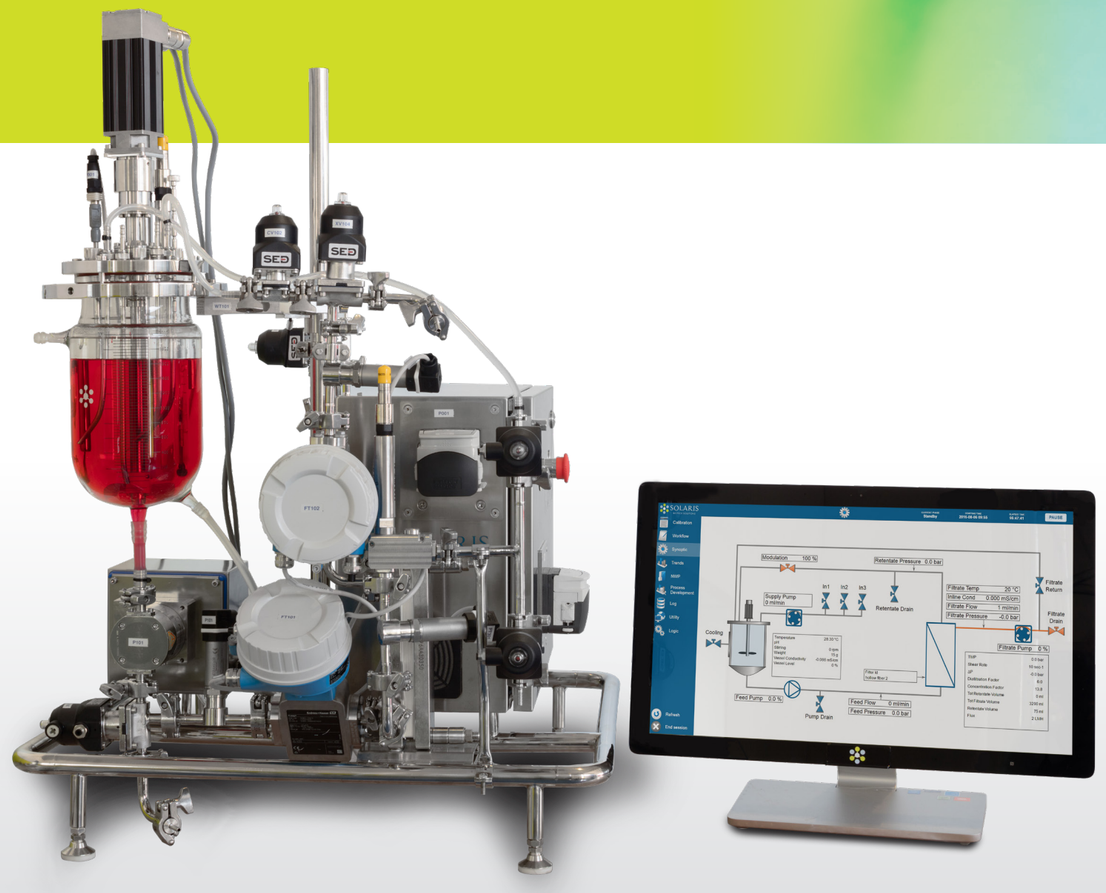
KRONOS

AUTOMATIC & FLEXIBLE TANGENTIAL FLOW FILTRATION SYSTEM

SOLARIS
BIOTECH SOLUTIONS

AUTOMATIC AND FLEXIBLE TANGENTIAL FLOW FILTRATION SYSTEM



KRONOS is a benchtop automatic Tangential Flow Filtration (TFF) system, it can handle up to 0.5 m2 total filtration area and is equipped with multiple modules make it so the ideal system for innovative process development as long as for automatic process sequence.

Typical applications includes the following:
Basic research
Scale-up and scale-down studies
Process development and optimization

KRONOS can be used for:
Biopharmaceutical
Biofuels research and manufacturing
Vaccines
Food and beverage biotechnologies
Bioremediation
Bioplastics
Cosmeceutical
Nutraceutical

Flexibility
the best membrane for each separation process

OPTIMIZING
The ratio cost/profit

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Benefits

Availabe in 3 different volumes:
2L, 5L, 10L.
Removable vessel

Powerful/ Accurate **brushless motor**,
from 1 to 2000 RPM.

Modbus Digital Hamilton sensors

Fully removable and
cleanable jacket

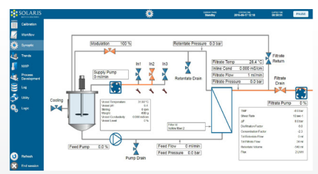
Small foot print to maximize lab
space efficiency

Integrated NPW test

Automatic process sequence
Optical Filtrate Flow Control

Flexibility
the best membrane for each separation process

User-friendly process management
Innovative filter history management



Safety: pressure releaf valve
included in each unit

Remote access via PC, tablet/smartphone
Remote control for after sale assistance

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Flexibility

Kronos can be equipped with **several types of membrane** (hollow fiber, cassettes, ceramic) and is designed following the most updated criteria of cGMP.

