



A Leader in Electric Motor Testing

Tip Of The Week

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Drive Input Imbalances

Current imbalances are sometimes referred to as a burglar alarm; generally problematic and need further diagnosis. However, imbalance at the inverter input under lightly loaded conditions is a normal phenomenon of the electrical circuit. The source of this current imbalance is often the connection of the electrical supply to the VFD, not to the motor itself. More specifically, the issue is the VFD's full-bridge rectifier combined with subtle line voltage imbalances to the VFD. The VFD rectifier will draw from the input as necessary to supply the DC bus, which supplies power through transistors to the motor. The diodes in the VFD rectifier only conduct when the input voltage to the drive is higher than the DC bus voltage that it is supplying. Consider it a voltage replenishment for the VFD. So when the VFD is lightly loaded and one of the three phase supply lines has a higher line voltage, it will resupply the DC bus first, and conduct longer than the other phases resulting in a current imbalance on the line side of the VFD.

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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