



A Leader in Electric Motor Testing

Tip Of The Week

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Resistance and Resistive Imbalance

Often we are asked why MCEGold doesn't have default alarms on phase resistance. The motor phases are made up of copper wire, which has a positive temperature coefficient for resistance meaning as temperature goes up resistance of the copper wire goes up as well. From a cold start phase resistance to a recently shut down hot phase resistance, the values of resistance can change greatly and nuisance alarms would be likely if a standard value was established without any history or baseline. So, we leave the phase resistance alarms for you to establish based on historical and baseline measurements.

But don't worry. Resistive Imbalance to the rescue! Regardless of changes in resistance values the resistive imbalance is not greatly influenced by temperature and therefore is a very valuable and reliable indicator of power circuit health right out of the box. MCEGold establishes a standard imbalance limit depending on the voltage category of the motor, and a change from baseline limit starting at a 50% increase in resistive imbalance. 50% seems like a lot, but most of your larger critical motors have resistive imbalances that are <1% and often <0.1%. A 50% caution highlighted in yellow is designed to give you a reason to look at the data trend to determine if you are seeing an early identification of a power circuit anomaly. You don't want to miss a resistive imbalance going from .08% to 1.8% (just below the standard alarm setpoint) and not take some action on it. By the way a .08% to 1.8% is a 2000% increase, so a 50% change in baseline doesn't seem like a lot anymore, and should be enough for an early indication of power circuit changes.

Want to see a real case study on resistive imbalance? Visit the PdMA YouTube Channel at:

<https://www.youtube.com/watch?v=Mh2Cx6yqviv>

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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