



**CIGRE SC B2**

**OVERHEAD LINES**

**2003 ACTIVITY REPORTS**

## 1. Highlights

SC B2 is a very active Study Committee involving 9 WG centred on the design, construction, maintenance, operation and refurbishment of Overhead Lines for power transmission, including all mechanical and electrical aspects.

In 2003, SC B2 has held a symposium and a colloquium in Edinburgh, Scotland, and has produced numerous results among which the publication of 3 Electra Articles, a technical Brochure and 2 tutorials.

SC B2 Strategic plan was also revised in 2003. It describes the long terms objectives and ambitions of the SC for the next three years and provides guidelines and rules for working groups activities.

## 2. Status of SC reference model implementation

The main change to the SC was the issue of non permanent working groups. The SC has accepted shorter term (4 year) life of working groups. An action plan was drawn ensuring that the productivity is increased, that networking is maintained and that information from old working groups is not lost. The action plan stated that:-

- Each WG (irrespective of period of existence) is to produce a revised TOR with a list of tasks that are to be completed by 2006.
- That in 2006 new working groups are to be proposed with tasks focused for the next 3 years. If required the same chairman and secretary can remain.

It was felt that to change working groups at present will seriously disrupt the present work production especially given the difficulty in finding chairman. The action plan forces a focus of tasks as well as structured formation of new working groups.

Three activity groups dealing with Strategic direction, Customer needs and publications and tutorials will be formalised to ensure better participation from the SC members.

## 3. Main technical directions currently being pursued by the SC

The main technical directions are driven by the overall evolution of the electricity sector which requires from OHL equipments higher reliability on increasing utilisation and load conditions, less expensive maintenance overall costs and longer life expectancy. Environmental pressure also addresses numerous technical and visual aspects that are dealt with by the SC. Thus, the non exhaustive list of the directions currently being pursued by the SC are the following :

- Methods for increasing the reliability of lines, as well as knowledge on the factors that affect reliability,

- Methods for increasing life span of existing lines as well as methods to better optimise their maintenance,
- Factors that limit the power transfer in OHL as well as methods to increase this power transfer capability,
- Assessment of the condition of lines components, estimation of failure modes and development of adequate diagnostic tools,
- Use of OHL structures to perform additional functions to the main power transmission meaning,
- Knowledge on the environmental restrictions to OHL as well as methods to meet environmental criteria with existing network infrastructures.

#### 4. SC Working Groups and Task Forces

SC B2 currently hosts nine WGs.

- Four general WGs, all dealing with general aspects and principle of OHL design and associated hardware : Principles of OHL Designs (B2-06), Electrical Aspects of OHL (B2-12), Management of Existing OHL (B2-13) and Life-Cycle Assessment and Environmental Concerns (B2-15) ;
- Five WGs focused on specific technological aspects : Insulators (B2-03), Foundations (B2-07), Overhead Structures (B2-08), Mechanical Behaviour of Conductors and Fittings (B2-11) and Meteorology for OHL (B2-16).

Each WG has a number of Task Forces which aim at addressing some specific problems in the scope of their respective WG.

#### 5. Joint Working Groups and Task Forces

SC B2 takes an active role in the following groups:-

Impact of exposure emf limits b3/b1/b2/c3-20 – This group is largely dormant at present.

Dynamic rating of equipment (b3/a2/a3/b2/c2-19) – The previous chairman of this group resigned. SCB3 asked that a convener be found. SC B2 offered a convener which was accepted by SC B3. SC B2 will now take the lead in this group in line with normal practice.

High surge impedance lines (c1/c4/b2.06.02). The B206.02 has produced a draft document on this topic for sharing with other SC's.

Hvdc line costs (new) (b2/b4 - 42). The convener for this group could not be found in B2. (A person from ABB Sweden was nominated by the SCB2 representative (Brazil) but later had to withdraw). SC B4 offered to source a convener.

A proposition for a new working subject aiming at carrying out an update of the comparison between OHL and underground cable and involving SC B1 was accepted. The scope and TOR still has to be finalized.

#### 6. SC Publications and publication plan

2003 publications include one technical Brochure and 3 technical reports :

- Assessment of Existing Overhead Lines Supports (B2-08). Brochure ref 230
- Assessment of Existing Overhead Line Supports (B2-08), art. N°207
- Statistical Analysis of Structural Data of Transmission Lines Steel Towers (B2-08), art. N°208
- State of the art Survey on Spacers and Spacers Dampers (B2-11), art N°209.

As to increase the distribution of technical brochure and to promote CIGRE work through industry, WG are required to produce tutorials based on technical brochures or other already published documents. A whole list of tutorial for 2004 and after is already available.

## 7. SC Website

SC B2 has its own web site [<http://www.cigre-sc22.org>] in which all documents are attached and may be downloaded. The web site has been receiving an average of 10000 hits per year. Two WGs have their own web site accessible from SC B2 web site.

## 8. SC Strategic Plan and Action Plan

SC B2 strategic plan which spans over a period of ten years was updated as to adapt itself to the new developments and trends concerning both the overall Electricity Sector environment and the CIGRE work organisation.

Concerning the changes affecting the whole electricity sector, SC B2 identifies the necessity to closely stick to evolutions in :

- the operational environment : uprating and upgrading of existing OHL, extension in equipment life expectancy, optimisation of maintenance... ;
- the environmental changes : visual impact of lines, reduction on losses, EMF, noise, pollution... ;
- the changes in the business environment : deregulation, unbundling of generation, transmission and distribution business, changes in the political and financial structure of assets owners,
- the evolution of the technology : use of FACTS which modify lines utilisation set point, use of new type of conductors allowing power flow increase or other monitoring equipment which lead to higher line utilisation rate.

Observing the opportunities and trends brought by this overall environment, the strategic plan considers the SC strengths and weaknesses and defines its technical objectives and its strategic administrative and technical directions. This strategic plan also describes the changes to the operation of the SC established in line with the requirements of CIGRE organisation. Finally, it edicts some rules applicable to all WG and defines the role of Advisory Groups.

Action plans which outline the main actions of WG are given in the document as well as list of tutorials to be organised by each WG.

## 9. SC Meetings

The 2003 Symposium was held in Edinburgh on 8-10<sup>th</sup> of September. In addition to its Technical and Administrative meeting, the Symposium hosted a colloquium on “*UK Transmission and Distribution : an era of Changes*”.

## 10. SC Participation to Regional Meetings and Symposia

CIGRE SC B2 “Overhead Lines” and Yugoslavian CIGRE Committee (JUKO) both organised a Colloquium on “Overhead Lines Revitalization” in Belgrade on May 6-8, 2003.

One Session of the Colloquium was dedicated to the “Present Overhead Line Design and Construction”. SCB2-WG 06 had 6 contributions (Elias Ghannoum, Svein Fikke, Jan Rogier), mostly based on the CIGRE Technical Brochures issued in 2000 – 2001 on behalf of WG B2.06 and a SCB2-WG 06 meeting was held in conjunction with the Colloquium.

## 11. Relations with other Organisations

WG of SC B2 have regular exchanges with IEC TC 11, TC 36 and one WG share information with IEEE TF. Links with CEA may also be pursued.