



PTC Steel



Organization Background

PTC Steel – Minneapolis was founded in 1924. It is a leading producer of Electric Resistance Welded (ERW) and Drawn Over Mandrel (DOM) mechanical steel tube. Tony Bolz manages the plant, and the plant produces over 32,000,000 pounds of tube per year.



Julie Van

Sustainable Systems Management
University of Minnesota Twin Cities

“My experience with MnTAP and PTC Steel this summer has been an absolute blast! I have never learned so much in such a short period, and I have gained a deeper understanding about the sustainability space in the context of manufacturing and industrial systems. I am excited for the things I have learned, and I am very grateful to be able to experience this awesome opportunity.” ~ JV

Project Background

The plant partnered with MnTAP with the goal of using less water to cool production equipment. The first half of the project consisted of creating a comprehensive water map with water usage and water flow rate quantified. Using flow rates and run times, the annual water usage for each process was calculated or estimated if there was a lack of information or access to the drainpipes. It was identified that 81% of water usage in the facility was single pass cooling water from the well, which signified this area as the largest conservation opportunity.

Incentives To Change

PTC Steel believes in being a good steward of the environment and has a strong sense of responsibility to their local community that drives them towards ever greater environmental sustainability.

SOLUTIONS

Install Automatic Solenoid Valves

Installing automatic solenoid valves on 14 pieces of equipment with single pass cooling water would reduce water use on non-production days. Additionally, solenoid valves would be automatic and eliminate the need to

manually turn cooling water on and off. This would save 25,000,000 gallons of water and \$137,000 in costs annually.

Repair the Water Softener and RO System

The tube water softener and RO system filter water for the tube mill coolant tank and use about 64,900 gallons annually. An investigation revealed that the system constantly discharged water due to a broken piston. The system also consumed more salt than necessary. Repairing the system would save 4,500,000 gallons, 2,050 pounds of salt, and \$56,000 annually.

Change Rinse Tank Flow Rate to 0.5 GPM

The rinse tank on the cleaning line was flowing at 5.3 gallons per minute (GPM) because of a broken flow meter. Replacing the flowmeter would solve this problem. In the meantime, the flow has been manually lowered to 0.5 GPM and, thus, will save 2,450,000 gallons and \$29,800 per year.

Turn Off Rinse Tank on Off Days

The same rinse tank was running on non-production days. Turning the flow off during weekends and holidays will reduce usage by 196,000 gallons and \$2,400 per year.

Solutions

Turn Off Cleaning Line Burners on Off Days

Natural gas burners maintain the alkaline and rinse tanks at their setpoints. However, the tanks are not needed if the plant is not operational. Turning the burners off on non-production days is conservatively estimated to save 3,600 therms and \$1,800 annually.

Install Lid For Alkaline Cleaner Tank

The alkaline tank currently loses heat through evaporation. Adding a lid for the tank is estimated to reduce these losses by approximately 70%, or around 7,900 therms, and save \$3,900 annually.

“Working with Julie was great! She is very motivated and did a wonderful job! Not only did she identify places we were using too much water, but she also educated our team. Julie used all her resources here and at MnTAP to solve problems and suggest better practices moving forward. It’s amazing the amount of money that can be saved if you are looking. A great experience and we can’t wait to work with MnTAP again”

~ Tony Bolz, Plant Manager



Recommendation	Annual Reduction	Annual Savings	Status
Install Automatic Solenoid Valves	25,000,000 gal water	\$137,000	In Progress
Repair the Water Softener and RO System	4,500,000 gal water 2,050 lbs salt	\$56,000	Implemented
Change Rinse Tank Flow Rate to 0.5 GPM	2,450,000 gal water	\$29,800	Implemented
Turn Off Rinse Tank on Off Days	196,000 gal water	\$2,400	Implemented
Turn Off Cleaning Line Burners on Off Days	3,600 therms	\$1,800	Implemented
Install Lid For Alkaline Cleaner Tank	7,900 therms	\$3,900	Researching

MnTAP Advisor: Gabrielle Martin, Associate Engineer