or by email at s.

hampton@ieee.org.

Sincerely,

Sherry Hampton
Administrator, Governance
Standards Activities
Phone +1 732 562 6003
FAX +1 732 875 0695
Email: s.hampton@ieee.org

CC: kerszei@sce.songs.com, stds-pes-scc@ieee.org, nancy.frost@vonroll.com

PAR Request Date: 11 October 2006**PAR Approval Date:** 06 December 2006**PAR Signature Page on File:** Yes**Type of PAR:** Revision to IEEE Standard**Status:** Revision to an Existing IEEE Std 117-1974**Root Project:****1.1 Project No.:** **P117****1.2 Type of Document:** Standard**1.3 Life Cycle:** Full-Use**1.4 Is this document in ballot now?** No**2.1 Title**

Standard Test Procedure for Thermal Evaluation of Systems of Insulating Materials for Random-Wound AC Electric Machinery

2.1 Amendment/Corrigenda Title**3.1 Working Group Name** [Standard Test Procedure for Evaluation of Systems of Insulating Materials for Random-Wound AC Rotating Electrical Machinery](#)**Working Group Chair**
[Frost, Nancy](#)
Phone: +1 518 344 7124
Email: nancy.frost@vonroll.com**Working Group Vice Chair**
[Wicks, Roger](#)
Phone: 804-383-3300
Email: roger.c.wicks@usa.dupont.com**3.2 Sponsor** [IEEE Power Engineering Society Electric Machinery \(PE/EM\)](#)**Sponsor Chair**
[Kerszenbaum, Isidoro](#)
Phone: +1 949 368 6217
Email: kerszei@sce.songs.com**Name of Standards Liaison Representative (if applicable)**
[Kamwa, Innocent](#)
Phone: 450-652-8122
Email: kamwa.innocent@ireq.ca**3.3 Joint Sponsor****4.1 Type of Ballot:** Individual**4.2 Expected Date of Submission for Initial Sponsor Ballot:** July 2008**4.3 Projected Completion Date for Submittal to RevCom:** May 2009**5.1 Approximate number of people expected to work on this project:** 10

5.2 Scope: This is a standard test procedure for the thermal evaluation and qualification of electrical insulation systems for Random-Wound AC Electric Machinery, where thermal degradation is the dominating aging factor. This procedure compares the relative thermal performance of a candidate Electrical Insulation System (EIS) to that of a reference Electrical Insulation System. This standard covers insulation systems for such machinery with input voltage of up to 1000 Volts at 50/60 Hertz. This standard provides a statistical method for establishing a relative life-temperature relationship for an insulation system. To have any significance, the reference insulation system must be supported with adequate field service data. This procedure is intended to evaluate insulation systems for use in air-cooled, random-wound AC electric machinery with “usual service conditions”. This procedure, on its own, does not cover insulation systems such as exposure to conducting contaminants, radiation, inverter applications, or operation in oils, refrigerants, or other media that potentially degrade insulating materials. For evaluation of sealed insulation systems, refer to the informative annex at the end of this document.

Old Scope: No Scope presented.

5.3 Is the completion of this document contingent upon the completion of another document? No

5.4 Purpose: The purpose of this standard procedure is to classify insulation systems in accordance with their temperature limits by test, rather than by chemical composition. This test procedure has been prepared to outline useful methods for the evaluation of systems of insulation for random-wound stators of rotating electric machines. The motorette procedure described is used for the evaluation of electrical insulation systems.

