

MOTOR MANAGEMENT SUCCESS:

Repair Specifications Save Money and Energy — Kennewick Wastewater Treatment Plant

results

- Established reliable motor repair specifications to ensure motors retain top efficiency
- Launched a solid relationship with a motor repair shop providing quality repairs using EMM's Motor Repair Purchasing Specifications
- Achieved annual energy cost savings of \$4,500 from quality repair work completed on eight of the plant motors
- Completed plant-wide motor census and database of 95 motors

South High Rate Treatment Basin at the Kennewick Wastewater Treatment Plant, Kennewick, WA



Kennewick's Wastewater Treatment Plant serves the City of Kennewick, Washington, which has a population of 52,000. This secondary treatment facility processes an average of 5.5 million gallons per day, with a capacity to treat 12.5 million gallons per day. It is an activated sludge plant with fixed aeration.

project overview

In Kennewick, Washington, former Wastewater Treatment Plant manager, Tim Richman, was concerned. "I had heard rumblings about large increases in power costs and brownouts and wanted to get a handle on our motors," said Richman. "I knew we needed good repair specifications." He also knew that with rates set to rise, he needed to be able to demonstrate the energy component of total motor operating costs.

Richman attended both the Spokane and Yakima Valley Wastewater Treatment Plant Forums and heard speaker Steve Dunnivant, a field consultant with the Electric Motor Management (EMM) program. After he read EMM's Motor Repair Purchasing Specifications and saw Dunnivant demonstrate MotorMaster+ 3.0 (a free motor management software), Richman knew he had his solution. He invited Dunnivant to visit Kennewick to help him install the software and train his staff on its variety of uses. Kennewick's plant did have a list of its motors and their horsepower, but it was not complete. Working with Dunnivant, they completed the list and developed a database of all installed and inventoried motors in the plant. The database will allow plant management to analyze motor operating costs, to make cost effective repair and replace decisions when motors fail, and also to optimize their inventory of spares.

Richman also took action on the Motor Repair Purchasing Specifications, which offered a detailed set of repair procedures designed to ensure energy efficiency is retained when a motor is repaired. He shopped the repair specifications out to motor repair centers around eastern Washington to find one that would comply with these standards. He found H&N Electric in the neighboring city of Pasco, a motor repair service center that was familiar with the repair specs, having had previous exposure to EMM's program. Indeed Joe Golsen, supervisor at H&N, believes the EMM specifications are a good tool for any motor service center.

Lessons Learned

John Griffin, who took over from Richman as manager of the Kennewick plant, is making good use of this new relationship with H&N Electric and their familiarity with the repair specs. Six to eight motors ranging in size from 40 hp to 150 hp have been sent to H&N for rewinding. He estimates use of the repair spec for these motors alone is saving him as much as \$4,500 annually, or \$25,000 over the life of the motors. When improperly done, efficiency loss of the rewound motors can be up to 2 percentage points; for these types of motors, it would increase annual operating costs by \$242 for the 40 hp pump motors and \$907 for the 150 hp.

Larger motors are used to aerate the plant's two high rate treatment ponds, and represent the biggest single operational cost Griffin has in his division. "My annual costs for fixed aeration are about \$152,000. The costs are going to \$211,000 next year. That's a big price increase!" Rewinding the motors according to spec will definitely ensure that they operate at their original efficiency. With increasing energy costs of close to 40 percent, efficiency counts.

Griffin and his staff aren't stopping with just these results. Such an accurate and complete database facilitates a variety of cost-saving measures and allows them to launch additional motor system efficiency efforts. Now, they can easily compare efficiency ratings on various pumps, inventory spare motor parts for more efficient use, and determine the proper motor size for an operation.

The database is also being used for budgeting. In the next two to three years Griffin hopes to replace the plant's aging fixed aeration system with a more energy-efficient system. Griffin admits the biggest challenge to installing the new system is funding it. Use of MotorMaster+ 3.0 gives a more complete cost savings and projection picture and can help provide the financial justification.



North High Rate Treatment Basin at the Kennewick Wastewater Treatment Plant, Kennewick, WA

Project Partners

City of Kennewick Wastewater Treatment Plant

Northwest Energy Efficiency Alliance

Motor Management Success Story, August 2001



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Facultative Lagoon #1 at the Kennewick Wastewater Treatment Plant, Kennewick, WA