

March 14, 2011

For the four weeks in March we are returning to our popular Test Your Knowledge series.

The March 14, 2011, question: What is the primary factor that causes rotor resistance to be variable with slip?

1. Rotor bar resistance is constant with slip
2. Effective resistance of the rotor bars changes with slip
3. Leakage inductance varies with slip
4. Both 1 and 3
5. Both 2 and 3

The correct answer is 5 - Both 2 and 3. Effective rotor resistance itself varies due to two factors, one of which is heating as a result of the high currents during motor starting (when slip frequency is at its maximum). The second factor affecting rotor resistance occurs during startup, at which time the current flows in the upper portion of the bars because that is the area where the overall impedance is lowest (i.e., area of high effective resistance and lowest leakage inductance, which is the dominant factor in the impedance due to the tight coupling of the rotor bars with the stator). As the slip frequency decreases, the reactance and effective resistance of the bars decrease. Thus, overall impedance decreases, allowing the current to flow more evenly throughout the rotor bar.

If you answered incorrectly and feel you need additional training OR if you answered correctly and still feel you need additional training, we can help you. Our training department offers classes on various topics, click here (<http://www.pdma.com/PdMA-training.php>) to go to the training page. We also have a Data Interpretation Book available to help you. Contact PdMA (pdma@pdma.com) or call (813) 621-6463 for information.

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.