

CIGRE Study Committee B4

PROPOSAL FOR THE CREATION OF A NEW WORKING GROUP

WG 1^o B4.92	Name of Convenor: John Wright-Smith (AUSTRALIA) E-mail address: john.t.wright-smith@bigpond.com
Strategic Directions #²: 1	Sustainable Development Goal #³: 7, 9, 11
The WG applies to distribution networks: <input checked="" type="checkbox"/> Yes / <input type="checkbox"/> No	
Potential Benefit of WG work #⁴ : 1, 2, 4	
Title of the Group: STATCOMs at Distribution Voltages	
Scope, deliverables and proposed time schedule of the WG: Background: <p>An increasing integration of green energy resources, such as renewable energy sources and electric vehicles, challenges the management of the distribution grids. It requires an extensive infrastructure upgrade, to avoid voltage limit violations or over loading of lines. This comes with a large investment cost.</p> <p>Power electronics-based STATCOMs, allows better grid controllability and facilitate the integration of green energy resources, limiting or deferring the infrastructure upgrade. Power electronics-based STATCOMs provides dynamic injections and absorption of reactive power into the distribution system, which enhance distribution grid with more flexible and reliable voltage control and power quality improvement including damping of flickers and harmonics control as compared to other device such as capacitors.</p> <p>A number of distribution STATCOMs (D-STATCOM) are currently being developed and installed in the world such as USA, Canada and UK. It would be necessary and beneficial to collect and evaluate the design and operational experience gained from these newly developed distribution STATCOMs, and prepare general guidance for the future application of STATCOMs in distribution systems.</p> Scope: <p>This WG will focus on providing guidelines for the D-STATCOM grid integration and grid services capabilities based on and with reference to existing service experience. The TB will provide recommendations to the following:</p> <ul style="list-style-type: none"> • Topologies and architectures of STATCOM in distribution grids. • Definition and control of STATCOM stages. • Type and factory tests for acceptance of STATCOM in distribution grids. • Guidance of application of connecting and operating STATCOM in AC at medium voltage level, and in radial and meshed configurations. • Service provision for distribution grids. • Economical assessment and business cases including a comparison with. <ul style="list-style-type: none"> ○ Tapping at the substation ○ Voltage Regulators ○ Switched cap banks ○ Voltage regulation distribution transformers • Summary of impact on distribution networks • Maintenance requirements 	

Liaison experts from SC C2, C4 and C6 will be invited to participate this WG.

Deliverables:

- Technical Brochure and Executive Summary in Electra
- Electra Report
- Future Connections
- CSE
- Tutorial
- Webinar

Time Schedule: start: 10.2020

Final Report: 12.2023

Approval by Technical Council Chairman:



Date: October 15th, 2020

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

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.