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Tip Of The Week

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Concentric Wound Motors and Eccentricity

Only a few years ago many low voltage NEMA frame motors that were less than 50 HP were concentric wound. Concentric wound motors are machine wound and have the phases stacked rather than lapped. As a result they may produce a natural separation in the phase inductance readings.

Today many of the manufacturers of low voltage NEMA frame motors have upgraded their stator winding processes, so you may find motors as large as 150 HP or larger to have concentric windings. This is important to remember when performing a Rotor Influence Check for the first time on a low voltage machine. At the end of the first pole group the results may appear as a possible air gap eccentricity because each of the phases; 1-to-2, 2-to-3, and 3-to-1 appear to have separated minimum and maximum inductance values, resulting in a graph that appears like a misalignment. Because the nameplate data does not let the operator indicate if a motor is concentric or lap wound, continuing the test for at least a second pole group provides the information needed to determine if the motor is concentric wound. If each of the three phases has consistent minimum and maximum inductance values from the first pole group to the second it is an indication of a concentric winding.

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.