CIGRE Study Committee B1

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

WG N° B1.65	**Name of Convenor:** Søren Krüger Olsen (DENMARK) **E-mail address**: SKROL@ORSTED.DK
Strategic Directions #[2]: 1	**Technical Issues #[3]: 9**
The WG applies to distribution networks[4]: Yes	
Potential Benefit of WG work #[6]: 2, 4, 5	
Title of the Group: Installation of submarine cables	

Scope, deliverables and proposed time schedule of the Group:

Background:

The use of submarine cables is becoming more and more widespread. A need is seen for common guidelines concerning installation of submarine cables that will ensure that all central parties handling submarine cables have the same basis. Examples of parties are utilities, installers, manufacturers and involved consultants.

The term installation covers in this respect all handling of finished cables at the factory through loading, transpooling to laying and protection in or on the seabed by various means.

Scope:

The working group should provide a Technical Brochure covering a wide range of aspects of submarine cable installation, protection and repair. Main issues to be covered will be the following:

1. Describe best installation practices of the business with the aim to ensure safe installation of submarine cables with a high level of protection against damage from external sources.
2. Provide guidelines for a submarine cable installations with description and input to the most important steps in the life of a submarine cable project:
    a. Technical and economical input to prefeasibility studies with focus on installation conditions and foreseeable issues to be taken into account in the budget. Emphasis on information needed from specific permit related requirements, seabed mobility assessments, geotechnical and geophysical seabed as well as from UXO/archaeological/obstacles surveys, third party risks to be taken into account and others.
    b. Handling of the engineering phase as regards submarine cable installation conditions, installation and maintenance methods, third party risks and input/relation to cable and cable protection design.
    c. Handling of submarine cable installation and maintenance with focus on best practices and the handling of involved risks.
    d. Aspects to be taken into account when maintaining the protection to the cables over their lifetime, when cables are repaired, are taken out of service and possibly removed.
3. Examination and reference to various publications within and outside of the Cigre community that provides important insight into detailed aspects related to installation.
4. All types of installation should be covered from transition joints on land to the end of the cables at another landfall, wind turbine (fixed or floating), offshore substation or

other. The WG should not specifically consider umbilicals, but should look in general at umbilical power cables.

5. Provide common definitions for terms used in the business.
6. The WG should provide the information in a way that is relevant for both new parties in the business and more experienced.

The cables covered by the WG would be power cables in the range of 30 kV to 500 kV (or even above) for both AC and DC application with various insulation systems. However, the aspects covered would even be relevant for lower voltages as well.

Deliverables:

☒ Technical Brochure and Executive summary in Electra

☐ Electra report

☒ Tutorial[5]

Time Schedule: start: December 2018 **Final Report**: December 2021

Approval by Technical Council Chairman:

Date: December, 29th, 2018

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