



## Study Committee A1 – Electrical Rotating Machines

### Advisory Group A1.02

#### Hydro-Generators

#### Minutes of meeting

**Tuesday 24, August 2010**

**Room 351 Level 3**

**Palais des Congrès**

**Paris, France**

15 :15 to 18:00

#### 1) Welcome, introductions and changes in membership

72 attendees from 23 countries.

#### 2) Active Questionnaires (Working Groups) (anyone receiving this Agenda who has not received the referenced materials recently distributed. Please contact the Working Group Leader listed for each topic)

Generator Stator Winding Stress Grading Coating Problem, Remi Tremblay (CA). (A1.02) Questionnaire sent before the meeting to all CIGRÉ members. A presentation for approval of this questionnaire made during Paris 2008 meeting. It received approval. The questionnaire was sent to all SCA-1 members by October 2008. The TOR was approved by October 2008. Answers were requested for the end of the year 2008. A preliminary report was presented during Sydney meeting in 2009.

TOR details:

1. Terms of Reference (TOR) approved by October 2008
2. Final questionnaire sent September 18<sup>th</sup> 2008
3. Draft of the report presented in Sydney 2009
4. Second report draft presented by Mr Peter Weihe (AU) in Paris 2010
5. Final report for January 2011
6. Technical brochure May 2011
7. Tutorial June 2011

Approved by SCA1 2010-08-27.

Generator fire protection, – Alexander Gromow (BR) (A1 technical.04) A preliminary report was presented by Mr Gromow during 2008 meeting. A presentation was made during Sydney meeting in 2009 by Mr Sanz. The TOR indicates a final report for 2010 in Paris. A preliminary report will be presented in April 2010. A brochure will be prepared for February 2011.

TOR details:

Terms of Reference (TOR) approved only on April 2008. However, this WG began his activities at the end of 2005.

Comparison between similar questions from the Groups 1, 2 and 6: ready. Presented at the Paris Biannual Session in 2008 – 40 pages (465 survey items)

Isolated analysis Group-01 – Users: ready. Presented at SC-A1 Sidney Meeting in 2009 - 174 pages (3640 survey items)

Draft report to be issued by April 2010

Final report for Paris in 2010

Technical brochure forecasted by December 2010

Tutorial for March 2011

Approved by SCA1 2010-08-27.

State of art of Hydrogenerators efficiency, Hector. D. Piriz (AR) (WG A1.12) A presentation was made in Paris in 2008. The TOR was approved in 2008. Final report in 2011. Mr Piriz made a presentation during Sydney meeting.

TOR details:

Terms of Reference (TOR) approved by December 2008

Final questionnaire for April 2009

Draft report for July 2010

Presentation in Paris in 2010

Final report for January 2011

Technical brochure May 2011

Tutorial June 2011

Approved by SCA1 2010-08-27.

Guide for Prevention of and Minimizing the Damage from Stator Winding Grounds - Oscar Martinez (ES) (WG A1.14) An A1.01 WG ended on this topic. TOR approved in 2008 for an A1.02 advisory group WG. A final report will be prepared for 2011. Mr Martinez made a presentation during Sydney meeting.

TOR details:

TOR approved on 16 October 2008.

Draft version 1 by October 2010

Commented version by June 2011

Final version by 2011 meeting

Technical brochure for Electra publication by November 2011

Tutorial for December 2011

Approved by SCA1 2010-08-27.

Insulation update – from class F to class H, Jose Luis Garcia Araco (WG A1.13) The TOR was approved by October 2008. A liaison will be make with D1.07 WG. Howard Sedding will assure this liaison. TOR was approved in 2008. The final report will be presented in 2011. Mr Garcia made a presentation during Sydney meeting.

TOR details:

1. Terms of Reference (TOR) approved by 15 October 2008
2. Questionnaire for comments scheduled for June 2009
3. Presentation of WG works in Paris in 2010. Questionnaires will be sent before September 15 and if only minor comments they will be sent for answering by November 1.
4. Draft report for March 2011
5. Final report to be approved in China in 2011

6. Technical brochure for November 2011

7. Tutorial for January 2012

Approved by SCA1 2010-08-27.

Questionnaire on the use of plastic thrust bearings, – Mr Lars-Eric Kämpe (SE) (WG A1.21) is the chairman of this working group. He made a presentation during Sydney meeting in 2009.

TOR details:

1. Terms of Reference (TOR) approved in February 2010
2. Draft version presented in Paris.
3. Final version to be sent to everybody by October 15 2010
4. Answers requested for January 2011
5. Draft report for September 2011
6. Final version by March 2012
7. Approval of the final report by August 2012
8. Technical brochure January 2013
9. Tutorial March 2013

Approved by SCA1 2010-08-27.

Generator cleaning, – Mr Geir Aalvik (NO) (WG A1.25) is the chairman of this working group. He accepted in Sydney in 2009.

TOR details:

1. Terms of Reference (TOR) approved in January 2010
2. Presentation in Paris in August 2010
3. First draft questionnaire – September 2010
4. Comments by members and experts – February 2011
5. Second draft questionnaire – March 2011
6. Comments by members and experts – June 2011
7. Final questionnaire – August 2011
8. Survey answers – February 2012
9. First Draft report – August 2012
10. Comments by members and experts at Paris 2012
11. Second draft report – January 2013
12. Comments by members and experts – April 2013
13. Final report – June 2013
14. Technical brochure October 2013
15. Tutorial November 2013

Approved by SCA1 2010-08-27.

Guide on Generator/Power System Interrelationship Issues (WG-A1.0?). This WG was led by A1.01 advisory group. Gert Coetzee (ZA) can't be the convener anymore. Mr Rouco accepted in 2009 to be the convener of this working group. AG A1.02 will participate to the works. It was discussed in Paris in 2010 during A1.01 meeting. A1.02 AG will wait Mr Rouco works and will take a decision for future works for hydrogenerators in 2011 in China.

Approved by SCA1 2010-08-27.



## 1 New working groups:

Magnetic wedges. Mr Josip Studir made a presentation in Paris in 2010. He will be the convener of this WG. The TOR will be sent this fall for approval. Approved by SCA1 2010-08-27.

Winding supports. Mr Franz Ramsauer made a presentation in Paris in 2010. He will be the convener of this WG. He will present a TOR this fall for approval. Approved by SCA1 2010-08-27.

Testing voltage of doubly-fed asynchronous generator-motor rotor winding for pumped storage system. Mr Osamu Nagura made a presentation in Paris in 2010. He will be the convener of this WG. He presented a TOR this fall for approval. Approved by SCA1 2010-08-27.

The meeting was stopped there at 18h00. No time for new other WG.

- 3) **Proposals for other new topics of Study.** It was agreed in Paris 2002 that a series of Guides aimed at Generator breakdown/failure mechanisms should be created and would be beneficial to the industry. The goal is to present information that will stimulate informed discussions between plant operators and manufacturers/ service providers. Each guide should include a listing of important ideas and information, potential negative consequences, references on where to find information to avoid potential disaster (references) and as appropriate comments on current industry practices. The list of suggested topics will be periodically reviewed and updated.

Current list:

- a. Economic evaluation;
- b. General means and features to increase reliability;
- c. Analysis of magnetic saturation caused by uprating a generator when replacing only the stator winding and reinsulating the rotor winding (B class to F class);
- d. Evaluating delta at split core joints with ELCID method.

Please contact the Convener if you are interested in coordinating a working team or group on any subject.

- 4) **Next meeting- China 2011 as part of the SC-A1 meeting.** Every WG will have to present works done up to now by the WG.

Rémi Tremblay-Convener 2010-08-27.