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POLLUTION PREVENTION

IN RHODE ISLAND

Case studies of the Rhode Island On-Site Technical Assistance Program

Jewelry Mfg.
Precious Metal and Rinsewater Recycling

Jewelry manufacturer uses ion-exchange to recycle rinse water and reclaim metal from precious metal plating operations.

Industry \ Contact
SIC Code: 3911 Electroplater,Rhode Island
Contact: Herff-Jones, Inc.

Technology Description
The company manufactures class rings, trophies, plaques and other related materials and employs about 190 people. One of the primary operations of the company is electroplating.

After plating, product is rinsed in three tanks. The first two tanks are static rinse tanks which are replenished in a counter current fashion, i.e., fresh water feeds the second tank, the second tank feeds the first tank, with the first, most concentrated tank being sent back to the plating bath. The third and final rinse was originally sent to the company's chemical treatment system and discharged to sewer. Ion exchange has been installed to recycle the water in the final rinse, thereby eliminating this discharge.

Precious metal ions captured in the mixed-bed ion exchange resins are sent off-site for recovery.

Feedstock Materials
Rinsewater flow rate: approximately 3 gallons per minute (345,000 gals. annually).
Waste treatment chemicals: Caustic, Acids, Flocculants.

Wastes
3 gallons of rinsewater per minute sent to sewer.
Sludge volume difficult to estimate as the treatment system services many different plating lines.

Costs
Precious metal ion exchange system: Approximately $7,200

Operation \ Maintenance
Pump power: $50-$70/yr

Savings
The company eliminated the purchase of rinsewater from the city-345,000 gallons per year $ 6,000. Treatment chemical use has also decreased.

Treatment/Disposal costs have decreased along with sludge volume due to diminished use of the pretreatment system.

Payback Period
Estimated to be 2 years.

Impact
The company has eliminated the purchase of city water for the precious metal plating rinses. In addition, treatment and disposal costs have decreased as has the dependence of the facility on its chemical treatment system. The company has also installed similar systems on their other plating lines to further reduce water and waste treatment chemical use **(See case study #'s 38-42).**