UNIVERSITY OF MINNESOTA
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MnTAP

ENERGY EFFICIENCY AT THE PELICAN RAPIDS WASTEWATER PLANT

Challenge

Energy efficiency is a noble goal at any wastewater treatment plant. When a plant can be run more efficiently, it saves energy and reduces operating costs. Unfortunately, it isn't always obvious what to change in order to find these savings. Operators at the Pelican Rapids Wastewater Plant were ready to test changes in order to save energy. With some help from MnTAP, the operators were able to identify, test, and implement savings opportunities resulting in large scale savings for the plant and the city.

Results

Reduce Digester Blower Speed

Turn off Digester Blowers after Emptying Basins

Save Energy 145,000 kWh / yr

Reduce Costs $11,600 / yr

MINNESOTA TECHNICAL ASSISTANCE PROGRAM
612-624-1300

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Contact us for more information!

Findings

Reduce Digester Blower Speed from 45 Hz to 30 Hz (112,500 kWh, $9,000)

The Pelican Rapids wastewater treatment plant is running two digesters in series. The identical blowers serving these digesters are run with VFDs. Initially, the first was set at 75% speed (45 Hz), while the second was at 50% speed (30 Hz). The team was curious as to whether turning down the speed of the first blower would provide adequate aeration for treatment.

The operators tested turning the first digester to 50% speed to match the second, and found that treatment quality was not adversely affected by the change. The treatment quality actually improved, although whether that was due to this change or because of lurking variables is unknown at this time. The $9,000 in annual cost savings was a nice bonus.

Turn off Digester Blowers for 36 Hours after Emptying Basins (32,500 kWh, $2,600)

Through discussions relating to plant operations, it was discovered that the digester blowers are running 24/7. This means that after sludge is sent to storage and digesters are emptied, any air being generated is being sent into an empty tank, and is effectively being wasted. The operators decided to do some testing and determined that they are able to leave the digester blowers off for 36 hours after emptying the tanks with no adverse impact on treatment quality. The $2,600 per year savings made this no-cost operational change well worth their time.

Bernard Spragg. Pelican. Flickr.

Getting Started with Energy Efficiency

Benchmarking your wastewater plant is a great way to get a sense for the magnitude of savings potential for your plant. B3 Benchmarking for Minnesota Wastewater Plants can be completed here:
http://mn.b3benchmarking.com/WastewaterTreatmentPlants

For more information on wastewater treatment efficiency, please give us a call (612) 624-1300 or visit our website:
http://mntap.umn.edu/POTW/wwtp.html

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