Title of TC
Overhead Lines

A Background
IEC Technical Committee 11 “Overhead lines” first met in 1972 with the main purpose of establishing design criteria to be used as a framework for National Regulations, deferring from each other only in local conditions and in the assumed safety level. TC 11 deals with the design and testing of components of the overhead lines (Towers, foundations, fittings) which are not covered by other technical committees. Regarding conductors and insulators, which are dealt with by TC 7 and TC 36 respectively TC 11 covers only the aspects relating to structural design criteria of these components. The scope of TC 11 concerns the reliability of overhead lines, and also deals with the safety aspects, including definition of clearances, the tests on structures, foundations and fittings, and erection methods.

B Business Environment

B.1 General
In developing countries, there are many new overhead line constructions, in contrast to other countries, especially the developed countries where new constructions have slowed and older overhead lines have started reaching the end of their life cycle, and may need refurbishment. On account of the reduced rate of new construction in developed Country there is the need to increase transmission capacity of existing OHLs. Solutions are the reconductoring with high temperature conductors, use of RTM (Real time Monitoring) systems, use of probability based ratings, voltage uprating, use of HSIL lines and AC to DC conversion of lines. There is also the challenge of reducing the environmental impact of overhead lines both from an aesthetic impact and minimization of electric and magnetic fields.

In addition to the primary aspect of transportation of electric power, the safety of workers involved in the erection and maintenance of overhead lines has to be taken into account.

With the increased interest in HVDC (and EHVDC) transmission lines TC 11 needs to ensure that publications issued are relevant to the needs of both the AC transmission and DC transmission communities.

B.2 Market demand
The customers for standards developed by TC 11 are electricity utilities, T&D Companies, manufacturers, test laboratories, overhead line contractors and designers.
There is some duplication of work by CENELEC, however CENELEC have signalled that they do not regard harmonization as a priority. (also in account of the recent modifications introduced in the new edition (2012) of EN 50341-1 with direct references to Eurocodes.

B.3 Trends in technology

The increased interest in EHVDC transmission and possible increase in AC transmission voltages (also by conversion of existing AC lines). The reconductoring with High Temperature Low Sag conductors. The adoption of innovative supports solutions. New technologies in the construction of overhead lines. The design of high surge impedance lines and bundle expansion (BEX) Reducing the cost of HV DC Convertor Equipment

B.4 Market trends

In many developing countries there is considerable expansion of the overhead line transmission network. The increased use of renewable energy e.g. hydro-electric generation where generation centres are remote from the load centres has led to increased interest in EHV DC Transmission. In many Countries there is also the steady increase of distributed power generations from solar and wind energy sources, characterized by strong daily and seasonal variations and by random behaviour (intermittent and not foreseeable), with the consequent requirement of higher load capacity (flexibility of transmission) of the electrical grid.

B.5 Ecological environment

Transmission line towers are generally steel construction, conductors are generally copper or aluminium and steel, while insulators may be glass, porcelain or polymeric. Metallic tower structures and conductors are fully recyclable. The increasing adoption of different types of components (insulators, conductors, fittings, supports) partly made with polymer or composite materials requires evaluations on their recyclability. Transmission line towers are designed for a minimum life span of 30 years, and will often be used well after this time. However with the development of UHV AC and DC transmission, the effects of corona, RIV and electro-magnetic fields will have to be taken into consideration, together with land occupation and visual impact.

C System approach aspects

TC 11 will actively continue to promote the establishment of liaisons with other committees. There is interdependence with committees as listed below:

TC 11 as a customer for standards of other Technical Committees.

TC 7: Overhead conductors

TC 42: High Voltage Test Techniques

TC 11 as a supplier of standards to other Technical Committees.

TC 115 High Voltage DC

Cooperation established:

Liaison officers, and experts participating in IEC TC 7, TC 36, TC 78 and TC 99 (request of liaison member)

Cooperation to be established: IEC TC 106; TC 115

Experts working in other Technical Committees CIGRE SC B2 and CENELEC TC 11
D Objectives and strategies (3 to 5 years)

Objectives
1. Maintain the time for development of TC 11 work within requested time scales
2. Keep TC 11 standards up to date reflecting new technologies and user requirements
3. Maintain and promote the awareness of TC 11 publications

Strategies
1. Monitor Market and technology trends to assist the development of standards
2. Maximise consensus for new work, revisions and amendments before formal start of procedures
3. Review target dates for all work

E Action plan
1. Complete the revision of IEC 60652, IEC 61284, IEC 61854, IEC 61897.
2. Start New Work on Fittings for High Temperature conductors
3. Establish liaison with IEC TC 115
5. Incorporate recent results from Cigre B2 committee related to weather data and effects on lines in future revision of IEC 60826

F Useful links to IEC web site

IEC_TC11_dashboard giving access to Membership, TC/SC Officers, Scope, Liaisons, WG/MT/PT structure, Publications issued and Work and Maintenance Programmes and similar information for SCs, if any.

Name or signature of the secretary

BD Taylor