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Bioengineering – Experience only specialists can have

BioEquipment

Bioreactors and Fermenters
- Airlift Fermenter
- Airlift Visual Safety Fermenter VSF
- Anaerobic Fermenter
- Autoclavable Fluidized Bed Reactor AWS
- Autoclavable Laboratory Fermenter ALF
- Cell Fermenter
- Enzyme Membrane Reactor EMR
- Fermenter with Integrated Downstreaming
- Fermenter for Plant Cell Cultivation
- Fluidized Bed Reactor WS
- High Pressure Fermenter
- High-Temperature-High-Pressure Fermenter HTE
- Laboratory Fermenter L1523
- Laboratory Fermenter NLF22
- Laboratory Pilot Fermenter LP351
- Loop Safety Fermenter LSF
- Membrane Reactor MF
- NMR Reactor
- Photoreactor
- Pilot Plant Fermenter
- Rotaschon Fermenter
- Small Laboratory Fermenter KLF
- Solid State Fermenter
- Surface Cultivation Reactor
- Visual Safety Fermenter VSF

Up- and Downstream Equipment
- Cold Sterilization
- Continuous Sterilization System
- Dispersing Mixer
- Dosage System
- Medium Storage Vessel 50–5000 l
- Perfusion System
- Spiral Filter
- Feed Vessel

Probes/Measuring systems
- Admittance Probe
- Antifoam Probe
- Exhaust Gas Analyzer
- Gas Flow Meter
- IFM - Intelligent Front Module
- Level Indicator «Biowatch»
- Level Measurement Probe
- pH/Redox Probe
- pH Interchangeable Probe
- pO2 probe
- pO2 Interchangeable Probe
- Pressure Transmitter
- Pt100 Temperature Probe
- Software for Media Optimization
- Turbditiy Probe
- Weighing Probe
- Weight Measurement: Platform, Cell

Sampling and Harvesting
- Contained Sampling System
- Dialysis Probe
- Harvesting Valve
- Pervaporation Probe
- Sampling Valve

Agitation System
- Direct Drive
- Disk Turbine
- Draught Tube
- Magnetic Drive
- Top Drive
- Impeller

Aeration and Exhaust
- Autosterile Filter
- Air Filter
- Bubble-Free Aeration
- Control Valve
- Flow Meter
- Gas Mixing Station
- Incinerator
- Reflux Cooler
- Viewing Glass Bursting Disk Assembly

Vessel Accessories
- Bottle Cap with Sterile Filter
- Bubble Trap
- CIP Spray Ball
- CIP Valve
- Dosing Valve
- Foam Breaker
- Hypodermic Needle with Sterile Case Assembly
- Illumination Unit
- Injector Valve
- Lamella Clarifier Unit
- Lid Opening Device
- Rotor Filter
- Rupture disk
- Safety Valve
- Steam Trap
- Sterile Pressure Gauge
- Sterile Trap
- Thermometer
- Viewing Port

Pumps for Sterile Applications
- Domp® Double Diaphragm Pump
- Double Piston Pump
- Kobio-Pump
- Magnetic Circulation Pump
- Peristaltic Pump
- Piston Diaphragm Metering Pump

Components for Sterile Lines
- Diaphragm Valve
- Multiple-Diaphragm Valve
- Memtile: Stainless-Steel Valve Drive
- Pneumatic Valve Drive
- Pipe-Pt100
- Sterile Connection
- TRI-Clamp Connection
- Vacuum Valve

Fermenter Energies
- CIP-System: Mobil, Kitchen
- Clean Steam Generator
- Compressor
- Cooler
- Heating Circuit
- Steam Generator
- Thermostat

Powder Handling/Mixing
- Cup Hermann Powder Transfer System
- Inversina Tumbler Mixer, 2–500 Litres
- Manual mini-Inversina tumbler mixer

BioEngineering

Design and Manufacture of Plants for the Production of:
- Amino Acids
- Antibiotics
- Biomass: Probiotics, Starter Cultures
- Biopesticides
- Biopolymers and Lipids
- Enzymes
- Ethanol
- Flavors and Fragrances
- Fruit Juices
- Monoclonal Antibodies
- Organic Acids
- Peptides/Proteins: Blood Factors, Hormones, Growth Factors
- Sugar Derivates
- Vaccines
- Vitamins

BioControl

Measurement and control
- BioLogics
- Back up
- Data logging
- Data processing
- Process analysis
- Process management
- Process optimization
- Process supervision

