

Application of Fuzzy Approach to the Vibration Fault Diagnosis

Authors : Jalel Khelil

Abstract : In order to improve reliability of Gas Turbine machine especially its generator equipment, a fault diagnosis system based on fuzzy approach is proposed. Three various methods namely K-NN (K-nearest neighbors), F-KNN (Fuzzy K-nearest neighbors) and FNM (Fuzzy nearest mean) are adopted to provide the measurement of relative strength of vibration defaults. Both applications consist of two major steps: Feature extraction and default classification. 09 statistical features are extracted from vibration signals. 03 different classes are used in this study which describes vibrations condition: Normal, unbalance defect, and misalignment defect. The use of the fuzzy approaches and the classification results are discussed. Results show that these approaches yield high successful rates of vibration default classification.

Keywords : fault diagnosis, fuzzy classification k-nearest neighbor, vibration

Conference Title : ICEE 2014 : International Conference on Electrical Engineering

Conference Location : Paris, France

Conference Dates : December 30-31, 2014