

**SOLARIS**<sup>™</sup>  
B I O T E C H

By Donaldson



**Solaris Biotech** specializes in delivering advanced **technology solutions** for the entire range of processes in the **bioprocessing industry**.

Our products are utilized across various sectors including **pharmaceuticals, food production, agriculture, biomanufacturing, bioplastics, biofuels, cosmeceuticals, catering** to both **research** and **development** as well as large-scale production needs.

As a key component of the **Donaldson** Life Sciences division, we actively engage in the design, engineering and manufacturing of benchtop, pilot, and industrial-scale fermenters, bioreactors, filtration solutions, and other process equipment.

**With our widespread network of production, sales, and service branches around the globe, we efficiently cater to a diverse international customer base.**

Though initially more industrially focused, Solaris today offers a more comprehensive approach to entirely cover from **upstream** to **downstream**.

## LAB

Dedicated to laboratory scale equipment from **200 mL up to 20 L**

## INDUSTRIAL

Committed to totally customizable cGMP pilot-industrial equipment **upon your needs**, and to the design and manufacturing of full turnkey solutions

### Mission

Our mission is to provide advanced yet accessible solutions, with unique benefits in terms of quality and flexibility, and to be our clients' partner of choice

### Vision

Our vision is to support biotechnology and non-biotech company in the development of processes that improve the well-being of society and environment.

### Value

We aim to provide an integrated service in which technology, assistance and expertise come together, conveying added value to the purchase.

### Difference

We strongly believe in customer care, in satisfying every biotech branch needs and in innovation. This all together drives us to making a difference in the market.

## PRODUCT RANGE

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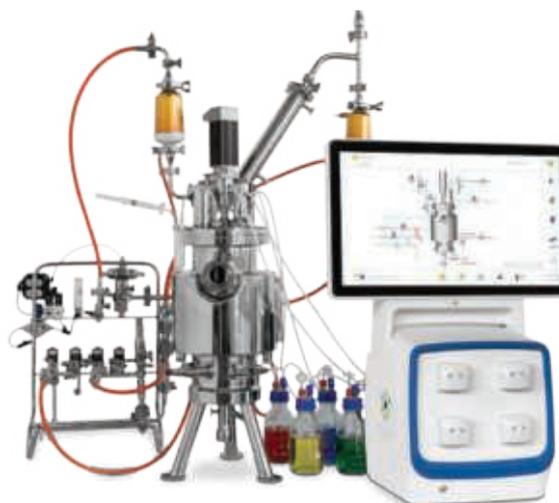
**ONE**  
2 L



**IO**  
200 mL – 1000 mL



**JUPITER**  
2 L – 10 L



**GENESIS**  
7.5 L – 20 L



**M SERIES**

30 L – 200 L



**S SERIES**

5 L – 200 L



**I SERIES**

FROM 250 L



**KRONOS (TFF)**

2 L – 10 L



**TYTAN (TFF)**

250 L/h – 500 L/h



one



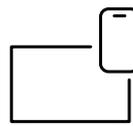
benchtop  
autoclavable  
fermenter  
bioreactor



**ONE** is a 2 L autoclavable, single-wall glass vessel, benchtop bioreactor. The system is designed for aerobic and anaerobic cultivations/fermentations, closed aseptic operations.

## Features

- Integrated wi-fi connection and fully automated solution.
- Accurate stirring, temperature, pH and oxygen controls.
- Precise feedings via peristaltic pumps.
- Suitable for batch, fed-batch and continuous processes and parallel control up to 24 units.



**more  
device  
in one**



**integrated  
wi-fi  
connection**



single & parallel  
fermenter  
bioreactor



**10** is a fully electrical mini fermenter/bioreactor with a fast and accurate thermoregulation system (without water circulation).

## Features

- With total volumes of 200 mL or 1000 mL, it represents an innovative device for process development and media optimization.
- Suitable for batch, fed-batch and continuous processes and parallel control up to 24 units.



