AUTO AUCTION TREATMENT AND REUSE OF WASTEWATER

A major auto auction washes and details hundreds of cars daily. Since no public sewer is available for discharge, they were hauling thousands of gallons of wastewater for disposal at considerable cost. A complete water purification and reuse system was installed to purify all the water to rinse-quality standards. A broad range of cleaning chemicals is used in the washing and detailing process, all of which are removed by the system along with other contaminants.

System Design:

The wastewater is discharged to a series of floor trenches fitted with coarse screens for separation of gross solids. The transfer pumps are also fitted with screens to separate finer solids. The wastewater is discharged to an equalization tank, where settleable components are pre-separated.

The water is then processed by a membrane bioreactor (MBR) for removal of all colloidal and insoluble contaminants and reduction of COD and BOD. The purified water from the membrane bioreactor (MBR) can be reused as wash water. In order to produce rinse-quality water for reuse, purified water from the ultrafilter is then processed by a reverse osmosis system. This removes soluble salt and organics that remain after the membrane bioreactor (MBR) and thereby produces high quality water for reuse as rinse. The system operates unattended.

Significant Benefits

- Lower energy cost allows operation in larger plants
- Robust tubular membranes reduce replacement cost
- High mixed liquor concentration reduces tankage required
- Small system footprint
- Safe automatic clean-in-place system
- Consistently high performance

Technology Benefits

Membrane Separation System Using Tubular Ultrafilter (UF) Membranes

- Simple mechanical process
- High quality water consistently produced
- Ability to reuse purified water
- Low operating costs
- Unattended operation
- Skid mounted components reduce installation costs
- PLC-based control minimizes operator labor requirements
Simple Mechanical Process:
The membrane filter is a mechanical system that allows clean water to pass the filter while contaminants are rejected and returned to the waste holding tank. No chemicals are required other than what may be necessary for pH adjustment. Also, there is very little sludge generated by the process. The system uses a conventional aerated activated sludge process and separates the contaminants from the water.

Unattended Operation:
Since this process is principally mechanical very little operator attention is required.

Consistently 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 settling characteristics. This system produces the highest quality water of all generic treatment systems. The purified water is suitable for reuse or sewer discharge.

Low Disposal Cost:
The biological process will produce a small volume of liquid sludge that is inexpensive to dispose.

Low Operating Cost:
The membrane filtration systems will be the least expensive treatment to operate. The cost of operation of the MBR and RO systems require little or no chemical and very little labor.