Electric Motor Testing Tip of the Week

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Effects of Unbalanced Voltage on Motor Life

From the EASA brochure "How To Get The Most From Your Electric Motors", the formula for calculating temperature rise on a motor with an unbalanced voltage supply is:

2 x (% voltage unbalance)^2 = % additional temperature rise

Using this formula a motor operating with a 3.5% voltage unbalance will experience an additional temperature rise of 25%. A standard, totally enclosed, fan-cooled T-frame motor has a temperature rise of approximately 75°C, therefore a 25% rise would result in an additional increase of about 19°C. Another rule of thumb states that each 10°C rise above the rated temperature cuts motor life by half.

For more details go to http://www.pdma.com/PDF/Articles/Fault_Zone_Power_Circuit.pdf or visit the Electrical Apparatus Service Association at http://www.easa.com

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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.