

INNOVATIVE CULTIVATION SOLUTIONS

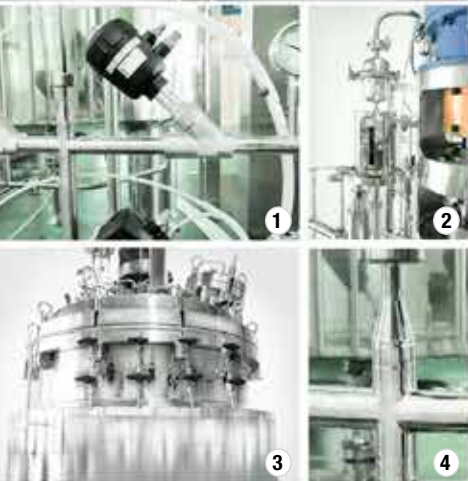


2015 Catalogue

**SIP Fermentation Systems
(Pilot & Production)**

Pilot Scale SIP Fermentation Systems

Pilot and Production Scale Fermentation System



The Winpact brand offers pilot and production scale bioreactor/fermentation systems for all of your large scale fermentation needs. Our standard SIP (sterilization-in-place) system provides top of the line quality and excellent compatibility to meet all the bioprocess engineering standards. All of our features are designed to provide a high level of productivity and automation while maintaining a low operational cost.

Our standard system ranges from 10L to 1000L working volume, which provides a simple yet flexible range of ordering options. Culturing cells and microbes could not be any easier with our full cascade function. In addition, we offer a wide variety of optional devices for all of your fermentation/ bio-reaction needs.

- 1 Pneumatic valve for accurate control
- 2 Motor lubricate and cooling device
- 3 Detachable aseptic feeding device
- 4 Orbital welding provides top quality



Monitor page for operation overview



Real-time controlling interface



Auto and manual operation



Adjustable pump setting and Cascade control

*For further and updated information, please visit www.majorsci.com

Pilot Scale SIP Fermentation System

10L / 30L System

Motor

Manual or automatic control of constant agitation speed

Peristaltic Pump

Uses four Watson Marlow built-in peristaltic pumps for all your feeding needs

Control Station

Large screen and graphical user interface

Stainless Steel Vessel

Special designed heating jacket provides better heating efficiency



FS-30L



FS-10L

*All images are reference only, actual products might differ from the pictures above. Major Science reserves the right for product revision at any time.



Immediate visualization on operation overview



Easy and intuitive operation for manual and sequence control



Online system calibration with system feedback



System Expansion with varies optional devices

Production Scale SIP Fermentation System

1000L System



100L System



500L System

Features

Flexibility

- 100L up to 1000L- Capsule Type Vessel
- Modular options to fulfill various needs for different applications
- Optional CIP- ready connection ports

Versatility

- Color touch screen control with simple, easy to use interface
- Fully automated process with remote monitoring
- 15-steps automatic program setting
- Special coiled jacket design for temperature uniformity and stability

Sterility

- Electropolished tubing and valves, BPE standard
- Orbital welding to ensure minimal residue buildup
- Double-layered mechanical seal with lubricating water as an indication for breakage

Durability and Safety

- SUS316L stainless steel with manual mechanical control
- Outer vessel wall provides thermal insulation and protection
- Exhaust pressure relief valve

Security

- Password protection
- Multiple users with customized access levels
- Multiple built-in safety devices



- A** Peristaltic Pump
Built-in three rotors Easy-Load pumps for all your feeding needs
- B** Platform
(Optional device) For easy access for viewing your experiment, available upon request
- C** Piping System
SUS-316L EP internal polished tubing for parts direct contact with medium
- D** Stainless Steel Vessel
Hive jacket design provides better heating efficiency.
- E** Control Station
Large screen and graphical user interface
- F** Motor
Manual or automatic control of constant agitation speed
- G** Head Plate Ports Arrangement
Safety devices and extra ports for flexibility.
- H** Harvest Valve
Single block valve construction provides superior aseptic harvesting.
- I** Dust-free control cabinet

Pilot and Production Scale Fermentation System

INNOVATIVE CULTIVATION SOLUTIONS



Fully automatic sterilization process



Real-time data trend recording



On line system calibration



Raw data for service and maintenance

*Please visit our website www.majorsci.com for more product selection and detail information.

*Technical specification subject to change without notice.

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SIP Fermentation Systems (Pilot & Production)

Specification

*For system over 1000L please contact the authorized dealer for more details.

