

Annual Conference of the IEEE Industrial Electronics Society (IECON 2022)

Special Session on

“Machine Learning for Renewable Energy Systems Failure Diagnosis and Prognosis”

Principal Organizer:

First name: **Mohamed** Last name: **Benbouzid**

Email: Mohamed.Benbouzid@univ-brest.fr

Affiliation: University of Brest, France

Co-organizer 1:

First name: **Yassine** Last name: **Amirat**

Email: yassine.amirat@isen-ouest.yncrea.fr

Affiliation: ISEN Yncrea Ouest, France

Co-organizer 2:

First name: **Tarek** Last name: **Berghout**

Email: t.berghout@univ-batna2.dz

Affiliation: University of Batna, Algeria

Call for Papers

Renewable energy systems, including wind turbines, tidal turbines, wave energy converters, and PV systems, are operating in harsh onshore and offshore environments requiring sophisticated and powerful real-time condition monitoring systems capable of adapting to any environmental or operational conditions. Emergence of advanced sensor technology makes it easier to collect the device and system operating history, while directing health condition monitoring research towards data-driven methods. Machine learning tools are particularly attractive in this respect due to their simplicity and less requirements for expertise and knowledge about these systems. In fact, it is often sufficient to only study the recovered historical data and their behavior to assess the system state of health, which can be done through the design of accurate health indicators. State of health assessment will then lead to aging estimation via remaining useful life prediction (prognosis).

Following a successful special session at IECON 2021, this special session continues to address and disseminate the state of the art research and ongoing development results on the implementation of machine learning-based strategies for renewable energy systems failure diagnosis and prognosis.

Good quality papers may be considered for publication in the IEEE Trans. on Industrial Electronics, subject to further rounds of review.

Topics of interest include, but are not limited to:

1	State of health classification and remaining useful life prediction.
2	Exploring advanced techniques for centralized, decentralized, and federated learning.
3	Data exploration techniques including selection, extraction, compression, and advanced sparse coding (compressed sampling), etc.
4	Accelerated life tests and natural degradation models.
5	Offline and adaptive online learning and dynamic systems.
6	Small-scale machine learning, deep learning.
7	Supervised, unsupervised, reinforcement, and domain adaptation learning algorithms.
8	Modeling architectures such as ordinary, hybrid, ensemble learning architectures.
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This Special Session Proposal is sponsored by: **IES Renewable Energy Systems Technical Committee**

Submissions Procedure:

All the instructions for paper submission are included in the conference website: <https://iecon2022.org/>

Deadlines:

Full paper submission: April 15, 2022

Paper acceptance notification: June 17, 2022

Camera-ready paper submission: July. 29, 2022