Special Session on

Diagnostics for Permanent Magnet Generating Systems for Renewables

Organized and co-chaired by

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Call for Papers

The need for rapid decarbonization has pushed towards the advancement of renewable technology. The permanent magnet machines have a key role in this transition due to their high-power density and efficiency. However, they are stressed during operation leading to degradation and ageing and consequently early faults. These early faults have to be detected timely, otherwise they may evolve in severity and lead to catastrophic breakdowns. Such breakdowns are accompanied by negative outcomes such as production losses and delays, long times before reoperation, high maintenance costs and loss of reliability, which is critical for the public's trust in the new technologies. All the above negative outcomes are even more serious in remote renewables such as offshore wind, wave and tidal energy harvesting. The need for reliable diagnostics and prognostic methodologies is evident. Moreover, the operation of renewables is by its nature transient, thus making many traditional diagnostic methods, relying on steady-state analysis, obsolete. This Special Session will focus on drawing attention to this particular and timely topic across all fields related to Permanent Magnet machine diagnostics for renewables.

Topics of interest include, but are not limited to:

- Permanent magnet machine diagnostics for wind and wave energy harvesting.
- Magnetic gearboxes for renewables.
- Fault tolerant operation of permanent generator drives for renewables.
- Accelerated ageing and degradation studies on permanent magnet machines for renewables.
- Condition monitoring accounting converter, power grid and gear box operation
- Mechanical faults detection on wind, wave and tidal energy harvesting