CIGRE Study Committee A2
PROPOSAL FOR THE CREATION OF A NEW WORKING GROUP (1)

WG N° A2.XX	**Name of Convenor :** Zarko Janic (DE) **E-mail address**: zarko.janic@siemens.com
Technical Issues # (2): 9, 10	**Strategic Directions # (3): 2, 3, 4**
The WG applies to distribution networks (4): Yes	
Title of the Group: Power transformer efficiency	

Scope, deliverables and proposed time schedule of the Group :

Background :
Energy efficiency is becoming more and more important as a worldwide issue for electricity transmission and distribution.

Standardization is in place in several countries for distribution transformers. For power transformers, regional regulations exist and work in standardization bodies continues, but these face a number of difficulties. In particular some variations and exceptions to cater for specific design and in-service aspects are considered from present benchmarks such that additional clarification is required for their application to most power transformer types.

Scope :
The scope of this working group is to :

- Provide an overview on existing standards and regulations on global scale: definitions, affected transformer types, exceptions
- Provide an overview on economic and environmental impact of these regulations
- Provide an overview on transformer losses and strategies for their optimization
- Provide an overview of current loss level specifications used in tenders by utilities, including loss evaluation
- Review and discuss existing formulae, benchmarks and on-going work (IEEE, IEC, CENELEC, European Commission…)
- Develop and recommend rules and exceptions to deal with so far unaddressed transformer types and specific design and in-service aspects and develop correctional factors
- Provide overview of experience with energy efficiency improvement, regulation and technology.
- Present possible impact of higher efficiency on transportability of transformers
- Present cost/benefit analysis for further efficiency improvement

Deliverables :

Report to be published as Technical Brochure with summary in Electra

Time Schedule : start : Middle 2016 **Final report** : End of 2019

Comments from Chairmen of SCs concerned :

Approval by Technical Committee Chairman : M. Wald
Date : 07/03/2016

(1) Joint Working Group (JWG) - (2) See attached table 1 – (3) See attached table 2 - (4) Delete as appropriate

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 within distribution level and to the upstream network.
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 (cf. 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