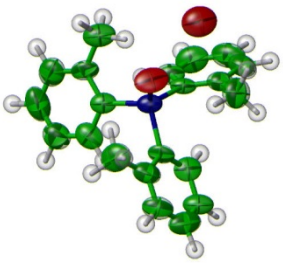


MMS
Membrane Systems

TripleSystem

Tools enabling Innovation

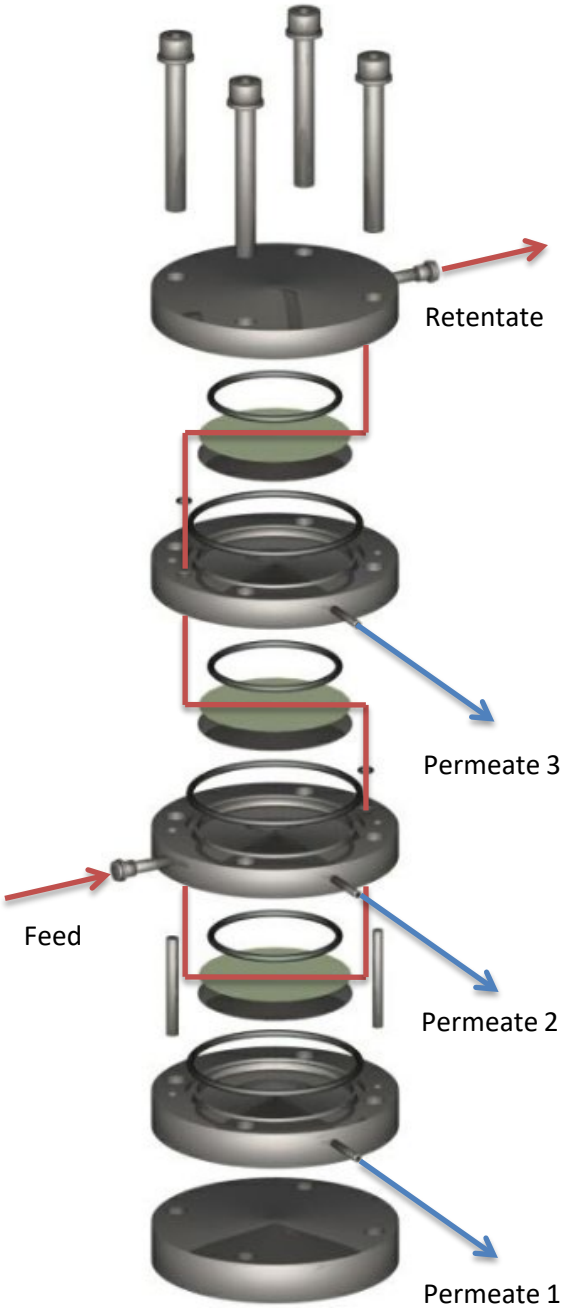
Membrane Solutions for the Laboratory

Laboratory Membrane System

The MMS Triple System is an easy-to-use batch laboratory membrane device for microfiltration, ultrafiltration, nanofiltration and reverse osmosis operations.

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

The Triple System is based on a unique designed flat-sheet cell for crossflow membrane testing up to 40 bar.



Key Features

- Speed control of circulation pump for variable membrane crossflow velocity
- High operating pressures
- Rapid screening of up to three membranes simultaneously
- Cooling/heating jacket on tank for temperature regulation
- Wide range of membranes available
- Optional ceramic test cell
- HMI interface with data logging

Further Information

MMS AG Membrane Systems
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8902 Urdorf
Switzerland

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info@mmsx.com
www.mmsx.com

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Applications

Aromas and Colorants
Herbal extract fractionation & concentration
Natural colour purification & concentration
Aroma sterilization & concentration
Evaporator condensate treatment

Bio-pharma
Enzyme & protein concentration
Peptide concentration & de-salting
API or oligosaccharide purification & concentration
Solvent recovery or exchange

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

Food & Extracts
Protein or extract fractionation & concentration
Hydrolysate fractionation & concentration
Sugar fractionation & concentration
De-alcoholization of beer and wine
Soy milk debittering

