

**The economic dynamics for electric motor repair/replace decisions have changed over the past several years. Higher energy prices forced companies to focus on costs as never before, but even after prices settled back down the dye was cast and examining motor efficiency in repair/replace decisions had become a given. Motor service centers had to adapt to survive. The report that follows details how three service centers perceive the current market and what they see as their role in the new environment.**



## **Motor Service Centers Adapt to a Changing Market**

**Motors power industry.** They are an integral component of the complex systems that support industrial processes. When motors go down, production stops and that's a manufacturing taboo. In the past, the energy cost to run motors was never much of an issue in the Pacific Northwest, where supply was both plentiful and economical. With low energy costs prevalent and production paramount, motors service centers had a simple goal for their clients: get the motor up and running.

A few years ago, that situation changed radically with a substantial spike in energy prices; power costs suddenly came under intense scrutiny. For industrial customers who ran some of their operations 24/7, the increased energy costs were particularly significant, with estimated jumps in the range of 20%. Energy use needed to be assessed for ways to save and "efficiency" became a bottom line buzzword. Prices eventually settled back at lower levels, but the point had been made: *energy costs matter.*

With energy efficiency now a major – and permanent part of the economic equation, both service centers and customers have had to alter their thinking. Motor service centers successfully making the transition to the new climate are sharing knowledge with their customers, investing in state-of-the-art equipment and using motor operating costs as a primary criterion to help customers decide whether to repair or replace a motor when it fails. Various industry, utility, and government programs have helped support industry's transition to energy efficient motor management practices. One such program in the Pacific Northwest is the Northwest Energy Efficiency Alliance's Electric Motor Management (EMM) program, whose motor seminars educate end-users on the efficient management of electric motors systems and suggest a number of ways to improve plant operations. The program promotes the use of Electric Motor Manager (em2), a motor data collection and efficiency analysis software used in the repair/replace



decision-making process. em2 facilitates the creation of a motor database and enables users to calculate motor operating costs. The EMM program also promotes the use of the Motor Repair Purchasing Specification, which gives both end-users and repair shops a set of standard guidelines for motor repair and rewinding jobs. These tools represent good examples of the new methods employed by motor maintenance personnel as they shift the emphasis of their business to improved motor management.

Adaptation takes many forms, but as the stories of the service centers discussed below illustrate, a common theme is that increased efficiency benefits everyone. Employees from each of these motor service companies attended EMM seminars on increasing motor efficiency and used the acquired knowledge to improve their company's procedures and services.

*"Knowledge is the biggest factor in running an efficient motors operation. It is important to both gather and teach pertinent, complete and timely information".*

### **Spreading the Word: HPS Electrical Apparatus Sales & Service**

HPS Electrical has been an area mainstay since 1957 and the leading electric motor sales and service source in Western Oregon. The plant in Roseburg has 10,000 square feet dedicated to motor repair and reconditioning, and an additional 4,000 square feet that houses an extensive motor inventory ready to fulfill customer demands.

During his 37 years in the electrical field, Steve Skenzick, General Manager of HPS, has witnessed first-hand the dramatic changes in the motor service field. He knows that to stay in business, HPS not only has to keep up with the changes, but also has to cater to a more demanding clientele. Motor service used to be a "black box" to customers, where the emphasis was on the quick turnaround, not on how it was done. But increased energy costs and, consequently, higher operating costs have caused customers to look more closely at how their motors are serviced. HPS decided to bring their customers into the service process by helping them access every available resource that promotes a more efficient motor fleet. One aspect of this process involves using the em2 software to evaluate and inventory motors. Another



aspect is keeping an ear to the ground to learn about various utility and manufacturer incentives.

As Skenzick puts it, "Knowledge is the biggest factor in running an efficient motors operation. It is important to both

gather *and* teach pertinent, complete and timely information. Customers are more knowledgeable than they used to be and that's where it starts." HPS regards its customers as allies in creating better systems. Working with their client, fiberboard manufacturer Sierra Pacific/Medite Division, HPS has guided them through the process of creating a complete motors database of their 820 units. All nameplate specifics are downloaded into the em2 software so that when a motor goes down, the company sends HPS a read-out of that motor's specifications. Skenzick then uses that data in the analysis component of the software to evaluate the options for repair or replacement. The analysis is based on operating costs and also factors in any available incentives or rebates. The answers are quick, reliable and timesaving.

Depending on each company's motor management needs, the level of a service center's involvement can vary. HPS deals with their clients on an individual case basis and regards its job as part of the process of helping to get the word out to increase energy efficiency for end-users, large and small. Knowing their customers' needs allows HPS to give them the best analysis for their particular situations.

### **Investing in the Technology: Industrial Electric Motor Service, Inc.**



*Shop Director, Ken Weigel, stands beside Industrial Electric's new oven.*

farmers to irrigation and pump companies. The company supports customers from southern Idaho to northern Nevada. While always meticulous in their work, it was apparent that the changing environment of the business required more, and that meant bringing in state-of-the-art equipment.

To ensure that their work produces the best results possible, IEMS purchased a highly advanced core-loss tester and upgraded an aging burn-off oven. Iron-loss (core-loss) can cause premature motor

failure, and the core-loss tester is used before and after winding removal to document the health of the stator lamination. Burn-off ovens are used to clean excess material from metal parts. The original burn-off oven was well over 20 years old, not uncommon for the industry. Why would you necessarily need to replace an oven that was already working? IEMS understood why. One of their largest industrial clients, an area food processing company, heavily promotes predictive and preventative maintenance.