# JUPITER

single & parallel  
autoclavable  
fermenter  
bioreactor

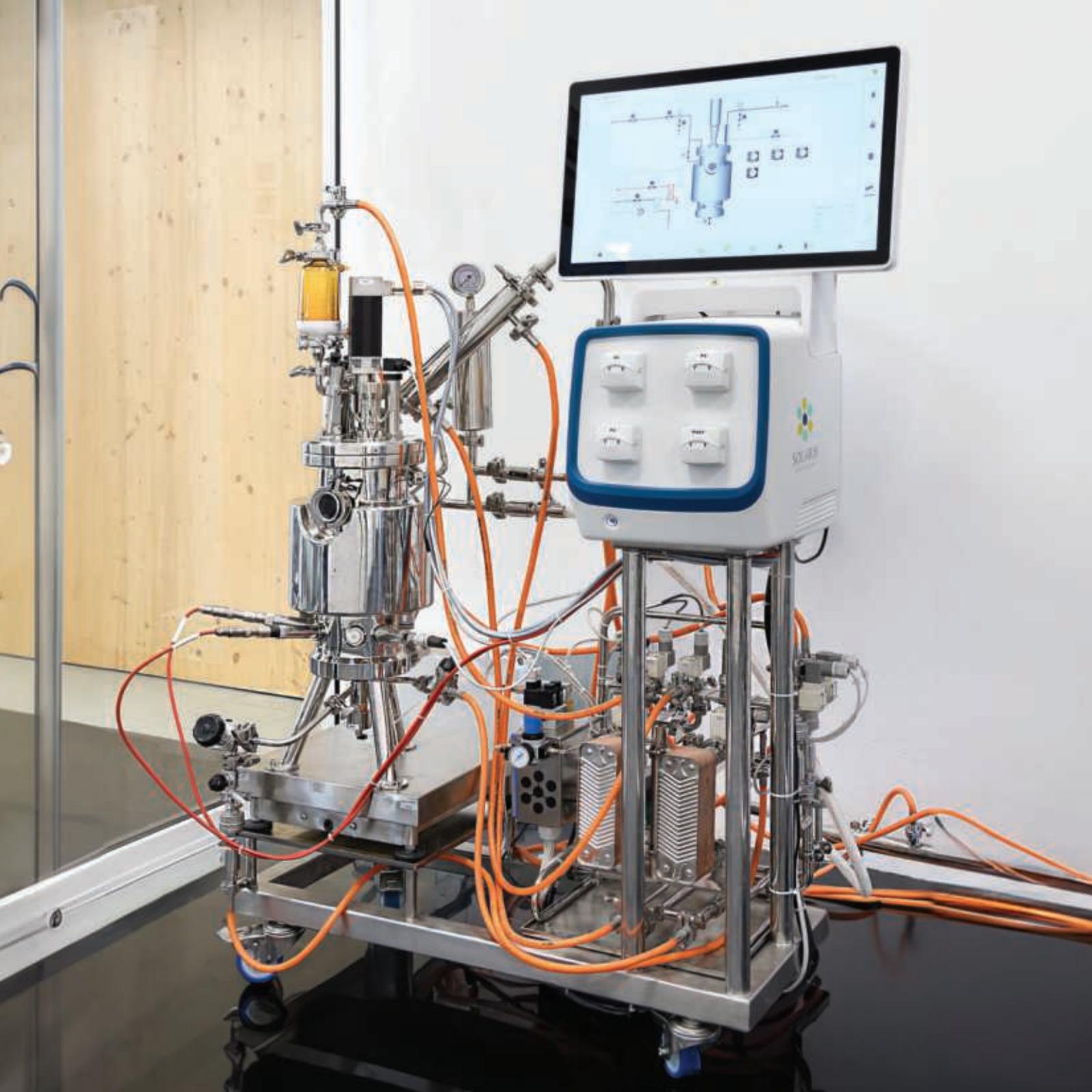


**Jupiter** platform offers multiple autoclavable vessel sizes from 2.0 L up to 10.0 L total volume with different H/D ratio available.

**Pressure** control up to 1.6 bar is also available in the 2 and 4 L volumes. Suitable for batch, fed-batch and continuous processes and parallel control up to 24 units.

