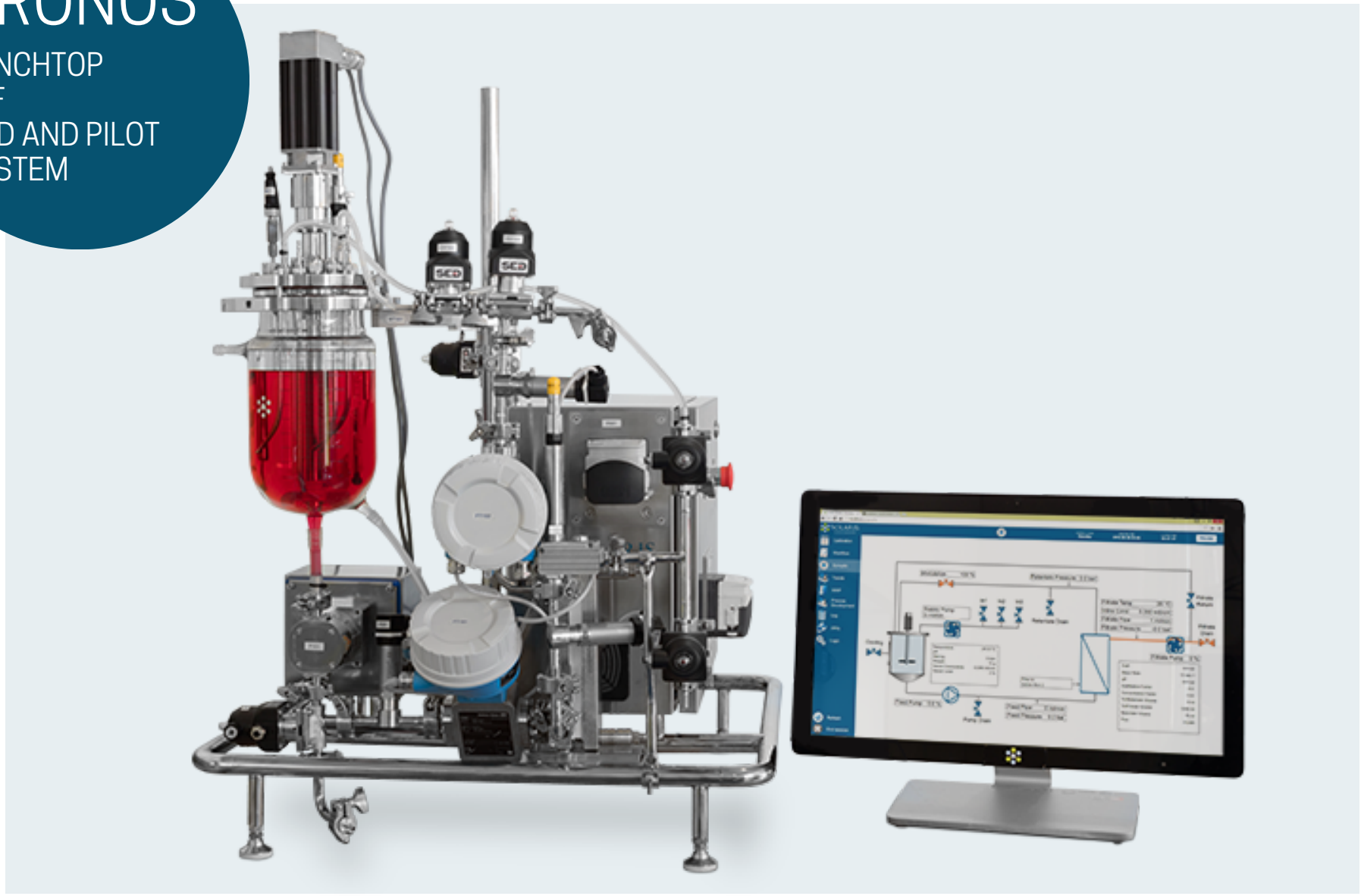
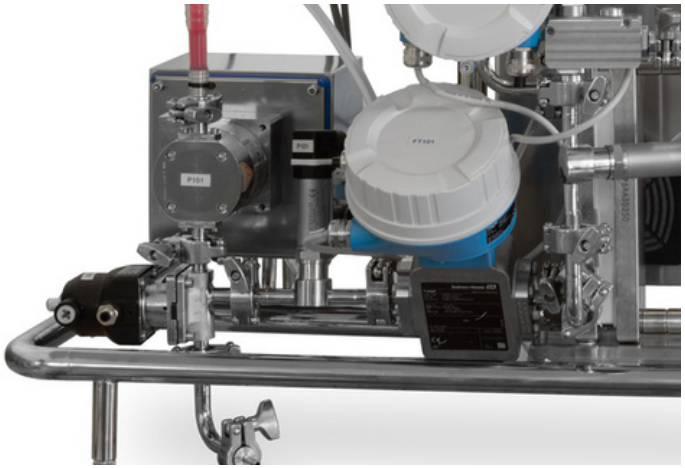
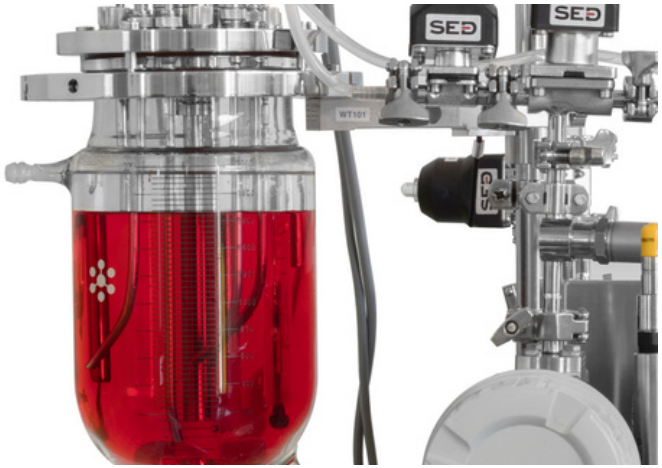
KRONOS

