CIGRE Study committe B3

PROPOSAL FOR THE CREATION OF A NEW WORKING GROUP

WG B3.73

NAME OF THE CONVENOR
VAESSEN Peter (NETHERLANDS)

TITLE
Asset management and digital integration of mobile substations for a resilient and flexible transmission grid.

THE WG APPLIES TO DISTRIBUTION NETWORKS: YES

ENERGY TRANSITION
1 / Storage
3 / Digitalization

POTENTIAL BENEFIT OF WG WORK
1 / commercial, business, social, economic benefits
2 / potential interest from a wide range of stakeholders
3 / likely to contribute to new or revised industry standards
4 / state-of-the-art or innovative solutions or directions
5 / Guide or survey on techniques, or updates on past work or brochures
6 / work likely to contribute to improve safety

STRATEGIC DIRECTION
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-ofthe-art technological advances
2 / Making the best use of the existing systems

SUSTAINABLE DEVELOPMENT GOAL
9 / Industry, innovation and infrastructure

BACKGROUND :

Background:

There is an urgent need to improve the resilience of the transmission grids and to be able to restore power delivery very fast after a disruption (natural or intentional). Solving grid congestion because of rapid electrification has high priority for TSOs. Faster building of grid assets is hindered by long permit processes and difficulties to obtain planned outage to execute, due to the increased loading of the grid.

Fast deployable relocatable plug-and-play multi voltage, high power (>100MW) mobile transformer substations (MoSS) are available to improve transmission grid resilience, relieve grid congestion for temporary connection of renewables and/or load and to bypass partly or entirely existing substations to allow faster expansion/maintenance/repair.

Existing dedicated MoSS solutions often have limited functionality with respect to communication, redundancy, voltage regulation or duration of operation and are not intended to be integrated in the TSO SCADA/EMS.

Being able to standardize integrate and manage different types of MoSS into existing TSO SCADA/EMS would increase resilience, reduce grid congesting and planned outage and allows a more flexible operation of the transmission grid.

The MoSS standardized tools and requirements needed may include guidance for:

- Communication, Redundancy, voltage regulation and duration of operation guidelines
- Control and protection design systems (i.e. IEC 61850 or CIM tools)
- SCADA/EMS integration requirements
- Substation operation requirements
- Guidelines for specification and design

PURPOSE / OBJECTIVE / BENEFIT OF THIS WORK :

In this brochure we will propose a set of guidelines on how to standardize and manage MoSS assets to become a part of the TSO system operation SCADA/EMS system, thus creating a more resilient and flexible transmission grid suitable for the energy transition

SCOPE :

The working group will review existing CIGRE activities, documents and other literature that relate to handling MoSS.

We will examine existing practices and analyse the challenges they present with system integration into SCADA/EMS, operation and maintenance. A survey will be conducted to obtain the relevant information about existing TSO practices and plans.

The group will produce a guideline on how to standardize and manage MoSS assets to become part of the TSO system operation SCADA/EMS system

DELIVERABLES AND EVENTS

Deliverables Types

Annual progress and activity report to Study Committee
Electra report
Technical Brochure and Executive Summary in Electra
Tutorial

Deliverables schedule

Tutorial	Q3	2029	Tutorial Presentation
Technical Brochure	Q3	2029	Final TB

Time schedule

Q4	2025	Recruit Member
Q1	2026	Develop Work Plan
Q1	2029	Draft TB Study Committee Review
Q2	2029	Final TB

APPROVAL BY TECHNICAL COUNCIL CHAIRMAN:
Rannveig S. J. Loken
July 08th, 2025