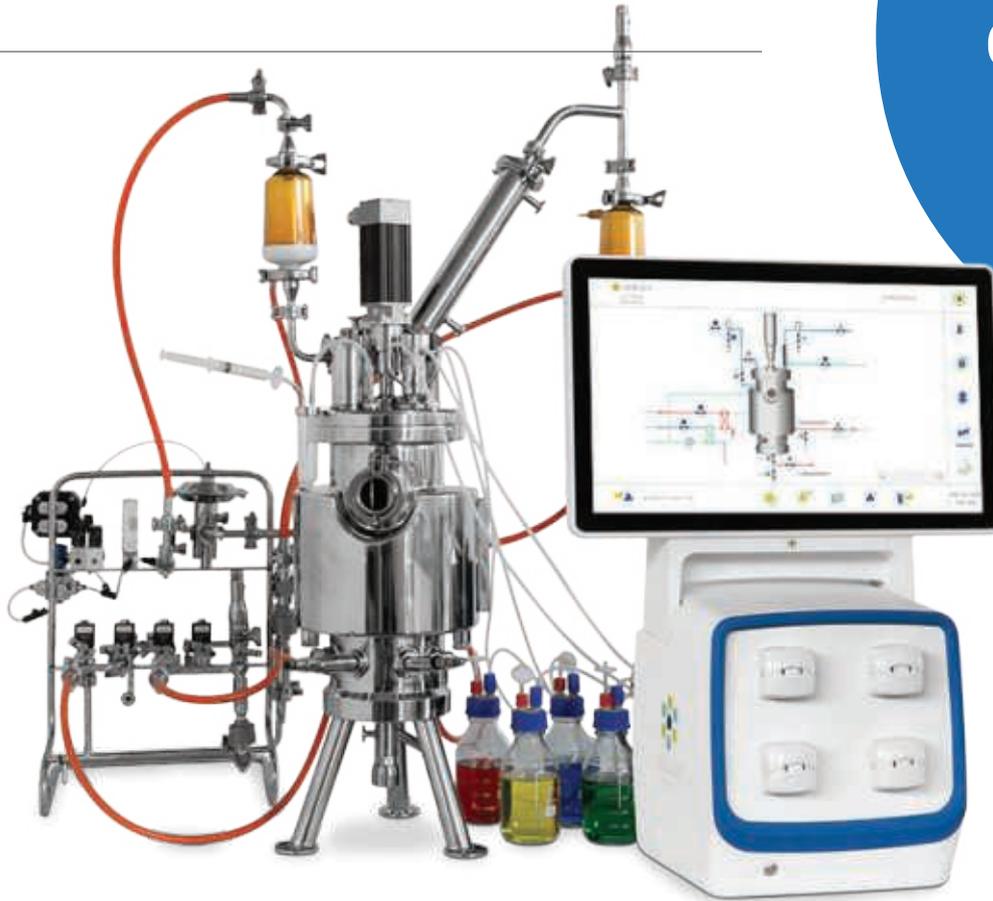
## Customizable Configuration

- The system is highly configurable, offering a wide range of measurement and control options.



# GENESIS

benchtop  
/pilot SIP  
fermenter  
bioreactor



**GENESIS** is a compact SIP benchtop/pilot bioreactor, available from 7.5 up to 20 L total volume. Available as **automatic sterilization** with steam, electrical heaters or hybrid system.

## Modular Platform

- Double jacket (side-bottom) for greater heat transfer efficiency and optimal temperature control. Available as a benchtop solutions or on wheels. Suitable for batch, fed-batch and continuous operation and parallel work up to 24 units.

