

CIGRE Study Committee B2

PROPOSAL FOR THE CREATION OF A NEW WORKING GROUP (1)

WG* N° B2.58	Name of Conven	or: Giorgio Diana (Italy)
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Technical Issues # (2): 7,9		Strategic Directions # (3): 1,2,3
The WG applies to distribution networks (4): Yes / No		
Title of the Group: Vibration Modeling of High Temperature Low Sag conductors – Self damping characterization		
Scope, deliverables and p	proposed time sche	edule of the Group :
Background : References and background are in the previous work inside CIGRE: TB 294 ('How overhead lines are re-designed for uprating/upgrading': Cigré B2 06. June 2006); CIGRE SC B2/C1 JWG19 ('Increasing capacity of overhead transmission lines – needs and solutions' January, 2009; the work of CIGRE SC B2/48 "Experience with the Mechanical Performance of New Conductor Types"; the work of CIGRE SC B2/25 "Preparatory studies for the revision of existing IEC standards and recommendations for new IEC standard relating to Overhead Lines".		
Scope :		
Modeling of Aeolian vibrations of high-temperature low-sag conductors, including recommendations for laboratory tests on conductors and fittings. The aim is to assist overhead line engineers to improve line protection by better being able to predict line behavior with respect to Aeolian excitation		
1. Define the conductor types addressed (core and envelope material, construction type) on the basis of the work of CIGRE SC B2/48 "Experience with the Mechanical Performance of New Conductor Types"		
 2. Through laboratory tests: Evaluate the variation of conductor self damping with temperature e.g. equivalence to tension variation, possibility of criticality at low temperature only. Define the effect on conductor self damping of conductor pre-stretching, installation temperature, temperature cycling (At least two laboratories already have a program for this type of testing) Use test results to evaluate the effect of ice and wind load cycling on conductor self damping The presence of laboratory testing will need more than 2 years to deliver the final products: 3 to 4 years are expected. 		
3. On the basis of the tests conductor self-damping, tak	performed and the king into account all	obtained results: define a methodology to model the effects described above
Deliverables : Report to be published in Electra or technical brochure with summary in Electra		
Time Schedule : Start : August 2014Final report : 2018		
Comments from Chairmen of SCs concerned : None		
Approval by Technical Committee Chairman : Date : 12/05/2014		



(1) Joint Working Group (JWG) - (2) See attached table 1 – (3) See attached table 2



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.
м	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