CIGRE Study Committee A1

PROPOSAL FOR THE CREATION OF A NEW WORKING GROUP

WG [1]N° A1.68	**Name of Convenor:** Kondra Nagesh (INDIA) **E-mail address**: knagesh@ntpc.co.in
Technical Issues #[2]: 8	**Strategic Directions #[3]: 2**
The WG applies to distribution networks[4]: Yes	
Potential Benefit of WG work #[5]: 3	
Title of the Group: Evaluating Quality Performance of Electric Motor Manufacturing and Repair Facilities	

Scope, deliverables and proposed time schedule of the WG:

Background:

The correct design and manufacturing quality of a motor is very important to ensure a reliable operational life. There is presently very little guidance available to introduce best practices in motor manufacturing facilities. Most motor failures have been caused by a combination of poor skills as well as poor manufacturing and test equipment. Sharing industry best practices will improve the motor manufacturing industry as a whole. This guide will cover the basic requirements of manufacturing processes, best design and quality practices available and associated minimum requirements for manufacturing facilities to ensure the production of high quality of motors.

Scope:

The guide will cover the best available practices on evaluating the quality performance of motor manufacturing and repair facilities. The guide will cover the following subjects:

1. Basic insulation storage and handling requirements.
2. Effect of poor storage on insulation quality.
3. Basic requirement for motor winding bar manufacturing and assembly.
4. Testing facilities for manufacturing motors for different applications.
5. Critical tests during motor stator and rotor manufacturing.
6. Use of advance technologies in motor manufacturing and its impact on the motor quality.
7. Brief on important checks during coil assembly and VPI processes.
8. Elaborate on how the quality of motors improves by use of advanced technologies (e.g. fully automatic taping and coil shaping machine).
9. It will suggest guidelines for selection of cables used for connections between winding and terminal studs, the size of terminal studs and requirement of type of cable lugs at termination points.
10. The guide will give detail designs of bus connection rings in large motors. Elaborate on design requirement to maintain air clearance between adjacent bus rings.
11. Performance Evaluation parameters and its associated index
12. Evaluation of motor manufacturer facilities on the following items:
    a. Procurement and inventory storage
    b. Available design documents and procedures
    c. Rotor and Stator manufacturing processes
    d. Manufacturing equipment and facilities
    e. Test procedure and facilities and
    f. Packing and dispatch processes.

Deliverables:

☒ Technical Brochure and Executive Summary in Electra

☐ Electra Report

☒ Tutorial[6]

☐ Webinar[6]

Time Schedule: start: July 2019 **Final Report**: August 2022

Approval by Technical Council Chairman:

Date: July 12th, 2019

Notes: [1] Working Group (WG) or Joint WG (JWG), [2] See attached Table 1, [3]See attached Table 2, [4] Delete as appropriate, [5] See attached Table 3,
[6] Presentation of the work done by the WG

Table 1: Technical Issues for creation of a new WG

1	Active Distribution Networks resulting in bidirectional power and data flows within distribution levels up to higher voltage networks
2	Digitalization of the Electric Power Units (EPU): Real-time data acquisition includes advanced metering, processing large data sets (Big Data), emerging technologies such as Internet of Things (IoT), 3D, virtual and augmented reality, secure and efficient telecommunication network
3	The growth of direct current (DC) and power electronics (PE) at all voltage levels and its impact on power quality, system control, system operation, system security, and standardisation
4	The need for the development and significant installation of energy storage systems, and electric transportation, considering the impact they can have on the power system development, operation and performance
5	New concepts for system operation, control and planning to take account of active customer interactions, and different generation types, and new technology solutions for active and reactive power flow control
6	New concepts for protection to respond to the developing grid and different generation characteristics
7	New concepts in all aspects of power systems to take into account increasing environmental constraints and to address relevant sustainable development goals.
8	New tools for system technical performance assessment, because of new Customer, Generator and Network characteristics
9	Increase of right of way capacity through the use of overhead, underground and submarine infrastructure, and its consequence on the technical performance and reliability of the network
10	An increasing need for keeping Stakeholders and Regulators aware of the technical and commercial consequences and keeping them engaged during the development of their future network

Table 2: Strategic directions of the Technical Council

1	The electrical power system of the future: respond to speed of changes in the industry
2	Making the best use of the existing systems
3	Focus on the environment and sustainability
4	Preparation of material readable for non-technical audience

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.
7	Work addressing environmental requirements and sustainable development goals.