

MEMBRANE FILTRATION WITH TANKLESS BACKWASH

High performance filtration with reduced footprint and weight

WHY MEMBRANE FILTRATION

Ensure downstream asset integrity and maximize reservoir injectivity through stable, high quality injection water. Membrane Filtration (MF) provides an absolute barrier against suspended solids and bacterial even under varying inlet conditions. MF is a proven technology that provides space and weight benefits over

WHY WATER STANDARD

An experienced process package supplier delivering high quality membrane systems for offshore and onshore applications, Water Standard has teamed with Pall Water to provide the O&G industry's leading standard MF designs specifically for reservoir injection water.

BENEFITS OF MEMBRANE FILTRATION FROM WATER STANDARD/ PALL

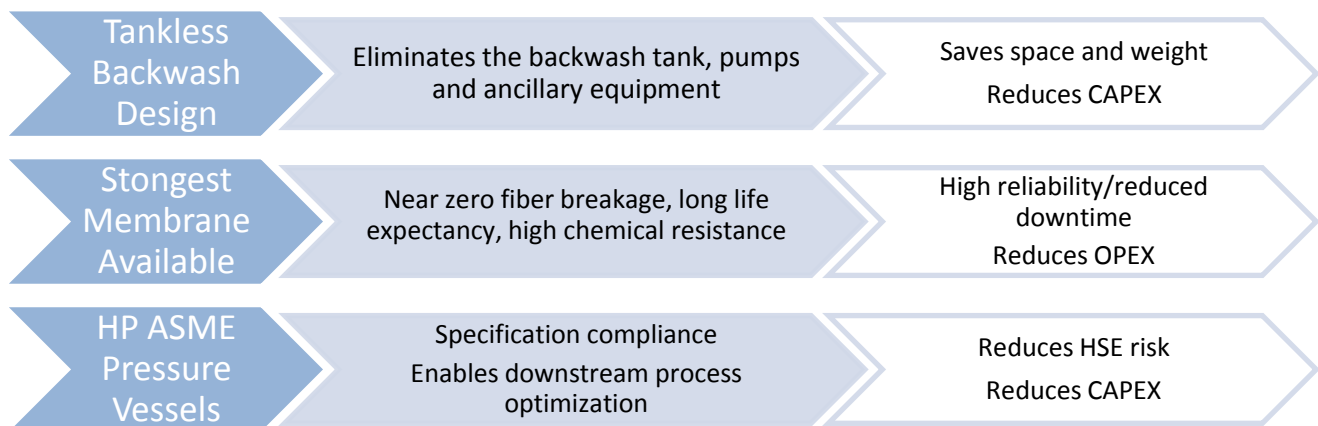


Photo: Offshore MF units (Courtesy of Pall Water)



WSMF – 48 standard membrane filtration rack

STANDARD DESIGNS REDUCE SIZE AND CAPITAL COST

Rack Sizes & Specifications				Utilities Required		Outlet Water Quality			
Model #	Capacity (bpd)	Membrane Rack Weight (kg)		Membrane Rack Footprint (m ²)	¹ Power Requirement (kW)	² Compressed Air Required (Nm ³ /hr)	Particle Size (µm)	Total Suspended Solids (mg/L)	Water Recovery (%)
		Dry	Operating						
WSMF - 32	20,000	5,200	5,800	10	10	165	≤ 0.1	< 0.2	96
WSMF - 48	30,000	6,700	7,500	13	12	245			
WSMF - 64	40,000	9,700	10,700	14	15	330			
WSMF - 80	50,000	11,200	12,500	17	18	410			
WSMF - 96	60,000	14,000	15,600	20	20	490			
WSMF - 128	80,000	19,100	21,200	25	23	655			
WSMF - 144	100,000	21,600	24,000	28	25	735			

1) Maximum power requirement is intermittent and occurs during cleaning. Excludes compressor/blower power requirement.
 2) Intermittent demand at 1 barg pressure.

The standard scope of supply includes:

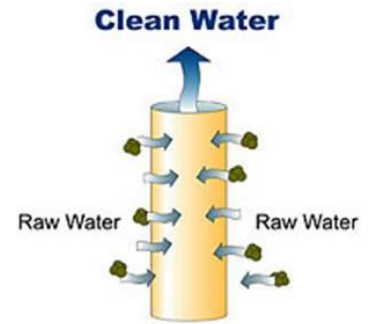
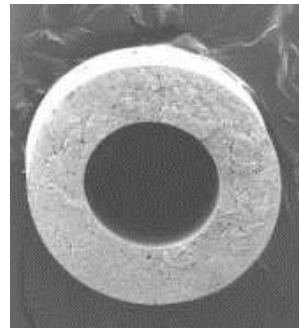
- Membrane skid package with ASME coded pressure vessels
- Piping, valves, instrumentation, and controls
- CIP skid package with tank, pump, and filter

Optional scope:

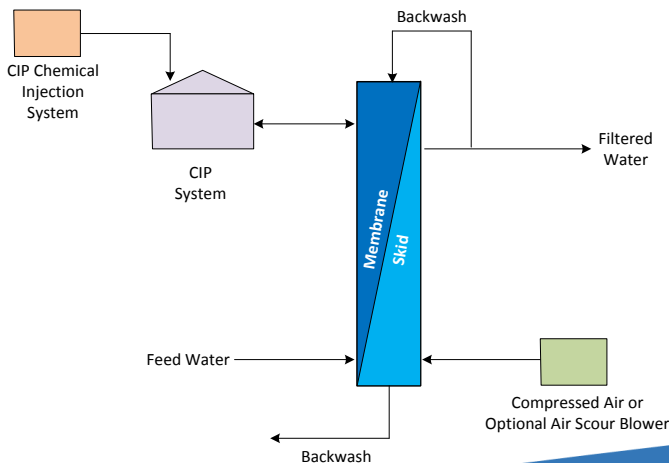
- Air scour blower
- CIP chemical injection systems

HOW IT PERFORMS

- PVDF membranes for outstanding physical strength and chemical resistance for long-term reliability.
- Uniform membrane pore size produces consistent high quality filtrate even when feed water turbidity fluctuates.
- High permeability membrane and large modules enable high flux and compact footprint.
- Outside-in filtration leads to reduced backwash volumes and allows elimination of backwash equipment.



Photos: Cross section of hollow fiber PVDF membrane operating as outside-in filtration (Courtesy of Pall Water)



High pressure ASME membrane filtration vessel