Old Purpose: The chief purpose of this test procedure is to classify insulation systems in accordance with their temperature limits by test, rather than by chemical composition. The intention is, first to classify according to the recognized thermal classification A, B, F, H, and above H categories as referenced in the Appendix. The motorette procedure is intended to be used as an Industry Standard for insulation systems in that data obtained in accordance with this standard can be correlated between testing laboratories. A wide variety of synthetic electrical insulation materials is available for application in electric machinery and apparatus. As there is a growing tendency either to rely solely on these materials as electrical insulation, or to employ them with the old familiar materials in novel combinations, there is a corresponding increase in the problems associated with the selection and evaluation of insulations. Consequently a complete insulation system must be evaluated rather than testing only individual insulating materials. Many of the specifications regulating the use of insulation materials were written before the advent of the newer synthetics and were based upon experience gained with the old materials over a long period of time. Difficulties arise, therefore, when an effort is made to classify these new materials or combinations for insulation purposes under IEEE Std 1-1969 General Principles for Temperature Limits in the Rating of Electric Machinery and supplementary documents IEEE Std 98-1972, Guide for the Preparation of Test Procedures for the Thermal Evaluation and Establishment of Temperature Indices of Solid Electric Insulating Materials, and IEEE Std 99-1970, Guide for the Preparation of Test Procedures for the Thermal Evaluation of Insulation Systems for Electric Equipment. A wide range of properties is available in current synthetic materials, so that it is not feasible to classify them on the basis of their chemical composition alone. Secondly, it is not desirable to wait and acquire the knowledge required to classify them solely on the basis of experience. In the third place, composite systems of insulation, in which materials of different temperature classes are used in different parts of the structure, may give satisfactory service at temperatures higher than normally permitted for the lowest temperature component; and, conversely, compatibility or other problems may arise whereby the highest temperature component is rendered unsuitable for use at its classified temperature. This test procedure has been prepared to outline useful methods for the evaluation of systems of insulation for random-wound stators of rotating electric machines. It is expected that the several insulating materials, or components, making up any insulation system to be tested will first be screened in accordance with specific test procedures for each

type of material. Normally materials that have given acceptable performance in these separate screening tests would be included in the system evaluation tests outlined in this procedure. This procedure is intended to evaluate insulation systems for use in "usual service conditions" with air cooling. It has also been a useful tool for evaluating systems for special requirements where machines are enclosed in gas atmospheres, subjected to strong chemicals, to metal dusts, or submersion in liquids. However, these special requirements are beyond the scope of this test procedure.

5.5 Need for the Project: The original scope and purpose of this document are in essence remaining the same while the document itself will be updated to the correct IEEE format. This standard is a reference document for other standards (IEEE, UL, IEC) and as such needs to be maintained and updated. As well, the IEC standards 61857-1 and 61857-21 will be reviewed to harmonize these documents together, while maintaining the IEEE format and focus. In addition, the relevant sections of IEEE 1107 (IEEE Recommended Practice for Thermal Evaluation of Sealed Insulation Systems for AC Electric Machinery Employing Random-Wound Stator Coils) will be pulled into an appendix of this IEEE 117 document as this testing is very similar, requiring one additional step. In balloting, if this needs to be a separate full standard, it will be noted and can be accomodated at that time.

5.6 Stakeholders for the Standard: The stakeholders for this standard are the manufacturers and users of low voltage random wound motors.

6.1.a. Has the IEEE-SA policy on intellectual property been presented to those responsible for preparing/submitting this PAR prior to the PAR submittal to the IEEE-SA Standards Board? Yes **Presented Date:** 2006-10-16

If no, please explain:

6.1.b. Is the Sponsor aware of any copyright permissions needed for this project? No

If yes, please explain:

6.1.c. Is the Sponsor aware of possible registration activity related to this project? No

If yes, please explain:

7.1 Are there other standards or projects with a similar scope? Yes

If yes, please explain:

IEC 61857, Electrical Insulation Systems Procedures for Evaluations, Part 1 - General Requirements - Low Voltage and Part 21 - Specific Requirements for General Purpose Models - Wire Wound Applications. Both these standards were modeled after the IEEE 117-1974(1984) document.

Sponsor Organization: IEC

Project/Standard Number: 61857

Project/Standard Date: 0000-00-00

Project/Standard Title: IEC 61857, Electrical Insulation Systems Procedures for Evaluations, Part 1 - General Requirements - Low Voltage and Part 21 - Specific Requirements for General Purpose Models - Wire Wound Applications

7.2 Is there potential for this standard (in part or in whole) to be adopted by another national, regional, or international organization? ? Do not know at this time

Technical Committee Name and Number:

Contact person:

Contact person Phone Number:

Contact person Email Address:

7.3 Will this project result in any health, safety, security, or environmental guidance that affects or applies to human health or safety? No

7.4 Additional Explanatory Notes:

Any changes made in the title, scope or purpose were for clarification only. The essence of this standard remains the same. Changes made or to be made are for updating and clarification purposes, as test equipment and clarifications on test procedures need be made.

8.1 Sponsor Information:

Is the Scope of this project within the approved scope/definition of the Sponsor's Charter? Yes

If no, please explain: