Elara Flat

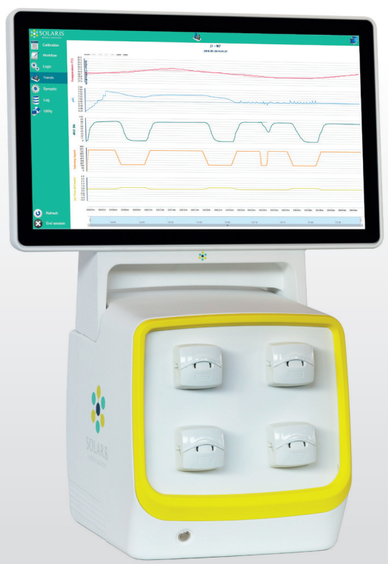
FOTOBIOREACTORS

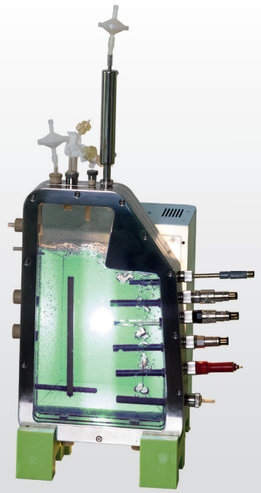
SOLARIS
BIOTECH SOLUTIONS

PHOTOBIOREACTORS

ELARA FLAT

ELARA Flat photobioreactor is ideal for phototrophic organisms as moss, microalgae, bacteria and plant cells. The flat design allows much better light intensity control by utilizing a uni-directional light source and receiver. The light intensity is dimmable from 0-100% up to 3000 µmol(photon)/m2.





ELARA Flat typical applications includes the following:
Education & Basic research
Scale-up and scale-down studies
Process development and optimization

ELARA Flat can be used for:
Algae
Phototrophic bacteria
Plant cells

INNOVATIVE SOLUTION
TO IMPROVE MICROALGAE CULTURE

Homogeneous Light distribution

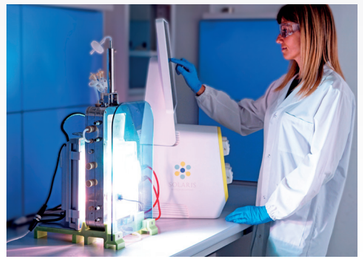
WHY TO INVEST IN THIS PRODUCT

High power LED lighting, spectrum selectable and dimmable 0-100%

Higly resistant to salty water

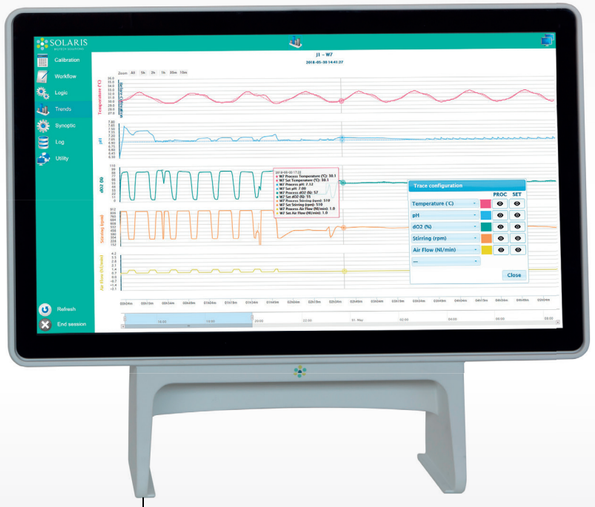
FLAT PHOTOBIOREACTOR

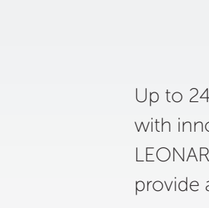
Benefits



Up to 24 units managed with one HMI with innovative PARALLEL process control LEONARDO: smart controller designed to provide an high level of automated management of the fermentation/ cultivation processes
Batch, Fed batch or continous processes

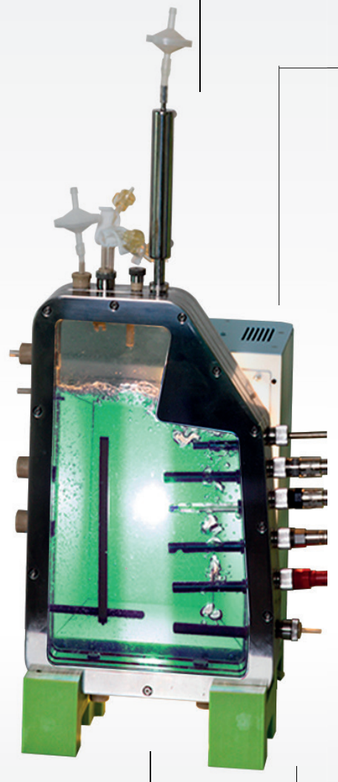
24" touch HMI.





