CIGRE Study Committee A1

PROPOSAL FOR THE CREATION OF A NEW WORKING GROUP[1]

WG N° A1.64	**Name of Convenor: Erli Ferreira Figueiredo (BR)**
Strategic Directions #[2]: 2	**Technical Issues #[3]:**
The WG applies to distribution networks[4]: Yes	
Potential Benefit of WG work #[6]: 1	
Title of the Group: Guide for Evaluating the Repair/Replacement of Standard Efficiency Motors	

Scope, deliverables and proposed time schedule of the Group:

Background:

Electric motors and the systems they drive are the largest electrical end-use, accounting for between 43% and 46% of all global electricity consumption in the industrial sector. A large industrial plant may have more than a hundred motors. These motors operate all kinds of process equipment and their failure can result in losses in plant productivity and reductions in product quality. In power stations a motor failure may lead to difficulties in electricity generation supply or even to generation break off.

Decisions to repair or replace a failed motor should be based on variables such as: the original stator and rotor must be in reasonably repairable conditions, a thorough evaluation of the root-cause of the failure, repair cost, motor power rating and efficiency, frequent starts, environmental conditions, load factor, energy efficient motor purchase price, annual operating hours, electricity price, and economic analysis. Thus, the guide shall elaborate on identifying, based on an accurate evaluation and planning, the feasibility of repair or replacement of existing, standard efficiency motors. Besides that, a survey about the implementation of minimum energy performance standards (MEPS) in several countries will be done.

Scope:

The focus of the study shall be on:

1. Overall description of the failure processes;
2. Factors affecting repair decisions;
3. Stator and Rotor failure mechanisms, root causes and repair methods;
4. Impact of repair/rewinding on motor efficiency, reliably and performance;
5. Replacement of standard efficiency motors;
6. Motor Specification;
7. Motor load estimation techniques;
8. Assessing economic feasibility;
9. Survey on implementation of MEPS.

Deliverables:

☒ Technical Brochure and Executive summary in Electra

☐ Electra report

☒ Tutorial[5]

Time Schedule :

- TOR submitted for approval in July 2018
- Forming of team – July 2018
- Presentation at Paris Meeting – August 2018
- Draft questionnaire 1 –- October 2018
- Comments by members and experts —December 2018
- Draft questionnaire 2 –- February 2019
- Additional comments by members and experts – April 2019
- Final questionnaire – June 2019
- Survey – Answers – July to September 2019
- Presentation of status at SC-A1 Meeting - September 2019
- Draft report 1 – December 2019
- Comments by members and experts – March 2020
- Draft report 2 – May 2020
- Additional comments by members and experts – July 2020
- Approval of final report – October 2020
- Technical Brochure and Executive summary in Electra – February 2021
- Tutorial – April 2021

Start: **August 2018** Final report: **February 2021**

Approval by Technical Council Chairman:

Date: 21/08/2018

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

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
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 (ref. 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

Table 3: Potential benefit of work

1	Commercial, business or economic benefit 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 direction
5	Guide or survey related to existing techniques. Or an update on past work or previous Technical Brochures
6	Work likely to have a safety or environmental benefit