## Bench top fermenter

Serie	IO		Jupiter			
<b>Material</b>	Vessel: Borosilicate glass Other: AISI 316L					
<b>Vessel volume (L)</b>	0.2	1.0	2.0	4.0	6.5	10.0
<b>Working volume range (L)</b>	0.07 - 0.15	0.36 - 0.70	0.50 - 1.50	1.0 - 3.0	1.6 - 4.9	2.5 - 7.7
<b>H/D ratio</b>	1.50/1	2.50/1	3.00/1	3.25/1	2.50/1	3.00/1
<b>Max temperature (°C)</b>	56	56	65	65	65	65
<b>Space requirement in Autoclave (H x D mm)</b>	320 x 170	420 x 170	610 x 275	705 x 285	705 x 315	790 x 335
<b>Stirrer (rpm)</b>	1 - 2000	1 - 2000	1 - 1900	1 - 1800	1 - 1700	1 - 1700
<b>Recipe preparation / Control</b>	PCS integrated with 24" HMI touch display with SCADA system using Leonardo software for control of up to 24 units					
<b>Pumps per vessel</b>	Integrated four Watson Marlow pumps (Configurable)					
<b>Impeller type</b>	Rushton/ Marine/ Pitch blade (Configurable)					
<b>TMFC for gas flow/ composition control</b>	Max. up to 5 TMFC, overlay and/or submerged (TMFC up to 2 VVM/ TMFC up to 0.2 VVM)					
<b>Thermoregulation</b>	Peltier cell		Water jacket and electrical heaters (Double wall) / Cooling finger and heating blanket (Single wall)			

\* PG 13.5 ports for condenser, sensors (pH, DO, redox etc.)

## Sterilizable in-place bioreactor

Serie	Genesis			
<b>Material</b>	Vessel and parts in contact with the culture: AISI 316L Others: AISI 304			
<b>Vessel volume (L)</b>	7.5	10.0	15.0	20.0
<b>Working volume range (L)</b>	1.9 - 5.6	2.5 - 7.5	3.7 - 11.2	5.0 - 15.0
<b>H/D ratio</b>	2.5/1			
<b>Temperature (°C)</b>	130			
<b>Stirrer (rpm)</b>	1 - 1500			
<b>Sterilization</b>	<i>In-situ</i> sterilization with max. temp up to 130 °C			
<b>Recipe preparation / Control</b>	PCS integrated with 24" HMI touch display with SCADA system using Leonardo software			
<b>Pumps per vessel</b>	Integrated four watson marlow pumps (Configurable)			
<b>Impeller type</b>	Rushton/ Marine/ Pitch blade (Configurable)			
<b>TMFC for gas flow/ composition control</b>	Max. up to 5 TMFC (TMFC up to 2 VVM/ TMFC up to 0.2 VVM)			



# Pilot & Industrial Solution



# M SERIES

pilot industrial  
standard SIP  
fermenters /  
bioreactors

INDUSTRIAL

The **M Series** includes standard SIP bioreactors available in a range of six different volumes from 30 up to 200 litres, with a wide range of options and accessories.



SPECIFICATIONS

**SIP/CIP Industrial scale fermenter/ Bioreactor**

Series	M series					
Material	Vessel and parts in contact with the culture: AISI 316L Others: AISI 304L Sight glass: Borosilicate					
Vessel volume (L)	30	50	75	100	150	200
Working volume range (L)	7.5 - 22.5	12.5 - 37.5	18.5 - 56.5	25.0 - 75.0	37.5 - 112.5	50.0 - 150.0
H/D ratio	3/1					
Temperature (°C)	150					
Stirrer (rpm)	1 - 850	1 - 750	1 - 660	1 - 600	1 - 580	1 - 550
Recipe preparation / Control	PCS with integrated 21.5" HMI touch display with SCADA system using Leonardo software					
Pumps per vessel	Integrated four Watson Marlow pumps configurable according to requirements					
TMFC for gas flow / composition control	Max. up to 5 TMFC (TMFC up to 2 VVM/ TMFC up to 0.2 VVM; configurable)					



A man in a dark uniform stands next to the equipment.

C-1-20  
003/C



## S-I SERIES

SIP and CIP  
customisable  
pilot and  
industrial scale  
fermenters/  
bioreactors

**FULLY CUSTOMIZABLE** highly automated fermenters and bioreactors from 5 up to 200 litres (S-Series) and from 250 litres and above (I-Series).

