

POLLUTION PREVENTION

IN RHODE ISLAND

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

Textile Printer Wastewater

Silk-screen printer recovers and re-uses screen emulsion rinse water using an ultrafiltration process.

Industry \ Contact

SIC Code: 2291 Textile Printer, Rhode Island.

Contact: Textile Grant Company

Technology Description

The company is engaged primarily in the silk screen printing of textiles for aprons, towels and kitchen linens. The print facility employs approximately 100 people.

The silk screen operation requires application of a water-based emulsion to the screen prior to applying the print pattern. Once the screen is exposed, the pattern is completed and excess emulsion must be rinsed off with a high-pressure water spray. The company was using a diatomaceous earth filter to recover the rinse water. Diatomaceous earth bled through the system and caused pump seals and packings to fail at least every 6 weeks. Costs associated with pump maintenance became burdensome and the company began looking for other alternatives. Until 1996, the company shipped the emulsion rinse water off-site for treatment and disposal. In 1996, the company purchased an ultrafiltration system and equipped it with a Membrex MX50 spiral - wound membrane.

Water and screen emulsions generated during rinsing operation are now separated using a Membrex MX50 ultrafiltration system. The screen emulsion is concentrated in a 375 gallon holding tank for periodic offsite non-hazardous treatment. Permeate from the system is suitable for reuse in the rinsing operation evaporation losses.

Feedstock Materials

Rinse Water

Wastes

Non-hazardous wastewater hauling and disposal 22,000 gallons/year

Costs

Ultrafiltration unit: \$19,000

Operation \ Maintenance

Labor: \$3,600/year

Electricity: \$524/year

Solids Removal: \$760/year

Savings

Non-Hazardous wastewater disposal: \$10,000/year

Diatomaceous Earth Disposal: \$760.00/year

Equipment Maintenance

Pump Unloaders (\$85, every 4-6 weeks): \$850/year

Pump Packings (\$120, every-6 weeks): \$1,200/year

D.E. Cartridges (1 per year): \$400/year

Treatment Chemicals

Defoamer: \$36/gallon, \$1,800/year

Diatomaceous Earth: \$18/bag, \$450/year

Payback Period

16 months

Impact

Since the company abandoned the use of its diatomaceous earth system and installed a UF system, the company has extended the operational life of its high-pressure pump seals and packings, as well as reducing its off-site disposal of screen rinse water.