Remote control via PC, tablet and smartphone for process management and after sale assistance

Assymetric shape to prevent foam formation



Homogeneous light distribution
Automatic and manual control of light intensity and circadian cycle simulation

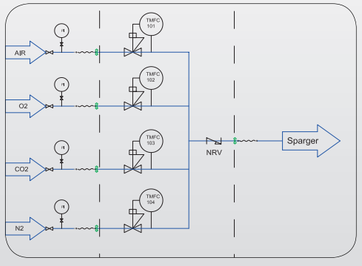
Modbus Digital sensors

Safety: pressure relief valve included in each unit.

Compact and modular PCS

N.4 assignable Watson Marlow pumps in entry level

Additional External modular box:
OD, dCO2, weight, thermobox, peristaltic pumps



Airlift mixing process
Different gas mixing strategies with up to 5 TMFC

Parts in contact with the culture made in borosilicate glass and Super duplex SAF 2507 highly resistant to salty water

FLAT PHOTOBIOREACTOR

ELARA FLAT

HOMOGENEOUS LIGHT DISTRIBUTION

The innovative flat design allows a homogenueous light distribution, even at high viscosity.

MATERIAL

Parts that are product contacting are made from borosilicate glass and Super duplex SAF 2507, for compatibility with high salt concentrations.

ASYMMETRICAL SHAPE

The asymmetrical shape is highly effettive fro the management of foam formation.

MODBUS DIGITAL SENSORS

Digital sensors (including Cell Density products) have been integrated to the Solaris PCS and Leonardo controlling software, giving the user many benefits over traditional analog sensor outputs. Such benefits include a robust communication protocol not susceptible to signal loss, in-software sensor diagnostic information, parallel calibration/batch calibrations and more.

AIRLIFT

The Flat system utilizes an airlifting design allowing gentle mixing and ensuring efficient homogenization.

GAS MIXING

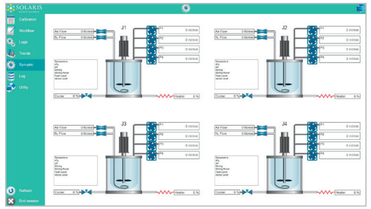
Hardware and software adaptability are key to enable the best aeration strategy for each process. Thermal mass flow controllers (TMFC) allow precise flow rate control of individual gasses. Up to 5 TMFC's can be configured within each PCS cube and integrated to the controlling software. The powerful software and control platform allows precise cascade adjustment of multiple parameters to manage gas transfer, OTR, kLa, etc.

USER-FRIENDLY SOFTWARE

Solaris controlling software offers a simply laid out, yet powerful platform for experimental design planning and process control. The graphical user interface enables the intuitive selection and adjustment of control functions. Extracted data is compatible with Window Excel but, in addition, Solaris offers a platform where fermentation data can be easily exported in real time and thus managed. This software is included in the supply and can be installed on an unlimited numer of the client's PC or laptops.

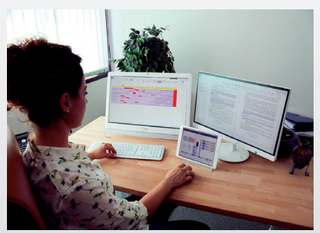
Do it parallel: smarter..faster

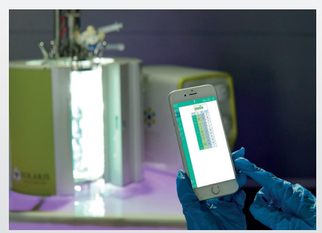
Leonardo allows intuitive and time-saving parallel operations. Up to 24 indipendent fermentations/cultivations can be carried out simultaneously.

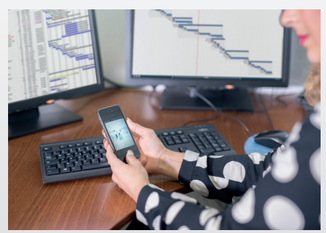


Do it wireless!

Increase mobility: users have the option to access the platform remotely via PC, tablet, phone. Remote access is multi-level password protected.







