



## **Membrane Solutions for the Pilot Plant**

### **Pilot Membrane System**

The MMS SW18 system is an easy to use pilot membrane unit for microfiltration, ultrafiltration, nanofiltration and reverse osmosis operations.

Applications such as fractionation, purification and concentration of molecules can be tested.

The pilot system can be equipped with different types of modules for test applications.

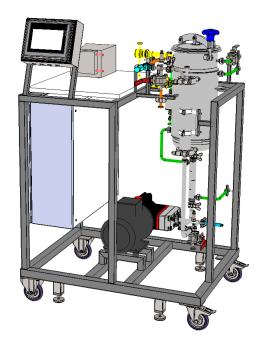
## **Key Features**

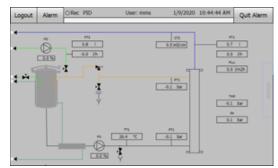
- Batch operation.
- · Optional Diafiltration.
- Operating pressure up to 40 bar (optional 60 bar).
- Testing of spiral wound membranes.
- Optional testing of ceramic, hollow fibre or tubular membranes.
- One pump system (pressure & circulation pump) with speed control for variable membrane crossflow velocity.
- Multitube heat exchanger and jacketed tank for temperature regulation.
- · Human-machine interface (HMI) with data logging.

#### **Further Information**

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## **Applications**

#### Food & Extract Sector

- Protein fractionation & concentration
- Extract fractionation & concentration
- Hydrolysate fractionation & concentration
- Sugar fractionation & concentration
- De-alcoholization of beer and wine
- Soya milk de-bittering

#### **Natural Oils Sector**

- De-waxing
- De-colourization
- Purification
- Concentration
- Oil/water separation

#### **Chemical Sector**

- Acid/caustic recovery
- Catalyst separation
- Solvent exchange & recovery
- Polymer purification & concentration
- Condensate water purification

#### **Bio-Pharmaceutical Sector**

- Fermentation broth clarification
- Enzyme & protein concentration
- Peptide concentration & de-salting
- API purification & concentration
- Oligosaccharide purification & concentration
- Solvent recovery or exchange

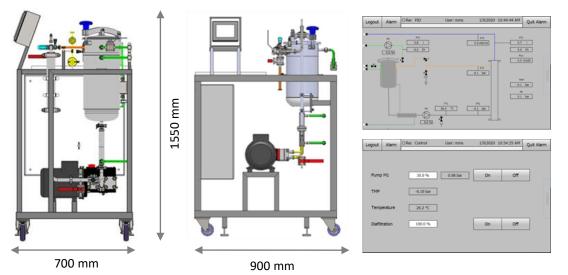
#### **Aroma and Colorant Sector**

- Herbal extract fractionation & concentration
- Natural colour purification & concentration
- Aroma sterilization
- Aroma concentration
- Evaporator condensate treatment

#### **Biofuels Sector**

- Organic acid clarification & purification
- Organic acid concentration
- Sugar clarification & concentration
- Ethanol purification
- Condensate water recovery

For a specific application not listed above ask our specialists at info@mmsx.com





# **Specifications**

Operation Mode | Batch operation, manually controlled

Intended use | Liquid food products and aqueous solutions

Membrane type | Spiral wound module 1812 (other membranes types available)

Membrane area | ~0.2 - 0.3 m<sup>2</sup> per spiral wound module 1812

Feed requirements | Particle size < 100 μm (for spiral wound)

Feed tank | 10 | with lid and jacket

System dead volume | 0.8 - 1.2 | (depending on system configuration)

Heat exchanger | Multitube (~0.02 m<sup>2</sup>) and tank jacket (~0.15 m<sup>2</sup>)

Working pressure 1 - 40 bar (1 - 60 bar optional)

Working temperature 5 - 80 °C (limitations due to membrane possible, heating/cooling water required)

Crossflow | ~200 - 600 l/h

Installed power 1.5 kW (400/50Hz)

Space requirement | 900 x 700 x 1550 mm (L x W x H)

Weight | ~120 kg

Frame | Stainless steel (304), on wheels

Tubing | All tubing and fittings of material 316L

Seals & O-Rings | EPDM, FKM and PTFE

Components | All steel components in contact with product are made of 316L if not otherwise stated

Instruments 2 Pressure transducers (0 - 50 bar)

1 Temperature transducer (0 - 100 °C)

1 Permeate flow transducer (0.5 - 180 l/h) (magnetic)

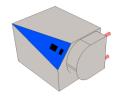
HMI 1 Touch panel for process control including USB port for data logging



## **Options**

#### **Diafiltration Kit**

A peristaltic pump and a flow transducer (magnetic) are integrated into the control system for continuous diafiltration.



### **Loop Flowmeter**

Additional flow transducer (magnetic) in the circulation loop.



#### **Permeate Conductivity Sensor**

Additional conductivity sensor to measure permeate quality during production or CIP.



### **High Pressure Kit - PN60**

System components allow for an operating pressure up to 60 bar.



## **Additional Membrane Types**

- Triple spiral wound
- Ceramic kit
- Triple ceramic kit
- Hollow fibre kit
- Tubular kit



#### **Membrane Cut-Offs**

Wide range of pore sizes and cut-offs available:

- Microfiltration (0.1 1.4 μm)
- Ultrafiltration (1 250 kDa)
- Nanofiltration (100 1000 Da)
- Reverse Osmosis



