



Electric Motor Testing Tip of the Week

revolutionizing *electrical* reliability

July 30, 2007

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:

$$2 \times (\% \text{ voltage unbalance})^2 = \% \text{ additional temperature rise}$$

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>

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.