Capacity	10L	30L	100L	300L	500L	1000L
Total volume	15L	42L	120L	360L	650L	1350L
Working volume	10L	30L	100L	300L	500L	1000L
Vessel and jacket maximum working pressure	3 barg (43.5 psig) / 4 barg (58 psig)		3 barg (43.5 psig) / 3 barg (43.5 psig)			
Type	Double layered fully enclosed capsule-type tank, with an outer temperature protective layer					
Material	Direct contact to medium - SUS316L; all others - SUS304					
Surface finish	Interior polish ≤ 25 Ra/in (0.6 μ m) Mechanical polishing; Electropolish optional Exterior polish ≤ 32 Ra/in (0.8 μ m) Mechanical polishing; Electropolish optional					
Ports	Ports designed according to user requirements					
Piping and valve materials	<p>Parts that come in direct contact with the product/medium uses SUS-316L EP (≤ 25 Ra/in) internal polished tubing (BPE standard) :</p> <p>A.) Internal EP polished diaphragm type pneumatic valve and manual valve (BPE standard) B.) Tubing all welded with Orbital Welding C.) Vessel bottom drain uses a diaphragm valve, to minimize dead volume D.) Piping designed for ease of transfer to scale up (can be used as a seed fermentation system) or downstream process</p> <p>Parts that do not directly contact product/medium</p> <p>A.) Constructed with SUS304 stainless steel</p>					
Controller	10.4" color industrial touch screen	12" color industrial touch screen				
Setting	<ul style="list-style-type: none"> * User-friendly, graphical control interface * Includes secure user accounts, with different levels of access * Use stainless-steel controller cabinet (100L and above only) * Modularized and standardized design (Module Skid): ergonomically designed according to height, ease of vessel clean up, and ease of extraction in relation to vessel bottom valve * Includes maintenance page with system diagnostics * All programmed setting values are automatically stored into the built-in memory; the settings will not be lost in case of a power outage/interruption. When power is restored, the interrupted process will automatically resumed 					
DO	<ul style="list-style-type: none"> * Automated sterilization process * Automated fermentation program * Valve control 					
pH	<ul style="list-style-type: none"> * Control Range: 0-100%, adjustable * Software electrode calibration, with automatic temperature compensation function * Includes one (1) set of side-inserted stainless steel autoclavable DO electrode * DO stat features with intelligent feeding 					
Pump	<ul style="list-style-type: none"> * PID control with adjustable deadband * Control range 2.00 to 12.00 pH, ± 0.01 * Calibration function with automatic temperature compensation function * Includes one (1) set of side-inserted, autoclavable pH probe with stainless steel housing * pH Stat features with intelligent feeding 					
Temperature	<ul style="list-style-type: none"> * Built-in peristaltic pumps * Each feeding pump can run an adjustable 15 steps program * Each pump can be adjusted for speed, forward and backward direction, and manual or automatic mode * Each of the four peristaltic pumps can be designated for different functions: acid pump, base pump, antifoam pump, or substrate feeding pump * Optional fifth and six peristaltic pump is also available 					
Temperature	<ul style="list-style-type: none"> * Vessel temperature is measured with a side-inserted PT-100 temperature probe and maintained using PID control. * Control range: 0-125°C, ± 0.1°C. Operational range up to 85°C 					

*Technical specifications subject to change without notice.



Agitation	<ul style="list-style-type: none"> * Manual or automatic control of agitation speed * 15 steps program to change speed, or use DO cascade control
Air supply and exhaust	<p>Gas supply and dehumidifier: uses in-house air compressor or air dehumidifier</p> <ul style="list-style-type: none"> * Includes re-useable, autoclavable 0.2µm air filter for gas inlet * Gas Inlet (air) <ul style="list-style-type: none"> Includes mass flow controller: 2 vvm maximum according to the vessel capacity * Gas Inlet (oxygen) <ul style="list-style-type: none"> Includes pure oxygen rotameter (manual flow control): 1 vvm maximum according to the vessel capacity * Includes oxygen gas solenoid valve, with automatic pulsed time control <p>Air outlet / Exhaust</p> <ul style="list-style-type: none"> * Exhaust port with stainless steel condenser * Includes re-useable, autoclavable 0.2µm air filter * Includes automated adjustable gas outlet valve to adjust vessel back pressure * Can control manually or automatically via software

Utility Requirement

Capacity	10L	30L	100L	300L	500L	1000L
Power	Three phase 220V (note: can be customized to local standard)					
Air	At least 6 barg		At least 7 barg			
	30 L/min flow rate	90 L/min flow rate	300 L/min flow rate	900 L/min flow rate	1500 L/min flow rate	3000 L/min flow rate
	Dehumidified					
	Oil-free					
Peripheral factory water supply	Cooling water (tap water, at least 15°C below working temperature, must be soft water) ; Pressure at least 2 barg					
Process water	RO Water					
Plant steam	≥ 2 barg					
Process steam	≥ 2 barg					
Drain	In situ drain; ≥ 1"	In situ drain; ≥ 1"	In situ drain; ≥ 2"	In situ drain; ≥ 2"	In situ drain; ≥ 4"	In situ drain; ≥ 4"

*Customization on the SIP Fermentation system available upon request. Please contact your regional manager for evaluation request.

