PdMA CORPORATION A Leader in Electric Motor Testing

Tip Of The Week

December 13, 2010

For the remainder of 2010, our Tip of the Week will consist of a question presented to the Tip of the Week recipients.

Question for December 13: In a 72 slot, 6 pole AC machine stator, the lowest (and most troublesome for the designer) stator slot harmonics are:

A. 5, 7
B. 15, 17
C. 23, 25
D. 31, 33

Answer: The correct answer is C 23, 25. These stator slot harmonic peaks can be found in the eccentricity spectrum at 1380 Hz and 1500 Hz respectively for a 60 Hz machine (1150 Hz and 1250 Hz for a 50 Hz machine). Slot harmonics occur at frequencies set by the spacing between adjacent slots (which governs the total number of stator slots in the stator core) and are calculated by the following equation:

Vslot = (2 * K * S / P) +/- 1

Where:
Vslot = number of the harmonic component
S = number of slots on the stator
K = is an integer number (K=1 yields the lowest frequency slot harmonics which are also the most troublesome)
P = number of poles

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.