

The **Microfiltration (MF) System** is a modular, pressure-driven membrane solution engineered to remove suspended solids, emulsified oils, colloids, and biological matter from complex industrial wastewater. Designed for upstream and midstream oil & gas and mining operations, it delivers **consistent filtrate quality, high uptime, and low lifecycle cost** — even in harsh, variable feedwater conditions. PVDF or PES hollow fiber/flat sheet membranes in crossflow or dead-end configurations deliver reliable clarification and pretreatment for the full downstream treatment train.

KEY BENEFITS & APPLICATIONS

High-Efficiency Solids & Oil Removal

- Removes TSS, turbidity, colloids & emulsified hydrocarbons to sub-NTU filtrate levels
- Produces effluent suitable for RO, IX, evaporation, or direct process reuse
- Stable performance across variable feedwater composition and loading

Optimized for Harsh Industrial Wastewater

- Engineered for produced water, SAGD, thermal EOR, and mining tailings streams
- Chemically resistant membranes withstand oxidant, caustic, and acid CIP regimes
- High tolerance for free and emulsified oil, grease, and fine particulate loading

Lower OpEx vs. Conventional Clarification

- Significantly reduced coagulant/flocculant vs. DAF and clarifiers
- Lower sludge volumes reduce disposal frequency and hauling costs
- Fully automated; minimal operator intervention required

Modular & Scalable Design

- Standardized skid packages available in multiple flow capacities
- Incremental expansion as production volumes grow
- Suitable for pilot, temporary, or permanent installations

Sustainable Water Management

- High-recovery reuse programs; measurably reduces freshwater withdrawals
- Directly supports ESG commitments and Zero Liquid Discharge (ZLD) targets

APPLICATIONS

Produced Water Treatment
(Onshore & Offshore)

SAGD & Thermal EOR
Water Treatment

Mining & Mineral Processing
Wastewater

Tailings Water Clarification

Pretreatment for RO, NF, or
Thermal Concentration

Industrial Reuse &
Process Water Recovery

SYSTEM ADVANTAGES VS. CONVENTIONAL TECHNOLOGY

Feature	Microfiltration	DAF / Clarifier	Media Filtration
High Solids Removal (TSS)	✓	✓	✓
Emulsified Oil Removal	✓	—	—
Consistent Filtrate Quality	✓	—	—
Low Chemical Demand	✓	—	✓
Modular Expansion	✓	—	—
Small Footprint	✓	—	—
Automated Operation	✓	—	—

TECHNICAL SPECIFICATIONS

MEMBRANE CHARACTERISTICS

Pore Size	0.1–0.2 µm (typical)
Membrane Type	PVDF or PES hollow fiber / flat sheet
Configuration	Outside-in or inside-out
Chemical Resistance	Oxidants, caustic, acids & surfactants
Design Flux	30–90 LMH

SYSTEM PERFORMANCE

TSS Removal	> 99%
Turbidity (filtrate)	< 0.1–0.5 NTU
Oil & Grease Reduction	80–95% (emulsified)
Water Recovery	90–98%
Operating Pressure	5–30 psi

OPERATING CONDITIONS

Temperature	5–45°C
pH (operation)	2–12
pH (CIP)	Up to pH 13–14
Backwash Frequency	Every 10–60 minutes
CIP Frequency	Weekly to monthly

PRETREATMENT REQUIREMENTS

Coarse Screening	1–3 mm recommended
Coagulant Dosing	Optional (high-oil / high-colloid)
Feed Pump	Stable pressure control
Flow Control	Constant flux or pressure mode

MODULE SIZES & WHY MICROFILTRATION?

Module	GPM	m ² /day
Standard MF Skid	50–150	275–825
Large MF Skid	300–600	1,650–3,300

Multiple skids combine for any required capacity.

WHY MICROFILTRATION?

Proven membrane barrier: Absolute 0.1–0.2 µm pore size removes bacteria, colloids, and fines that conventional clarifiers cannot reliably achieve.

Reduced chemical footprint: Eliminates or sharply reduces coagulant, flocculant, and polymer programs typical of DAF or gravity settling.

Compact & relocatable: Skid-mounted units fit existing footprints and can be redeployed as operational needs change.

Designed for produced water: Material selection and CIP protocols optimized for high-TDS, high-hydrocarbon Western Canadian streams.

INTEGRATION WITH DOWNSTREAM TREATMENT

TECH	PROCESS	HOW MF HELPS
RO	Reverse Osmosis	Protects RO membranes from colloidal and particulate fouling; extends membrane life and reduces cleaning frequency
NF	Nanofiltration	Stabilizes feedwater quality ahead of NF trains; reduces scaling potential and improves flux stability
MVC/MVR	Thermal Concentration	Reduces suspended solids and oil loading to evaporators; minimizes scaling, carryover, and tube fouling
IX	Ion Exchange / Softening	Extends resin bed life by removing fines and organics; improves regeneration efficiency and capacity
ZLD	Zero Liquid Discharge	Enhances overall system recovery; reduces brine volume and concentrate disposal requirements