

CIGRE Study Committee B2

PROPOSAL FOR THE CREATION OF A NEW WORKING GROUP

WG¹ B2.92	Name of Convenor: Hugo VALENTE (PORTUGAL) E-mail address: hugo.valente@ren.pt		
Strategic Directions #²: 1, 2, 3	Sustainable Development Goal #³: 9, 11		
<p>This Working Group addresses these Energy Transition topics:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;"> <input type="checkbox"/> Storage <input type="checkbox"/> Hydrogen <input type="checkbox"/> Digitalization <input checked="" type="checkbox"/> Sustainability and Climate Change <input checked="" type="checkbox"/> Grids and Flexibility <input type="checkbox"/> Solar PV and Wind <input type="checkbox"/> Consumers, Prosumers and Electrical Vehicles <input type="checkbox"/> Sector Integration </td> <td style="width: 50%; border: none; vertical-align: top;"> <input type="checkbox"/> None of them </td> </tr> </table>		<input type="checkbox"/> Storage <input type="checkbox"/> Hydrogen <input type="checkbox"/> Digitalization <input checked="" type="checkbox"/> Sustainability and Climate Change <input checked="" type="checkbox"/> Grids and Flexibility <input type="checkbox"/> Solar PV and Wind <input type="checkbox"/> Consumers, Prosumers and Electrical Vehicles <input type="checkbox"/> Sector Integration	<input type="checkbox"/> None of them
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Potential Benefit of WG work #⁴: 3, 4, 5, 6			
Title of the Group: Update on Overhead Transmission Lines Construction Methodologies			
<p>Scope, deliverables and proposed time schedule of the WG:</p> <p>Background:</p> <p>The construction of OHL involves different fields of expertise, starting from access planning, then foundation works, assembly and erection of towers and finally stringing of conductors.</p> <p>There are different methods to accomplish each of these tasks. It is therefore very important to ensure, from the design phase, that the chosen methodology is adequate, taking into account:</p> <ul style="list-style-type: none"> - Local environmental, climatic and terrain conditions; - Local particularities and restrictions; - Available equipment and labour; - Logistics and project planning. <p>Only planning that takes these aspects into account will allow an overhead line to be built efficiently while guaranteeing the safety of workers.</p> <p>Purpose/Objective/Benefit of this work:</p> <p>This WG will provide a state of the art of the main methodologies currently used in the world, for the following three stages of OHL construction:</p> <ul style="list-style-type: none"> - Installation of foundation; - Assembly and erection of towers; - Conductor stringing. <p>This information will then be analysed and the main findings will be used to elaborate recommendations on best practices and methodologies.</p> <p>The state of the art will also include a review of the latest innovations for the construction of OHLs.</p>			

Scope:

1. Review of construction practices/methodologies, using a questionnaire and a literature review;
2. Recommendations on methodologies and/or practical guidelines for the following three main areas: construction of foundations, assembly and erection of towers and conductor stringing.
3. Best practice recommendations for planning site access, logistics and interfacing with third-party infrastructures;
4. Investigate new technologies/methodologies (use of UAV in line construction, pilot wire stringing, automation, robotics, ...) and how their introduction and management can be carried out (e.g. construction risk assessment, training/validation of skills, etc.);
5. Commissioning recommendations.

The work will be carried out in three parts:

- Part 1: Access planning and logistics;
- Part 2: Construction methodologies, limited to the three main areas mentioned above, applied on:
 - o new lines;
 - o uprating or upgrading of existing line;
 - o other works on a line.
- Part 3: Design, innovation and new technologies.

Excluded from Scope

- Construction methodology for Live Work on energised lines;
- Concrete and/or wooden pole constructions;
- Third party infrastructure and public exposure to construction hazards
- Review of routine operational maintenance procedures.

