

Special Session on

Frequency Response Analysis for Electrical Machines' Fault Diagnosis and Prognosis

Organized and co-chaired by:

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Abstract

Frequency Response Analysis (FRA) has recently gained significant interest among the diagnostics community of electrical machines. The analysis of the frequency response can reveal specific abnormalities and early faults in electrical machines, while particular interest lies in the analysis of stator faults and the insulation degradation that may lead to reliable prognosis. In order to comprehend the results of FRA, complex modelling is also needed to permit the evaluation of the observed divergences from what is the healthy state, while the healthy state requires reliable definition since it strongly relies on statistics due to manufacturing tolerances. This Special Session invites original papers aiming at and answering to the questions above.

Topics of interest include, but are not limited to:

- Application of Frequency Response Analysis in Electrical Machines for condition monitoring, fault detection and prognosis.
- Statistical analysis and impact of manufacturing on the electric and dielectric properties of electrical machines' components.
- Accelerated ageing and degradation studies of insulation aiming for FRA.
- Simultaneous operation of AI and FRA for condition monitoring of electrical machines.
- Signal processing and machine learning methods for the determination of insulation condition.

- Comparison between FRA and other insulation condition monitoring methods.
- Prognosis and estimation of the remaining useful life of the insulation.

Important dates

- Full Paper Submission: February 1, 2026
- Full Paper Notification: May 1, 2026
- Final Paper Upload: June 1, 2026

Submission of papers

Paper submission follows the rules of regular papers. All the instructions for paper submission are included in the conference website:

<https://icem2026.ubi.pt/submission.html>