

# Sustainable Solutions to Conserve and Reduce Water Use at Rochester Midland Corporation



## Rochester Midland Corporation

Established in 1888, Rochester Midland Corporation (RMC) is a leading manufacturer of specialty chemicals including industrial cleaning and food sanitation products. It is a multinational company crucial in helping customers to achieve a higher level of cleanliness, productivity and environmental awareness. It provides guidance in regulatory compliance for food plants, legionella risk management, and the evaluation of waste discharge. RMC is investigating sustainable solutions to further improve sustainability practices and reduce their environmental impact. .

## Challenge

RMC uses a variety of raw materials for the production of their chemicals. High quantity materials are stored in bulk, while small quantity materials arrive in 55 gallons drums and are pumped directly into the mixing kettles. At RMC, products range in viscosity from watery to thick, with the thickest material being 8,000-10,000 centipoise (cP). During the cleaning, residual product left in the supply line is lost during the line purge, which is then processed through the wastewater treatment system.

Annual water usage is 3,830,000 gallons, at a cost of \$10,850. General facility use accounts for 70-72% of the water use, with the remainder used in product manufacturing. Annual waste water discharge is about 2,230,000 gallons, with a \$15,000 surcharge for disposal by a publicly owned treatment works (POTW). Potential tasks to address reduction in water usage were identified during NYSP21's visit which include a Cleaning/Rinse In Place (CIP/RIP) system, a filling nozzle rinse system and other practices at the facility. Some in-place well established cleaning operations need to be investigated along with the water use to purge the product lines.

## Challenge

- Reducing significant amount of water use (~58% of total) emanating from the Refill Rinse Drum/Barrel area. Products at RMC range in viscosity from watery to thick, with the thickest material being 8,000-10,000 centipoise (cP). General facility use accounts for 70-72% of the water use. Annual water usage and waste water treatment costs are significant.

## Solution

- NYSP21 assisted RMC to find viable, sustainable solutions to conserve and reduce water usage. The team created a water map to understand water use processes. Investigated spray ball and Clean In Place (CIP) techniques. Methods to characterize rinse water through conductivity measurements with hardware solutions were determined.

## Results

- The water mapping activity identified the various reasons for water use such as cleaning tanks and lines between production batches, and quantities used
- Create awareness among its workers on the importance of water conservation practices

## Solutions

NYSP2I conducted an assessment project for Rochester Midland Corporation with the objective of identifying and investigating viable, sustainable solutions to conserve/reduce water usage. The team at NYSP2I created a water map of the primary water use processes and characterized specific process water types as a baseline. The methods to reduce and/or reuse water for various processes based on contaminants and water purity requirements were investigated. Spray ball technologies and clean in place (CIP) systems were considered as options to conserve water use during the tank and line rinses. A method was determined to characterize rinse water through conductivity measurements with hardware solutions that could be used by RMC. Due to the limited amount of data collected on water use, a quantitative economic analysis was not feasible.

## Results and Next Steps

- The water mapping activity identified the various reasons for water use such as cleaning tanks and lines between production batches, and quantities used.
- Create awareness among its workers on the importance of water conservation practices.
- RMC should continue to track water use regularly and document the specific product that was produced prior to each rinse process.
- Conduct conductivity measurements of the rinse water out flow for a range of product batches, based on viscosity. This will provide data on when the tanks and lines are cleaned and identify opportunities to optimize the rinse process for specific products.
- Investigate using final rinse outflow where conductivity close to baseline to refill the rinse drum barrel.
- In addition, any conservation efforts implemented would save upfront water costs, along with saving any costs associated with heating the water and treatment of the waste water outflow.
- Since the completion of this study, and aided by diminished water usage, surcharges have been reduced by thirty-three percent and a new wastewater treatment system has been installed to improve effluent water quality.

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## Testimonial

*"The water mapping performed by the NYSP21 team from RIT revealed a number of improvements that will reduce RMC's water consumption and as a direct outcome reduce the amount of waste water treated and those associated costs as well. Even after the project was officially completed there were several continuous improvement opportunities identified that RMC will continue to follow through on over the next several months."*

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