SOLARIS™
BIOTECH

By Donaldson

GENESIS

CATALOGUE


P1
P3

GENESIS

pilot SIP fermenter bioreactor

GENESIS is a compact benchtop SIP fermenter / bioreactor, available from 7.5 up to 20 L total volume.
Automatic sterilization with steam, electrical heaters or hybrid system.

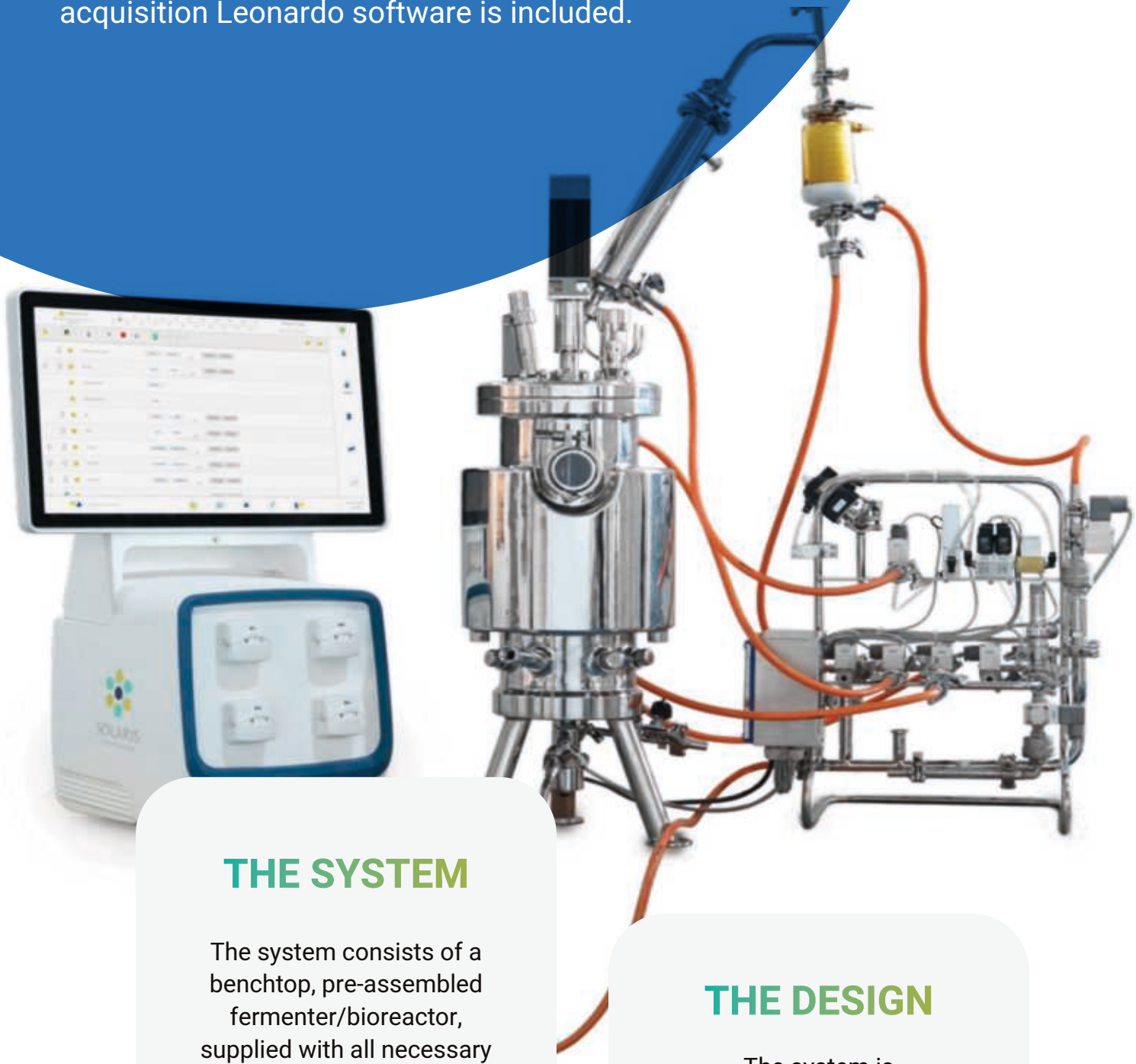
“Having the opportunity to extract real time process data with the lowest step time of 1 second remotely offers to our customer a powerful monitoring tool.”

