

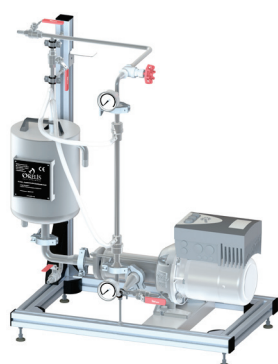
Crossflow filtration pilot systems with ceramic and/or polymeric membranes

The MINIPILOT and the POLYPILOT are versatile crossflow filtration units used to test ceramic or polymeric membranes.

- The MINIPILOT is a laboratory equipment designed to perform preliminary feasibility studies.
- The POLYPILOT 150 can be used for testing one module with one tubular multi-channel ceramic membrane, or one module with 2,5" spiral wound membrane. This unit can be used to study the process parameters (flowrate, pressure drop, transmembrane pressure, tangential flow velocity, temperature, etc.) needed in order to design a full-scale system at optimum design conditions.
- The POLYPILOT 500 can be used for testing one module with three tubular multi-channel ceramic membranes, or two modules with 4" spiral wound membrane. This unit can be used to acquire process design data or used as a small production unit.

Wide range of process capacities

Laboratory pilot



MINIPILOT

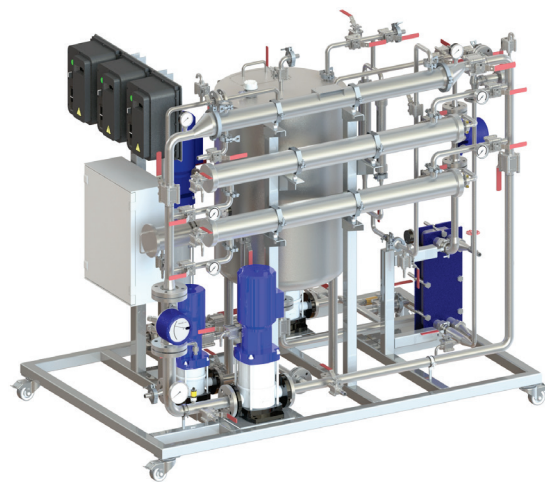
- Permeate flowrate 2 l/h max.*
- 5 l tank
- Tubular mono-channel ceramic MF, UF
- Flat-sheet polymeric MF, UF

Semi-industrial pilot with full-scale membranes



POLYPILOT 150

- Permeate flowrate 150 l/h max.*
- 25 l tank
- Tubular multi-channel ceramic MF, UF, NF
- Spiral wound polymeric MF, UF, NF, RO



POLYPILOT 500

- Permeate flowrate 500 l/h max.*
- 200 l tank
- Tubular multi-channel ceramic MF, UF, NF
- Spiral wound polymeric MF, UF, NF, RO

(*) Depends on the type of filtered product and type of membrane. Permeate flux value: 250 LMH

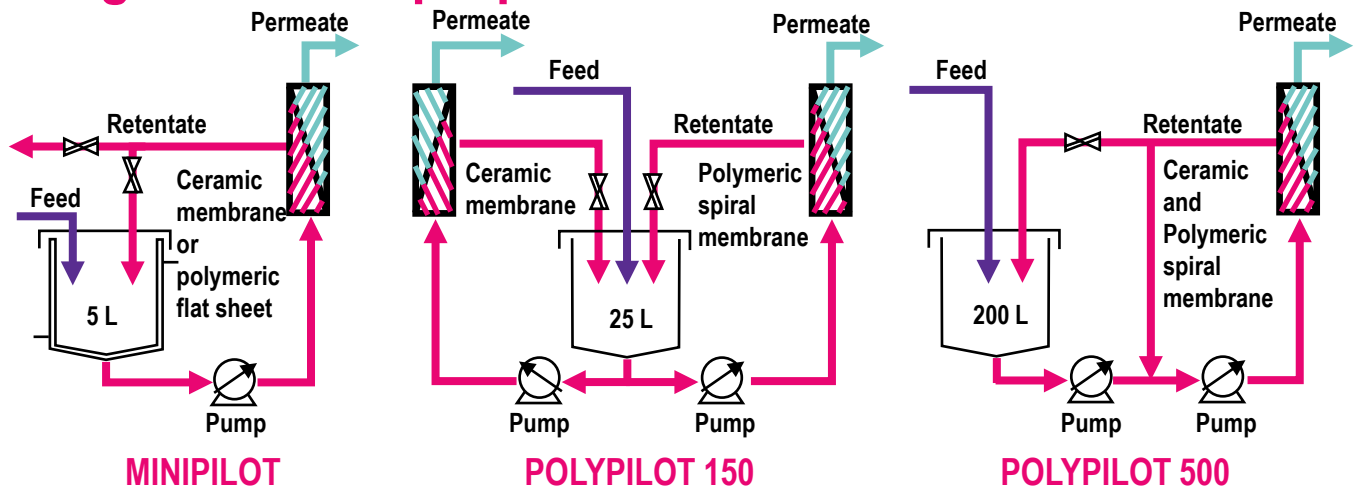
MINIPILOT features

- Quick results
- Ceramic and polymeric laboratory membrane
- Low working volume
- Easy set up and operation

