

Special Session

ADVANCED TECHNIQUES FOR CONDITION MONITORING OF ENERGY CONVERTERS AND SYSTEMS IN RENEWABLE APPLICATIONS

Organised by:

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Renewable energy sources rely on many kinds of energy converters, which make possible the exploitation of primary sources (wind, tidal, solar, geothermal, hydro, etc.) for electric energy production. Energy converters (Electromechanical: synchronous/asynchronous generators, single or double-fed machines, permanent magnet or current-excited machines, reluctance machines, rotary or linear type machines, etc.; Static converters: bi- or multilevel inverters, rectifiers, etc.; Photovoltaic cells; etc.) as well as the systems in which they operate (wind, solar, hydro plants, etc., also including energy storage systems: flywheels, batteries, etc.) must assure service continuity and affordable energy supply to develop the full source potentials and avoid downtime, incidents, out-of-service and human/economical damage. Other sectors requiring service continuity and early fault detection include vehicular traction systems, industrial equipments, power plants, etc. Despite many techniques proposed until now, much more can be still researched for non-invasive advanced monitoring of the apparatus conditions. This special session is aimed to collect papers focused on advanced techniques for monitoring of electrical/mechanical problems in electrical drives and generation systems.

The techniques/topics of interest include (but are not limited to):

- Monitoring of electrical/mechanical integrity of wind energy converters
- Bearings monitoring: oil film instability, vibrations, wear, overheating, etc.
- Torsional and lateral vibrations in rotor systems and drive trains
- Short-circuit and insulation monitoring
- Non invasive monitoring by measurements of electromagnetic variables
- Multi-sensor monitoring (currents, vibrations, etc.) and comparative evaluation
- Monitoring of electrical/mechanical integrity of traction systems, power plants, etc.
- Condition monitoring of energy accumulators, flywheels, batteries, capacitors, etc.
- System integration of plant control and fault detection techniques and actions
- Sensor condition monitoring, fault detection, and robust/fault tolerant control
- Industrial experiences of electrical/mechanical faults and forensic engineering
- Methods for the study, analysis, modeling and simulation of electrical machines, static converters, and drive systems under faulty operating conditions, with particular reference to renewable energy applications

Submission of papers:

Deadline: 31 May 2018

Submit the paper at: <http://soe.northumbria.ac.uk/efea2018/index.html>