CIGRE Study Committee B1

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

WG* N° B1.56	**Name of Convener :** Frank de Wild (NETHERLANDS) **E-mail address**: Frank.deWild@dnvgl.com
Technical Issues # (2): 8	**Strategic Directions # (3): 2**
The WG applies to distribution networks (4): Yes	
Title of the Group: Cable rating verification	

Scope, deliverables and proposed time schedule of the Group :

Background :

WG B1.35 drafted a guide for rating calculations of insulated cables. One of the issues considered in that guide was the use of calculation tools. It was recommended by the WG that the user should verify the calculations of the tool before using it. Despite some tools being used frequently, and by multiple companies, it is generally unclear exactly how a calculation is performed by the calculation tool. Given the many different installation situations and cable designs which exist, and for which a strict IEC based calculation is not even possible (refer to the many examples in the technical brochure of WG B1.35), the user should verify how the situation is treated by the calculation tool. The assumptions made and the formulae used must be applicable, but these are not gathered in any standard. For dynamic or transient ratings, verification becomes even more important as the dynamic behavior significantly complicates the models and their output.

As it is rather difficult to verify calculations of calculation tools, especially when these tools provide transient or dynamic ratings, or real life situations which are not precisely covered by IEC, it is currently proposed to help the cable community by setting up a uniform calculation verification protocol, which can be used to ensure a correctly working software within a certain (limited) domain

Scope :

To define and detail a uniform calculation verification protocol giving the possibility to the user to ensure a correctly working software within a certain (limited) domain. Steps to be taken are:

- Define the scope of the verification protocol (domain of applicability) in detail
- Define a limited series of:
  - duty aspects (steady state current, dynamic current, harmonics,..)
  - cable systems (MV, HV, submarine cable, DC cable,….)
  - installation types (direct, pipe, tunnel, air,…)
- Make calculations for defined situations
- Report calculation results in full detail
- Establish verification protocol (how to verify a software with these calculations, and how to interpret differences)
- Update B1.35 report and the tutorial

It is noted that in this work, no verification of tools itself will take place.

Deliverables : The WG will add the verification protocol to the existing WG B1.35 report and re-publish the complete Technical Brochure. Also the tutorial will be updated.

Time Schedule : start : November 2015 **Final report** : October 2017

Comments from Chairmen of SCs concerned :
Approval by Technical Committee Chairman : M. Waldron **Date** : 12/01/2016

(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