12.3. Cigré liaison

Last Cigré session was held in Paris on the 25th of August with more than 300 attendees, which makes the transformer session one of the most popular in the event.
A poster session was also part of the event with 29 selected papers in two time slots.

12.3.1. Paris session Discussion meeting summary

- PS1 Transformer incidents in service
  - Keynote speech by Mr. Fate (Ca)
    - 50 % of fire caused by HV bushings
    - Pressure relief device are of limited efficiency
    - Mitigation measures includes tank designed for energy containment. Nowadays tank can withstand up to 8 MJ, but considerable improvement can be made by enhanced tank design
  - Discussions
    - Other sources of critical incidents are reported as smoke, debris, fire fighting water, oil spills and porcelain fragments, static electrification, seismic forces and resonance between cables and transformers.
    - France showed a fire rated of less than 0.015 % in the past 30 years due to transformer tank explosion. An extensive work with the manufacturer have allowed to correlate the arc energy and the tank pressure withstand supporting the work of HQ. Existing transformer being able of withstanding up to 2 bars and arc energy can be such as it develops 3 bars and more.
    - Were displayed as effective measure to reduce the fire risk, the use of RIP bushings, monitoring of tap changer, monitoring of moisture in the bushings
    - The advantage of high fire point liquid was highlighted as reducing the risk of explosion of pole type transformer, reducing the risk of fire in tap changers

- PS2 Transformer Life
  - Keynote speech by Mr. P Jarman (UK)
    - Assessment of remaining life is important for investment planning
    - Unfortunately the current diagnostics methods give only a short notice before failure.
    - We still need a good aging indicator.
  - Discussions
    - Chemical indicator of ageing shall be carefully selected and their long-term stability as well as the validation of the laboratory must be evaluated.
    - The current DGA does not take into account the difference between free breathing and seal type transformers.
    - The Irgamet passivator seems to reduce by a factor 10 the amount of furan dissolved in oil
    - To estimate the remaining life the statistical approach is considered as a valid way, as well as health index and risk index. Furan are not reported as a very accurate indicator but can be used to determine which units needs to be more carefully monitored. Methanol seems to be a promising new aging indicator.

- PS3 Transformer Modeling
  - Keynote speech by Mr. Tenhbolen (D)
    - 3 active areas of transformer modeling, Windings, 3D electromagnetic field and CFD for hydraulic behavior.
    - Nevertheless validation of such detailed model is absolutely necessary.

12.3.2. Next meetings

11th to 16th of September 2011 in Kyoto Japan

- Preferential Subjects
  - **PS1**: Transformer Maintenance, monitoring, diagnostics and related testing
    - New approaches for maintenance, monitoring and diagnostics, development of health index
    - Advanced monitoring technology and algorithms, example of early detection, criteria
    - Low maintenance transformers, transformer improvements, etc.…
  - **PS2**: New material
    - New materials-compatibility, technical performance, economic value.
    - Ageing
    - Dielectric performances under unconventional stresses
  - **PS3**: Transient phenomena and testing
    - In service experience, measurements, failures, lessons learned
    - Critical configurations, simulations, very fast transients, disconnector switching
    - Experience with transformer testing, improvements

Paris Session 2012

- Draft proposal of Preferential Subjects
  - **PS1**: Transformer For the future network
    - Monitoring, dynamic overloading, impact of harmonics
  - **PS2**: Eco design Eco use
    - Low noise, low losses, high temperature material, recycling, environmental considerations
  - **PS3**: Magnetic circuit
    - Modeling, material, inrush, noise

12.3.3. Publications

The publication can be downloaded free of charge by the members of Cigré from the web site: http://www.e-cigre.org, browse for A2 publications. Printed copies can be ordered from the Cigré central office (not free of charge!).

Since last year the following publication (Technical Brochure and Electra publications) were issued.

- Thermal performances **TB 393** – 2009
- HVDC converter transformers, tests procedures, ageing evaluation and reliability in service: **TB 406** 2010
- HVDC converter transformers, Guidelines for design review: **TB 407** 2010
- Report on gas monitors for oil filled electrical equipments: **TB 409** 2010
- Insulating oil reclamation and dechlorination: **TB 419** 2010
- Dielectric response diagnoses for transformer winding: **TB 414** 2010
- Report about the Int. Conf on Power transformer 2009 in Torun Pl: **Electra N°248** February 2010
- Report about the Int. Colloquium on transformer research and asset management Cavtat Croatia: **Electra N°250** June 2010

Expected to be published soon

- TB on experience with new insulating liquids

- Guide for transformer maintenance.

12.3.4. Activity reports

- Fire protection
  Questionnaire on success/ non-success of pressure relief and fast depressurization system will be circulated. This is needed to terminate the work done within the WG.
- Procurement
  This WG will update the design review existing brochure (#204) and the transformer specification brochure (#156) and a new brochure on Factory assessment will be issued. Completion planned at end of 2010.
- Reliability survey
  lack of response from the utility in some countries impairs the original planning.
- Thermal modeling
  interim report expected in 2011

Other WG beginning their work

- Transient
- Cu2S long term
- Oil conductivity
- Transportation
  This WG needs the participation of transporter in WG
- Bushing reliability survey

New proposal for WG

- Reactors

12.3.5. New organization

The new chairman is: Mr. Claude Rajotte from Canada
There are 4 advisory groups

- Transformer Technology Leader F Devaux (France)
  - Specification, procurement and economic
  - Design material, manufacturing and testing

- Transformer Operation Leader P Lorin (Switzerland)
  - Operation, reliability, safety and environment
  - Life management, maintenance, diagnostic and monitoring

- Customer and tutorial Leader S Tenbohlen (Germany)
  - A2 customer needs
  - Worldwide visibility
  - Management of tutorial created by A2

- UHV transformers Leader Y Shirasaka (Japan)
  - UHV AC and DC