

POLLUTION PREVENTION

IN RHODE ISLAND

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

Textile Preparation Water Conservation

Textile preparation facility conserves water through counter-current rinsing.

Industry \ Contact

SIC Code: 2291 Textile Preparation, Printing, Finishing; Rhode Island.

Contact: Company # 89

Technology Description

The facility produces peroxide-bleached, washed and dried fabric for subsequent printing and finishing at its sister facilities. The facility employs approximately 80 people. Management contacted DEM's Pollution Prevention Program for assistance in determining water conservation techniques which could be implemented at the facility. The average daily water use at the preparation plant exceeded 250,000 gallons per day. The Pollution Prevention staff recommended counter-current rinsing methods for the open-width and rope washers at the facility. The company tested its product's quality on a pilot scale with counter-current rinsing, and determined the fabric's quality was not affected.

Peroxide-bleached fabric is fed through two rope washers while city water flows opposite the fabric. The discharge water from the second rope washer is pumped into the first, yielding counter-current rinsing. Fresh water consumption in this process has decreased by 10,000 gallons per day.

The open-width washer consists of 7 basins, three of which contain a solution of soap and water. The last 4 basins contain only rinse water. Fabric is fed into the first of the three soap basins while fresh water is fed into the last of the three basins. The water from the third and second basins flows over into the first basin. The first basin, which contains soap, water and fabric contaminants, overflows to the sewer. The fabric is then fed from the third basin into the first of 4 rinse basins. Fresh water is fed into the last of the four basins, overflowing to the first basin and then to the sewer. Fresh water consumption in this process has decreased by 25,000 gallons per day.

Feedstock Materials

250,000 gallons of city water per day

Wastes

250,000 gallons of wastewater sent to the sewer

Costs

Pumps, plumbing, level switches: \$3,500

Operation \ Maintenance

Labor: negligible

Electricity: \$1,000 annually

Savings

Water consumption has decreased by 35,000 gallons per day

Water/sewer savings @\$1,000 per million gallons - city

@\$1,500 per million gallons - sewer

Total savings: \$21,875/year

Payback Period

2 months

Impact

The company is saving over \$20,000 per year through implementation of counter-current rinsing techniques. The company has reduced its demand from the city water works by nearly 9 million gallons per year, and has likewise reduced its impact on the local sewer system by the same amount.