SYSBIOTECH

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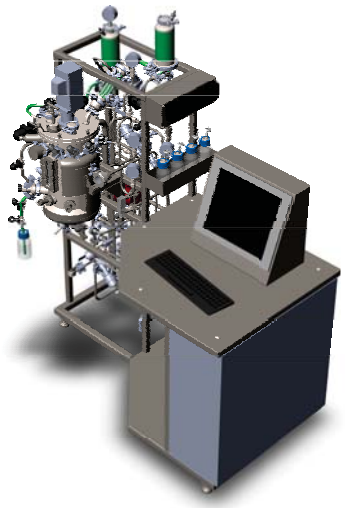
20L SIP/CIP Lab-Pilot Fermenter

Sysbiotech 20L Laboratory Pilot plant Fermenters is a reliable solution for working with microbiological process for scientific research and small biotech production facilities as well as for scaling up technology.

Total volume (L)	Working volume (L)	Minimal volume (L)
20,0	14,0	5,0



Standard «ready to use» solutions include all components needed for convenient operation with microbial culture applications. After connecting the Fermenter you can start using it right away without having to buy any accessories.

Sysbiotech Laboratory-Pilot plant Fermenters have fully aseptic design and can be validated easily. C-Bio control system, universal for any volume of Fermenter greatly simplifies scale-up process and allows for easy transfer of fermentation data.

If needed, Sysbiotech Fermenters can be upgraded to fulfill your specific application requirements. For your convenience, all the necessary piping is installed on open stainless steel mobile frame. This helps to save space in your facility and simplifies access for maintenance of the Fermenter.

Width (cm)	Depth (cm)	Height (cm)	Weight (kg)
1400	750	1900	170

SIP (sterilization-in-place) sequence is fully automatic. User can set his own sequence parameters for achieving the best results.

All wetted surfaces of Fermenters are made from AISI 316L stainless steel with surface finish of Ra 0,8 µm which allows more effective CIP (cleaning-in-place) process.

Main features:

- Ready-to-work standard solutions with the ability to upgrade
- 100% aseptic design, easy validation
- Different types of impellers: Rushton, marine-blade, pitched-blade right- and left-handed orientation with radial or axial flow
- Drive with single mechanical or magnetic seal. In both cases 100% aseptic operation is guaranteed.
- Mixing speed 30-600 RPM in standard execution, up to 1.500 RPM on request.
- Standard sensors: temperature, pH, pO_2, and foam.
- Sensors on request: optical density, ORP, level, weight, conductivity, pCO_2, gas analyzers.
- The purity of gas mixture in bioreactor is guaranteed by 5" absolute filters 0,2 µm
- Gas mixture supply control via manual flow meter or automatic MFC (mass flow controller)
- Different sparger types: ring or micro spargers. Different specific designs are available on request.
- Two ingold ports for electrodes.

C-Bio control system features:

- Universal control system for all range of volumes
- Ability to use a separate control system for each culture vessel, or one control system for several vessels
- The system is based on SCADA controller, constructed in conformance with industrial automation standards.
- Simple and intuitive user interface that provides quick access to all controllers and data.
- "Sequences" program allows creating your own program of cultivation, which will allow better control of the process.
- All fermentation process data is gathered and saved in separate electronic records.
- To minimize the number of errors, different bioreactor operators are given four different levels of access to control system.

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Vessel (Length/Diameter: 2/1)

Total volume	20 L
Working volume	14,0 L
Materials	AISI 316L for wetted parts ASISI 304L for non-wetted parts
Design pressure	3,0 kg/cm³ (vessel) 4,0 kg/cm³ (jacket)
Design temperature	143 °C (vessel) 151 °C (jacket)
Surface finish	Internal polishing 0,6 µm External polishing 1,2 µm

Agitation unit

Single mechanical or magnetic seal

Manual/automatic speed control depending on the amount of dissolved oxygen.

Speed range 30-600 RPM. Up to 1.500 RPM available on request

Marine, Rushton or pitched-blade impeller. Different impeller types available on request

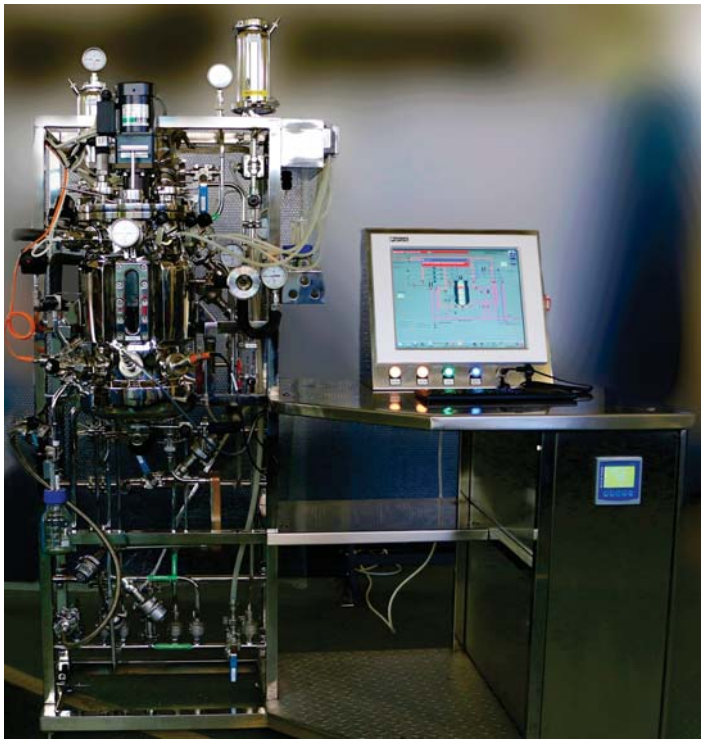
3 welded baffles

Aeration unit

Automatic air supply 2 VVM

5" absolute filter 0,2 µm and filter housing made from AISI 316L stainless steel

Manual flow meter or automatic MFC (mass flow controller)



Components

Top lid	Diaphragm Pressure Gauge Diaphragm Pressure Transmitter Rupture disk with outlet pipe Gases exhaust with condensor Inoculation Light glass Foam control with peristaltic pump CIP spray ball
Upper side walls	Air inlet Viewing glass Addition inlet Sparger (ring or micro sparger)
Lower side walls	Temperature sensor PT100 pH control with peristaltic pumps pO_2 sensor Sterile sampling system Different sensors available on request: optical density, ORP, level, weight, conductivity, pCO_2
Jacket	Steam inlet / Cooled water outlet Steam outlet / Cooled water supply (with safety valve and manometer)
Bottom	Serializable bottom valve

Piping

Material	Sanitary grade steel
Piping construction	Air supply Plant steam supply Pure steam supply Cooling water supply Cooling water return Waste water drain Waste liquid drain Waste gas out
Fittings	Diaphragm valve Angle seat valve Steam trap Diaphragm pressure gauge Ball valve and Pneumatic angle valve Check valve Safety valve
Pipes welding	Orbital welding (product line) Manual welding (general line)