

## MOTOR MANAGEMENT SUCCESS:

# Ash Grove Cement and Riverside, Inc. Commit to Motor Repair Excellence

Ash Grove Cement & Riverside Inc.

## benefits

- Ash Grove Cement improves motor reliability by adopting a *Motor Repair Purchasing Specification* requiring its repair shops to perform stator core loss tests on all motor repairs pre-and post-repair.
- Ash Grove saves \$6,000 per hour of lost production time by quickly determining core damage before making repair decisions.
- Ash Grove saves \$5,000 in energy costs by detecting a damaged core on a 700 horsepower motor. They replaced the motor instead of repairing it.
- Riverside, Inc. purchased a new core loss tester to help customers retain efficiency during repair. A 2 percent loss of efficiency during repair can add \$1,000 per year to the operating cost of a 250 horsepower motor – and that's just one motor.

*Ash Grove Cement, Durkee, OR plant.*



*Ash Grove Cement is headquartered in Overland Park, Kansas, and operates cement and lime plants in nine states across the country. With an annual production capacity of more than 6.1 million tons of cement, Ash Grove is the fourth-largest cement manufacturer in the United States. Riverside, Inc. is based in Parma, Idaho with affiliate shops in two locations in Nevada. They are a full-service motor repair and machine shop. The story of these companies' cooperation and commitment to excellence gives testimony to the truth that good business practices benefit everyone.*

## project overview

Ash Grove Cement operates eight plants across the Midwest and western states. The company recently embarked on a corporate Maintenance Excellence program to improve process reliability and reduce downtime for its corporate motor fleet of 600 large motors. "Every hour we lose of process time costs the company \$6,000. In a week, we could lose as much as \$1,000,000," said Bernie Sherin, maintenance manager at Ash Grove Cement's Durkee, Oregon plant. Several large motor failures at Ash Grove Cement plants alerted Sherin to the need for improved motor management practices. Working with Dennis Bowns, a field consultant with the Electric Motor Management (EMM) program, Sherin reviewed the Durkee, Oregon plant's repair and rewind procedures for failed motors and decided upon two courses of action to improve reliability: 1) to create a motor repair specification for their repair shops to follow, and 2) to include motor operating costs in the analysis for repair versus replace decision making.

Company procedure at Ash Grove Cement was to send failed motors out for repair and rewinding. Bowns provided Sherin with the *EMM Motor Repair Purchasing Specification*, a set of procedures for repair shops to follow to ensure retention of motor reliability and efficiency. The procedures included, among other things, a stator core loss test before and after repair to ensure the core has not been damaged. Also required is the use of water spray-controlled ovens for burn off to prevent overheating and damage to the core. (See sidebar for more on the motor repair specification procedures.) Sherin selected both procedures for inclusion in Ash Grove Cement's repair spec. "We knew a motor couldn't be rewound to higher efficiency, but we didn't want to go backwards and see losses in efficiency or reliability due to a damaged core," he said.

With the model spec in hand, a group of Ash Grove Cement employees, including Sherin, began a nationwide search for repair shops that could provide quality repair. Visiting shops in Texas, Oregon, and Idaho, the group discovered "inconsistencies in procedures among our different shops" and many shops had no core loss testing

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equipment. At a price tag of \$25,000, the equipment is expensive. Yet Sherin was willing to work with shops that showed a commitment to quality repair. Riverside, Inc., right in Sherin's own back yard in Parma, Idaho, proved to be just such a shop.

Riverside was not new to Ash Grove Cement, or to the motor repair business. The company had been a longtime service provider for Ash Grove's Durkee plant (where Sherin is based) repairing some 15 large motors a year, often on a scheduled or preventive maintenance basis. While Riverside was one of the shops that didn't have a core loss tester when Sherin first made the rounds, they saw the value of investing in one. "Ash Grove Cement is changing their repair policies to improve reliability and be more efficient," said Jim Neace, Shop Service Manager at Riverside, Inc. "We want to help them get there."

## Lessons Learned

Neace views the \$25,000 investment in the core loss tester as part of a growing business opportunity for his company that helps customers improve motor management by predicting failures and analyzing energy savings opportunities in new motor purchases. "Our industry is changing" said Neace, "and the motor shop that focuses solely on repair is not going to survive." His company has already invested close to \$100,000 in predictive maintenance tools, enabling them to offer a wide array of services such as vibration analysis, thermography, polarization tests, laser alignment, and dynamic balancing.

Neace cites a recent job where Ash Grove sent him a failed 700 horsepower motor to repair and requested a determination of damage to the core prior to repair. This assessment would have been a simple step with a core loss tester, but in the absence of one, Neace had to conduct a more time-consuming core loop test. The test revealed that the core had been damaged, which meant the motor would perform less reliably and perhaps more expensively, even after repair. A loss in efficiency of a 700 hp motor – even as little as 1 to 2 percent – could mean an increase in electricity bills of \$5,000 over the life of the motor (this particular motor runs about 1,000 hours a year). Based on the damage report and repair/replace estimates, Ash Grove decided to purchase a new motor at a cost of \$30,000 rather than repair the old one for \$23,000.

Core loss testing offers Ash Grove even greater reliability and savings opportunities for their larger motors with long run times. Last year, they installed a 1,500 horsepower kiln fan motor, which runs 8,000 hours a year. When this motor goes in for repair, an efficiency loss of even a half a percent can cost as much as \$19,500 over the life of the motor.

While Ash Grove Cement was "the number one reason we went for the core loss tester," Neace is confident other customers will want the service – particularly as attention to energy costs increases. He expects a three-to-five year return on the investment. "We're a growing company, and the only way we continue to grow is to invest in services our customers need."

*Motor Management Success Story, August 2001*

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## About the Motor Repair Purchasing Specification

*The Motor Repair Purchasing Specification addresses critical issues for maintenance of efficiency and reliability during routine repair and rewind of motors. Here are its key points:*

- A repair form from the purchaser accompanies the failed motor when it is sent to the service shop.
- Winding data is carefully recorded to precisely replicate the original winding.
- A core loss test is conducted before and after burn off to ensure there has been no damage to the core.
- Rotors are tested for damaged bars whether damage is suspect in this area or not.
- Burnout or burn off is done in a water spray controlled oven at a temperature of less than 750°F.
- Instruments are calibrated annually including the burnout oven temperature controller.
- The purchaser has full access to the facility where work is being done.
- Records are kept of all tests and inspections carried out, and signed copies are provided to the purchaser.

*Obtain a free copy of the complete Motor Repair Purchasing Specification by calling 888-720-6823.*



*Jim Neace, Shop Service Manager, Riverside, Inc.*

## project partners

Ash Grove Cement

Riverside, Inc.

Northwest Energy Efficiency Alliance

