

MOTOR MANAGEMENT SUCCESS:

Crown Pacific Lumber Saves Money With Motor Management Tools

Crown Pacific Lumber

results

- Completed the sawmill's motor inventory, creating a database of 300 motors ranging in size from 3 hp to 600 hp.
- Initiated the planer mill's inventory of 150 motors, also in the 3 to 600 hp size range.
- Replaced an existing 89%-efficient motor with a new 96%-efficient motor, saving \$3,400 annually.
- Instituted a plan to include motor operating costs in the company's procedure for all motor repair/replace decisions.
- Can now make confident and knowledgeable decisions about motors before they fail.
- Additional diagnostic tools help to identify even more opportunities for improved motor management.

Todd Hester, Electrical Superintendent, instituted a plan to review motor operating costs in the company's procedure for all motor repair/replace decisions.



project overview

Crown Pacific Lumber acquired the Gilchrist Mill near LaPine, Oregon in 1991. Gilchrist is one of three large sawmills operated by Crown Pacific in the Northwest and is expecting to process 175 million board feet of lumber. After undergoing its extensive upgrade, the mill can now process both large and small logs down to a diameter of only a four-inch top.

Crown Pacific Lumber knows that operating a large sawmill in today's evolving and competitive environment means making each mill as energy efficient as possible. In late 2000 and early 2001, the company was involved in an extensive upgrade to their Gilchrist sawmill in central Oregon. John Thomas, a key account specialist with Midstate Electric Coop, was aware that the company was in the process of completing the \$20 million upgrade and also that the utility was going to significantly raise rates in October 2001. Crown Pacific's overall rate would increase about 20%, with a 28% increase in the demand charges and a 16% increase in the energy rate.

"I felt that this was a good time to make the mill as energy efficient as possible. Using more energy-efficient motors and other energy efficiency measures like lighting will help lessen the cost of the rate hikes," Thomas said. He enlisted the aid of Jim Williams, Electric Motor Management (EMM) field consultant, to guide Crown Pacific through some energy-saving procedures. The two had met earlier when Williams visited Midstate Electric to introduce the EMM program to the utility.

Williams and Todd Hester, Crown Pacific's electrical superintendent, began to inventory the sawmill's 300 motors. EM2, the free software program provided by the Electric Motor Management program, was loaded on a Palm Pilot® handheld computer. Entering motor data directly from the plant floor, Williams and Hester quickly catalogued a wide variety of information. This included motor ID number and location, amps and volts, nameplate data, original cost, vendor, number of rewinds and repairs, date put into service, bearing numbers and type, lubrication data, annual operating hours and annual cost of operation. Later, the information was downloaded into a computer for further analysis. EM2 software is designed to calculate motor operating costs and efficiency. The software easily generates a financial analysis that shows whether it is more cost effective to repair or replace a failed motor. EM2 also helps track maintenance information.

After inventorying about 10 motors, Williams and Hester discovered two motors that were each costing Crown Pacific about \$49,000 per year in electrical costs. "The annual cost to run each motor was eight times the cost to buy a new one," said Williams. Both motors were used to operate the mill's two main air compressors.

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Upon learning the cost to operate these motors, Williams and Hester decided to do a more extensive investigation. Only one motor was chosen for analysis because Crown Pacific planned on installing a new control system that would substantially reduce the run time for one of the air compressor motors, explained Williams. (For more on this decision, see side bar detailing SAV-AIR.)

Using EM2 software, they compared the cost of electricity to run the existing motor, with an operating efficiency of 89%, to that of a new, energy-efficient motor rated at 96%. The results showed that replacing the existing motor would save Crown Pacific about \$3,400 per year, with a simple payback of 1.8 years. To Hester, the numbers were compelling.

Lessons Learned

Before Crown Pacific's introduction to the EM2 software and the EMM program, motors were automatically sent out for repair when they failed. Now, Hester routinely performs a more thorough analysis of repair/replace options. "We didn't have the tools to see what to do with the motor. Now we can look at the software and know whether or not to rewind the motor or to purchase a new or energy-efficient motor," said Hester.

Hester has begun training his electricians to use EM2. Ultimately, he also wants them to include motor operating costs in their analysis of repair/replace options for failed motors. Although Crown Pacific hasn't yet established a formal policy on conducting this type of analysis on each failed motor, he plans to require it.

Working with EM2 software impressed Hester so much that he bought a current logger to do further analysis of motor systems in the plant. The current logger records motor amp draw over time – up to 10 days – to create a load profile of the motor and application. Hester can use the load profile to properly size the motor to the application. Oversizing of motors is a common occurrence in older mills where operational changes, such as feedstock of smaller logs, may alter the original design intent of a particular application. Profiling the motor load and application offers Hester yet another tool for identifying opportunities to improve overall motor management in the plant.

Hester hopes to install the new energy efficient motor during the second quarter of 2002. Because Midstate Electric is participating in the Bonneville Power Administration's (BPA) Conservation and Renewable Resource Discount Program, it is possible that up to 60% of the new motor's cost could be paid by the utility, said Midstate's Thomas. Crown Pacific's management is waiting to hear from BPA about their entire conservation package, which also includes a new compressed air control system and lighting upgrades. But since the savings determined by the EM2 analysis are so compelling, Hester said, "We will put the new motor in even if BPA doesn't fund our entire conservation package." In the meantime, Hester and his staff are busy inventorying and creating a database for the planer mill's 150 motors.

For more information on these useful motor management tools, visit the EMM website at www.drivesandmotors.com or call 888-720-6823.

Motor Management Success Story, April 2002.



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Alliance's SAV-AIR Project – Getting Compressed Air to Work

SAV-AIR is sponsored by the Northwest Energy Efficiency Alliance to develop an industrial compressed air (CA) monitoring and control process to ensure the long-term, efficient operation of these CA systems. SAV-AIR begins by performing a detailed evaluation that includes extensive real-time measurement of the system's compressors and air demands. These measures are then used to develop a model to optimize system operations, resulting in recommendations from SAV-AIR for possible system changes and/or upgrades.

By installing a SAV-AIR monitoring and control system, Crown Pacific found it could reduce the number of compressor motors from two to one. Preliminary calculations showed that the SAV-AIR system could save about 2 million kWh per year, or between \$60,000 to \$102,000 in energy costs, providing a simple payback of less than two years. Ongoing monitoring will maintain this high level of efficiency by identifying such things as leaks or clogged filters. "Operating air compressors at their maximum efficiency is very important in a sawmill because compressed air cost a lot of money," said Williams. Crown Pacific is working with Midstate Electric to obtain cost-share funding for the monitoring and control system through BPA.

project partners

Crown Pacific Lumber
Midstate Electric Coop
Northwest Energy Efficiency Alliance