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Tip Of The Week

July 12, 2010

Getting Started Can Be Stressful

During the start-up process the outer most section of many rotor bar designs can heat up as much as 300 degrees C in less than 10 seconds. The inner most section of the rotor bar closest to the shaft may only heat up 100 degrees C. This creates a warping of the rotor bar and a significant thermal expansion equal to many tons of axial pressure. A bar with a high resistance connection will have less current flowing through it and will not expand at the same rate. This differential expansion and non symmetric heating results in severe stress and an eventual crack. Left unchecked it will produce the same environment for a stress fracture due to differential expansion on the bar in the next slot.

To read a case study on broken rotor bars go to http://www.pdma.com/pdfs/cs/CS0402R.pdf.

For more information regarding rotor bar heating read “Can rotor bar tightness be assured?” by Richard L. Nailen, P.E., in July 2010 *Electrical Apparatus* magazine.

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.