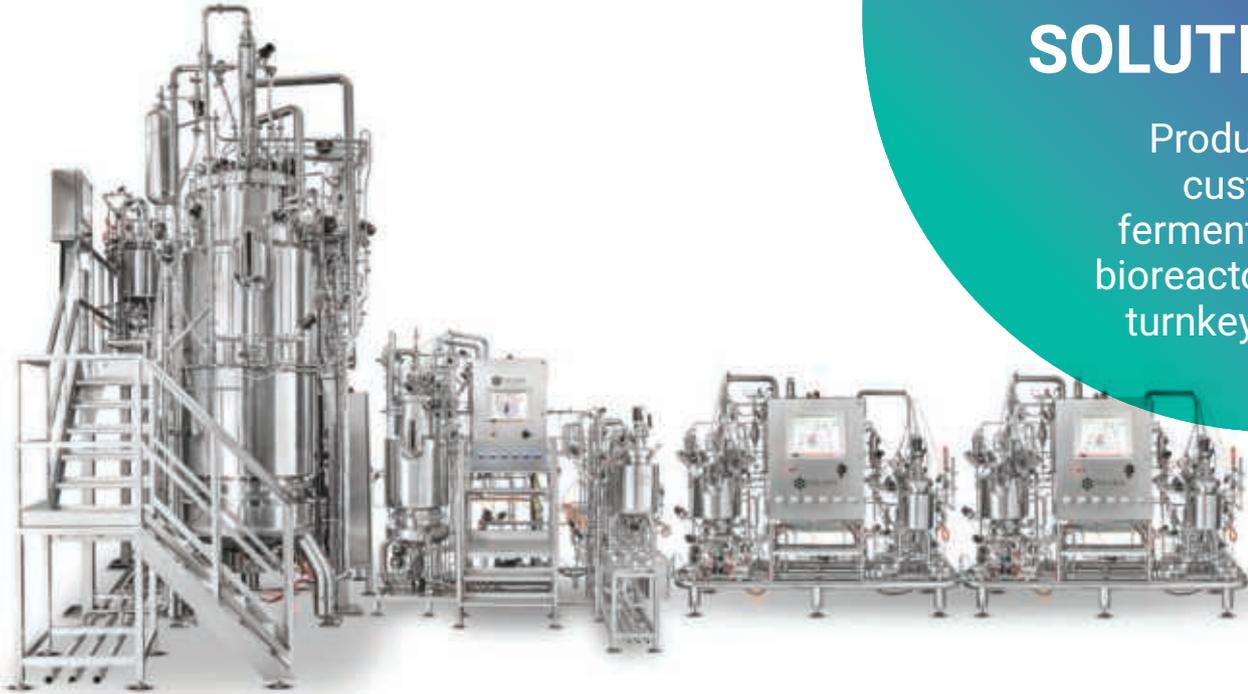
**Tailor-made** according URS.

Full **cGMP package** also available.

