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Success Stories

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Weyerhaeuser Takes a Scientific (Economic) Approach to Saving Energy Dollars

When Weyerhaeuser, a $20 billion international forest products company, began their search for an energy efficient motor, they faced the same issues and opportunities as other manufacturers; the rising cost of power, and the desire to take advantage of energy rebates. But what makes Weyerhaeuser different is the way they approached the motor selection process.

With approximately 50 thousand motors in operation, accounting for 81 percent of the company's electrical load, it was clear they wanted the most efficient motor available. But they also wanted a product with superior quality and reliability that would help them reduce un-planned downtime, and cut maintenance costs. Deciding not to focus on the purchase price alone, they determined that a strictly scientific approach would help them reach their ultimate goal of reducing their total cost of ownership.

Weyerhaeuser Company selected a cross-functional team for the project. And named John Holmquist, Weyerhaeuser Senior Scientist, and Fellow of the Institute of Electrical and Electronic Engineers as one the teams' leaders. Holmquist and the technology team quickly decided that the IEEE 841 standard, which is recognized as a tough design and manufacturing standard for improved reliability, efficiency, and performance, would become the new base line for Weyerhaeuser motor requirements. Next, the team asked six motor manufacturers to provide samples for evaluation. Each motor was extensively tested, torn down for inspection, and then rated on more than 170 performance attributes.

Based on overall quality, efficiency, and availability, the team selected the Reliance 841 XL Premium Efficient motor. They reported that the product met or exceeded all IEEE specifications, and that because it was a standard Reliance offering, the motor would be readily available from Reliance stock centers throughout the U.S. and Canada. "I'm excited to partner with Reliance, and standardize on a motor that is applicable to all parts of the Weyerhaeuser industry, from forest, to wood, to pulp and paper," stated Holmquist. "The Reliance 841 XL is designed for severe duty applications and meets all of our requirements for quality, reliability, and energy efficiency."

There were several features of the Reliance motor that Holmquist was particularly impressed with. "You know Reliance really has a precision balanced rotor providing smoother operation, reduced vibration, and longer bearing life," said Holmquist. "Additionally using Conrad bearings with bearing isolators on each end will extend the life of the motors."

Based on pay-back calculations developed by the team, the Reliance 841 XL would be used in all new applications. Calling older standard motors "economically obsolete", Holmquist told his colleagues "that it pays us to buy the new energy efficient motor." But the team still needed to determine what made the best economic sense when it came to the issue of failed motors, and retro-fitting existing motors.

The team calculated both the short and long term cost of repair, and compared those numbers with the cost and long term benefits of installing the new energy efficient motor. The numbers indicated that all failed motors, 50 HP and lower, should be replaced with the Reliance product. "We have determined that it's a more cost effective solution to scrap the failed motor and replace it with the Reliance 841 XL," stated Holmquist. "We also recommended that motors 60 HP and higher should be evaluated on an individual basis to determine the most cost effective solution."

And while it may seem difficult to replace a motor that's running, the team discovered that in many cases replacing these inefficient motors actually makes good financial sense. "Our recommendation is that all motors that can meet a pay back period of less then three and a half years should be retrofitted," Holmquist reported.

Theoretically, the technology team's choice of motor, and their recommendations on the motors usage, added up to reduced operating costs. But would those numbers add up the same way on the mill floor?

NORPAC Puts Reliance Motors to the Energy Savings Test

Among the Weyerhaeuser mills that enthusiastically embraced the decision to standardize on the Reliance 841 XL was the North American Paper Corporation (NORPAC). The NORPAC facility, located in Longview, Washington, is a joint venture between Weyerhaeuser and Nippon Paper Industries of Japan. The mill, the second largest of its kind in North America, operates 24 hours a day, 365 days a year, producing over 750,000 tons of high-quality newsprint annually — enough to stretch to the moon and back every two weeks. NORPAC serves newspaper publishers and commercial printers in the western United States and Japan. Major newspaper groups served in the U.S. include: Gannett, Knight-Ridder, Dow Jones, San Francisco Newspaper Agency, the Oregonian, and the Seattle Times.

Mill leadership readily understood how dramatically the rising cost of energy impacted their operation. Since they couldn't control the price of electricity, there were willing to do all they could to reduce the energy they used. In order to capture the maximum energy savings as soon as possible, plus take advantage of incentives being offered by their local utility, NORPAC began by changing out larger motors first before moving to smaller units. By the fall of 2002, NORPAC had retrofitted more than 200 older model motors with the Reliance 841 XL, reducing energy costs significantly.

Today, Mark Higginson, Senior Support Engineer for NORPAC's electrical and control systems, continues to emphasize the energy efficiency program. "It's been fun to jump on the band wagon and keep it moving", says Higginson. "Our systematic approach to identify inefficient equipment and change it out during planned shut-downs continues." With an average monthly power bill of about $4 million, Higginson believes that every opportunity to change out an old motor and replace it with a Reliance 841 XL, means continued incremental improvements. "Reducing the bill by several percentage points makes a big difference," he says. "It also offers a dramatic return on our investment because when you couple the efficiency savings of this motor along with the energy rebates offered by our local utility, the pay back for the motor is less than one year."

While not a member of the team that made the decision to standardize on the Reliance 841 XL, Higginson supports the decision enthusiastically saying "I have not had any experience that would contradict the wisdom of the decision to choose Reliance." He believes his mill is using a motor that provides a "premium payback" because it's well designed, well manufactured, and reliable. "Companies can make a lot of claims," according to Higginson, "but it's been proven that the Reliance 841 XL offers us premium efficiency in a motor that can operate in our tough, demanding environment. We expect them to perform, without problems 24 hours a day, 365 days a year. That's what we wanted, and that's what we've got. It's an exceptional motor".

Beyond just the motors performance, Higginson says it's also the company's service and performance that makes a difference. "Reliance offers a great product, but the organization also stands behind the product and gives us valuable support."

In the end, the numbers on paper added up the same way on NORPAC's mill floor. The scientific approach, the calculations developed, and the recommendations made, were right. Because of the work done by Holmquist and his technology team, NORPAC has cut energy and maintenance costs, reduced downtime, and lowered their total cost of ownership.

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