APPLICATIONS

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

Our Product Genesis

This catalogue describes Solaris GENESIS. For supervisory control and data acquisition Leonardo software is included.



THE SYSTEM

The system consists of a benchtop, pre-assembled fermenter/bioreactor, supplied with all necessary tubes, valves, piping and instruments, auto-mation, control panel (HMI).

THE DESIGN

The system is designed for aerobic and anaerobic fermentations, closed aseptic oper-ations.

Customizable Configuration

SIP
Stainless Steel vessel
Modular Platform
benchtop or wheeled skid options

BASIC RESEARCH

EDUCATION

PROCESS DEVELOPMENT & OPTIMIZATION

SCALE UP & SCALE-DOWN STUDIES

SMALL PRODUCTION

Sterilization with steam, electrical heaters or hybrid (steam/electrical).

Jacketed (side-bottom) for greater heat transfer efficiency and optimal temperature control.

AISI 316L vessel.

Microbial (Toro sparger, Rushton impellers, baffles) and cell cultures (Sintered sparger, Marine impellers) configurations available.

Wide range of measurement and control options.

Modbus digital sensors reduce background noise and guarantee quick response time.

Suitable for batch, fed-batch and continuous processes.

Product Description

Different gas mixing strategies with up to 5 TMFC.

Powerful and accurate brushless motor.

Optional integration of up to 4 analog input/output connections, choosing between 0 - 10 V and 0 - 20 mA / 4 - 20 mA.

Wheeled skid option available.

The thermoregulation and aeration loops are external from the PCS, on a dedicated support with a combination of stainless steel and flexible tubing.

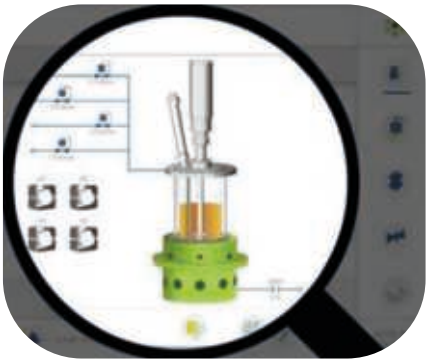
Circular sight glass on vessel side.

Leonardo Software

SoftwareThe innovative SCADA software Leonardo has a smart and user-friendly controller designed to provide a high level of automated management of the fermentation/cultivation processes.

Full version included in the equipment supply. Up to 24 units managed in parallel with a unique HMI (24”). Data extraction in .csv format.

Remote control and access via PC, tablet or smartphone, with QR code scanning or dedicated portal.



SYNOPTIC

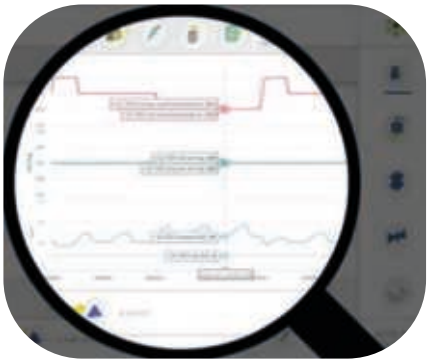
- Real time 3D view
- Parallel control
- Manual control

LOGIC PARSER

- Customized logic functions
- Parallel logic blocks and funtions

REMOTE CONTROL

- Unlimited number of profiles editor
- Unlimited number of devices to be associated



TRENDS

- Custom acquisition time
- Up to 6 values simultaneously display
- Automatic graph comparison

WORKFLOW

- Custom phase manager
- Parallel visualization
- Cascade settings
- Peristaltic pumps function assignable from software

CALIBRATION

- Up to three-point calibration
- Simoultaneus calibration values for parallel work