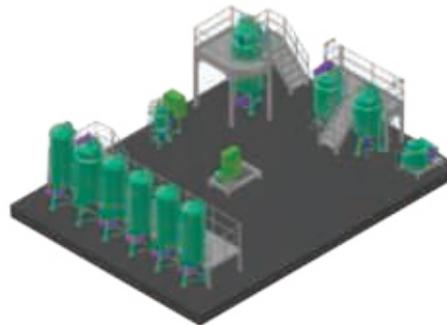


# TURNKEY SOLUTIONS

Production of customized fermenters and bioreactors, with turnkey project



## Project Feasibility & Assessment



## Engineering and Manufacturing

Hardware design  
Software design  
Integrated system architecture



## Handover

Commissioning  
Qualification/ Validation  
Start-up & training

# Process Equipment



**Buffer Tanks**



**Sterilizers**



**Media Preparation Tanks**



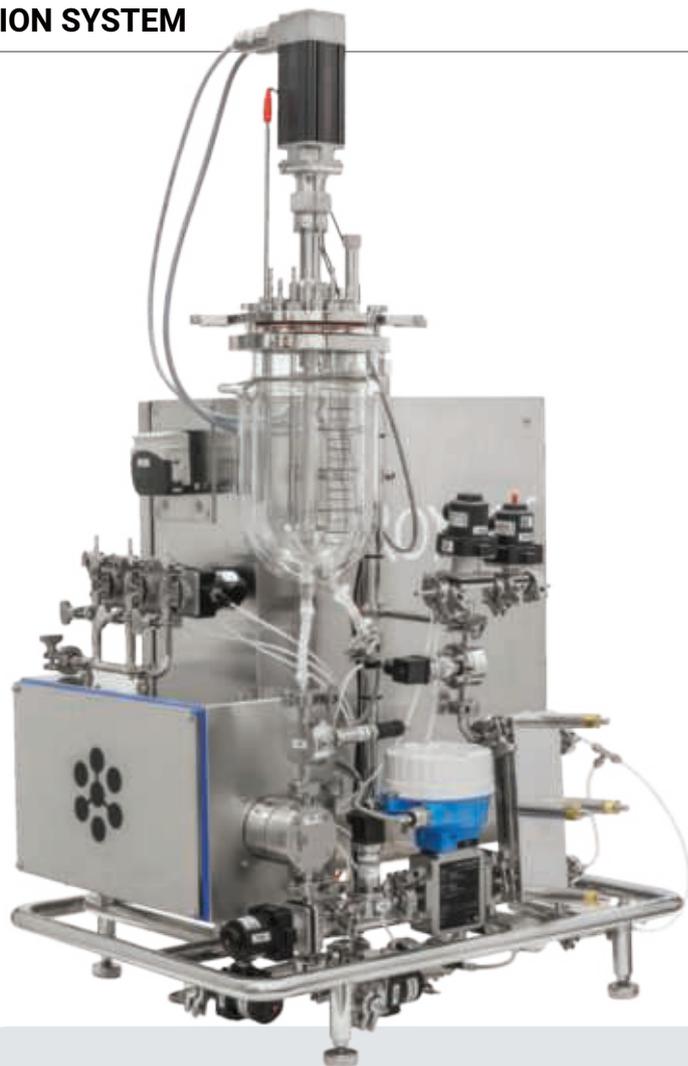
**CIP Units**

# Filtration System





## FILTRATION SYSTEM



# KRONOS

Standard  
Benchtop  
Tangential  
Flow Filtration  
(TFF) System



**KRONOS** is a benchtop automatic **TangentialFlow Filtration (TFF) system**, designed following the most updated criteria of cGMP.  
**KRONOS** can handle up to 0.5 m<sup>2</sup> total filtration area allowing different membrane technologies like cassettes and hollow fibers which make it ideal for **innovative process development** as well as for automatic process sequences.





# TYTAN

Pilot and  
Industrial  
Tangential  
Flow Filtration  
Systems

**TYTAN** is Solaris' completely customisable pilot / industrial scale **Tangential Flow Filtration (TFF) system** based on microfiltration and ultrafiltration techniques and operating at low pressure ranges (1-5 bar).



# Leonardo Software



# Leonardo User-Friendly software



The **Super Powerful and user-friendly software** that manages all Solaris equipment, from benchtop units to pilot-industrial scales, from **upstream** to **downstream**.

The software is **developed on a Linux operating system** and **communicates with PLC and DCS** for the supervision and control over multiple units, managing sterilization, cleaning of pipelines and transferring between units, working with the major automation and software platforms on the market.



# LEONARDO

Software &  
Automation

## **Leonardo is Solaris' in-house developed software for Process Control.**

Its flexibility and powerfulness make it suitable for different kinds of process fields, from **benchtop** bioreactors used in R&D, to **pilot** and **industrial** bioreactors for scale-up and production and filtration systems (TFF).

## **The unicity**

While the interface remains the same, Solaris developed unique features and options depending on the needs. Let's dive in a little bit...



Our products are utilized across various sectors including **pharmaceuticals, food production, agriculture, biomanufacturing, bioplastics, biofuels, cosmeceuticals**, catering to both research and development as well as lab and large-scale production needs



# Solaris Biotech

## By Donaldson



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Mantova - Italy

### **OUR OFFICES SHOWROOMS**





[www.solarisbiotech.com](http://www.solarisbiotech.com)



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By Donaldson

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