



A Leader in Electric Motor Testing

Tip Of The Week

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Show Me the Swirl

High pole pass frequency (F_p) peaks as a sideband around electrical line frequency or as an independent frequency in a current demodulated spectrum are both indications of a rotor bar defect. However, it is important to remember that mechanically induced load changes can also create frequency peaks at or near F_p that mirror the effects of a broken rotor bar. If a trend is not your friend, meaning you have not collected enough historical data to identify a trend, then you should always rely on a third indication before calling the rotor bad. One very good indication is to monitor the Swirl Effect. Best described in detail by the late Gerald Kliman, the Swirl Effect is the 180° reversal in phase of the air gap flux across a broken bar. This disturbance of flux is easily transferred to the stator and can be detected with current signature technology like the EMAX focusing on the 5th harmonic as a primary location for slip related sideband activity. So, if you're trying to make a decision on a possible rotor defect, don't forget the swirl.

To learn more about the Swirl Effect from a broken rotor bar please visit:

http://www.pdma.com/webinars/Rotor_Fault_Zone/Rotor.html

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. 126 or lou@pdma.com.

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