

Membrane Solutions for the Lab

Tools enabling Innovation

MMS
Membrane Systems



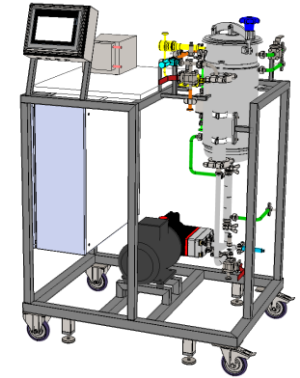
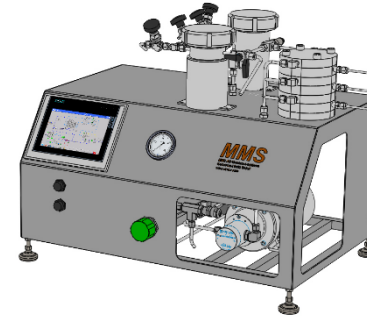
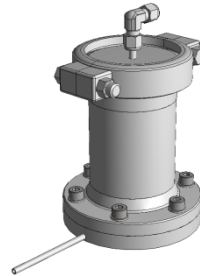
FS: Flat sheet

SW: Spiral wound

Cer: Ceramic

HF: Hollow fibre

Tub: Tubular



| System | Mem HPLC | Mem Tester | Triple System | SW18 |
|-------------------------|--------------------------|---------------------------|--|------------------------------|
| Operation mode | Batch | Batch | Batch | Batch |
| Membrane type | FS | FS | FS | SW, optional Cer/HF/Tub/FS |
| Feed volume | 50 – 300 ml | 50 – 300 ml | 200 – 800 ml | 2 – 20 l |
| Dead volume | 5 ml | 10 ml | 50 ml | 0.8 – 1.0 l |
| Pressure rating | 40 bar (60 bar optional) | 40 bar | 40 bar (60 bar optional) | 40 bar (60 bar optional) |
| Pressure Source | HPLC pump | Compressed N ₂ | Compressed N ₂ | Pressure/circulation pump |
| Crossflow source | HPLC pump | Magnetic stirrer | Circulation pump | Pressure/circulation pump |
| Heat exchanger | n/a (external tank) | n/a | Tank with jacket | Tank with jacket & multitube |
| Diafiltration | n/a (only manual) | n/a (only manual) | Optional with N ₂ and DF tank | Optional with DF pump |
| Data logging | n/a | n/a | SD card or USB | SD card or USB |

Membrane Solutions for the Pilot Plant

Tools enabling Innovation

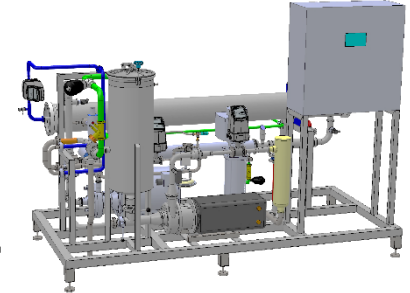
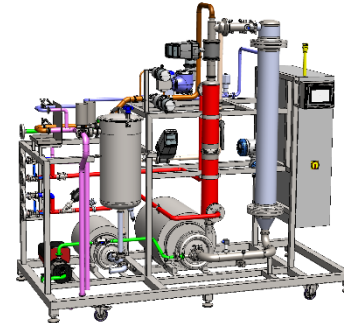
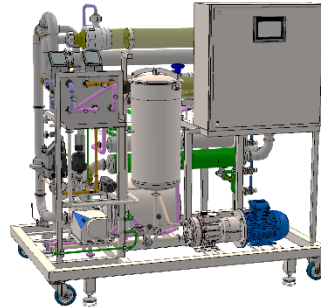
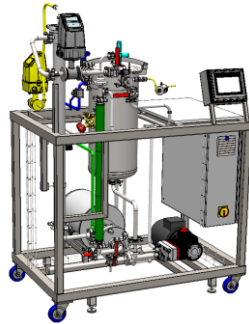


SW: Spiral wound

Cer: Ceramic

HF: Hollow fibre

Tub: Tubular



| System | SW25 | SW40 | HFC7 (low pressure) | SW80 |
|----------------------------|--|--|----------------------------|----------------------------|
| Operation mode | Batch, optional continuous | Batch, optional continuous | Batch, optional continuous | Batch, optional continuous |
| Automation | Manual valve/pump control, optional semi-automatic | Manual valve/pump control, optional semi-automatic | Semi-automatic | Semi-automatic |
| Membrane type | SW, optional Cer/HF/Tub | SW, optional Cer/HF/Tub | Cer/HF, optional SW | SW, optional Cer/HF/Tub |
| Feed volume | 20 – 200 l | 200 – 1 000 l | 200 – 1 000 l | 500 – 10000 l |
| Dead volume | 3 – 5 l | 15 – 40 l | 20 – 40 l | 20 – 60 l |
| Pressure rating | 40 bar (60 bar optional) | 40 bar (60 bar optional) | 6 bar | 40 bar (60 bar optional) |
| Pressure source | Pressure pump | Pressure pump | Pressure pump | Pressure pump |
| Crossflow source | Circulation pump | Circulation pump | Circulation pump | Circulation pump |
| Heat exchanger | Multitube + on/off valve | Multitube + on/off valve | Multitube + on/off valve | Multitube + on/off valve |
| Auto. diafiltration | Optional with DF pump | Optional with DF pump | Optional with DF pump | Optional with DF pump |
| Data logging | SD card or USB | SD card or USB | SD card or USB | SD card or USB |