Study Committee No : B2

Scope of Working Group

Group No : WG B2.51 **Name of Convener : R. Stephen (South Africa)**

TITLE of the Group :

Methods for the optimized design of overhead transmission lines

Background

WG09 of SC22 has determined in 1991 the costs of transmission lines as a function of different components such as towers, foundations and insulators (ELT_137_3 "International survey of component costs of overhead transmission lines"). Since then, there has been limited work on the overall interaction between components in meeting the intended function of the line as well as how to determine the best tower, conductor and foundation combination in an objective manner. An example is that for a given power transfer and impedance the line can be designed using twin, triple, quad or more subconductors in a bundle. The diameter of the bundle can be altered to meet the required impedance. The tower types can vary from pole to self supporting lattice, guyed poles or lattice, guyed V or cross rope suspension towers. It is difficult to objectively decide on which combination to use. It is also necessary to describe the interaction between the line components and how their different configurations affect the electrical performance and function of the line, considering also environmental constraints.

Scope:

- To describe the relationship between the structural/mechanical line components and the electrical parameters of the line for AC and DC transmission.
- To update the work of WG09 by issuing a new questionnaire on parametric studies of overhead transmission line costs
- Based on established relationships and analysis of the cost components, develop objective methods and indicators which can be used by utilities to determine optimized designs for AC and DC transmission lines.

Deliverables:

- Technical brochure + ELECTRA summary - Objective determination of overhead transmission line design.

Time schedule:

To be published by end 2013.

Other SC's and WG concerned by the work:

For AC designs C4; For HVDC B4; For environmental constraints C3.

Approval by TC Chairman : Klaus Fröhlich **Date : 11/01/2011**

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