

Wind turbine bearing prognostics using deep learning approaches

The prognostics and health management (PHM) is closely related to the improvement in maintenance times and reduction of O&M costs. This is particularly important for complex and high-cost machines, such as the wind turbines (WTs), exposed to the highly variable wind loads and a continuous operation. The bearings of WTs are frequently pointed as one of the main sources of WT failures, being responsible for causing large financial losses. In this context, the use of deep learning algorithms to deal with the vibration data can lead to an effective diagnostics and prognostics of the WT bearing remaining useful life. This work intends to run the analysis of three state-of-the-art deep learning algorithms in real WT bearings, in order to compare their performance and establish the conditions for the reduction of O&M costs in the wind industry by using predictive maintenance.