

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 Fermenter P
 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
 Intelligent Front Module IFM
 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
 Turbidity 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

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

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

Data logging
 Data processing
 Process analysis

Process management
 Process optimization
 Process supervision



Pilot Fermenter P
 Experience put into practice

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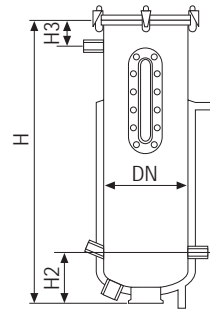
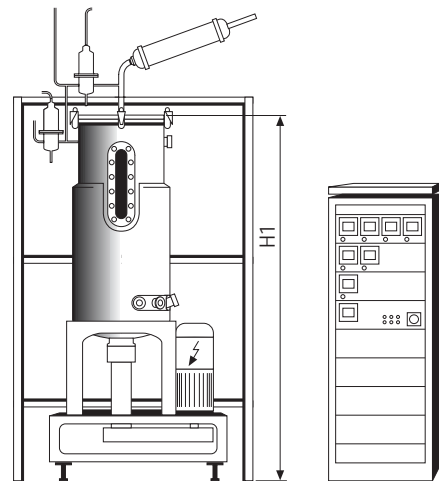
Bioengineering –
 Experience only
 specialists can have

Scale-up or production processes are the field of application for the Pilot Fermenter P with total volumes from 100 up to 1000 litres.

The straightforward concept in design and construction results in a user-friendly and sturdy high-tech plant. The central in- and outlets for steam, water, air, and waste water, minimize installation time and work.

The flexible installation of Bioengineering probes and accessories for media addition, aeration, sampling, harvest, perfusion, foam destruction, CIP, etc. is guaranteed with the standardized ports.

The modular design in combination with the variety of proven accessories enable the performance of biotechnological processes with enzymes, microorganisms, fungi, algae, plant or animal cells.



Product overview

		base						vessel
total volume	working vol.	DN	width x depth	H	H1	H2	H3	height x diameter
100 l	65 l	419	1000 x 1000	870	1600	200	125	2 : 1
150 l	100 l	419	1000 x 1000	1170	2000	200	140	3 : 1
200 l	130 l	500	1000 x 1100	1300	2210	200	140	3 : 1
300 l	200 l	500	1000 x 1100	1510	2240	250	140	3 : 1
450 l	300 l	600	1200 x 1200	1700	2450	245	140	3 : 1
750 l	500 l	700	1300 x 1300	2070	2800	350	140	3 : 1
1000 l	650 l	900	1500 x 1380	2180	2990	315	140	3 : 1

Technical data

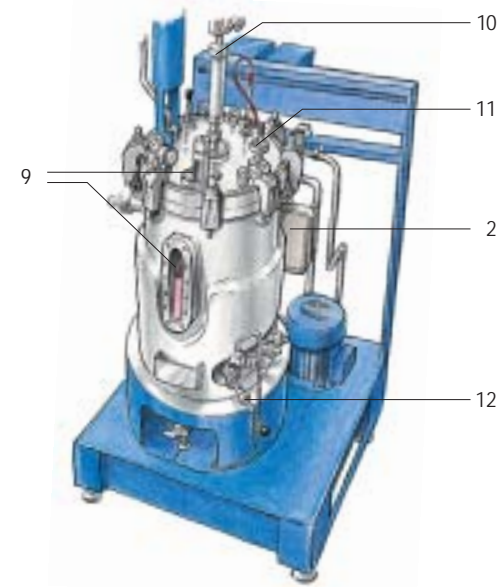
operating temperature	max. 150 °C	
operating pressure	6 barü/g	
operating pressure heating jacket	6 barü/g	
material of parts which are in contact with the product	316L	
motor power	100 l	3 kW
	150 l, 200 l, 300 l	7.5 kW
	450 l	10 kW
	750 l	11 kW
	1000 l	15 kW
speed (standard)	max. 750 min ⁻¹	

Our equipment fulfils the required national guidelines and cGMP/ FDA-regulations (including IQ and OQ documentation on request).

