CIGRE Study Committee B1

PROPOSAL FOR THE CREATION OF A NEW WORKING GROUP[1]

WG N° B1.61	**Name of Convenor:** Eugen Bergin (IRELAND) **E-mail address**: bergin_eugene@yahoo.co.uk
Strategic Directions #[2]: 1 and 2	**Technical Issues #[3]: 9**
The WG applies to distribution networks[4]: No	
Potential Benefit of WG work #[6]: 5	
Title of the Group: Installation of HV Cable Systems	

Scope, deliverables and proposed time schedule of the Group:

Background:

The SC B1 has recommended to update the Technical Brochure 194 "Construction, Laying and Installation Techniques for Extruded and Self-contained Fluid Filled Cable Systems" from 2001. The existing TB 194 has the following Chapters:

1) Introduction
2) Description of the Cable System
3) Construction Techniques
4) Cable Installation Design and Laying Techniques
5) External Aspects
6) Design of a Link
7) Glossary
8) Bibliography

The revisions to TB194 should also take the following recent CIGRE SC B1 work, if applicable, into account:

- TB 640 Guide for Rating of High Voltage Cables – in this TB the main installation configurations have been described
- The work of WG B1.48 on Trenchless Technology, will be completed soon
- The work of WG B1.41 on Long Term Performance of Soil and Backfill for Cable Systems is also close to completion
- The work of WG B1-34 on Mechanical Forces in Large Cross Section Cable Systems has identified some areas where TB 194 should be updated
- The work of TF B1-53 on Installation Related Cable Damages suggested that including information regarding the following topics:
    - How to co-ordinate cable design, engineering and installation given project interfaces between different companies
    - Add best practices and practical examples to the installation guidelines
    - Add examples of cable damage related to installation errors.

Some new cable constructions are being introduced in some countries and these should be considered.

Scope:

1. To review existing and innovative methods for HV cable installation. The review should include cable installed in trenches, ducts and tunnels.
2. To compare the relative merits of the installation methods and to give recommendations for their application.
3. The method of working will be :
    a. Remind existing practices for cable installation and identify the factors responsible for the choice of a particular practice.

b. Review possible innovations, improvements and alternatives in the light of increasing economic and environmental pressures.
c. Give recommendations for the application of new installation technologies to high voltage cable systems.

4. To review the calculations and parameters necessary to perform design calculations for cable installation (including for example, on the one hand, pulling tension during installation, and on the other hand requirements for installations in tunnels, ducts, manholes and towers).
5. To compare theoretical productions with the results of engineering trials.
6. To recommend simplified methods for the calculation of design parameters for cable laying.

The scope of this WG covers extruded and self-contained fluid filled cable systems; submarine cables are not included in the scope of this WG

Deliverables:

☒ Technical Brochure and Executive summary in Electra

☐ Electra report

☒ Tutorial[5]

Time Schedule: start: June 2017 **Final Report**: August 2020

Approval by Technical Committee Chairman:

Date: 17/03/2017

Notes: [1] or Joint Working Group (JWG), [2] See attached Table 2, [3]See attached Table 1, [4] Delete as appropriate, [5] Presentation of the work done by the WG, [6] See attached table 3

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
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 (ref. 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

Table 3: Potential benefit of work

1	Commercial, business or economic benefit for industry or the community can be identified as a direct result of this work
2	Existing or future high interest in the work from a wide range of stakeholders
3	Work is likely to contribute to new or revised industry standards or with other long term interest for the Electric Power Industry
4	State-of-the-art or innovative solutions or new technical direction
5	Guide or survey related to existing techniques. Or an update on past work or previous Technical Brochures
6	Work likely to have a safety or environmental benefit