FLAT PHOTOBIOREACTOR

ELARA FLAT

Data sheet

Vessel	
Photobioreactor type	**Flat**
Total Volume (liters)	1,60
Ratio D/H	1:2,4
Min. Working Volume (liters)	1,30
Max. Working Volume (liters)	1,40
Max. temperature	50 °C
Operating pressure	< 0,5 bar
Ports	n.1 port, Gas out Condenser n.1 port, Antifoam probe n.1 port, multi addition (3) needle free connectors n.1 port, single addition needle free connector n.4 port, Hygienic Socket Solaris, Spare probes n.1 port, temp. housing, PT100 n.2 ports, Sampling system n.1 port, Gas Sparger Input n.1 port, Baffle n.3 ports, Spares (1bottom,2short) n.1 port, Harvest valve
Design	Borosilicate Glass Jacketed Vessel with Super Duplex and AISI316
Materials	Borosilicate Glass, Super Duplex, AISI316

Sensors lenght (mm)	
pH	225
dO_2	225
Dimensions for autoclave (with Condenser)	
Height (mm)	660
Diameter (mm)	280
Thermoregulation	
Control	PID Control - Accuracy 0,1 °C Thermobox (flat) / water jacketed with electric heaters (stirred vessel)
Gas Control & Gas Mixing	
Sparger and overlay Gas Control	TMFC
Gas Mixing (Air,CO_2,O_2,N_2)	n.1 TMFC + n. solenoid valves or n° of TMFC
Aeration system	Micro holes Type with 0,2 µm filter
Exhaust	Condenser and 0,2 µm filter
Peristaltic Pumps	
n.4 Watson Marlow type 114, fixed speed, max. 60 rpm, volumetric flow 0,5-51 ml/min, function assignable from software	
(optional) Watson Marlow type 313 FDM/D, max. speed 350 rpm, volumetric flow 1,5-1750 ml/min, function assignable from software	
Controller	
Master Control Module	From 1 to 24 units - 35x37xh36 cm
HMI with Leonardo software	Operate interface 58x15xh48 cm with 24" monitor

Controls

INTEGRATED IN THE PCS

Temperature	
Sensor	PT100
Control system	Measuring resident in Leonardo 3.0 software
Control range	0 - 150°C
pH	
Sensor	Digital sensor
Control system	Measuring resident in Leonardo 3.0 software
Control range	0 - 14
Operation temperature	0 - 130°C
Pressure range	0 - 6 bar
Actuator	Cascade to peristaltic pumps for the addition of acid/base solutions or gas (CO_2)
dO_2	
Sensor	Digital Optical sensor
Control system	Measuring resident in Leonardo 3.0 software
Control range	0,05 - 300% air saturation
Operation temperature	-10 - 130°C
Pressure range	0 - 12 bar
Actuator	Cascade to RPM, Gas Control, feedings,ect
Antifoam/Level	
Sensor	Solaris sensor
Control	Measuring resident in Leonardo 3.0 software
Redox (ORP)	
Sensor	Digital sensor
Control system	Measuring resident in Leonardo 3.0 software
Control range	±2000 mV
Operation temperature	- 10 -130°C
Pressure range	≤ 6 bar

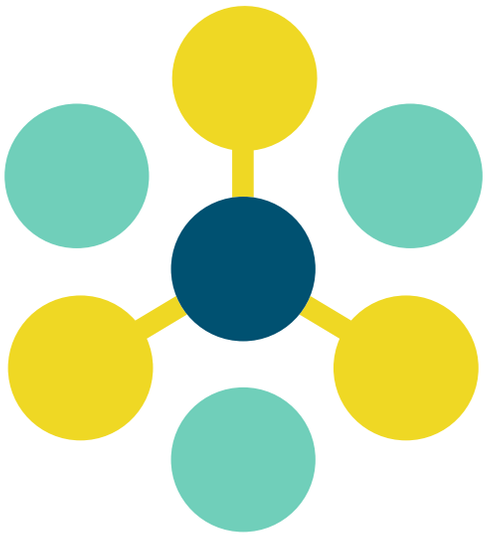
EXTERNAL MODULAR BOX

Conductivity	
Sensor	Digital sensor
Control system	Measuring resident in Leonardo 3.0 software
Control range	1 - 3000 µS/cm
Operation temperature	0 -130°C
dCO_2	
Sensor	Analog sensor
Control system	Measuring resident in Leonardo 3.0 software
Control range	0,00-200% saturation
Operation temperature	-20.0-150°C
Pressure range	0 - 4 bar
Weight	
Sensor	Digital Balance
Control	Measuring resident in Leonardo 2.0 software
Peristaltic pumps	
WM 114	10-60 rpm
WM 313 FDM/D	45-350 rpm

Chiller

- Optionally ELARA 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



SOLARIS

BIOTECH SOLUTIONS

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