Remarks:

- WG B2.60 Affordable Overhead Transmission Lines for Sub-Saharan Countries
- WG B2.70 Aerial Markers Aircraft warning markers and bird flight diverters for Overhead Lines – Experience and recommendations
- WG B2.81 Increasing the strength capacity of Existing OHL Structures
- TB 731 Robotics for Assessment & Maintenance of OHL
- TB 471 Working safely while supported on aged overhead conductors
- TB 416/TB 416A Innovative Solutions for Overhead Line Supports
- IEEE 524: Guide to the installation of Overhead Transmission Line Conductors;
- IEEE 951: Guide to the Assembly and Erection of Metal Transmission Structures;
- IEEE 977: Guide to the installation of Foundations for Transmission Line Structures;

Deliverables:

- Annual Progress and Activity Report to Study Committee
- Technical Brochure and Executive Summary in Electra
- Electra Report
- Future Connections
- CIGRE Science & Engineering (CSE) Journal
- Tutorial

Webinar

Time Schedule:

- | | |
|---|------------|
| • Recruit members (National Committees, WiE, NGN) | Qtr 2 2024 |
| • Develop final work plan | Qtr 3 2024 |
| • Draft TB for Study Committee Review | Qtr 3 2027 |
| • Final TB | Qtr 1 2028 |
| • Tutorial | Qtr 2 2028 |
| • Webinar | N.A. |

Approval by Technical Council Chair:

Date: March 11th, 2024



Notes:

¹ Working Group (WG) or Joint WG (JWG),

² See attached Table 1,

³ See attached Table 2 and CIGRE reference Paper: Sustainability – at the heart of CIGRE's work.

⁴ See attached Table 3

WG Membership: refer Comments at end of document

Table 1: Strategic directions of the Technical Council

1	The electrical power system of the future reinforcing the End-to-End nature of CIGRE: respond to speed of changes in the industry by preparing and disseminating state-of-the-art technological advances
2	Making the best use of the existing systems
3	Focus on the environment and sustainability (in case the WG shows a direct contribution to at least one SDG)
4	Preparation of material readable for non-technical audience

Table 2: Environmental requirements and sustainable development goals

	CIGRE selected the 7 SDGs that are the most relevant to CIGRE. In case the WG work refers to other SDGs or do not address any specific SDG, it will be quoted 0.
0	Other SDGs or not applied
7	SDG 7: Affordable and clean energy Increase share of renewable energy; e.g. expand infrastructure for supplying sustainable energy services; ensure universal access to affordable, reliable, and modern energy services; energy efficiency; facilitate access to clean energy research and technology
9	SDG 9: Industry, innovation and infrastructure Facilitate sustainable infrastructure development; facilitate technological and technical support
11	SDG 11: Sustainable cities and communities Increase attention on sustainable and resilient buildings utilizing local (raw) materials, power for electric vehicles, strengthening long-line transmission and distribution systems to import necessary power to cities, developing micro-grids to reinforce the sustainable nature of cities; protect and safeguard the world's cultural and natural heritage; reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and waste management
12	SDG 12: Responsible consumption and production E.g. Promote public procurement practices that are sustainable; address reducing use of SF6 and promote alternatives, encourage companies to adopt sustainable practices and to integrate sustainability information into their reporting cycle, address inefficient fossil-fuel subsidies that encourage wasteful consumption
13	SDG 13: Climate action E.g. Increase share of renewable or other CO ₂ -free energy; energy efficiency; expand infrastructure for supplying sustainable energy; strengthen resilience and adaptive capacity to climate-related hazards and natural disasters; integrate climate change measures into national policies, strategies and planning; improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning
14	SDG 14: Life below water E.g. Effects of offshore windfarms; effects of submarine cables on sea-life
15	SDG 15: Life on land E.g. Attention for vegetation management; bird collisions; integration of substations and lines into the landscape

Table 3: Potential benefit of work

1	Commercial, business, social and economic benefits 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 directions
5	Guide or survey related to existing techniques; or an update on past work or previous Technical Brochures
6	Work likely to contribute to improved safety.

Comments:

1) CIGRE Official Study Committee Rules: WG Membership

<https://www.cigre.org/GB/about/official-documents>

- a. Only one member per country: by exception of SC Chair, WiE and NGN nominees.
- b. WG nominees by NCs must first be supported by their National Committee (or local SC Member) as an appropriate representative of their country.
- c. Acceptance of the nomination is granted by the SC Chair and advised to the WG Convener.

2) Collaboration Space

<https://www.cigre.org/article/GB/collaborative-tools-2>

CIGRE will provision the WG with a dedicated Knowledge Management System Space.

The WG will use the KMS for drafting collaboration, capture and retention of discussion and meeting records.

Official country WG Members will be sent registration instructions by the Convener.

Official country WG Members may request the WG Convener to allow additional access for an extra national subject matter specialist to aid in the work at the national level, including NGN members.