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”FDP2#4 - Modeling and identifying non-stationary long-term historical condition monitoring data in the presence of noise with non-Gaussian characteristics”

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“The advancement of condition monitoring systems has led to an increase in the utilization of long-term monitoring data for diagnostics and prognostics. The effective utilization of such data, collected over extended periods ranging from months to years, is a critical factor in enabling accurate diagnosis and prognosis. However, most of these industrial applications operate under time-varying conditions, making the diagnosis and prognosis approach to condition-based maintenance (CBM) complicated. Furthermore, many machines work in harsh environments, such as mining machines, wind turbines, helicopters, etc. The data acquired from these machines is often affected by noise with non-Gaussian characteristics. Therefore, it is a necessary task to analyse real data and introduce a proper model that could consider time-varying parameters and the effects of non-Gaussian noise.

In this research, we first conducted a short literature review on the state of the art in long-term data modelling, focussing on statistical-based models. Then we analysed a well-known benchmark data set collected from the high-speed shaft of a wind turbine. Finally, we present the results for this data set and draw conclusions based on our findings.”

Presenter(s) : SHIRI HAMID

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