

**CIGRE Study Committee B5**

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

<b>WG* N° B5.48</b>	<b>Name of Convenor:</b> Bin Su (China) <b>E-mail address:</b>
<b>Technical Issues # (2): 6</b>	<b>Strategic Directions # (3): 1</b>
<b>The WG applies to distribution networks (4): Yes</b>	
<b>Title of the Group:</b> Protection for developing network with limited fault current capability of generation	
<p><b>Scope, deliverables and proposed time schedule of the Group:</b></p> <p><b>Background:</b></p> <p>There is an ongoing or planned large-scale introduction of wind power generation in many places. Most kinds of wind power generators have very limited capability to produce fault currents. In some places there are plans for introduction of considerable amount of photovoltaic generators also with limitations to produce fault currents. HVDC of VSC type will also be common. This kind of converter can feed power to network without any own short current power. Most of the existing protection is designed to work in power system where the fault currents mainly are produced from traditional electric generators based on rotation machines. With large-scale introduction of the new types of power generation the working condition of the existing protection will dramatically change. WG B5.34 “The Impact of Renewable Energy Sources and Distributed Generation on Substation Protection and Automation” has partly touched this problem in a general way but there should be a need to investigate this issue more in details.</p> <p><b>Scope:</b></p> <p>The WG shall perform investigations, analyses and recommendations regarding the new fault current sources, the capability of existing protection to operate correctly and the possibilities and needs for new protection solutions. The following items shall be covered:</p> <ol style="list-style-type: none"> <li>1. Investigation and evaluation of new fault current sources.</li> <li>2. Models of new fault current sources for fault current calculations shall be specified and recommended.</li> <li>3. The ability of the existing protection to operate correctly in these applications shall be analyzed and performance and limitations should be reported.</li> <li>4. If possible, new ideas of protection solutions and principles should be studied.</li> </ol> <p><b>Deliverables:</b> Report to be published in Electra or technical brochure with summary in Electra</p> <p><b>Time Schedule:</b> start: Beginning 2012 <span style="float: right;"><b>Final report:</b> 2015</span></p>	
<b>Comments from Chairmen of SCs concerned:</b>	
<p><b>Approval by Technical Committee Chairman:</b> Klaus Fröhlich</p> <p><b>Date:</b>04/03/2012</p>	

(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)**

<b>1</b>	Active Distribution Networks resulting in bidirectional flows within distribution level and to the upstream network.
<b>2</b>	The application of advanced metering and resulting massive need for exchange of information.
<b>3</b>	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.
<b>4</b>	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.
<b>5</b>	New concepts for system operation and control to take account of active customer interactions and different generation types.
<b>6</b>	New concepts for protection to respond to the developing grid and different characteristics of generation.
<b>7</b>	New concepts in planning to take into account increasing environmental constraints, and new technology solutions for active and reactive power flow control.
<b>8</b>	New tools for system technical performance assessment, because of new Customer, Generator and Network characteristics.
<b>9</b>	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.
<b>10</b>	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)**

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