

DIRECT ASSISTANCE PROGRAM



CASE STUDY

Rinse Water Assessment for Reduction and Reuse Performed by NYSP2I

Challenge

Operations at a manufacturing facility in Central New York consist of three plating lines as well as one grinding-polishing room. The projected annual volume of water in all four operations, based on 6 months of data, is approximately 616,000 gallons at a cost of roughly \$3,000. Wastewater treatment (WWT) chemicals and supplies totaled around \$23,500 for the year and sludge disposal costs were about \$10,600. To help offset some of these costs the manufacturer wanted to evaluate whether water and chemicals can be reused or reduced from four processing lines.

Solution

The New York State Pollution Prevention Institute (NYSP2I) at the Rochester Institute of Technology (RIT) partnered with the Mohawk Valley Applied Technology Corporation to assess the quantity and quality of the rinse water from the manufacturer's plating lines, pickling line, and grinding-polishing operation. The work involved lab analysis of multiple water samples, rinse tank pH and conductivity readings, and water flow readings. This information was used to develop viable options to modify rinse water management and potentially reduce the size of the needed wastewater treatment.

Results

Testing and discussions with the manufacturer resulted in the identification of several possible locations in the plating lines where closed loop rinses and reactive rinses would be effective. Ion exchange technology can be used to close-loop rinse water in the chrome plating line, eliminating the need to treat chrome rinse water in the WWT and possibly eliminating one treatment tank. There would also be a slight reduction in water volume going to the WWT system, approximately 23,500 gallons/year. If the elimination of the chrome treatment tank in WWT reduces the WWT water use by a third then there is an additional reduction of 10,200 gallons/year. The expected savings resulting from the reduction in chrome sludge generation and less chemical treatment for WWT are estimated at \$17,215 per year. Payback would be less than a year for initial installation costs.

The grinding-polishing room water could be reused with some filtration and smaller volumes sent to WWT and potentially reduce wastewater flow going to WWT by 88,600 gallons/year. The manufacturer can conduct trials using water that is already being filtered to remove heavy solids as other studies have shown that process water, which is not perfectly clean, can still be effective in cleaning/rinsing for this type of operation.

If the options identified are implemented, the total reduction in water use would be 177,300 gallons/year.

CHALLENGE

- The manufacturer wanted to evaluate whether water and chemicals can be reused or reduced to offset operating costs at the facility

SOLUTION

- Assessment of the quantity and quality of the rinse water from the manufacturer's plating lines, pickling line, and grinding-polishing operation
- Lab analysis of multiple water samples, rinse tank pH and conductivity readings, and water flow readings

RESULTS

- Testing and discussions with the manufacturer resulted in the identification of several possible locations in the plating lines where close loop rinses and reactive rinses would be effective
- If the options identified are implemented, the total reduction in water use would be 177,300 gallons/year

NYSP2I PARTNERS



New York Manufacturing Extension Partnership

Funding provided by the Environmental Protection Fund as administered by the New York State Department of Environmental Conservation.

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