POLLUTION PREVENTION
IN RHODE ISLAND
Case studies of the Rhode Island On-Site Technical Assistance Program

Die Caster
Vibratory Solution

Die caster utilizes ultrafiltration to close-loop vibratory process.

Industry Contact
SIC Code: 3369 Precision Zinc Die Caster, Rhode Island.
Contact: Company #6

Technology Description
The company is engaged in the production of precision zinc die casts. The average employment of the company is 10.

In a vibratory process for finishing die cast zinc parts, 5,000 gallons per month of metal-bearing waste solution was originally generated and discharged to the sewer. After consulting with DEM's Pollution Prevention Section, the company found a cost-effective, non-chemical method for cleaning and recycling their tubbing solution. The company bought and installed a Splitter ultrafiltration unit (manufactured by Infinitex of Buffalo, NY) to recycle the tubbing solution. A zinc-rich sludge by-product of the ultrafiltration process is now sent off-site to a zinc supplier for reclamation.

Feedstock Materials
200-300 gallons per day (GPD) of process water.
40 gallons per month of Oakite Stripper M-3 tubbing soap, manufactured by Oakite Products of Berkeley Heights, NJ.

Waste Releases
200 to 300 GPD of metal-bearing tubbing solution discharged to the sewer.

Costs
100 to 150 GPD Splitter Ultrafiltration System, manufactured by Infinitex of Buffalo, NY.
Tanks, pumps, filters/housings
Total Capital Investment $5,500
**Operation \ Maintenance**
Membrane replacement: $300 per year

**Savings**
Annual savings in soap purchases: $1,426
Annual savings in cartridge filters: $789
Annual savings in process water: $161
Annual savings in sewer fees and analytical testing: $1,224

**Payback Period**
Approximately 1 year

**Impact**
The company no longer uses 62,500 gallons per year of water in its vibratory operation. The company has found that, by installing an ultrafiltration system, they were able to effectively "close loop" their vibratory process. In addition, ultrafiltration allows much of the tubbing soap to be recycled. By recycling the vibratory solution, the company has eliminated discharge to the sewer. Since no water is discharged to the sewer, compliance is not an issue.

In addition to eliminating discharge to the sewer, ultrafiltration creates far less sludge than chemical treatment. The other advantages of ultrafiltration are that operating costs are minimal and there are no hazardous chemicals involved. The company also found that the number of rejected parts in the production line decreased as a result of the modified process.