

October 11, 2010

Confirming Current Unbalance Follow-up

Last week we forwarded a tip from Marty B. at Abbott Laboratories discussing ways to confirm a current unbalance in the motor or power supply. Our apologies to Marty as we mentioned test leads rather than motor leads, which drastically changed the troubleshooting process.

So, we are going to take advantage of this mistake to expand on the troubleshooting approach by discussing the rotation of motor leads and test leads. First to repair last week's mistake, while testing a motor circuit you come up with an unbalanced current reading. When possible, you can then verify the cause of the unbalance by 'rotating the phases'. This means moving the *motor leads* from phase A to phase B, phase B to phase C, and phase C to phase A. This will maintain the motor's proper direction of rotation. After the phases are rotated, test the motor circuit again. If the current unbalance moves with the phase shift, it is a supply power line issue. If the current unbalance stays with the same Motor T-lead, then it is a motor issue.

Rotating motor leads is a time consuming process; therefore, prior to moving the motor leads a test equipment and test lead validation is recommended. To perform this validation rotate the test leads from black (ph1) white (ph2) and red (ph3) to black (ph2) white (ph3) and red (ph1). If the unbalanced phase stays on the same test lead, then the variance is with the test equipment or test leads. If the unbalanced phase moves to a different test lead then the problem lies within the power supply or motor. An additional check, forwarded by another Tip of the Week reader, is to validate the current test leads by connecting all three current probes to a single phase. All three current readings should be within specification.

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.