BioTop® multi-purpose bench-top fermentor | bioreactor systems

SmithBio offers a range of BioTop® multi-purpose bench-top fermentor | bioreactor systems, designed and perfected for serial or parallel aseptic cultivation of microorganisms and cell cultures for a wide range of applications, including batch, fed-batch or perfusion processing for process development, production scale-down/scale-up experiments and scientific research.

The range includes BioTop® L, , BioTop® C and BioTop® D model systems.

The flexible configuration of each BioTop® fermentor | bioreactor model and the wide range of available options enables optimal automated operation, accurate real-time process control and monitoring, and consistent and reliable cultivation results.

A range of sensor-probe devices is available for process-optimal configuration and in-vessel monitoring of critical process parameters, for example temperature, pH, DO/pO_2, pCO_2, anti-foam, fluid level, ORP/RedOx, cell viability, turbidity-NIR, conductivity, OD-VIS, Raman, and more.

Each BioTop® Vessel Control Unit (VCU) is designed with a powerful and robust industrial Siemens PLC controller architecture for advanced PID feed-back regulated setpoint, profile and cascade control of all critical process parameters, including control of in-vessel sensor-probes, vessel heating/cooling, agitation speed, and connected auxiliary instruments.

The VCU instrument configuration includes gas controllers, pumps, (external) agitator motor and digital and analogue I/O, fluid and gas connections for all vessel assembly associated instruments and supply lines.

The VCU housing has sufficient free space for additional controllers and actuators, enabling maximum configuration freedom to meet the stringent requirements of biotechnology processes and equipment. An optional circulating water thermostat (CWT) system may be included for temperature control of water jacketed vessel assemblies (BioTop® PLUS systems).

The VCU is operated from an touch-screen PC/HMI by using WinCC-SCADA fermentation-specific BioTrail™ instrument operation and control software (3-level password, SQL database, CFR21 part 11 and GAMP compliant). The powerful BioTrail™ fermentation specific software allows for real-time monitoring and control of VCU integrated instruments and actuators, in-vessel sensor-probes and other critical process parameters, and other associated auxiliary devices.

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The BioTop® industrial design, quality instrumentation and flexible configuration ensures first class performance, optimal control and stability, and maximum connectivity options for additional process control, process analytics and other auxiliary devices.

The standard system package consists of the following main components:

- vessel control unit (VCU) with local PLC controller
- autoclavable vessel assembly with single wall or jacketed glass vessel, including;
  - SUS316 electropolished vessel frame, headplate with connection ports, sealed motor coupling, and shaft with impeller(s)
  - overlay and in-vessel sparger aeration ports, feed and sampling ports, condenser/exhaust port
  - 4 sensor probes (pH, temperature, antifoam and dissolved oxygen (DO/pO_2)
  - 1 condenser with sterile filter, 1 micro-sparger, 1 large bubble ring sparger and dip-tube(s).
- Touch screen PC/HMI with WinCC-SCADA and BioTrail™ control software
- Start-up tools and accessories.

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Configurable vessel assembly headplate ports allow for integration of in-vessel and at-vessel devices such as for sensor-probes, dip-tubes, spargers, off-gas testing, aseptic sampling, process analytical testing, ATF and TFF filtration, and more.

BioTop® systems are the best choice for cell cultivation and microbial fermentation research and development projects. The flexible configuration, wide range of options and powerful BioTrail™ operation and control functionality support a wide range of applications, satisfying your current and future needs.

Industries : bio-pharmacy, biotechnology, cell therapy, agriculture, food, cosmetics, health care products, environmental protection

Applications : cultivation of animal cells, microorganisms, insect cells, plant cells, CHO, Vero, BHK, 293, SF9, E.coli, Pichia, and more ...

Process modes : batch processing, fed batch processing, continuous processing, perfusion processing

Cultivation modes: suspended cells, microcarrier adhesive cells, fixed bed adhesive cells, oxygen enriched cultivation, anaerobe cultivation, and more ...

BioTop® L fermentor | bioreactor systems comprise of a customer pre-configured Vessel Control Unit (VCU), connected to a customer pre-configured vessel assembly (single wall or jacketed vessel), and operated and controlled by BioTrail™ L software from a touch-screen PC/HMI mounted on top of the VCU.

BioTop® C fermentor | bioreactor systems comprise of a customer pre-configured VCU, connected to a customer pre-configured vessel assembly (single wall or jacketed vessel), and operated and controlled by BioTrail™ software from a desk-top All-in-One touch-screen PC/HMI.

BioTop® D fermentor | bioreactor systems comprise of a customer pre-configured Vessel Control Unit (VCU) connected to 2 customer pre-configured vessel assemblies (single wall or jacketed vessel), operated and controlled from a desk-top All-in-One touch-screen PC/HMI.

For BioTop® models C and D only: *up to 4 VCUs (8 vessel assemblies) in parallel can be operated from one PC/HMI. Parallel process control may be further increased by using a master-PC/HMI controlling up to 3 support-PC/HMIs.*

For more information, please contact us. Our application specialists are happy to support you.