

COMMERCIAL SPECIFICATION

SCOPE OF SUPPLY

The scope of supply for this system is:

- Inspector model “Minos”
- Touch screen with data logging and report generator
- Round disc membrane holder (25mm)
- Tubing, cables and connectors
- Manual, documentation and CE certificate
- Transport box

SYSTEM DESCRIPTION

Bubble point

With this automated system the bubble point of a membrane can be determined, as an automated derivative from the ISO4003 standard:

The device starts by wetting the filter with the connected liquid. When the filter is fully wetted, pressure will slowly be applied via a pressure slope.

When air breakthrough occurs, a pressure drop will be detected and the measurement will stop. For some materials an alternative option is a better way to determine the bubble point; this option detects when air is passing through the permeate of the membrane. Thus when air passes through the membrane, it can be detected. It can be used for faster screening of bubble points.

The system includes a 25mm filter holder; it is possible to adapt to a 47mm holder or to customer-made modules or cells; tube adapters are supplied with the system. The filter can fit to most other filters and filter holders via tube adapters.

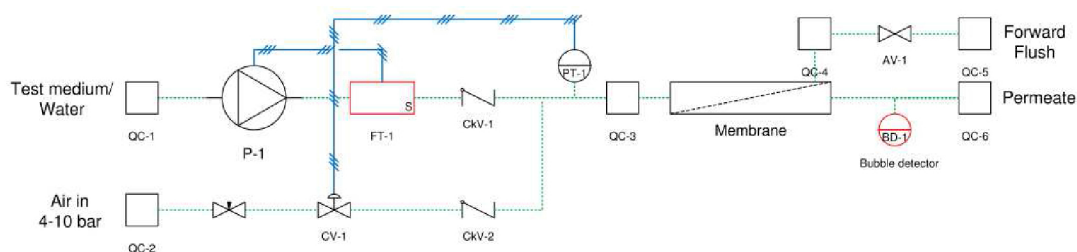
Clean Water flux

Additional to the Bubble point, the system can be upgraded with a flowmeter for the determination of the clean water flux. The pump will get a pressure setpoint and the measured flow will lead to the clean water flux.

The additional flowmeter is quoted as an option.

FLWSHEET & USER REQUIREMENT SPECIFICATION

The following flowsheet and URS are the technical basis of our system..



TAG LIST (key components)

TAG	Description	Range	Supplier/ Type
P-1	Feed pump	50 L/hr max	NF 1.100
FT-1	Feed flowmeter	0.1 – 0,9 L/min	FCH
PT-1	Pressure sensor	0.1 – 10 barg	520 series
CV-1	Pressure controller		C5

USER REQUIREMENT SPECIFICATION

- Push-in connectors & tubing
- Feed flow: 6 – 50 l/hr
- Pressure range: 0.1 - 10 bar
- Forward flush option for wetting membrane
- 25mm round disc membrane holder included
- Membrane is not a part of the scope
- Tubing material: Flex PTFE
- Optional items (red lined):
 - Flow meter, for flux determination
 - Bubble detector, for more accurate bubble point detection

SYSTEM



Bubble point Tester

TECHNICAL SPECIFICATION

BASE SYSTEM

The price includes the following Base system items

- Base system MINOS

Dimensions (cm) : 40 x 21 x 29 (LxWxH)
 Typical weight : 10 kg
 Touch screen : Included



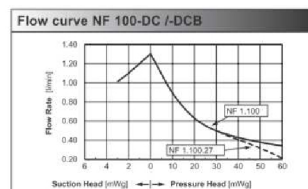
PUMPS

The price includes the following pumps items for the Convergence Inspector

- Membrane Pump NF 1.00

Material : PTFE, PVDF, FFKM

More details, see spec sheet or manual



PRESSURE CONTROL

The price includes the following pressure items for the Convergence Inspector

- Pressure sensor High-end 528 series

Pressure range : See flowsheet
 Accuracy : +/- 0,1% of FS
 Material : Stainless steel/FPM seal



More details, see spec sheet or manual

VALVES

The price includes all necessary electronically controlled valves. In case of the flowsheet for the Convergence Inspector:

- 1 x Solenoid 2/2
- 1 x Control valve C5

Control range : See flowsheet
 Material : Stainless steel/EPDM seals

More details, see spec sheet or manual



FILTER HOLDER:

The price includes 1 DELRIN filter holder 25mm.



COMMUNICATION

The price includes all necessary Input/output modules to control and read out all components in the requested flowsheet. This can included, but is not limited to the following items and completely depend on the model, functionality and desires.

- Modbus Gateway
- Digital inputs/outputs
- Analogue inputs/outputs (4 – 20 ma / 0 – 5V / Frequency / Etc)
- Serial interface modules (RS232 / etc) for external equipment
- PWM modules

TUBING

The price includes all necessary high and low pressure tubing to connect all the components. Sizes are based on flow range and pressure drops.

- Swagelok/JG tubing and fittings
- Check valves
- Pressure reliefs

SOFTWARE SPECIFICATION

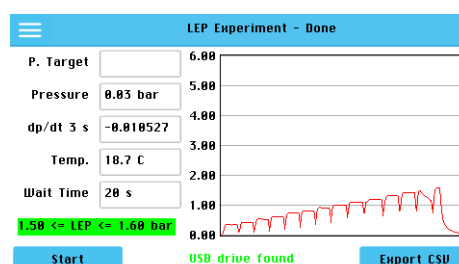
- Touchscreen HMI embedded
- USB data export of results & PDFs possible

LEP Settings	
Deaeration Time	48 seconds
Deaeration Power	25 %
dp/dt LEP Lower Threshold	-0.015 bar/s
dp/dt LEP Upper Threshold	-0.05 bar/s
Step Size	0.1 bar
Waiting Time per Step	6 seconds

Back Shutdown Save

LEP Settings	
Start Pressure	0.9 bar
Stop Pressure	5.9 bar
dp/dt Experiment End Threshold	-0.01 bar/s
Use Calibration	Enabled
Max Pump Time	18 seconds

Back Shutdown Save



TERMS & CONDITIONS

PAYMENT CONDITIONS

100% before shipment

TERMS AND CONDITIONS

The general terms and conditions of Convergence are applicable to all products and services (separately enclosed), unless otherwise stated in this quote or mutually agreed upon by written forms.

DELIVERY TERMS

All prices are Ex Works (EXW) according to Incoterms 2010.

DELIVERY TIME

Production time is scheduled at around 4 weeks after order confirmation and receipt of down-payment.

WARRANTY

Convergence ensures the proper functioning of the system and the components supplied under the terms of the contract. The warranty period is 1 year after delivery. The warranty is only valid if the instrument is installed and operated in accordance with the requirements of operating and maintenance instructions as required and set by Convergence. During the warranty period, an operation and service log must be kept. Normal wear and tear and defects caused by improper actions are excluded. Repairs and replacement parts will not extend the warranty period.

VALIDITY

This offer is valid for 90 days after quotation date.

CANCELLATION

In case of customer cancellation during any time of the production, Convergence will charge the made costs: 10% of PO if canceled within the first week, 30% of PO if canceled within 5 weeks and 80% of PO if canceled later.

