

**PROPOSAL FOR CREATION OF A NEW WORKING GROUP**

<b>WG B5.44</b>	<b>Name of Convenor : Zoran Gajic (SWEDEN)</b>
<b>Title of the Group: Protection Schemes for Special Transformers</b>	
<p><b>Scope, deliverables and proposed time schedule of the Group</b></p> <p><b>Background:</b></p> <p>Special power transformers are frequently used in modern power system to enhance special power system application and improve the overall system performance. Some typical examples of special transformers are:</p> <ul style="list-style-type: none"> <li>• <i>Phase-shifting transformers</i>, which introduce a variable phase angle shift between its terminal no-load voltages. They are typically used in order to control active power flow between two parts of the power system. They may have ratings over 1000MVA and phase angle shift up to <math>\pm 70^\circ</math>.</li> <li>• <i>Railway transformers</i>, which are used to connect single phase or two phase railway traction supply system to public three-phase supply network. Such transformers typically have special construction. One such example is 80MVA, 400kV transformer used to supply modern high speed railway tracks.</li> <li>• <i>Converter transformers</i>, which have fixed but non-standard phase angle shift between two windings (e.g. <math>22.5^\circ</math>), are commonly used to supply modern power electronic devices such as big MV drives. 132kV converter transformers with rating over 50MVA are already in service.</li> </ul> <p>Presently there is no much guidance regarding characteristics and protection schemes of such transformers. The emphasis should be to give enough details which may impact conventional and modern numerical protection systems. Some considerations should be envisioned to harmonics generated in converter installations.</p> <p><b>Scope:</b></p> <p>The analysis and consolidation of special transformers and associated protection schemes.</p> <p>1. Scope items:</p> <ul style="list-style-type: none"> <li>▪ Characteristics of special transformers important for protection scheme design ;</li> <li>▪ Zero sequence properties of special transformers;</li> <li>▪ Differential protection schemes for special transformer;</li> <li>▪ Other protection functions for special transformers;</li> <li>▪ Control for special transformers.</li> </ul> <p>2. Scope limits:</p> <ul style="list-style-type: none"> <li>▪ Limited to types of special transformers as listed above</li> <li>▪ Exclude power electronic part in converter applications.</li> </ul> <p><b>Deliverables:</b></p> <ul style="list-style-type: none"> <li>▪ Technical Report (Brochure) about these special transformers and their possible protection schemes</li> </ul> <p><b>Time Schedule:</b> start: Q2, 2011; Final report: Q3, 2014.</p>	
<b>Comments from Chairmen of SCs concerned :</b>	
<p><b>Approval by Technical Committee Chairman :</b> Klaus Fröhlich      <b>Date :</b> 11/01/2011</p>	

