CIGRE Study Committee B3

PROPOSAL FOR THE CREATION OF A NEW WORKING GROUP

JWG [1]N° B3/A3.59	**Name of Convenor:** Günter Kachelriess (Germany) **E-mail address**: gunter.kachelriess@siemens.com
Strategic Directions #[2]: 3	**Sustainable Development Goal #[3]:** 12, 13
The WG applies to distribution networks: ☒ **Yes /** ☐ **No**	
Potential Benefit of WG work #[4] : 3, 5	
Title of the Group: Guidelines for SF_6 end-of-life treatment of T&D equipment (>1kV) in Substations	

Scope, deliverables and proposed time schedule of the WG:

Background:

Emissions of SF_6 by any industries are contributing to the overall CO_2 equivalent emissions which drive global warming.

In the electric power industry, huge numbers of SF_6-containing T&D equipment are operating in substations and similar installations such as power plants and Gas Insulated Lines. SF_6 emissions from this equipment occur during production, commissioning, operation (incl. service) and end-of-life treatment. Actual studies e.g. by the well-accepted Fraunhofer Institute of Energy Economics and Energy System Technology (IEE) claim that the emissions during end-of-life treatment are by far predominant.

An increasing number of installed SF_6-containing T&D equipment is now reaching its end-of-life in the coming years. A trend to SF_6-free solutions might additionally drive a premature dismantling of SF_6-containing equipment.

Although use and handling of SF_6 is regulated for T&D equipment, regulations (e.g. European F-Gas regulation) has not given clear requirements on end-of-life treatment of SF_6 and do not rigorously sanction improper SF_6 end-of-life handling or stimulate re-use/re-cycle of SF_6.

Scope:

The scope of this working group is to give practical guidelines for proper SF_6 end-of-life treatment contained in T&D equipment as a blueprint for environmental responsible end-of-life handling of SF_6 in the electric power industry.
Some of the main issues that must be addressed are:

1. Give an overview of existing SF_6 end-of-life techniques and practices.
2. Collect and analyse existing SF_6 end-of-life recommendations, specifications, standards, regulations.
3. Conduct a gap analysis where SF_6 end-of-life practices or recommendations, specifications, standards, regulations are missing.
4. Establish guidelines for proper, practical SF_6 end-of-life treatment (e.g. removal, storage, transport, final disposal, possible re-use/re-cycle) ensuring minimized end-of-life emissions while ensuring the safety of end-of-life handling.
5. Give advice for future regulation(s) addressing the safeguard of proper SF_6 end-of-life treatment, ensuring minimized SF_6 end-of-life emissions.

Deliverables:

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

Time Schedule: start: July 2020 **Final Report**: End 2022

Approval by Technical Council Chairman:

Date: May 30th, 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.