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At first glance, the decision appears simple: rewind or otherwise repair the motor when it is cheaper than buying a new motor. It is, however, important to your overall bottom line to consider the total cost of ownership, including purchase, repair and operating costs. Efficiency is a key cost factor–the electricity used to power a motor typically represents 95% of its lifetime operating costs.

"Best practice" repair services can maintain the efficiency of your motors. A 2003 study conducted by the Electrical Apparatus Service Association (EASA) and the Association of Electrical and Mechanical Trades (AEMT) found that best rewind/repair procedures maintain motor effi- ciency within ± 0.2%. It also is possible to improve motor efficiency during repair. (See "The Effect of Repair/Rewinding on Motor Efficiency: An EASA/ AEMT Rewind Study and Good Practice Guide to Maintain Motor Efficiency," 2003).

The "Helpful Resources" page of the Motor Decisions Matter (MDM) Website (www.motorsmatter. org) contains links and background information to several best practice repair resources published by EASA and the Department of Energy (DOE) Industrial Technologies Program. Detailed definitions and studies also are available on the industry resources page of EASA's Website, www.easa.com, including "EASA Tech Note 16 Guidelines for Maintaining Motor Efficiency During Rebuilding," and "ANSI/EASA AR 100-2006, Recommended Practice for the Repair of Rotating Electrical Apparatus." Examples of best practices include:

- Conducting a stator core test before and after winding removal
- Repairing defective stator laminations
- Calibrating all test equipment and measuring devices at least annually
- Measuring and recording winding resistance and room temperature
- Having the appropriate power supply running the motor at rated voltage
- Balancing the rotor
- Repairing or replacing all broken or worn parts and fittings
- Having a documented quality assurance program
- Having and using appropriate test equipment
- Documenting measurements and test results

Maintaining efficiency during repair is important to your bottom line as well. Review the best practices referenced above and talk with your motor service provider about opportunities to improve reliability and avoid efficiency loss during repair. Having a sound motor management plan in place before the failure occurs can help eliminate rushed decision-making. The "1-2-3

Approach to Motor Management" spreadsheet from MDM is a good resource to help evaluate motor repairreplacement decisions.

While developing your motor plan, you may find that it makes sense for your company to establish and implement a motor repair policy. It certainly did for Ash Grove Cement & Riverside Inc. By adopting a motor repair purchasing specification, this cement and lime manufacturer was able to save $6000 per hour of lost production time by quickly determining core damage before making repair decisions. A case study describing Ash Grove Cement's commitment to motor repair excellence is available on the MDM website. It's a real "boosting-your-bottom-line" success story. **MT**

The Motor Decisions Matter campaign is managed by the Consortium for Energy Efficiency, a North American nonprofit organization that promotes energy-saving products, equipment and technologies. For further information about MDM, contact Ted Jones at tjones@cee1.org or (617) 589-3949, ext. 230.

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