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Fault Diagnosis in Induction Motors Using the Discrete Wavelet Transform

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Abstract : This paper deals with the problem of stator faults diagnosis in induction motors. Using the discrete wavelet transform (DWT) for the current Park's vector modulus (CPVM) analysis, the inter-turn short-circuit faults diagnosis can be achieved. This method is based on the decomposition of the CPVM signal, where wavelet approximation and detail coefficients of this signal have been extracted. The energy evaluation of a known bandwidth detail permits to define a fault severity factor (FSF). This method has been tested through the simulation of an induction motor using a mathematical model based on the winding-function approach. Simulation, as well as experimental, results show the effectiveness of the used method.

Keywords : induction motors (IMs), inter-turn short-circuits diagnosis, discrete wavelet transform (DWT), current park's vector modulus (CPVM)
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