Diagnosis of the Lubrification System of a Gas Turbine Using the Adaptive Neuro-Fuzzy Inference System

Authors : H. Mahdjoub, B. Hamaidi, B. Zerouali, S. Rouabhia

Abstract : The issue of fault detection and diagnosis (FDD) has gained widespread industrial interest in process condition monitoring applications. Accordingly, the use of neuro-fuzzy technic seems very promising. This paper treats a diagnosis modeling a strategic equipment of an industrial installation. We propose a diagnostic tool based on adaptive neuro-fuzzy inference system (ANFIS). The neuro-fuzzy network provides an abductive diagnosis. Moreover, it takes into account the uncertainties on the maintenance knowledge by giving a fuzzy characterization of each cause. This work was carried out with real data of a lubrication circuit from the gas turbine. The machine of interest is a gas turbine placed in a gas compressor station at South Industrial Centre (SIC Hassi Messaoud Ouargla, Algeria). We have defined the zones of good and bad functioning, and the results are presented to demonstrate the advantages of the proposed method.