*Leo Blanco, Motor Winder, with the core loss tester.*

To IEMS, this client's consistent demand for excellence and cutting-edge thinking keeps them alert and responsive to new technologies and methods. The savings that came from various improvements in the equipment offset the initial cost of purchase. Overall construction of the new oven is tighter, with better insulation and electronic controls that strictly regulate the burn-off temperature. For Matt Hitchcock, owner of IEMS, the purchase of the new

oven has been "a win-win situation." The company saves money running the process and the customer gets retention of motor efficiency in the in the rewind process.

Replacing equipment that works can be a tough decision to make. Examining just how well that equipment works can make the choice simpler. Hitchcock believes in the importance of updating equipment because, in most cases, the "improvements in the testing and processing equipment can pay for themselves." IEMS can give all its customers "better, quicker and more thorough repair, whether they think they need to worry about efficiency or not."

### **Watching the Bottom Line: Western Industrial Motor & Machine, Inc.**

Western Industrial's Pocatello, Idaho plant is a 30,000 square foot facility that provides services across seven states, with primary interests in industrial electrical motors and pumps.

For years there was something akin to a "band-aid" mentality regarding motor repair and maintenance; companies just wanted to get broken motors fixed and running. Pete Smith, Sales Manager and co-owner of Western Industrial, notes that many of the tools currently used to measure motor efficiency have been around for a while, but that motor efficiency and energy usage were not considered as part of the cost analysis and were largely ignored. Smith believes that the change in attitudes has been profound: "The Motor Management programs have educated the end-user to pressure electric motor manufacturers into providing a cost effective means to lower fixed expenditures by simply engineering more efficient horsepower." Economics still dictate repair/replace choices, but the makeup of the economic factors has changed. Better motors, along with improved analysis tools that factor in a variety of elements such as energy costs, directly – and sometimes dramatically – benefit the bottom line.

### **EMM's Motor Tracker Program**

In 2002, the Electric Motor Management (EMM) program promoted a marketing concept for motor service centers called "Motor Tracker." As part of the pilot program, EMM worked with ten shops in the Pacific Northwest area to develop tools and materials that support the creation and maintenance of databases for customers' motors. A complete and detailed inventory is a vital resource for both end-users and motor service centers to have at hand because it saves valuable time if there is a critical motor failure. A thorough database of motors also helps in non-crisis times to aid in pre-emptive maintenance and repairs. To obtain the Motor Tracker materials for your company free of charge, please contact ISI toll free at 888.720.6823. EMM would like to thank the following ten shops for participating in the pilot program:

- Center Electric in Tacoma, Washington
- Jim's Electric in Billings, Montana
- HPS Electric in Roseburg, Oregon
- K&N Electric in Missoula, Montana
- K&N Electric in Moses Lake, Washington
- K&N Electric in Spokane, Washington
- Riverside Electric in Parma, Idaho
- S&G Electric in Blackfoot, Idaho
- Western Industrial Motor & Machine in Pocatello, Idaho
- Wilde Electric in Hermiston, Oregon



*WI field consultant conducts an on-site vibration analysis of a clarifier pump motor.*

Earlier this year, Western Industrial received a large frame motor for rewinding from an area mining company. This motor ran 24/7, roughly 8700 hours per year, with nameplate data stating an efficiency rating of 88.5%. Costs to repair would have run at \$3 – \$3,500, but when analyzing the numbers to determine if replacement was a better option, Western Industrial found that using a new NEMA premium motor would save \$6,000 per year

in energy costs. The results were stunning: the first year's saving alone would more than pay for the new motor, with projected savings over an estimated 10-year motor life of \$60,000. With six locations and a multitude of similar motors, the mining company anticipates adding half a million dollars or more to their bottom line by year's end.

Having witnessed several large-plant closings in recent years, Western Industrial recognized the need to help their customers achieve the best bottom line possible. For Smith and co-owner

David John, "We know our future is tied directly to our customers' future. It's a no-brainer when you approach customer service with that attitude."

### **The Current Scene**

A recent study done by the Electrical Apparatus Services Association (EASA) on the state of the industry found that, "increased use of technology in the service business was cited as almost a given." The study also highlighted the fact that those centers providing niche and value-added services credited the additions to strong increases in revenue growth. "You cannot survive just repairing motors," was their mantra," according to the study.

Investment in diagnostic equipment is costly and can be prohibitive for some of the smaller service centers. The bar has been raised though and, as seen in the previous examples, service centers welcome a more knowledgeable customer base and see the work as a team effort to promote optimal solutions. The common theme is that developments to increase motor efficiency are ongoing and that dissemination of timely information needs to be universal. Ultimately, this benefits all the players.

A new Industrial Sector Initiative (ISI) program has been established by the Northwest Energy Efficiency Alliance (the Alliance) and will continue efforts to promote best practices. Many of the tools and services offered through EMM will be available under the auspices of ISI. The goal for ISI is to generate a significant volume of long-term, cost-effective electric energy savings through collaboration with vendors, energy-related organizations, trade organizations and electric utilities. If you are interested in learning more about ISI, please call 888.720.6823 for more information.

### **Additional information on motor efficiency can be accessed at the following sites:**

- The Electrical Apparatus Service Association:  
[www.easa.com](http://www.easa.com)
- Motor Decisions Matter:  
[www.motorsmatter.org](http://www.motorsmatter.org)
- The U.S. Department of Energy Office of Industrial Technology:  
[www.eere.energy.gov/industry](http://www.eere.energy.gov/industry)



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