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Surge Arrestors Effect on Motor RTG

Many large critical motors have surge arrestors installed to prevent voltage transients from damaging the motor insulation. Some of these arrestors will have a breakdown voltage within the 5kV range of the MCEMAX test equipment. An example is a 4kV motor with surge arrestors that start conducting at a ground wall voltage of 3.7kV. If you have the MCE test voltage set at 5kV for a standard test or polarization index (PI), you will push the surge arrestor beyond its breakdown voltage and see a very low resistance-to-ground (RTG) value. If you want to verify the breakdown voltage, run a step voltage test. Once the breakdown voltage is reached you will see a dramatic drop in RTG or an increase in current flow through the insulation. All tests after that should be performed at a voltage less than the breakdown voltage, which will allow valid insulation testing of the ground wall without showing the arrestors as a parallel resistance.

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.