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

Biofuels
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

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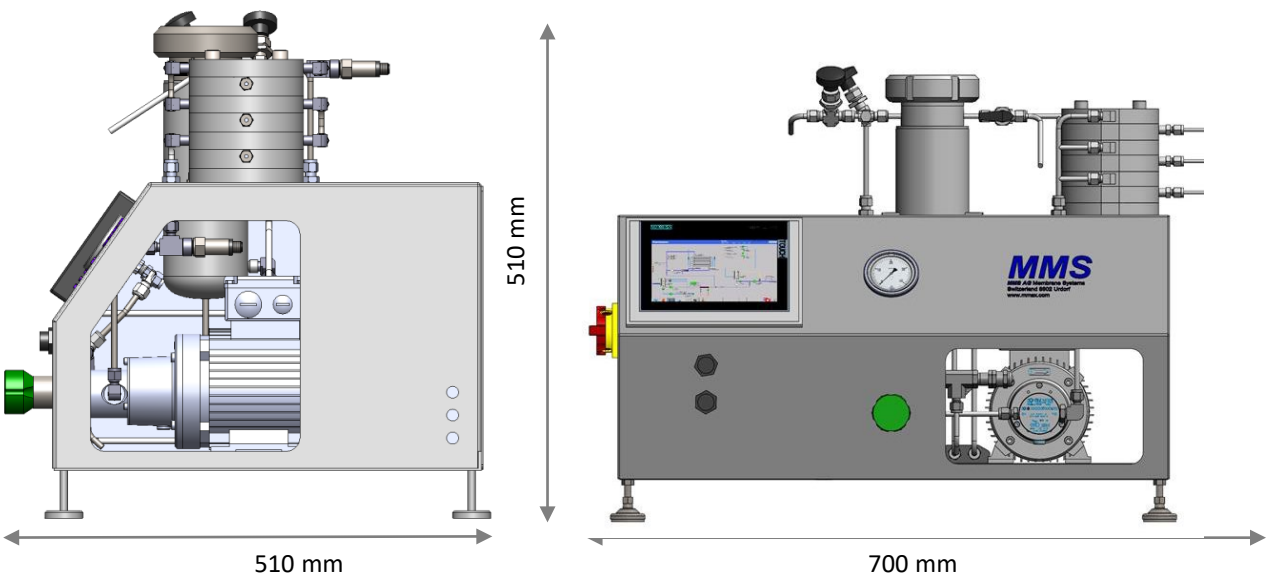
Specifications

Dimensions (L x W x H)	700 x 510 x 510 (mm)
Weight	50 kg
Installed power requirement	0.18 kW (220/110V)
Number of membrane cells	3 (connected in series or parallel)
Membrane area/cell	28 cm^2 (84 cm^2 in total)
Circulation pump	Speed controllable, magnetically coupled gear pump (CIP and SIP capability)
Permeate flow rate	1.5 – 7.5 ml/min (for flux values of 10 - 50 $Lm^{-2}h^{-1}$)
Crossflow	0.5 – 2 L/min (equivalent to approx. 0.5 – 4 m/s)
Tubing	All tubing and fittings Mat. 316 L
Feed tank	Stainless steel 316L, volume 900 ml, heating/cooling jacket area 0.04 m^2
System hold up volume	50 ml
Instruments	2 x Pressure transducers (0 – 50 bar) 1 x Temperature transducer (0 – 100 °C) 1 x Balance (0 – 2100 g, 0.1 g resolution)
Gaskets, seals & O-rings	EPDM (others on request)
Pressure rating	PN40, driving pressure created by compressed N_2
Temperature rating	5 – 80 °C (polystat required)
HMI	Touch panel for process control, indication of parameters and data logging



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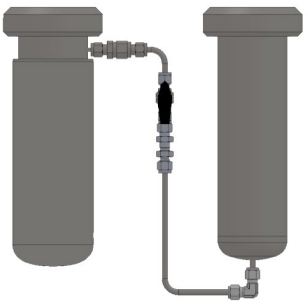
Options

Diafiltration Kit

The system is equipped with an additional tank, which allows for continuous diafiltration.



Solvent Kit

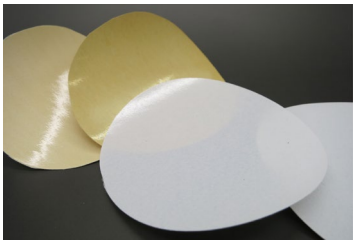
Seals and O-rings of membrane cell and equipment will be delivered in solvent stable polymer.

Membrane Cutting Tool

Circular punch of high resistance steel to cut out 75 mm disks.

Membrane Sheets 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