MEMBRANE FILTRATION

UF/MF

Ultrafiltration (UF) and Microfiltration (MF) enable the filtration of microorganisms and suspended solids found in groundwater under the influence (GWUI), surface water, seawater, waste water and industrial water. UF and MF modules are comprised of hollow fiber membrane with pore sizes ranging from 0.01 µm to 0.1 µm.

City of Delaware, Ohio, United States

Clifton, Colorado, United States - FiberFlex™

Emmons County, Colorado, United States

TECHNOLOGY OVERVIEW

MF 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 MF the preferred pretreatment process for NF/RO and other unit operations when treating wastewater, seawater and surface water.

In addition, Ultrafiltration & Microfiltration have a verifiable procedure to calculate the log removal value (LRV) for cryptosporidium & giardia, allowing it to be the primary treatment for potable water reuse applications.

EXPERIENCE

H2O Innovation has a unique experience in the design and implementation of UF/MF facilities. Our first UF plant was installed in 2005 and since then we have rapidly grown our installed base, in the industrial and municipal markets. To date we have operating facilities built around 6 different membrane manufacturers. This gives H2O Innovation a unique perspective on membrane type, module construction, overall performance and how to successfully implement them based on client's requirements. We are applying this knowledge from the smallest facilities of a few GPM to the largest ones in the tens of MGD.

Our facilities encompass a wide array of feed water qualities:

- Direct surface water
- Surface water with coagulation and/or chemical oxidation
- Industrial waste streams

Where the final product is used for:

- Drinking Water
- Wastewater Reuse
- Boiler Feed
- Cooling Water
- General Process Water Feed

H2O Innovation also supplied several plant where we supplied both an UF/MF system coupled with an NF/RO system downstream for further polishing of the final effluent.

UF / MF

FIBERFLEX™

Until a few years ago, UF/MF plant designs centered around a unique and proprietary membrane element for the life of the facility. This locked the end users into a single design for the next decades, excluding them from potential technical improvements from other suppliers and exposing them to the risks of a sole sourced supplier. Unlike NF/RO facilities where healthy being competition could be created for membrane replacement, the UF/MF market did not offer such opportunities.

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 his facility.

H2O Innovation launched its FiberFlex™ platform in 2013 to address this issue and open up replacements to future, better products and trigger competition and innovation between membrane manufacturers for the replacement market.

Sherman, TX, USA - FiberFlex™

Lebanon, OR, USA - FiberFlex™

Oil & Gas End User, AB, Canada - FiberFlex™

Wemindji, Quebec, Canada

PARTIAL UF REFERENCE LIST

PROJECT	APPLICATION	FLOW RATE	YEAR
San Diego, CA, USA	Wastewater Reuse	40 MGD	2021
Montevina, CA, USA	Drinking Water	30 MGD	2019
Valencia, CA, USA	Wastewater Reuse	12 MGD	2020
Clifton, CO, USA	Drinking Water	12 MGD	2015
Sherman, TX, USA	Drinking Water	11.3 MGD	2019
Innisfil, ON, CAN	Drinking Water	10 MGD	2018
City of Delaware, OH, USA	Drinking Water	6.75 MGD	2013
Lebanon, OR, USA	Drinking Water	4.5 MGD	2019
Carlsbad, CA, USA	Wastewater Reuse	3 MGD	2017
Emmons County, CO, USA	Drinking Water	3 MGD	2012
North Burleigh, ND, USA	Drinking Water	2.2 MGD	2011
Robson Raspberry, BC, CAN	Drinking Water	1.3 MGD	2014
Costa Azul, Mexico	Sea Water Desalination	1.1 MGD	2005
West Basin, CA, USA	Wastewater Reuse	1 MGD	2014
Raspberry Falls, VA, USA	Drinking Water	0.45 MGD	2018
Wemindji, QC, CAN	Drinking Water	0.43 MGD	2012
West Deptford, NJ, USA	Wastewater Reuse	0.4 MGD	2015