BENCHTOP
TFF
R&D AND PILOT
SYSTEM



SOLARIS
BIOTECH SOLUTIONS





KRONOS

This technical proposal describes the Kronos system.
For supervisory control and data acquisition software is included.
The system consists of highly modular benchtop Ultrafiltration (UF) and microfiltration (MF) system for concentration and/or buffer exchange.
Kronos has been designed to be used in laboratory environment for process development as well as for small scale production in cGMP environment.
Kronos is supplied with all necessary tubes, valves and instruments, automation, control panel (HMI) to be ready for process.

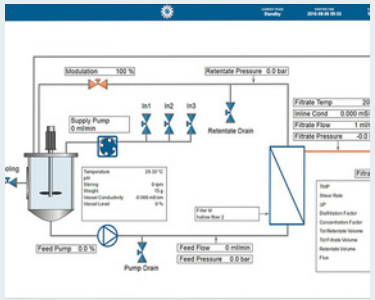
Filtration equipment

Fixed or wheeled skid options

Applications

- Process development and optimization
- Education
- Basic Research
- Scale up and scale-down studies
- Small production

- The system can support a wide range of membrane area facilitating process development from very low volumes to small scale production.
- Automated filtration process
- Documentation and validation service available.
- Easy-to-use control software interface.



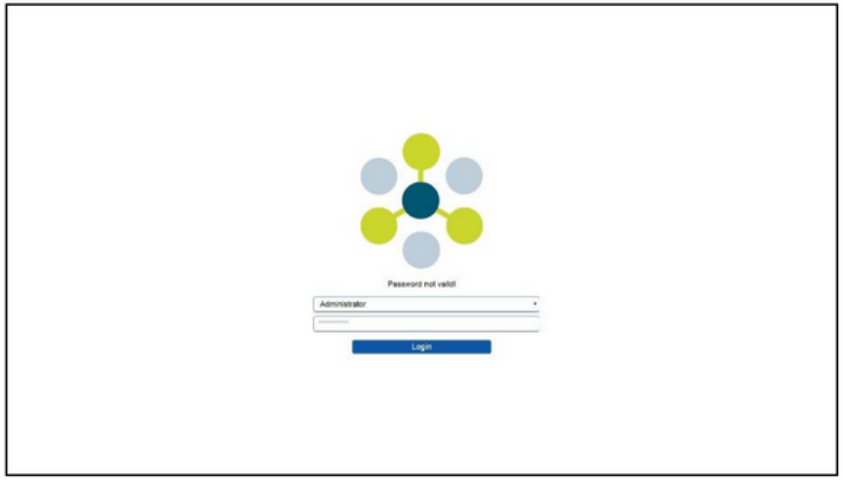
- Modular system accommodates cassette or Hollow fiber covering large application field, such:

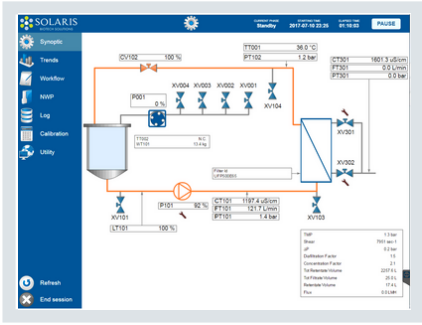
  - Vaccine
  - proteins concentration and buffer exchange
  - Cell broth clarification
  - Virus concentration and purification

- Safe: pressure alarm setting; level sensor option preventing overflow during manual operations.

