**CIGRE Study Committee A1**

**PROPOSAL FOR THE CREATION OF A NEW WORKING GROUP (1)**

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| **WG* N° A1.51** | **Name of Convenor :** D McMillan (UK)<br>**E-mail address**: dmcmillan@eee.strath.ac.uk |
| **Technical Issues # (2): 8** | **Strategic Directions # (3): 2** |
| **The WG applies to distribution networks (4): Yes** | |
| **Title of the Group: Monitoring, Reliability & Availability of Wind Generators** | |

**Background :**

Wind power assets are numerous (over 60,000 out of warranty assets in the EU by 2020[1]) and dispersed over large geographical areas. Wind turbine generators are a high-cost, key component of the asset and therefore monitoring of generators could play an important part in OPEX reduction. The goal of this WG is to develop a best practice Guide for monitoring of wind assets.

As part of this, a key task will be the assessment of currently available methodologies and their effectiveness (diagnostic & prognostic capabilities, accuracy, robustness, IT and analytical overheads, associated costs, potential cost savings, logistical issues). Although a large amount of public domain information exists regarding monitoring systems (sensors, data processing methods, impact on maintenance scheduling & logistics) there is a lack of information regarding how operators utilize these systems. Part of the aim of the WG will be to bring operators together to share experience on this specific issue.

Target group 1 (utilities): Primary large wind farm generators
Target group 2 (3rd party Operators): Emerging players in the generation market
Target group 3 (Small developers): Potential future generators

**Scope :**

- This Guide will assess existing methods for carrying out wind turbine generator condition monitoring & assessment according to the large range of criteria outlined above
- The Guide will provide case studies of utilities and operators methods for carrying out generator monitoring
- The guide will set out technical and economic criteria for generator condition monitoring to be cost effective
- The guide will calculate impact of these activities on annual operations and maintenance spend and levelised cost of energy (LCOE).

[1] http://www.ewea.org/fileadmin/files/library/publications/statistics/EWEA_Annual_Statistics_2013.pdf

**Deliverables :** Report to be published in Electra or technical brochure with summary in Electra

**Time Schedule** : start : January 2015 **Final report** : June 2017

| Month | Activity |
|---|---|
| Feb 2015 | TOR approval |
| September 2015 | Draft Report |
| Aug 2016 | Final Report approval in Paris |
| Oct 2016 | Six Weeks Rule for final approval |
| Feb 2017 | Final Report Summary ready to be published in Electra or on the SC-A1 Website |
| Feb 2017 | Final Report ready to be published as a Technical Brochure (TB) |
| June 2017 | Summary of the Report or TB in PPT to be presented as a Tutorial |

**Comments from Chairmen of SCs concerned** :

**Approval by Technical Committee Chairman** : M. Wald
**Date** : 05/02/2015

(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)

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| **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)

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| **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 |