



## **STUDY COMMITTEE B2**

### **Terms of reference of Working Group WG B2.24 : 2010- 2012**

<b><i>Working Group title:</i></b> <b>QUALIFICATION OF HV AND UHV OVERHEAD LINE SUPPORTS UNDER STATIC AND DYNAMIC LOADS</b>	
<b><i>Convenor:</i></b> Dr. Leon Kempner, Jr. (USA)	<b><i>Secretary:</i></b> Dr. Asim Haldar (Canada)
<b><i>Needs of Target Groups: (ref. SCB2 Action plan of March 2006) :</i></b> <ul style="list-style-type: none"><li>• <b><i>Investigate static advanced structural numerical analysis software for qualification of new tower designs that could help reduce the need to perform full-scale testing.</i></b></li><li>• <b><i>Investigate dynamic load analysis software for application to transmission towers. (§4.3, §4.4, §7.3.1,9).</i></b></li></ul> <p>A common practice in the transmission industry is to perform full-scale tower tests as part of the structural qualification procedure. With the development of advanced analysis computer software there is the possibility to reduce the need to perform a full-scale tower test. To make an informed decision whether to test a tower, designers require quality engineering information addressing the capability of advanced numerical modeling applicable to transmission towers. There is no common source industry publication available with this information. This information can help provide reliable transmission towers using advanced numerical simulations, with the potential of lowering the cost of tower qualification. International and nation industry standards can use this information for developing guidelines for structural qualification procedures.</p> <p>The current practice in the transmission industry is to perform static load analysis of towers. Most structural loads that transmission towers are subjected to are dynamic based. These dynamic loads include, but not limited to, wind (synoptic, hurricane, and localize high-intensity), earthquakes, avalanches, conductor vibrations, broken conductor and insulators. Recent earthquake and avalanche events with subsequent damage to critical transmission infrastructure demonstrate the importance of providing advanced analysis guidelines. With the development of advance dynamic numerical modeling software the ability to perform a dynamic analysis of transmission towers is more accessible. International and nation industry standards provide little or no guidelines for dynamic load evaluation using dynamic simulation. Quality engineering information on dynamic loads for tower analysis and design can increase the operational performance and structural reliability of transmission towers.</p> <b><i>Terms of reference with Specific Actions / Deliverables:</i></b>	

- Brochure, Part 1, addressing procedures for the qualification of towers under static loads with the help of advanced structural numerical modeling. Present numerical model calibrations using physical test results. Identify research needs necessary to provide reliable advance numerical modeling simulation applicable to transmission towers.
- Brochure, Part 2, addressing the sensitivity of overhead line supports to dynamic effects. Present examples of utility experience with dynamic events on overhead lines. Suggest a numerical simulation protocol to represent the behavior of overhead line supports under dynamic loads on HV and UHV lines.

**Target :**      Technical Brochure / Electra Article : **June 2012**

Tutorial will be available just after issuing the relevant brochure.

***Links with other SCs:***

WGB2.24 is linked with WGB2.22, WGB2.23, WGB2.25, WGB2.27 and WGB2.28.

***Approval by Technical Committee Chairman:    Klaus Fröhlich***  
***Date: 30/03/2010***