



## M 5 +

# THE FLEXIBLE TANGENTIAL FLOW FILTRATION SYSTEM FOR LAB AND PILOT USE

***M5+ unit is a unique solution for all those seeking a compact system for concentration/purification of bioproducts at Lab scale through TFF. It can be used for most downstream membrane purification processes as vaccines, enzymes, monoclonal antibodies or recombinant proteins.***

What makes M5+ **unique** compared with other equipment on the market?

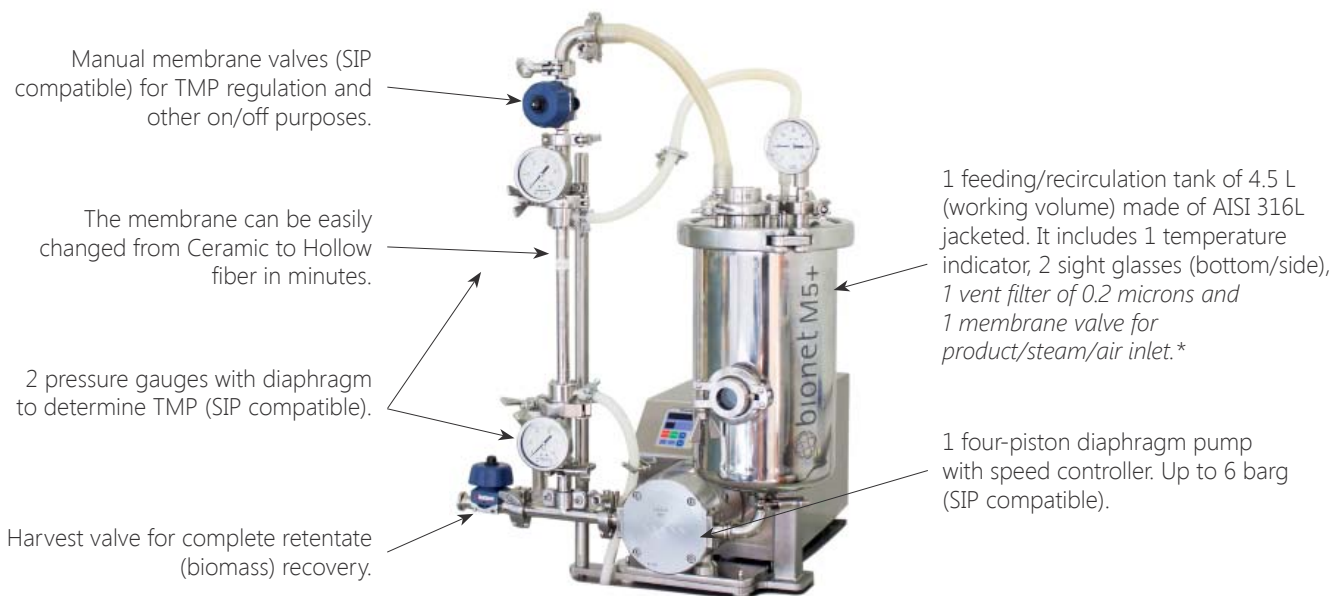
- > The M5+ is able to work with **2 different membrane technologies: Ceramic and Hollow Fiber**. This membrane can be from leading vendors (GE Health Care, TAMI Industries, SPECTRUM Labs, A-TECH Innovations...). This allows to really compare performance of different membranes technologies and vendors.
- > The system is able to **achieve high concentration factors (CF)** due to very small dead volume, achieved through a wise process design.
- > It can work in the **full range of Micro and Ultrafiltration**, with 21 different pore sizes, from gross MF (1.4  $\mu\text{m}$ ) to fine UF (1 KDa) in the same equipment.
- > Best available **pumping technology**, integrating a low shear four-piston membrane pump, working in a big range of pressure (from 0 to 6 bar) and flow rate, and with little stress to biomass.
- > Very good **control of temperature** through a jacketed stainless steel tank. This, combined with the pumping technology, allows to work with very low temperature for increase product quality.
- > There is a **Steam In Place** optional to work with sterile/aseptic conditions.

A so potent lab scale system as the M5+ has many applications for research and development, and for production of small batches.

**Study of separation processes.**

- > Achievable concentration factor.
- > Cleaning procedures.
- > Optimum membrane pore size.
- > Impact of the operative parameters (cross-flow velocity, pressure and temperature) regarding yields, flows and product quality.

**Production of small batches** of concentrated biomass or clarified supernatant. Enzyme and protein purification. Also for diafiltration.



Manual membrane valves (SIP compatible) for TMP regulation and other on/off purposes.

The membrane can be easily changed from Ceramic to Hollow fiber in minutes.

2 pressure gauges with diaphragm to determine TMP (SIP compatible).

Harvest valve for complete retentate (biomass) recovery.

1 feeding/recirculation tank of 4.5 L (working volume) made of AISI 316L jacketed. It includes 1 temperature indicator, 2 sight glasses (bottom/side), 1 vent filter of 0.2 microns and 1 membrane valve for product/steam/air inlet.\*

1 four-piston diaphragm pump with speed controller. Up to 6 barg (SIP compatible).

Microfiltration available pores	0.2, 0.45, 0.8, 1.4 µm
Ultrafiltration available pores	1, 3, 5, 8, 10, 15, 50, 70, 100, 150, 300, 500, 750 kDa
Filtration area	Ceramic: 0.0047 and 0.0132 m <sup>2</sup> Hollow fiber: 0.04 and 0.07 m <sup>2</sup>
Dead volume	400 ml minimum
Materials	SS AISI 316L for all parts in contact with product. Gaskets made of EPDM or Silicone.
Operation	Manual adjusting TMP with membrane valves. The pump includes its own control panel for speed regulation.
Electrical supply	230V/50 Hz or 115 V/60 Hz
SIP	* Available version for Steam in Place to work on aseptic/sterile conditions.
Weight	24 Kg
Space	540x650x600 mm

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