

# USING TEKLEEN FILTERS IN THE PETROCHEMICAL PROCESSING ENVIRONMENT

There are many areas within petrochemical processing which use water that requires filtering. The filtered water can then be re-used and the debris properly disposed of. By using a Tekleen self-cleaning automatic filter, this water can be cleaned of debris and solids, provide cooling, pre-filter water for further cleaning, and maintain the operational reliability of piping, spray heads and any devices that water flows through. It can be used as a pre-filter down to 2 microns, protecting R/O and microfiltration systems used for potable water quality production.

Several of the largest petrochemical plants in the U.S. use Tekleen filters for their various water requirements.

With proper filtration, source water for processing can successfully be derived from wells, ponds, rivers, rainwater, seawater and re-used water.

Without a proper filtration system, the debris in source water can cause fouling of pipes and heat exchanging surfaces, which lowers the thermal efficiency of the system. Fouling also increases the friction losses and induces erosion, corrosion, and energy waste by increasing the demand for a higher flow rate. Other problems include the plugging of spray nozzles, blinding of sensors, analyzers, as well as the wearing down of pump gland seals, scrubbers, misters, membranes, and ion exchanger columns. These issues cause unscheduled shutdowns for maintenance and cleaning and the loss of many production hours. Filtration is one of the simplest and most convenient ways of solving these problems.

By using Tekleen self-cleaning filters, the debris solids can be captured, removed from the water flow, and disposed of properly before the filtered water reaches its destination, using 6 - 30 gallons per rinse and lasting 4 - 10 seconds. Using a Tekleen filter also increases the potential use of filtered wastewater as re-used water or make-up water throughout a processing plant.

TEKLEEN® self-cleaning water filters provide the ultimate solution where dirty water is a problem. The filters operate on line pressure alone. The self-cleaning process is triggered by a pressure differential that occurs when water is too highly saturated with solids, and is accomplished in seconds without interrupting the main flow.

The filters are compact in size and designed to meet a variety of industrial applications. ASME code stamp vessels are also available as an option.

## APPLICATIONS

### 1. Cooling towers

When used to cool the product processing and the plant itself, water is sent through a cooling tower and often through an evaporative system. The water is cooled throughout the

cycle by atmospheric temperature and/or by evaporation. Evaporation in an open system invites all sorts of debris which must be filtered out to protect the piping from accumulations that slow down the water flow and cause expensive downtime to maintain the equipment. With a Tekleen automatic filter, the debris is filtered out and contained for disposal, the filter cleans itself, and the cooling water continues to flow.

One such installation for providing Cooling Tower water uses a Tekleen 6" filter, with a flow rate of 600 GPM, at 50 PSI. The filter used is a ABW6-LP with a 100 micron high performance screen.

### 2. Product processing and boiler steam

When water is part of the product itself or is used to purify or "scrub" the product, then that water has to be filtered to maintain product quality, going in and going out. Tekleen filters are ideal for this. By filtering waste water adequately, the process avoids many opportunities to pollute an area. Desalination of wastewater is an important part of this effort. Tekleen filters can protect the membranes downstream.

### 3. Underwater Pelletizing

Underwater pelletizing is a method of cutting extruded plastic into beads under a stream of water, which helps them take a spherical, conical or disk shape for feedstock or as a settling medium. The water used in processing the beads can be filtered and re-used. One such installation uses a Tekleen 6" filter, with a flow rate of 500 GPM, at 120 PSI. The screen used is a ABW6-LP 50 micron screen.

Where the material being pelletized absorbs water, this water can be removed and reclaimed after filtering.

### 4. Potable water

Petrochemical companies often provide potable water in housing and break rooms for employees. Tekleen filters can purify this water down to 2 microns to prefilter water going through an R/O or microfiltration process for safe drinking.

### 5. Polymer Filtration from Storm Pond

Polymer can be used for settling mud. With the mud adequately settled and turbidity minimized, the Tekleen unit can filter the re-usable water, which can be sent back to storage. The polymer beads are left behind in the pond to continue the settling process.

One installation uses a Tekleen 4" filter, providing 1,000 gpm, at 20 psi. The screen is Model LPF4-SP wedge wire screen, 100 micron ASME Stamped.

### 6. Well water pump seal protection

Packing seals and mechanical seals can be protected from excessive wear by using water to cool the seal and the shaft, to lubricate the seal and to flush away solids. One Tekleen installation uses a 2" filter, setup to provide 100 GPM. It uses a MTF2-XL 25 micron screen.

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*Tekleen industrial self-cleaning water filters are suitable for a wide range of applications: HVAC, petrochemical, pulp & paper, drinking water, golf & turf, sugar processing, metal processing, waste water, sea water filtration, greenhouse & nursery, plastics manufacturing, food industry, power generation, car wash water reuse and recycling, and fruit & vegetable irrigation.*