Optional Accessory Items

■ Electropolish (EP) of Vessel Tank

Electropolish of the vessel tank is offered as a higher sanitary grade surface finish. EP surface finish is an addition to the standard mechanical polish (MP) which provides a smoother surface area to minimize residual residue.

*Note that this option MUST be requested at your initial inquiry, later-on additions after the completion of construction is not possible

■ Transfer Piping

Transfer piping of your resulting product/medium between vessels is offered for convenience of operation.

Automated transfer using pressure in addition to directional control with valve regulations offers fast and easy operation.

■ Operation Platform

An operation platform is offered to provide optimal operation convenience. Stainless steel constructed platform offers elevated height for a full observation of the headplate when standing on the platform, the chest-leveled positioning of the vessel headplate prevents falling into the vessel.

*This option is only available with system 200L and above

■ CIP Connection Module

For automated cleaning procedures, a CIP system may be used with Major Science SIP fermentation system.

Additional valves, connections, and spray-balls will be installed to allow connection of your own CIP system.

*Note that this option MUST be requested at your initial inquiry, later-on additions after the completion of construction is not possible

*This option is only available with system 100L vessel and above.

■ Mobile SMS Module

Use a GSM network to communicate with control unit using SMS text messages (standard fees and charges will apply)

A.) Remotely monitor and control agitation, temperature, DO, and pH *exclusive in Major Science

B.) Receive regular updates on fermentation conditions

C.) Receive alarm notifications in fermentation conditions move outside of set range

■ Load Cell

The load cell provides weighing capability to your fermentation process. Weighing the substrate feeding can indicate how much substrate was added during the fermentation process, which allows the user to provide more accurate control accordingly to what the process needs.

■ Cell Density Monitor

Our special implemented online cell density device allows you to obtain direct information about your cell growth rate and cell density; as these values are critical to many bacterial, yeast and animal cell cultures, combining the monitoring and probing system into one, with high accuracy and easy access, monitoring cell growth is as easy as 1-2-3. Having trouble determine the cell growth rate? Our online cell density is the key to your solution.

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■ Oxygen Mass Flow Controller

Maintain optimal control over culture DO level by installing this optional mass flow controller. The mass flow controller can accurately adjust the flow rate of incoming oxygen and is resistant to fluctuations in gas pressure, ensuring precise control and repeatability of experimental conditions

- A.) Cascade control scheme
- B.) Integrated into controller for simple and automated operation

■ CO₂ / O₂ Off-Gas Analyzer

The CO₂ / O₂ Off-Gas Analyzer provides real-time measurements of carbon dioxide and oxygen concentration of the bioreactor exhaust gas. The CO₂ concentration is determined using a self-calibrating non-dispersion infrared sensor, while an electrochemical sensor monitors the oxygen concentration. Using this information, the user can continuously monitor metabolism and analyze cell growth parameters.

■ ORP Probe

The ORP probe measures the oxidation-reduction potential of the fermentation media, which is a crucial indicator of anaerobic conditions/reactions. This low/maintenance and sterilizable probe is designed to withstand repeated experiment.

■ Turbidity Probe

The turbidity probe measures the turbidity level of the fermentation media, which provides you an indication for the metabolic reaction and in terms allows you to maintaining a steady cell level.

■ Gas Mixing Station

The Gas Mixing Station allows the user to optimize cell growth conditions by independently supplying up to four gasses to the fermentation process. Parameters such as dissolved oxygen and pH can be controlled by adjusting the gas composition supplied to the system. Four manually adjusted flow meters control the flow rate of each gas, while the 4 solenoid valves automatically open or close in response to the culture conditions. The Gas Mixing Station can be operated in either manual or automatic modes.

■ Headplate Lift

For SIP vessel size, an optional lift can be provided to assist with headplate removal and manipulation. The headplate lift can use either a hydraulic or chain-hoist system.

