WIGEN Since 1965 WATER TECHNOLOGIES

Water.
Process.
Solutions.

Ultrafiltration

Hollow fiber ultrafiltration (UF) is the most reliable low-pressure membrane filtration technology available for producing drinking water that meets the requirements of the US EPA's Surface Water Treatment Rule (SWTR) and the Long Term 2 Enhanced Surface Water Treatment Rule (LT2ESWTR). These Rules were developed specifically to ensure the removal of bacterial virus, cryptosporidium and giardia from drinking water supplies. Wigen Water Technologies (WWT) designs and manufactures UF membrane systems that will act as a barrier to the following contaminants found in surface, groundwater and secondary wastewater sources:

- Turbidity & Suspended Solids
- Bacteria
- Viruses
- Giardia and Cryptosporidium
- Silt Density Index (SDI) for NF and RO pretreatment

In combination with oxidative and coagulation pretreatment processes, WWT UF membrane systems can also be used for the removal of the following source water constituents:

- Iron and Manganese
- Total Organic Carbon
- Arsenic

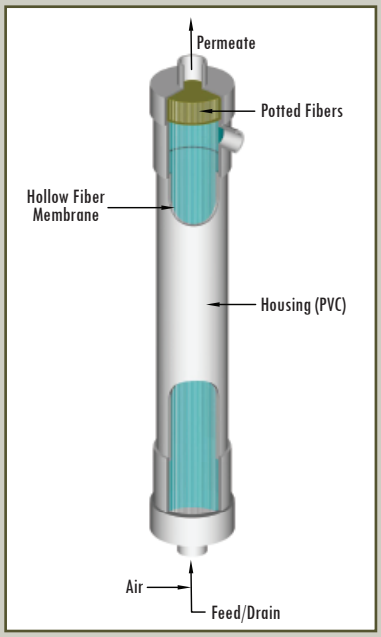
With in-house process engineering expertise, custom manufacturing facilities and the ability to select the best membrane for a particular application, WWT ensures its UF systems always produce the highest quality water reliably and cost effectively.

System Configuration

WWT will select the most effective UF membrane for a specific application to integrate into its membrane filtration systems. All membranes used are LT2ESWTR, Title 22 and ANSI/NSF Standard 61 certified. Specific features of UF membranes used in WWT systems are as follows:

- Flow Configuration: Dead-end, Outside-in, Pressurized
- Material: PVDF
- Nominal Pore Size: 0.02 µm
- Flux Range: 10-120 gfd
- Operating Pressure: 10-50 psig

WWT manufactures its membrane systems on skid mounted racks for cost effective and fast installation. Skid mounted systems are custom designed for each specific customer to ensure efficient and reliable operation whilst minimizing capital and operating costs. Larger UF systems can also be assembled on-site where this is more cost effective. All equipment used in WWT's membrane systems is manufactured from NSF approved materials for drinking water use.



UF Membrane Module

System Advantages

High Filtration Flux: Pressurized UF systems operate at higher flux rates than vacuum systems, resulting in compact footprints and lower capital costs.
Excellent Treated Water Quality: The small pore size of UF membranes proves excellent retention of turbidity and extremely high treated water quality.
Tolerance to high particulate loads: The outside-in hollow fiber membrane is more easily backwashed and air scoured resulting in less waste and greater source water utilization.
Chemical Durability: PVDF membranes can tolerate high concentrations of chlorine and acid, allowing flux rates to be recovered under the most challenging fouling conditions.
Energy Recovery: Where adequate hydraulic energy is available from the feed water supply, it can be utilized to drive the filtration process without the need for additional re-pumping, thus reducing energy use and treatment costs.

System Operation

During filtration, feed water enters the bottom of the module via a feed manifold. This same manifold acts as a backwash collection header when the module is drained. Feed water passes to the inside of the hollow membrane fibers and exits at the top of the module into a permeate collection manifold. During a backwash, permeate is directed into the membrane modules from this top manifold and the flush water from the backwash and air scour exits from the bottom port and is sent to drain. An aeration header provides air scour to each module and the air is injected using the same port as the feed water and backwash drain.

Periodic Chemical Clean in Place (CIP) and Maintenance Cleans (MC) are conducted to remove foulants and restore membrane performance.

Additional Applications

WWT's UF systems are also used for industrial process water treatment, secondary wastewater filtration in effluent reuse applications, and for pretreatment to NF or RO membranes in softening or desalination applications. When used in conjunction with other treatment processes such as GAC, media filters and NF/RO, WWT can integrate these systems on single or multiple skids for ease of installation and operation.

With expertise in a broad range of water treatment processes, WWT's engineering team has the expertise to design and manufacture the most reliable and cost effective total water treatment solution incorporating ultrafiltration.

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