CIGRE Study Committee B2

PROPOSAL FOR THE CREATION OF A NEW WORKING GROUP

WG N° B2.66	**Name of Convenor: Vivek T. Chari (IN)**	
Technical Issue: 9	**Strategic Direction: 2**	**SCB2 Strategic Plan: 5-8, 11, 20**
The WG applies to distribution networks: Yes		
Title of the Group: Safe handling and installation guide for high temperature low sag (HTLS) conductors		

Scope, deliverables and proposed time schedule of the Group

Background:
The use of HTLS conductors has been increasing over the years mainly to improve the transit capacity of lines or, in some cases, to improve reliability under adverse climatic loads on existing lines. In the process of installing these conductors, there is a risk of conductor damage which may lead to non optimal performance or failure. It is important that the conductors are handled in the manner they were intended.

There is at present a lack of guidance in handling HTLS conductors while they begin to be widely used. This new WG will be an extension of the preliminary work done by WG B2.48 but will analyse the installation and handling of these conductors in greater detail especially in relation to IEEE 524 which is currently the most widely used standard on installation. In the technical brochure prepared by WG B2.48, there were two chapters which covered installation and field experience.

The aim of this WG is to get more detailed feedback from various utilities, manufacturers and contractors that are currently handling these types of HTLS conductors. Also B2.48 discussed all types of HTLS conductors while this WG will be focusing on the composite cores and/or envelopes that require special handling. Installation tests will be addressed more thoroughly in this WG.

Scope:
This WG aims to produce guidelines relating to handling of HTLS conductors based on practical experience and lab testing. The guidelines will be based on state of the art and on WG members' expertise.

Some major issues to be treated are as follows:

- Definition of HTLS conductor types to be included in the brochure (ACCC, ACCR, ACCFR, ACSS, ACFR, CRAC, GZTACSR, KTACSR, TACSR, XTACIR, ZTACSR, ZTACIR)
    - Limit the scope to HTLS conductors which require different installation procedures to the one used for conventional conductors.
- Conductor preload and load shift between envelope and core during installation may result in bird caging. How can this be avoided?
- Review of qualification tests related to installation situation in order to state if existing tests are relevant for technologies with composite core with organic or metallic matrix
- Hardware recommendations
    - Use of armor rods at suspension clamps and other clamps (dampers, spacer-dampers, etc.)
    - Joints installation to avoid bird caging and meet the mechanical and electrical requirements
- Installation procedure and site acceptance tests

- Conductor monitoring during installation with an emphasis to monitor the structural integrity of the core of the HTLS Conductor
- Return of experience and best practices from a questionnaire and CIGRE experts

Deliverables: Technical brochure with summary in Electra

Time Schedule: Start in August/September 2016 **Final report:** December 2019

Comments from Chairmen of SCs concerned:

Approval by Technical Committee Chairman:

Date: 09/10/2016

(1) Joint Working Group (JWG) - (2) See attached table 1 – (3) See attached table 2
(4) Delete as appropriate

Table 1: Technical Issues of the TC project "Network of the Future" (cf. Electra 256 June 2011)

1	Active Distribution Networks resulting in bidirectional flows within distribution level and to the upstream network.
2	The application of advanced metering and resulting massive need for exchange of information.
3	The growth in the application of HVDC and power electronics at all voltage levels and its impact on power quality, system control, and system security, and standardisation.
4	The need for the development and massive installation of energy storage systems, and the impact this can have on the power system development and operation.
5	New concepts for system operation and control to take account of active customer interactions and different generation types.
6	New concepts for protection to respond to the developing grid and different characteristics of generation.
7	New concepts in planning to take into account increasing environmental constraints, and new technology solutions for active and reactive power flow control.
8	New tools for system technical performance assessment, because of new Customer, Generator and Network characteristics.
9	Increase of right of way capacity and use of overhead, underground and subsea infrastructure, and its consequence on the technical performance and reliability of the network.
10	An increasing need for keeping Stakeholders aware of the technical and commercial consequences and keeping them engaged during the development of the network of the future.

Table 2: Strategic directions of the TC (cf. Electra 249 April 2010)

1	The electrical power system of the future
2	Making the best use of the existing system
3	Focus on the environment and sustainability
4	Preparation of material readable for non technical audience