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Type : non spécifié

”COMO3#5 - Algorithm for the detection of faults in rolling element bearings running under tachless and variable rotating speed conditions”

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The goal of this research was to implement a new algorithm for the automatic detection of faults in rolling element bearings, in such a way that it does not depend on the estimation of the shaft rotational speed. The idea was that the algorithm could be applied under variable and unknown rotational speed conditions. The proposed algorithm was based on the detection of phase-relationships between spectral components that emerge when an amplitude modulation appears in the gathered vibration. To do that, a mode decomposition procedure, as well as the Hilbert transform, was applied in order to estimate a detection coefficient, which served as indicator of the presence of the modulation produced by the faults. Lock-in amplifiers were used in order to calculate such an indicator. The effectiveness of the method was validated through experiments performed by using simulation and real signals. It was proven that the application of the proposed method can lead to an effective detection of the modulation featuring the existence of rolling element bearing faults.

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