The KLF small laboratory fermenter in brief

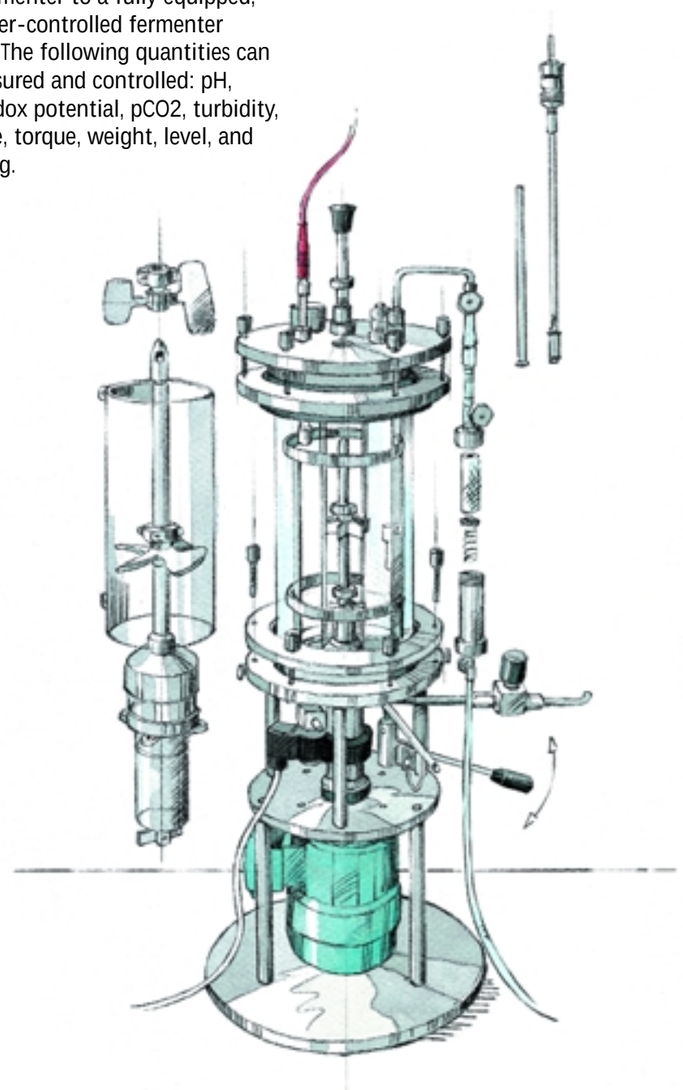
The KLF small laboratory fermenter is the smallest unit in our CSTR series of bioreactors. Its design permits straightforward interfacing with the Bioengineering modular instrumentation and control system, so that more instruments and controls can be added at any time (this is the first step in scaling up many processes). A benchtop apparatus, the KLF is the only small laboratory fermenter of its kind that can be sterilized in situ.

What benefits does the small fermenter offer?

Flexibility, sturdy construction and ease of operation make this small laboratory fermenter an attractive choice in research and educational settings, especially for scale-up and screening tasks. Its small volume helps hold down purchasing, overhead and direct operating costs. The user need not rely on free autoclave capacity, the fermenter does not have to be moved around, and stirring can be continued during sterilization (particularly important for sensitive media). What is more, the medium can be cooled down rapidly, and the special port system allows sterile connection of the fermenter to peripheral apparatus, even after sterilization.

Design and operation of the KLF small laboratory fermenter

Three interchangeable glass cylinders with volumes from 2.4 to 3.7 L are available as fermenter vessels. The stirrer can be driven from below or top through a mechanical seal or with a magnetic coupling. A variety of impellers can be attached to the shaft at any desired height, and changeovers for the most diverse mixing strategies can be handled with ease. The standard version features temperature control with an 800 W heating and cooling finger, stirrer speed control, and air metering with air intake and exhaust filters. The Bioengineering modular instrumentation and control system makes it possible to upgrade the small laboratory fermenter to a fully equipped, computer-controlled fermenter system. The following quantities can be measured and controlled: pH, pO2, redox potential, pCO2, turbidity, pressure, torque, weight, level, and metering.



What you can do with the KLF small laboratory fermenter

A range of options for culture media mixing and gas dispersion permit the use of the small laboratory fermenter for all kinds of aerobic and anaerobic cell cultures – bacteria, yeasts, fungi, algae, plant and animal cells in suspension – as well as microcarrier cultivations. The apparatus can be adapted to work with explosive substances and at pressures up to 6 bar. Some sample applications:

– Straightforward batch cultivation
– Continuous cultivation monitored by leveling tube or with weight, turbidity or level measurement
– Plant cell cultivation with illuminator jacket and special stirring systems
– Cultivation of animal cell cultures with special accessories including axial-flow and radial-flow stirrers and aeration systems (ring and sintered-metal spargers, bubble-free aerators)
– Unrestricted cultivation of pathogens and genetically manipulated organisms in compliance with all safety standards

Bioengineering KLF small laboratory fermenter at a glance

Utilities: Convenient, standardized electric, water and air hookups

Fermenter volume to fit your needs: interchangeable glass cylinders with volumes of 2.4, 3.1 and 3.7 L (steel cylinder with longitudinal viewing glass available as option)

Top or bottom drive: single or double mechanical seal (magnetic drive available as option)

Stirrer systems: airlift, radial-flow and other systems using draught tube, marine impeller, ring sparger. Various adjustable-height impellers available

Sterilization: in situ with electric heating (800 W heating finger) and safety jacket; septa for needle connection of peripherals

Speed and temperature control: standard features
Instrumentation and control system for pH, pO2, redox potential, pCO2, turbidity, pressure, weight, foaming, level, mass flow rate, mass spectroscopy, off-gas analysis, etc.

Connection of peripherals: septa for needle connections (acid, base, air inlet and exhaust, medium, etc.)

Pumps: peristaltic pumps for transfer of acid, base and media

Computer monitoring: BioLogics for Windows software created by Bioengineering

Accessories: aeration tubes, dip tubes, connecting needles, connectors, reflux coolers, etc.

Inlet air and exhaust: sterile filter in pressure housing, hose and needle connections, rotameter for measurement of inlet air flow rate

For further information on the KLF small laboratory fermenter from Bioengineering, please get in touch with us or request our complete product catalog. Many thanks for your interest!

Bacteria Fermenter

Plant Cell Fermenter

Mammalian Cell Fermenter