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Diagnosis and classification using ANFIS approach ofstator and rotor faults in induction machine

Merabet hichem, BAHI Tahar, DRICI Djalel

Abstract: Three-phase squirrel cage induction motors are one of the importantelements of the industrial production system, and are mostly used because oftheir robustness, reliability, relatively simple construction and their low cost.Nevertheless, during their function in different process, this machine types aresubmitted to external and internal stresses which can lead to several electricalor mechanical failures. In this paper, we proposed a reliable approach fordiagnosis and detection of stator short-circuit windings and rotor broken barsfaults in induction motor under varying load condition based on relative energyfor each level of stator current signal using wavelet packet decompositionwhich will be useful as data input of adaptive neuro-fuzzy inference system(ANFIS). The adaptive neuro-fuzzy inference system is able to identify theinduction motor and it is proven to be capable of detecting broken bars andstator short-circuit fault e with high precision. The diagnostic ANFIS algorithmis applicable to a variety of industrial process based on the induction machinefor detection and classified the any faults types. This approach is applied underthe MATLAB software®.

Keywords : Induction machine, Detection, diagnosis, neuro-fuzzy, Monitoring