



, CIGRE Study Committee B5

PROPOSAL FOR THE CREATION OF A NEW WORKING GROUP (1)

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| WG* N° B5.49 | Name of Convenor: Simon R Chano (CA) E-mail address: chano.simon@hydro.qc.ca |
| Technical Issues # (2): 5 | Strategic Directions # (3): 2 |
| The WG applies to distribution networks (4): Yes | |
| Title of the Group: Protection & Automation of Shunt Capacitors | |
| <p>Scope, deliverables and proposed time schedule of the Group:</p> <p>Background:</p> <p>The introduction of all film type capacitors with various configuration types "external, internal, fuseless and unfused capacitor elements" have made a lot of progress with respect to the dielectric withstand capability of new generation of capacitor elements. Modern capacitor protection now offers unprecedented new possible improvements for shunt capacitor banks including adaptive compensation for inherent unbalance of capacitor elements. New protection algorithms with control and monitoring features and integrated functions offer intelligent solutions to capacitor banks manoeuvre for voltage control and power quality factor.</p> <p>Scope:</p> <p>To cover all aspects of shunt capacitor applications for shunt compensation or harmonic filter applications</p> <ol style="list-style-type: none"> 1. Capacitor configurations and types - General shunt capacitor theory and construction – modern protection applications and adaptive functions for unbalance protection, Harmonic overloads, overvoltage capabilities of capacitors. Other protection, switching and control considerations for capacitor banks will be covered. 2. Deliverables: Technical Report - Time Schedule: start: 2011; Final report : 2014 <p>References:</p> <ul style="list-style-type: none"> – International substation communication standard IEC 61850 – IEC standards and related IEEE standards – Papers published in Journals and Conference Proceedings – Manufacturers published instructions and manuals <p>Deliverables: B5 CIGRE Technical brochure. Electra summary. Tutorial material</p> <p>Target Groups concerned by the work</p> <p>WTG manufacturers, Transmission companies, Distribution Companies, Short-Circuit Calculation Software Developers, Electrical engineering and consultancy companies, Transmission System Owners, Independent System Operators and Authorities.</p> <p>Time Schedule: start: January 2012 Final report: 2015</p> | |
| Comments from Chairmen of SCs concerned: | |
| Approval by Technical Committee Chairman: Klaus Fröhlich | |



Date: 10/02/2012

- (1) Joint Working Group (JWG) – (2) See attached table 1 – (3) See attached table 2
- (4) Delete as appropriate

Table 1: Technical Issues of the TC project “Network of the Future” (cf. Electra 256 June 2011)

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| 1 | Active Distribution Networks resulting in bidirectional flows within distribution level and to the upstream network. |
| 2 | The application of advanced metering and resulting massive need for exchange of information. |
| 3 | The growth in the application of HVDC and power electronics at all voltage levels and its impact on power quality, system control, and system security, and standardisation. |
| 4 | The need for the development and massive installation of energy storage systems, and the impact this can have on the power system development and operation. |
| 5 | New concepts for system operation and control to take account of active customer interactions and different generation types. |
| 6 | New concepts for protection to respond to the developing grid and different characteristics of generation. |
| 7 | New concepts in planning to take into account increasing environmental constraints, and new technology solutions for active and reactive power flow control. |
| 8 | New tools for system technical performance assessment, because of new Customer, Generator and Network characteristics. |
| 9 | Increase of right of way capacity and use of overhead, underground and subsea infrastructure, and its consequence on the technical performance and reliability of the network. |
| 10 | An increasing need for keeping Stakeholders aware of the technical and commercial consequences and keeping them engaged during the development of the network of the future. |

Table 2: Strategic directions of the TC (cf. Electra 249 April 2010)

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| 1 | The electrical power system of the future |
| 2 | Making the best use of the existing system |
| 3 | Focus on the environment and sustainability |
| 4 | Interactive communication with the public and with political decision maker |