PdMA® CORPORATION A Leader in Electric Motor Testing

Tip Of The Week

November 16, 2020

Back to the Basics - Part 5

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

Squirrel Cage AC Induction Fault Zone Analysis - Part 5

The Rotor Fault Zone focuses on the rotor cage of the squirrel cage AC induction motor. The stator three phase rotating magnetic field passing the conductive rotor cage induces a voltage on the rotor bars as a product of generator action. The induced voltage creates current flow in the rotor bars between the positive and negative potentials and the magnetic interaction between the rotor and stator magnetic fields creates rotation. With the motor running, if any part of the rotor cage becomes cracked or broken it will negatively impact the flow of current through the cage resulting in an undesired variation in the rotor magnetic field. Variations in the rotor magnetic field will result in variations in the motor torque, which will worsen as the rotor cage defect increases in severity. EMAX Rotor Analysis, In-Rush/Start-Up, and Current Demodulation are some of the popular tools used to identify this anomaly. With the motor de-energized there is no induced current flowing in the rotor cage, but there is a residual flux remaining, which reflects the variations in magnetic field experienced by the motor while it was running. MCE average inductance trending and the Rotor Influence Check (RIC) are popular tools used to identify rotor anomalies while the motor is de-energized.

To learn more (without leaving your office) about the Fundamentals of MCEMAX for rotor analysis, 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.