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# POLLUTION PREVENTION

## IN RHODE ISLAND

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

## Textile Printer
## Rinse Water Reuse

**Textile printer removes aqueous-based pigments through ultrafiltration to reuse 300,000 gallons of rinse water daily.**

**Industry \ Contact**
SIC Code: 2291 Rotary Screen Textile Printing, Rhode Island.
Contact: Company # 89

**Technology Description**
The company is engaged in the continuous rotary screen printing of textiles principally for the home fashions industry. The printing facility employs approximately 150 people.

Rinse waters totaling 300,000 gallons per day are generated by five print machines' conveyor sprays, three barrel washers and miscellaneous equipment rinsing with high-pressure hoses. Pigments used in the print operation are rinsed off the equipment, and the resulting colored water flows into two collection sumps. Previously, the sumps' gravity discharged into the sewer. The company contacted the DEM's Pollution Prevention Program to explore water conservation and recycling techniques.

Upon completion of several pilot studies, the company purchased and installed a 450,000 gallon per day ultrafiltration system to remove the suspended pigment solids from its rinse water and to reuse the permeate water at the machines. The Membrex ultrafiltration system installed is fitted with 50,000 molecular weight cutoff membranes. The pigment solids and debris rejected and concentrated by the membranes are flocculated and filter-pressed for non-hazardous disposal.

**Feedstock Materials**
300,000 gallons of process rinse water daily

**Wastes**
300,000 gallons of spent process rinse water daily

For more information, contact: RI Department of Environmental Management, Office of Technical and Customer Assistance, 235 Promenade Street, Providence, RI 02908 Phone: (401) 222-6822

**Costs**
450,000 gallons-per-day Membrex Ultrafiltration System manufactured in Fairfield, NJ
Tanks, piping, valves, switches, level, pressure, proximity, Sweco Separator, FSI prefilter housings, plumbing, electrical, rigging and construction
Capital: $1.3 million

**Operation \ Maintenance**
Membrane Replacement $50,000 annually
Labor $30,000 annually
Electricity $75,000 annually
Bag filters $4,800 annually
Flocculation Chemicals $20,000 annually

**Savings**
Approximately 300,000 gpd water (some fresh water is needed to make up for evaporation losses) @ $1,000 per million gallons City
@ $1,500 per million gallons Sewer
$225,000 annual water \ sewer savings

**Treatment \ Disposal**
15 cubic feet of filter press cake per week; non-hazardous material

**Payback Period**
Long Term

**Impact**
The company has invested the capital to recycle its rinse water. While no immediate payback will be seen, the company is confident that operating costs for the ultrafiltration system will be absorbed by the significant savings in water/sewer costs and the avoided costs of Publicly-Owned Treatment Works (POTW) surcharges and fines.

The elimination of a colored waste stream of this magnitude has helped the local POTW with excess influent problems.