

Water Conservation Tips

Reducing water use can make your operation more efficient and save you money on the volume of water used and treated. This fact sheet provides steps, coupled with examples, that you can take to reduce water use.

By implementing the following steps, your company can reduce water and save money.

Understand Your Water Use

Monitor water use throughout your facility and establish a baseline. Measuring wastewater volumes helps you identify areas where water use can be reduced and plan water conservation tactics. Water use may differ between shifts. Monitoring during each shift creates an accurate picture of your overall water use.

Flow meters can quickly indicate water overuse. Some meters on the market use circular chart recorders to measure water use in gallons per minute over a 24-hour period. Fluctuations may indicate leaks, unnecessary water use, or inefficient equipment. Monitoring water use raises employee awareness about conservation opportunities.

Case Study: Advance Circuits

To reduce water flow, Advance Circuits of Roseville installed flow meters to monitor water flow. Understanding its water use enabled the plant to focus water reduction efforts. Advance Circuits optimized flow sensors and improved operating and maintenance procedures. These changes cut water flow by 10.9 million gallons a year. The company saved \$38,000 annually and avoided a sewer access charge (SAC) of \$225,000.

Reuse Water

Consider reusing some of the water in your facility. Water reuse is using wastewater or reclaimed water from one application for use in another. Non-contact cooling water is ideal for water reuse if process demands match supply. Water recycling, using water again for the application that it was originally used in, is also a good option. Before reusing or recycling water, be sure it meets your water quality requirements and identify any treatment steps that may be needed.

Intern Project: Johnson Screens

Johnson Screens used more than 2.5 million gallons of water per year in their screen fabrication machines (SFMs) to cool the welds and welding

equipment. The intern recommended integrating all SFMs into the recycling system and installing a centrifugal separator and belt skimmer on the tank. The improved water recycling system conserves up to 2.4 million gallons of water per year and saved the company \$9,700.

Install Clean-in-Place System

A clean-in-place (CIP) system eliminates the need to dismantle equipment for cleaning and can help carefully control water and chemical use at your facility. Many production facilities manually run CIP systems, but fully automated CIPs are more consistent and typically more effective. Using final CIP rinses as the pre-rinse for the next cleaning cycle can further cut the amount of water used and wastewater generated.

Intern Project: A Minnesota Dairy

With the help of a MnTAP intern, a Minnesota dairy fine-tuned the computer programming that ran its CIP. The company decreased water use by nearly 8.5 million gallons annually, saving over \$20,000. The dairy also decreased its BOD loading by 2.5%, saving an additional \$6,000 per year.

Use High-pressure, Low-volume Wet Cleaning Systems

Before using wet cleaning methods, dry clean as much as possible to recover excess product and by-products. For wet cleanup, high-pressure, low-volume cleaning systems can help cut the amount of wastewater at your facility. Using the higher-pressure cleaning systems, employees are more likely to use less water during cleanup to achieve specified cleanliness.

Case Study: Mission Foods

Switching from garden hoses to high-pressure washing equipment, cutting back on water use, and improving housekeeping procedures helped Mission Foods in New Brighton reduce water use by 1.9 million gallons, avoid SAC fees, and save the company \$20,200.

Optimize Nozzle Use

Using automatic shutoff nozzles can reduce water use by preventing water from flowing when it is not needed. Optimize the fitting sizes of nozzles to reduce flow rates and use the smallest nozzle needed to maximize efficiency. Use the correct angle and spacing to maximize water hitting its target.

Case Study: Marigold Foods

Using an automatic shutoff nozzle on its truck washing hose saved Marigold Foods in Minneapolis between 3,000 and 6,000 gallons of water per day.

Prevent Leaks

Prevent water loss at your facility by finding and repairing all leaks. As part of a preventive maintenance program, make a checklist of all potential sources of leaks and conduct weekly inspections of equipment such as hoses, nozzles, tanks, and valves. Upgrading old production equipment can prevent leaks. Preventing leaks often saves money and increases efficiency. If leaks do occur, repair them immediately to prevent water loss.

Case Study: Schroeder Milk

Switching to a smaller nozzle size and repairing a leak in a 1/4 inch line saved Schroeder Milk in St. Paul a total of 4,380 gallons of water per day.

Install Valves

Use control valves to stop water flow when production stops. Solenoid valves, which directly control the on/off flow or regulate the flow rate, can be used to stop water flow when production stops.

Intern Summary: Hoffman Engineering

Hoffman Engineering in Anoka cut water use by 3.4 million gallons per year to save nearly \$32,000 annually. The improvements included installing a pressure gauge and control valve on the mist spray rinse and installing an automated conductivity meter and control valve to limit the total dissolved solids concentration.

Implement Employee Training and Incentives

Implementing programs to stop water flow during non-production times will reduce your water use. Use foot pedals or on/off switches in a production setting. Hang tags can be used on a production line to remind employees to turn off water after the last product.

Employees may need to be shown how to use water efficiently. Install process controls to make water use easier to manage. Implement a training program to teach employees how to efficiently use water in their work areas. Include information

in the training on current water use and water costs. Create incentives for employees who identify areas to reduce water use.

Treat water as a raw material with a real cost. If your facility has different operating divisions, charge water use and treatment back to each division. This creates an incentive to optimize water use and maximize efficiency. Setting water conservation goals for your plant will encourage employees to take responsibility and reduce water use.

Remember, you pay for water three times:

- Incoming water use
- Energy inputs from cooling or heating
- Discharge fees, which include biological oxygen demand, total suspended solids, phosphorus, etc.

Additional Resources

For more information about water conservation, review EPA Water Sense <www.epa.gov/watersense/index.htm>.

For information about cutting phosphorus from your cleaning operation, see MnTAP's fact sheet, Phosphorus: Reducing Releases from Industrial Cleaning and Sanitizing Operations [#11], available online at <mntap.umn.edu/potw/11-ReducingPhos.htm>.



For More Information

MnTAP has a variety of technical assistance services available to help Minnesota businesses implement industry-tailored solutions that maximize resource efficiency, prevent pollution, increase energy efficiency, and reduce costs. Our information resources are available online at <mntap.umn.edu>. Please call MnTAP at 612.624.1300 or 800.247.0015 for personal assistance.