



TEXTILE DYE REMOVAL & BRINE CONCENTRATION

Insoluble and soluble dyes and colloidal contaminants are removed from the waste stream, producing a reusable brine solution. Membrane separation is used based upon its ability to selectively remove contaminants and produce a brine that can be reused without chemically altering the fluid. The system corrects a discharge problem caused by color and high inorganic dissolved solids. The system operates unattended.

System Design

All of the wastewater is initially screened for removal of lint and large solids. The water phase is then discharged to the process tank of a tubular ultrafilter for removal of all colloidal and insoluble contaminants. The permeate from the ultrafilter is then discharged to the process tank of a nanofilter for separation of dye and alkalinity. The sodium chloride solution passes the membrane and the water phase is reused. The brine is further concentrated in a reverse osmosis system.

The concentrated contaminants are treated using conventional physical/chemical treatment, producing a dewatered solids phase.



Significant Savings

- Waste stream reduction lowers discharge fees
- Water reuse reduces overall consumption of water
- Brine recovery saves on processing cost
- Easy maintenance avoids labor costs and regulations
- Lower disposal cost

Clients and Projects

- Sara Lee Knit Products
- Springford

Technology Benefits

Membrane Separation System Using Tubular Ultrafilters (UF), spiral-wound NF & RO membranes

- Simple mechanical process
- Consistent high quality water
- Ability to reuse purified water
- Low operating costs
- Unattended operation
- Minimal disposal costs
- Ability to reuse brine

Contaminants Removed

- Pigments and Dyes
- Polymers
- Machine Lubricants
- Heavy Metals
- Alkalinity

Services Provided

- Systems Design
- Equipment and Installation
- Operator Training
- Maintenance Contract
- Build, Own, Operate, Maintain



Detail of spiral wound membrane element

Simple Mechanical Process

The membrane filter is a mechanical system that allows clean water to pass the filter while contaminants are retained and returned to the waste holding tank. There are no chemicals required other than that which may be necessary for pH adjustment. Also, there is very little sludge generated by the process. The system simply separates the contaminants from the water, whereas a chemical treatment system generates copious amounts of sludge that must be de-watered prior to disposal.

Unattended Operation

Since this process is completely mechanical and not dependent upon chemical feed and the coagulation and flocculation process, the only operational requirement is to clean the membrane filters periodically.

Consistent High Quality Water

The membrane filter forms a positive barrier to the flow of contaminants, producing continuous high quality water without operator attention. The membrane system is not affected by variability in the waste stream. The purified water is suitable for reuse or sewer discharge.