



A Leader in Electric Motor Testing

Tip Of The Week

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Rotor Evaluation Using MCEMAX® - Part 6

Six independent methods of rotor evaluation can be used from the MCEMAX technology to analyze the condition of a squirrel cage AC induction motor: Pole-pass frequency (Fp) sidebands around line frequency, 5th harmonic, demodulated Fp frequency, Rotor Influence Check (RIC), In/Rush-Start/Up, and average inductance. Over the next six tips we will discuss each of these methods in detail and provide examples.

Part 6 - Fp Frequency

Pole-pass frequency (Fp) sideband evaluation is one of the more established methods of rotor evaluation utilizing the current signature analysis test. The slip between the rotating rotor and stator magnetic fields creates a modulation of the stator current at Fp. Fp is calculated by multiplying the number of poles times the slip. Slip is equal to the difference in frequency of the stator and rotor rotating magnetic fields. Performing an fast-fourier transform (FFT) of the stator current produces a spectrum plot in the frequency domain, which allows isolation of the Fp as a sideband around the line frequency. Differential amplitudes between the Fp sideband and line frequency less than 36dB indicates possible advanced stages of rotor bar defects.

To see an example of the Fp used to troubleshoot a rotor bar defect and prevent a million dollars in lost production visit the PdMA YouTube channel at: <https://youtu.be/Q-AZ8ZT7myk>

You are invited to submit an Electric Motor Testing Tip of your own and receive a free PdMA® mug or hat if we publish it! Contact Lou at 813-621-6463 ext. 166 or lou@pdma.com.

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