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Tip Of The Week

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VFD Considerations - Part 1

Have you ever visited an auto repair shop and been offered a *Good, Better, Best* option when it comes to the basic 3,000 mile service? Going from G*ood* to *Best* certainly means more time and money, but the services received may be well worth it to extend the life and improve the reliability of your automobile.

This *Good, Better, Best* approach can also be used toward testing a motor connected to a variable frequency drive (VFD). Performing an EMAX energized test on the line side of the VFD can be done with standard AC current probes and the signals being tested will be at line frequency of the distribution system. Line side testing and analysis is the simplest approach and provides some basic information on the health of the motor drive system. Anomalies forming within the drive, especially on the front end rectifier section, can be readily identified. The power supplied to the drive can be evaluated to ensure a balanced three phase condition with acceptable harmonics per the IEEE 519 standard. Doing just the line side testing would be considered a *Good* approach.

Performing an EMAX energized test on the load side of the VFD may require AC/DC current probes with a broader frequency response as the frequency being tested can be other than the fundamental line frequencies. However, testing on the load side gives information about both the motor and the drive. All of the tests performed on a direct drive motor still apply to the VFD motor so the full complement of motor analysis can occur downstream of the VFD. Additionally, you can evaluate the performance of the transistor section, or output of the drive, for misfires and DC bus problems. Doing just the load side testing would be considered a *Better* approach.

Finally, doing both the line and load side testing would be considered the *Best* approach. Next week we will cover the recommended alarm template for testing a VFD motor.

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.