PCI Membranes
Filtration Group®

MAXI BUF

A pilot plant designed for process development, membranes scale up testing, quality assurance and small-scale/production range within microfiltration or ultrafiltration phase.

A simple self-contained unit with a hold-up volume (circa 120 Liters), Lowara feed and recirculation pumps with VSD, 3 membrane modules, heat exchanger, pressure & temperature sensors, flowmeters and a control panel. All mounted on a welded AISI 304 stainless-steel framework.

Application Range

Microfiltration (MF)	Ultrafiltration (UF)
up to 30 L/min	up to 30 L/min

Electrical Power Supply	Connections
400 Volts	Inlet to feed pump: 1 1/2” hose tail
3-phase (5 pins)	HE in/out cooling water: 1/2” OD hose
50 Hz. 40 Amp	Permeate outlet: 3/4” OD hose tail
Motor rating: 7.5 KW (feed pump @ 3 KW, recirculation pump @ 4 KW)	Shroud outlet: 1/2” ABS pipe
	Concentrate outlet UF: 1” OD hose tail

Size & Weight

Dimension			Unit & Package	Unit Only
Length	Height	Width		
4.2 m	1.4 m	0.8 m	450 kg	360 kg

Framework

Welded stainless-steel frame fabricated from a high-grade 304 SS for corrosion resistance, high rigidity and temperature resistance.

Module

3 x 12 ft (3.6 m) B1 Module

Comprised of 18 perforated stainless-steel tubes in the form of a shell & tube, each tube fitted with a membrane element. The modules are designed with a twin entry end caps; providing 2 parallel channels, each of 9 tubes in series. This allows viscous materials to be processed and high cross flow velocities to be used with acceptable pressure drop.

Specification per module

- Membrane area: 2.6 m^2
- Module weight: 33.7 kg
- Hold-up volume: Tube-side 8.4 L Shroud-side 20 L
- Membrane tube ID: 12.7 mm.
- Total membrane area modules: 7.8 m^2

Plant mechanical operating limit

- Max operating pressure: up to 10 bar
- Max pressure drop: 5 bar per module
- Max operating temperature: up to 70°C

Heat Exchanger (HE)

Shell & tube type heat exchanger 4 ft (1.2 m)

Process fluid is piped from the outlet of the recirculation pump through all 18 tubes in series within the heat exchanger while cooling water passes at low pressure (1-3 bar) through the shroud (shell) side. Cooling media flow could be up to 20 L/min.

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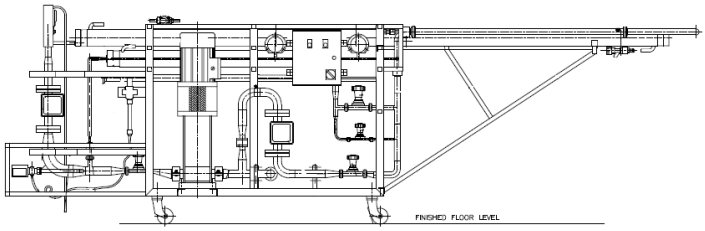

Pumps, IEC Motors & VSD

- Feed Pump: Lowara centrifugal pump, model 5SVH18V030T fitted with Hydrovar HV4.040 VSD controller. 3 m^3/hr max flow, 3 KW motor, 10 bar max pressure.
- Recirculation Pump: Lowara centrifugal pump, model 10SVH09V040T fitted with Hydrovar HV4.040 VSD controller. 9 m^3/hr max flow, 4 KW motor, 10 bar max pressure.
- Flows from both pumps can be adjusted via the HMI screen.

Flowmeter

- 3 Endress + Hauser electromagnetic flowmeters are installed on the unit: One on the feed line (Promag 10P25, DN25 1”). Two other flowmeters are installed on the retentate line and recirculation line (Promag 10P50, DN50 2”).
- An IFM flowmeter is also installed on the permeate line.

Pressure & Temperature Sensor. Pressure Control Valve

- Pump outlet pressure, modules inlet and outlet pressure are constantly monitor via independent Endress + Hauser PMC131 pressure transmitter and display on the HMI screen.
- Outlet temperature from all modules is monitor via Endress + Hauser TR11 thermometer sensor and display on the HMI screen.

Pressure Control Valve

- Two hand operated diaphragm valves are installed on the retentate line to create the back pressure and control flow.

Safety

- The unit is designed to the principles of Supply of Machinery (Safety) Regulations 1992 and are safe if operated in accordance with the procedures in the operating manual.

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