Technical Data

VESSEL				
Solaris Code	**Genesis 7.5**	**Genesis 10.0**	**Genesis 15.0**	**Genesis 20.0**
Total Volume (L)	7.5	10.0	15.0	20.0
Ratio H/D	2.5/1			
Min working volume (L)	1.8	2.5	3.7	5
Max working volume (L)	5.6	7.5	11.2	15
Max temperature	135 °C			
Operating pressure	Max 1.9 bar(g) controllable up to 1.6 bar(g)			
Design	Stainless steel jacketed vessel			
Materials	Parts in contact with the process AISI 316 L - other parts AISI 304			
Finishing	All parts in contact with the culture: Ra < 0.4 µm External: Ra < 0.6 µm (mirror polished)			
PORTS AND CONNECTIONS				
Vessel lid	Safety valve + gas out, sparger, antifoam/level sensor, pressure sensor, SALAS, 3 removable baffles, glass window + lamp or spare ports			
Upper side wall	Overlay gas inlet, circular sight glass			
Lower side wall	4 hygenic sockets (pH, dO_2 and 2 spare probes), sampling valve, sensor PT100			
Vessel bottom	Harvest valve			
Jacket in-out	Steam in, steam out, water in, jacket in/out, 3 electrical heaters in, PT100 for jacket			
STIRRINGS				
Drive	Brushless Motor			
Speed (rpm)	1 - 1500			
Torque (Nm)	0.8 (7.5 and 10 L) or 1.9 (15 and 20 L)			
Impellers	Select from: Rushton, Marine, Pitched blade			
THERMOREGULATION				
Control	PID Control - Accuracy 0.1 °C Heat exchangers and/or electrical heaters External steam generator and/or chiller required			

GAS CONTROL & GAS MIXING	
Sparger and overlay gas control	TMFC
Gas mixing (Air, CO_2, O_2, N_2)	Up to 5 TMFCs in total
Sparger type	Select from: toro type (ring), intered microbubbling
Gas out	Condenser
INTEGRATED PERISTALTIC PUMPS	
Quantity & Type	4 Watson Marlow 114FD/DV
CONTROLLER	
Master control module	From 1 to 24 units - 35 x 35 x 35 cm
HMI with Leonardo software	Touch screen PC, 24” Color Monitor
TEMPERATURE	
Sensor	PT100
Accuracy	± 0.1 °C
Control system	Measuring resident in Leonardo software
Control range	0 - 150 °C
pH	
Sensor	Digital sensor
Sensitivity	57 to 59 mV/pH
Control system	Measuring resident in Leonardo software
Control range	0 - 14
Operating temperature	Up to 130 °C
Pressure range	1 - 6 bar(g)
Actuator	Cascade to stirring, gas control, feedings
dO_2	
Sensor	Digital Optical sensor
Accuracy	1 ± 0.05 %-vol, 21 ± 0.2 %-vol, 50 ± 0.5 %-vol
Control system	Measuring resident in Leonardo software
Control range	0 - 300 % saturation
Operating temperature	Up to 130 °C
Pressure range	0 - 12 bar(g)
Actuator	Cascade to stirring, gas control, feedings
ANTIFOAM/LEVEL	
Sensor	Conductivity based
Control	Measuring resident in Leonardo software

TECHNICAL DATA

REDOX (ORP)	
Sensor	Digital sensor
Control system	Measuring resident in Leonardo software
Control range	± 1500 mV
Operating temperature	up to 140 °C
Pressure range	0 - 6 bar(g)

CONDUCTIVITY	
Sensor	Digital sensor
Accuracy	± 3 % at 1 µS/cm to 100 mS/cm, ± 5 % at 100 to 300 mS/cm
Control system	Measuring resident in Leonardo software
Control range	1 - 300 000 µS/cm
Operating temperature	0 - 140 °C
Pressure range	0 - 20 bar(g)

dCO_2	
Sensor	Digital sensor
Accuracy	± (10 % of the reading + 10 mbar)
Control system	Measuring resident in Leonardo software
Control range	0.5 to 100 %-Vol
Operating temperature	0 - 130° C (autoclavable)
Pressure range	0 - 20 bar(g)

CELL DENSITY	
Sensor	Digital sensor
Control system	Measuring resident in Leonardo software
Operating temperature	up to 140°C
Pressure range	0 - 10 bar(g)
TCD control range	0 - 4 AU
VCD control range	0.0 to 400 pF/cm

WEIGHT	
Sensor	Digital balance
Accuracy	± 0.1 g (4.5 kg) , ± 1 g (42 kg)
Control system	Measuring resident in Leonardo software

PERISTALTIC PUMPS	
WM 120 U Brushless	1 - 100 rpm
WM 313 FDM/D	175 rpm
WM 313 OEM VBM-D	175 rpm

Get in touch

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