



FOCUS ON CASE STUDIES: AERATION EFFICIENCIES

The Background

The Village of Reedsville's wastewater treatment facility has a dual oxidation ditch with four disc aerators supplying oxygen and mixing for the treatment process. Previously, the Village operated all four of the disc aerators' 10-horsepower motors at full speed regardless of the facility's load. This cost the Village more energy and money than required for its treatment process. Like most small communities, funds to make improvements are limited, so the Village contacted Focus on Energy for assistance in finding ways to reduce electrical consumption at its wastewater treatment facility.

The Approach

The Village of Reedsville has worked with Focus on Energy on several wastewater plant projects in the past. Manitowoc Public Utilities, which operates the Village's wastewater plant and services, contacted its Energy Advisor to discuss possible solutions for this problem. It was determined that installing variable frequency drives (VFDs) to control the speed based on the dissolved oxygen (DO) concentration in the oxidation ditch would be the perfect solution to save energy.

The Solution

VFDs were installed on four of the disc aerators' 10-horsepower motors. These motors are controlled by two DO sensors to maintain minimum DO set-point. They now operate at a significantly reduced speed, sometimes as low as 20%. Overall, these VFD additions have streamlined the control process on the disc aerators. The Village of Reedsville has additional flexibility in its treatment processes, and the automated DO control provides:

- **Stability**
- **Quick and efficient automated response times**
- **Reduced maintenance costs**
- **Less wear and tear due to lower operating speeds**

In total, the Village received over \$2,000 in Focus on Energy incentives and has achieved almost \$5,000 in annual energy cost savings on the facility's utility bill.

Project Breakdown:

- **Equipment Installed:**
 - Four VFDs on disc aerators
 - Two dissolved oxygen probes
 - Controls and programming
- **Project Cost:**
\$19,816
- **Annual Energy Cost Savings:**
\$4,875
- **Focus on Energy Incentive:**
\$2,002
- **Payback:** 3.6 Years



Installing the VFDs has allowed us to improve the control of our aerobic process while saving energy. Focus on Energy provided tremendous input and guidance on this job, and we plan to continue to work with them on other energy-saving projects in the future.



Rob Michaelson
Water Systems Manager
Manitowoc Public Utilities

REDUCING ENERGY WASTE ACROSS WISCONSIN

Focus on Energy, Wisconsin utilities' statewide program for energy efficiency and renewable energy, helps eligible residents and businesses save energy and money while protecting the environment. Focus on Energy information, resources and financial incentives help to implement energy efficiency and renewable energy projects that otherwise would not be completed.

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