

UF / MF

Ultrafiltration (UF) and Microfiltration (MF) enable the filtration of small suspended particles found in different types of water sources. UF and MF modules are made from hollow fiber membrane with pore sizes ranging from 0.01 μm to 0.1 μm .



City of Delaware, Ohio, United States



Emmons County, Colorado, United States

MEMBRANE FILTRATION PROCESSES

Membrane filtration rejects microorganisms and suspended solids greater than the pore size, typically resulting in turbidities less than 0.1 NTU and SDI's less than 3.0. This high quality filtrate makes UF/MF the preferred pretreatment process for NF/RO and other unit operations when treating wastewater, seawater and surface water.

In addition, UF & MF have a verifiable log removal value (LRV) for cryptosporidium & giardia of greater than 5.0, allowing it to be the primary treatment for potable water applications that require EPA and state health departments certification for surface water and ground water under the influence of surface water sources. Membrane filtration has four modes of operation; filtration, backpulse (i.e. backwash), cleaning-in-place (CIP) and membrane integrity testing.

In filtration, feed water is "pushed" through the membrane pores at low pressure where a portion of the filtered water or filtrate is stored for backpulsing and cleaning and the remaining filtrate continues to downstream processes or potable water storage. Backpulse is a reversal of filtrate flow to displace solids that have accumulated on the membrane surface and flows to drain. Backpulse frequency is based on the feedwater quality, typically every 20-60 minutes. Cleaning is done to remove materials that are not removed with backpulse. Chemicals used for cleaning are typically, acids, bases and oxidants. Membrane Integrity testing (MIT) is done periodically to verify there are no leaks in the membrane that would otherwise allow bypass of feedwater and harmful microorganisms. MIT is performed by using pressurized air and monitoring the pressure decay rate.



Clifton, Colorado, United States
Engineered with FiberFlex™



Wemindji, Quebec, Canada



Robson Raspberry, British Columbia, Canada

FiberFlex™

Unlike spiral wound membranes whose sizes and membrane filtration areas have been standardized across all or most membrane suppliers, UF modules can differ from one supplier to another in the matter of their dimensions, their process connections, and their operating sequences. Therefore, a typical UF system fitted with a specific brand and model of UF modules must conserve the same brand and model throughout its life span. This imposes unnecessary limitations to the system's owner when purchasing new modules for its system.

H2O Innovation has developed a flexible ultrafiltration skid to accommodate several types of modules and allow owners and engineers to take advantage of a much wider membrane spectrum. The FiberFlex™ is an open source equipment that simplifies membrane purchases and change overs.

PARTIAL UF REFERENCE LIST

PROJECT	WATER TREATED	APPLICATION	FLOW RATE
Carmel By the Sea, CA, USA	Alluvial Well	Drinking Water	100 gpm
Statoil Hydro, CAN	Well Water	Process Water	110 gpm
Stanton Power Plant, ND, USA	Surface Water	Process Water	190 gpm
Worker's Camp, AB, CAN	Well Water	Drinking Water	66 gpm 148 gpm
Wemindji, QC, CAN	Surface Water	Drinking Water	304 gpm
Lynn Lake, MB, CAN	Surface Water	Drinking Water	320 gpm
Worker's Camp, AB, CAN	Surface Water	Drinking Water	2 x 275 gpm
Costa Azul, Mexico	Seawater	Drinking Water	774 gpm
Robson Raspberry, BC, CAN	Surface Water	Drinking Water	900 gpm
North Burleigh, ND, USA	Ground Water – Under Direct Influence of Surface Water	Drinking Water	1 506 gpm
Emmons County, CO, USA	Surface Water	Drinking Water	2 083 gpm
Clifton, CO, USA	Surface Water	Drinking Water	11 111 gpm
City of Delaware, OH, USA	Ground and Surface Water	Drinking Water	468 748 gpm

H2O Innovation designs, manufactures and commissions UF and MF systems for a number of water filtration applications. The company's expertise is based on its ability to determine the best combination of features for an optimal performance. Our team of experts works closely with industry leaders to carefully select the membrane modules, the pumps, and the cleaning and filtration modes that are the most suitable for the application.