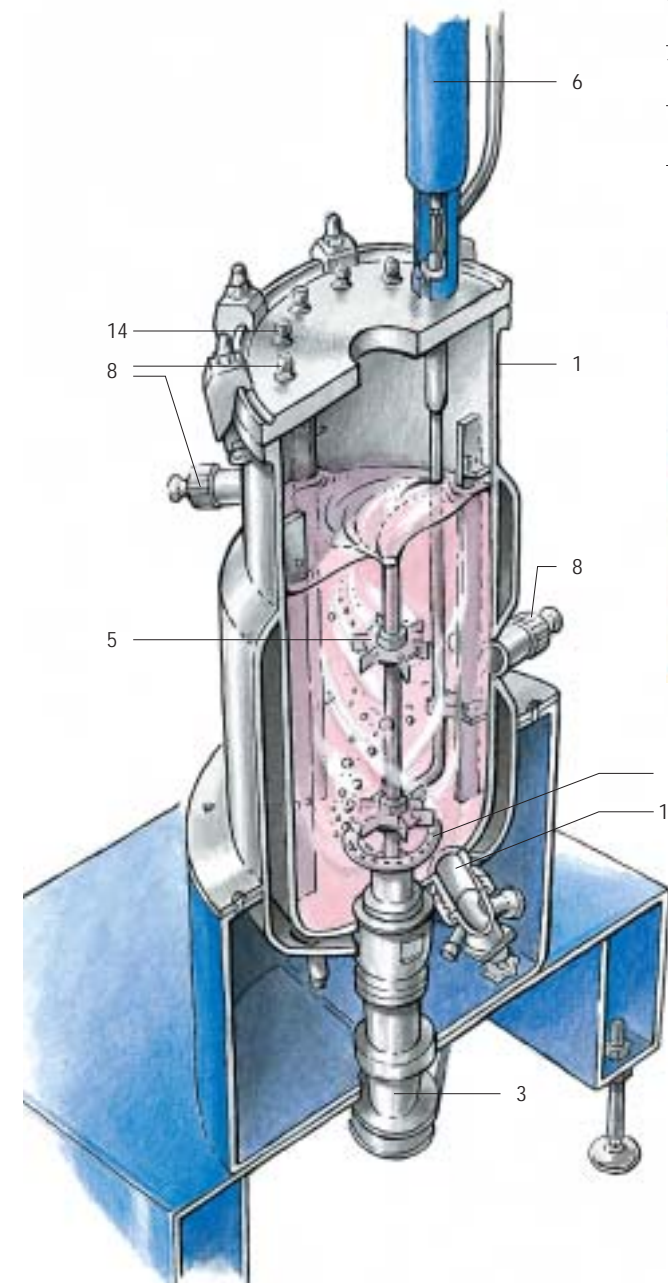
The stirrer units is driven by belt, thus reducing the fermenter height, separating the vessel from the motor, and optimizing the bearing of the free-swinging shaft. The shaft is removed from the top and the bearing with the seals is easily disassembled from the bottom.

The fermenter is aerated through the Bioengineering Autosterile filter. Without any complicated peripheral constructions, this filter is in situ sterilizable together with the fermenter.

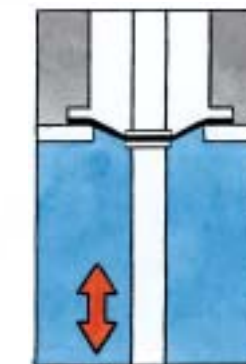
The power supply and the measurement and control units in the 19" measurement cabinet are separated from the fermenter. The Bioengineering IFM controllers combine state of the art digital technology with a modular set-up. Each measurement or control loop has its own separate module, thus enabling easy maintenance of single units or the adaption of the fermenter measurement and controls according to actual requirements. The BioLogics or BioVisual software covers all data logging and visualization requirements. On request other software systems are available.



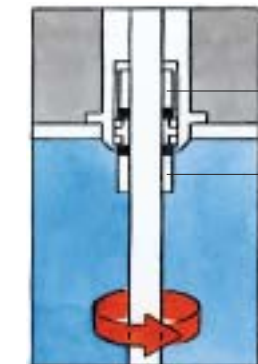
	Standard	Optional
1 Vessel	stainless steel 316L grain 240	special alloys mirrorpolished
2 Heating circuit	closed circuit, galvanized steel, heat exchanger for steam	stainless steel 316L, electrical heater, heat exchanger for cooling circuits
3 Agitation	bottom drive by belt, double mechanical seal	direct drive, magnetic coupling, top drive, Vibromixer
4 Mechanical seal	carbon silicium carbide, glycerine lubricated	steam condensate lubricated
5 Stirrer	blade stirrers, baffles	airlift, draught tube
6 Inlet air	Autosterile filter, ceramic filter	separate filter, double filters, absolute filter, gas mixing station
7 Aeration	submerge aeration	surface aeration, bubble-free aeration
8 Ports	standardized lid and side ports	flexible location and number special ports
9 Viewing glasses	longitudinal and lid viewing glass with illumination	flexible location and number
10 Exhaust air	ceramic filter	absolute filter, reflux cooler, foam destruction, incinerator
11 Inoculation	inoculation port	fixed piping, transfer concepts
12 Sampling	manual sampling valve	pneumatic valve, contained sampling valve, valve with steel bellow, cell-free sampling system
13 Harvest	manual harvest valve with steel bellows	pneumatic harvest valve, fixed piping, transfer concepts
14 Media addition	needle connection through lid	dosage valve, coupling, fixed piping, transfer concepts
Sterilization	manual sterilization of Autosterile filter and exhaust air valve	automatic sterilization of Autosterile filter and exhaust air valve



Vibromixer 3



Double mechanical seal



Magnetic stirrers 3

