# wavelet transform based ball bearing fault detection scheme for heavy duty mining electrical motors under supply frequency regulation using mcsa

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Abstrak

Most heavy duty mining electrical drives employ squirrel cage induction motors (SCIMs) which are subjected to various undesirable stresses. Therefore, condition monitoring of the SCIMs is indispensable for achieving production goals with minimum downtime in a fault-free working environment. Because bearing damage is the most frequently occurring fault in SCIMs, an effective fault detection scheme will aid in achieving production targets in an industrial mining scenario. In this regard, the present work intends to propose an effective fault monitoring algorithm, which is immune to supply frequency regulation, for the detection of ball bearing damage in an SCIM. Discrete Wavelet Transform (DWT) is used for the design of the fault detection scheme. Validation of the proposed scheme is done in a LabVIEW based laboratory interface. The complete analysis is carried out in MATLAB/ Simulink using a 5.5 kW, 3-phase, 415 V, 50 Hz SCIM.