Fault prediction of induction motor using Bayesian network model

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Author(s)

∨ Abdelaziz Lakehal ; ∨ Ahmed Ramdane

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Abstract:
The work presented in this paper focuses on the faults prediction in asynchronous machines. The main goal is to explore interesting information regarding the diagnosis and prediction of electrical machines failures by the use of a Bayesian graphical model. This paper has shown the applicability of BN in fault prediction on an electrical asynchronous machine. The graphical structure of the BN was built based on the available knowledge about the system's behaviour, the degradation mechanisms, the functional decomposition and the links between the system's components. After defining the parameters and the structure of the Bayesian network (BN), the inference has allowed to obtain the probability of failure. With the developed Bayesian model, the prediction of induction motor failure has become possible with high precision. The Bayesian model, that has been used, takes into account both internal and external causes of induction motors faults. A census of causes was carried out on induction motors park at the SONATRACH / SKIKDA / GL1K / LNG plant. By the end of this paper and before giving some conclusions, a case study of an induction motor is presented.