A Leader in Electric Motor Testing

Tip Of The Week

November 2, 2020

Back to the Basics - Part 4

The Back to the Basics Series has focused on Power Quality, Power Circuit, and Insulation. Continuing the series we now focus on the Stator Fault Zone.

Squirrel Cage AC Induction Fault Zone Analysis - Part 4

The Stator Fault Zone includes the inner turn and inner phase insulation systems. Much of this insulation is of similar material as the Insulation Fault Zone discussed previously. However, the testing required to identify weaknesses or faults are very different. The basic principle of the stator insulation is the same as the ground insulation which is to prevent current from flowing between turns or between phases. This type of current flow is identified as a turn-to-turn or phase-to-phase fault. A very important fact about these types of faults is that they are at the end of the PF Curve (Potential-Fault). Our goal should not be to identify the end-of-life faults, but instead to identify conditions early that will eventually lead to these end-of-life faults. Break down in the inner phase or inner turn insulation can result from a design flaw, electrical or mechanical imbalance, electrical transient, over heating, and age. Ensuring design and installation reliability is number one. Verify you received what you paid for before starting the motor and perform an In-Rush/Start-Up test the first time you start the motor. Then regular route based de-energized testing for stator resistance and inductance and energized testing for stator voltage, current, and impedance will give you trend analysis and early warnings of conditions conducive to a stator fault.

To learn more (without leaving your office) about the Fundamentals of MCEMAX for stator measurements, read about our new web-based training opportunities at https://www.pdma.com/pdfs/Training/Web%20Based%20Training%20Insert.pdf.

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.