**This option is only available with system 100L and above.*

Complete Winpact Evo System (FS-07 Series) + Mettler Toledo Probe

Cat No.	Product Description
FS-07-AS5P-110	Complete Winpact Evo Fermentation System for 500mL Double Jacketed Vessel, 110V
FS-07-AS5P-220	Complete Winpact Evo Fermentation System for 500mL Double Jacketed Vessel, 220V
FS-07-A01P-110	Complete Winpact Evo Fermentation System for 1L Double Jacketed Vessel, 110V
FS-07-A01P-220	Complete Winpact Evo Fermentation System for 1L Double Jacketed Vessel, 220V
FS-07-A03P-110	Complete Winpact Evo Fermentation System for 3L Double Jacketed Vessel, 110V
FS-07-A03P-220	Complete Winpact Evo Fermentation System for 3L Double Jacketed Vessel, 220V
FS-07-A05P-110	Complete Winpact Evo Fermentation System for 5L Double Jacketed Vessel, 110V
FS-07-A05P-220	Complete Winpact Evo Fermentation System for 5L Double Jacketed Vessel, 220V
FS-07-A10P-110	Complete Winpact Evo Fermentation System for 10L Double Jacketed Vessel, 110V
FS-07-A10P-220	Complete Winpact Evo Fermentation System for 10L Double Jacketed Vessel, 220V

FS-07-B01P-110	Complete Winpact Evo Fermentation System for 1L Single Wall Dish Bottom Vessel, 110V
FS-07-B01P-220	Complete Winpact Evo Fermentation System for 1L Single Wall Dish Bottom Vessel 220V
FS-07-B03P-110	Complete Winpact Evo Fermentation System for 3L Single Wall Dish Bottom Vessel, 110V
FS-07-B03P-220	Complete Winpact Evo Fermentation System for 3L Single Wall Dish Bottom Vessel 220V
FS-07-B05P-110	Complete Winpact Evo Fermentation System for 5L Single Wall Dish Bottom Vessel, 110V
FS-07-B05P-220	Complete Winpact Evo Fermentation System for 5L Single Wall Dish Bottom Vessel, 220V
FS-07-B10P-110	Complete Winpact Evo Fermentation System for 10L Single Wall Dish Bottom Vessel, 110V
FS-07-B10P-220	Complete Winpact Evo Fermentation System for 10L Single Wall Dish Bottom Vessel, 220V
FS-07-B15P-110	Complete Winpact Evo Fermentation System for 15L Single Wall Dish Bottom Vessel, 110V
FS-07-B15P-220	Complete Winpact Evo Fermentation System for 15L Single Wall Dish Bottom Vessel, 220V
FS-07-B20P-110	Complete Winpact Evo Fermentation System for 20L Single Wall Dish Bottom Vessel, 110V
FS-07-B20P-220	Complete Winpact Evo Fermentation System for 20L Single Wall Dish Bottom Vessel, 220V

FS-07-C053P-110	Complete Winpact Evo Fermentation System for 5L Single Wall Air Lifter Vessel, 110V
FS-07-C053P-220	Complete Winpact Evo Fermentation System for 5L Single Wall Air Lifter Vessel, 220V
FS-07-C054P-110	Complete Winpact Evo Fermentation System for 5L Double Jacketed Air Lifter Vessel, 110V
FS-07-C054P-220	Complete Winpact Evo Fermentation System for 5L Double Jacketed Air Lifter Vessel, 220V

FS-07-D03P-110	Complete Winpact Evo Fermentation System for 3L Single Wall Plain Bottom Vessel, 110V
FS-07-D03P-220	Complete Winpact Evo Fermentation System for 3L Single Wall Plain Bottom Vessel, 220V
FS-07-D05P-110	Complete Winpact Evo Fermentation System for 5L Single Wall Plain Bottom Vessel, 110V
FS-07-D05P-220	Complete Winpact Evo Fermentation System for 5L Single Wall Plain Bottom Vessel, 220V
FS-07-D10P-110	Complete Winpact Evo Fermentation System for 10L Single Wall Plain Bottom Vessel, 110V
FS-07-D10P-220	Complete Winpact Evo Fermentation System for 10L Single Wall Plain Bottom Vessel, 220V

Complete Winpact Solid State Fermentation System

Cat No.	Product Description
FS-10-A05P-110	Complete Winpact Solid State Fermentation System for 5L Double Jacketed Vessel, 110V
FS-10-A05P-220	Complete Winpact Solid State Fermentation System for 5L Double Jacketed Vessel, 220V

US Office

19959 Sea Gull Way, Saratoga, CA 95070 U.S.A.

T/ +1-408-366-9866 F/ +1-408-446-1107

Taiwan Office

No. 37, Wuquan 5th Road, Wugu Dist., New Taipei City 24888, Taiwan

T/ +886-2-2298-1055 F/ +886-2-2299-7871

India Office

No.12-13-104, St.No.3, Lane No.1, Tarnaka, Secunderabad - 500 017

Telangana, India

T/ +91-40-27001515 F/ +91-40-27001515