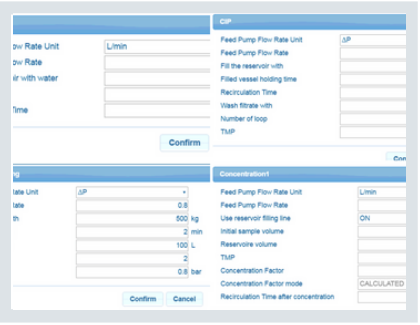
Leonardo

- Innovative SCADA software LEONARDO: a smart and user-friendly controller designed to provide a high level of complete automated monitoring of the process
- Full version included in the equipment supply
- Data extraction in .csv format
- Remote access via PC, tablet or smartphone, with QR code scanning or dedicated portal
- Remote control

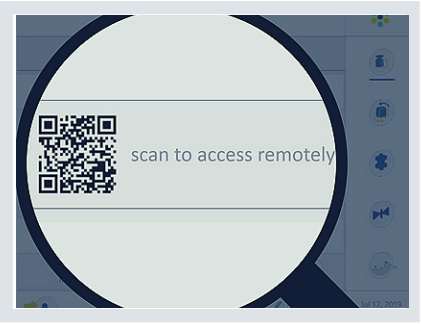




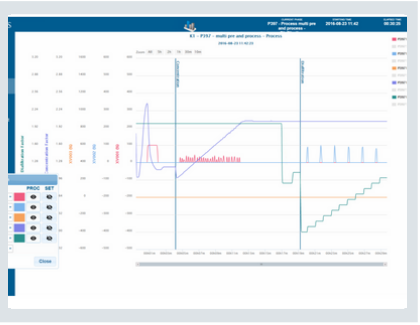
Synoptic



Filtration management and controls

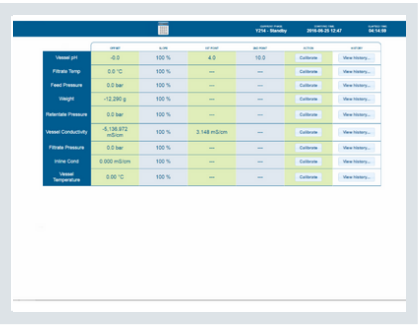


Remote Control



Trends

Workflow



Calibration

Vessel	Kronos 2.0	Kronos 5.0	Kronos 10.0
Solaris Code	kr2	kr5	kr10
Total Volume (L)	2 L	5 L	10 L
Pump output	180 l/h	180 l/h	180 l/h
Cassettes area range	200 cm2 to 0.5 sqm	200 cm2 to 0.5 sqm	200 cm2 to 0.5 sqm
Hollow fiber area range	140 cm2 to 0.4 sqm	140 cm2 to 0.4 sqm	140 cm2 to 0.4 sqm
Max. operating pressure	4 bar(g)		
Design	Borosilicate Glass Jacketed Vessel with conical bottom		
Design	Borosilicate glass vessel (single wall)		
Materials	Vessel: Borosilicate Glass Lid: AISI 316 L		
Drive RPM	Brushless Motor Direct Assembly 1-2000 RPM, Accuracy 1RPM		
Impeller	Marine Impeller		
Weight	Load cells		

Options

Transfer module

Transfer pump	Peristaltic pump: for diafiltration and large volume ultrafiltration
Triple inlet valve	Automated valves for highly automated filtration process

Permeate module

Perm. press. flow control pump incl. flow meter	Prevent membrane fouling in microfiltration
pH measurement	Inline pH sensor
Conductivity measurement	Inline conductivity sensor
UV 280 nm measurement	Inline UV prevent low yield or yield loss

Vessel upgrade options

Weigh measurement through load cells	
Conductivity measurement	
Temperature measurement	
Level control via sensor	Extra safety during manual operation

Options

Holder option

Hallow fiber holder	For single hallow fiber cartridges
Manifold for 3 hallow fiber cartridges	
Cassette holder	From various manufactures

PCS and SOFTWARE

PCS	▪
HMI	Touch Screen Industrial PC Color Monitor
Software	SCADA Solaris Software Control
Data Extraction	Through USB port or Ethernet
Graphs trends, On line displaying and Printing	▪
On line Parameters Calibration	▪
Alarms Management	▪
Events Recording	▪
Multipasswords Levels	▪

Dimensions

KRONOS 2.0

Depth	73 cm
Lenght	76 cm
Height	120 cm

KRONOS 5.0

Depth	73 cm
Lenght	76 cm
Height	135 cm

KRONOS 10.0

Depth	73 cm
Lenght	76 cm
Height	140 cm