POLYPILOT features

- Process results are directly scalable to a full-scale system
- Enables parametric study of the key process parameters, (including flowrate, pressure drop, concentration factor, cleanability, transmembrane pressure, and temperature)
- A pilot with closed loop
- A small batch production unit with low power consumption
- Operation with either ceramic or polymeric full-scale membranes

Operating mode and properties



Length x Width x Height	950 x 600 x 1000 mm		1100 x 950 x 1765 mm		1990 x 1290 x 1760 mm	
Wetted surfaces	316L stainless steel and EPDM or FPM or NBR gaskets (seals)					
Empty weight	70 kg		290 kg		600 kg	
Circulation flowrate	0 to 500 l/h		0 to 4000 l/h		0 to 13000 l/h	
Pressure range	0 to 4 bar		0 to 40 bar (60 bar optional)		0 to 40 bar	
Electric power supply	220 V		2 x power plugs 380 V 3-phase		1 x power plugs 380 V 3-phase	
Circulation pump motor	0,4 kW		3 kW		6 kW	
Mini and maxi working volume	1 - 5 l		8 - 25 l		20 - 200 l	
Membrane type	MF / UF		MF / UF / NF / RO		MF / UF / NF / RO	
Instruments	Indicators (local display)					
Tank	5 l		25 l		200 l	
Options	Thermoregulator group		Digital sensor, Electrical heater, Backpulse / Backwash			
	MicroKleansep™	Rayflow®	Kleansep™	Persep™	Kleansep™	Persep™
Membrane area	80 cm ²	2 x 125 cm ²	from 0,15 to 0,5 m ²	2,5 m ²	from 0,45 to 1,5 m ²	4 m ² - 14 m ²
Membrane geometry	Tubular mono-channel 400 mm long	Flat-sheet	Tubular multi-channel 1178 mm long	Spiral wound 2,5"	Tubular multi-channel 1178 mm long	Spiral wound 4"
	Ø ext. 10 mm	75 x 160 mm	Ø ext. 25 mm	2540	Ø ext. 25 mm	3838-3840-4040
Membrane type	Ceramic	Polymer	Ceramic	Polymer	Ceramic	Polymer
# of membranes / module	1	1	1	1	3	1
Maximum transmembrane pressure	4 bar	4 bar	10 bar	64 bar	10 bar	40 bar
Maximum temperature	80°C	50°C	100°C	45°C	100°C	45°C
Module material	316L stainless steel	PMMA	316L stainless steel			
Membrane material	Oxide-based ceramic	PAN or PVDF or PES	Oxide-based ceramic	Depending on membrane	Oxide-based ceramic	Depending on membrane
Hydraulic diameter/ Liquid path thickness	6 mm	0,5 and 1,5 mm	6 - 5 - 4,5 - 3,5 - 2,8 - 2,2 - 2 mm		6 - 5 - 4,5 - 3,5 - 2,8 - 2,2 - 2 mm	
pH	0-14	3-10	0-14		0-14	
Cut-off	Microfiltration 0,45 µm, 0,2 µm, 0,1 µm HR	Ultrafiltration from 30 nm (~150 kD) to 200 nm	Microfiltration 1,0 µm, 0,8 µm, 0,45 µm, 0,2 µm, 0,1 µm HR	Microfiltration 0,1 µm	Microfiltration 1,0 µm, 0,8 µm, 0,45 µm, 0,2 µm, 0,1 µm HR	Microfiltration 0,1 µm
	Ultrafiltration 300 kD HF, 150 kD, 50 kD, 15 kD		Ultrafiltration 300 kD HF, 150 kD, 50 kD, 15 kD	Nanofiltration 150 D and 300 D	Ultrafiltration 300 kD, 150 kD, 50 kD, 15 kD	Ultrafiltration 300 kD HF, 150 kD, 50 kD, 15 kD
			Nanofiltration 5 kD, 1 kD (19, 31 & 61 channels only)	Reverse osmosis	Nanofiltration 150 D and 300 D	Reverse osmosis

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