The control cabinet includes all the functions for parameters measurement and control: intelligent sensors, wireless connection, easy load pumps, recirculation vessels and valves module conveniently located.

Solaris technicians are on tap to evaluate together with the customer the best membranes available on the market (in terms of materials, geometrical configuration and operative parameters), for:

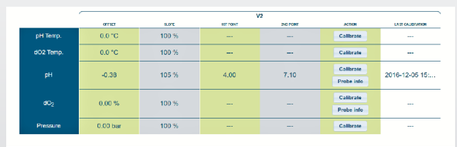
- concentrating with the best efficiency
- avoiding the problem of the gel layer
- increasing the efficiency in Diafiltration choosing the most suitable membrane.

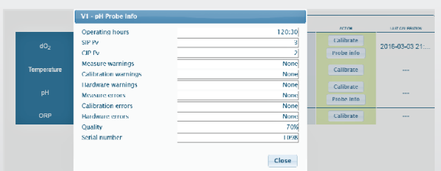
Flexibility
the best membrane for each separation process

Modbus Hamilton sensors

Why a digital sensor?

Hamilton sensors has been integrated into Solaris PCS and Galileo software giving the user the benefit of having a unique platform.
Fully compensated digital sensors, store and transmit all relevant sensor data, including calibration and diagnostic information directly to Solaris Galileo software.





Sensor life traceability

Reducing
background noise

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Data sheet

Kronos 0.5			
Total Volume (liters)	2,00	5,00	10,00
Hold up volume		70 ml	
Pump output		4-180 l/h	
Max. operating pressure		4 bar (g)	
Membranes available		Cassettes, Hollow fiber, Spiral wound, Ceramic	

Vessel Data	
Design	Borosilicate Glass Vessel with conical bottom
Materials	Vessel: Borosilicate Glass Lid: AISI 316L
Drive	Brushless Motor Direct Assembly
RPM	1-2600 RPM, Accuracy 1RPM
Impeller	Marine impeller
Weight	Load cell

PCS and Software

PCS	S.S Cabinet AISI 304
HMI	23'' Touch screen
Software	SCADA Solaris Software Control **Galileo**
Data Extraction	Through USB port or Ethernet
Graph trends, On line displaying and Printing	
On line parameter calibration	
Alarms Management	
Event recording	
Multipasswords level	
Integrated NPW test	

Options

Tranfer module	
Supply pump	Peristaltic pump. For diafiltration and large volume ultrafiltration.
Triple inlet valve	Automated valves for highly automated filtration process

Permeate module	
Filtrate pressure flow control pump Included flow meter	Prevent membrane fouling in microfiltration
pH measurement	Inline pH sensor
Conductivity measurement	Inline conductivity sensor

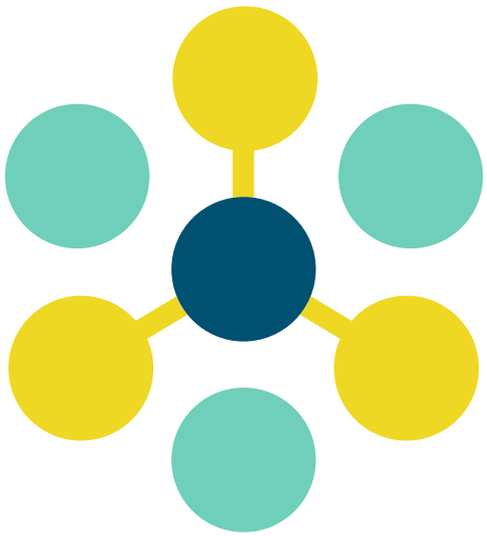
Vessel upgrade options	
pH measurement	
Weight measurement throught load cell	
Conductivity measurement	
Temperature measurement	
Level control via Sensor	Extra safety during manual operation

Holder option	
Hollow fiber holder	For single hollow fiber cartridge
Manifold for 3 hollow fiber cartridges	
Cassette holder	From various manufacturers

Chiller

- Optionally KRONOS can be equipped with a chiller for heat removal from your culture minimizing lab water usage
- Using this system you don't need a water supply line in your lab
- Cost-effective cooling of fermenters
- Easy operation
- Refregerant level monitoring

Chiller data sheet	
Working temperature range	-10°C / +40°C
Temperature stability	±0.5
Power consumption	0.7 kW
Filling volume range	2-8 L
Cooling output at 20°C measured with ethanol	0.25-0.60 kW
Cooling output at 10°C measured with ethanol	0.20-0.50 kW
Cooling output at 0°C measured with ethanol	0.15-0.36 kW
Cooling output at -10°C measured with ethanol	0.09-0.15 kW
Pump pressure max.	0.35-1.30 bar
Pump flow max.	16-35 L/min.
Dimensions (WxDxH)	200x350x465 mm



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