Farayand Pardis Sina a knowledge-based and leading Iranian company was founded in 2007 and with the participation of industrial researchers began its work in the field of biotechnology.
The company has always placed its priority on three general principles:

*Complete scientific and technical knowledge on all production procedures.
*Creating confidence by providing the best after-sale services.
*Respect the requirement of customers.

Today, this company possesses technical knowledge of producing different kinds of biological equipment, with the trademark of "Sina", it has attracted the attention of researchers and other producers.

ISO 9001:2008 ISO 13485:2003 ISO 10002:2004

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Disposable Bioreactor

SINA

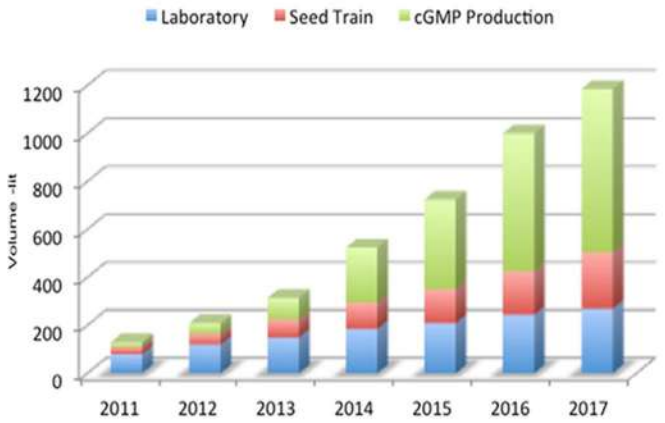
Disposable Sina Bioreactor

Disposable bioreactors are widely accepted as a tool for cell cultivation. Several technologies exist in the market, including stirred single use bioreactors, airlift bioreactors, paddle mixed bioreactors and others.

The rocking motion or wave-induced motion systems are amongst the most frequently used systems and are available for more than 10 years. The system consists of a rocker platform with bag holder, a full digital controller and a disposable bag. Culture medium and cells contact only a pre-sterile disposable bag that is placed on a special rocking platform.

The rocking motion of this platform induces waves in the culture fluid. These waves provide mixing and bubble free aeration with low shear stress, resulting in a perfect environment for cell growth.

Single use bag technology improves validation costs, removes the need for cleaning, sterilizing, reduces shear stress to cells and provides easy operation and protection against cross contamination. It is easy to use and applicable to all cell types, including mammalian cells (such as suspension or adherent cells), stem cells (shear sensitive), plant cells, insect cells and some microbial cells (low to medium density microbial cultures) for batch or fed-batch and perfusion culture.



Since 1999, using disposable bioreactors has attracted the attention of most international industrial manufacturers.

Today, because of the special advantages of this type of bioreactors, this new advanced technology is exerted by almost all artisans in pharmaceutical and biotechnology sectors.

The most important advantages of disposable bioreactors

* Application of disposable technologies eliminates the need of cleaning and sterilization.
* Reduction of the risk of cross contamination and enhancement of safety in biological and process.
* Reduction of lag-time between two batches of production.
* Saving cost more than 50% compared to fixed bioreactors.
* Ease of complex qualification and validation procedures in pharmaceutical production leading to significant cost reduction.
* Preferred system for animal cells, insect cells and virus culture.

+ Advantages by our system

* No complex controls to operate.
* Wi-Fi enabled for PC tracking or recording as well as synchronized action control.
* Data logging and level pre-set by smart software.
* Auto select of inlet gases between main and slave tanks.
* Disposable cell culture systems from 0.5 to 100 liter.

Disposable Bioreactor

VS.

Conventional Bioreactor

Benefits

- Reduction of maintenance and overhead expenses
- Reduction of use of WFI
- Reduction of operator's time and effort
- Reduction of validation requirements
- Elimination of Sterilization in Place (SIP) and Cleaning in Place (CIP)
- Quick set-up steps
- Flexibility and quickness in upstream and downstream processes

Features

- Rocking Motion, ideal for cell cultivation with low shear stress
- Suitable for micro-carriers
- Completely closed system
- Disposable Pre-sterilized SinaBag
- Easy bag installation
- Pressure safety control to avoid over pressure in bag
- Reliable single-use sensors for measurement of pH and DO (Optical models)
- Touch screen interface for easy operation
- Advanced alarming and safety features for safe operatition
- Instant monitoring of gas filter, rocker motion and main parameters status
- Wire-less connection to third party software and remote control
- RFID card reader technology to identify permitted users or bags
- Different user accessibility levels (Administrator, user, locked, etc.)
- Optional perfusion filters, load cell and controller

Equipment

* Measurement & control hardware, pumps and gassing system
* PID controller for automatic temperature, O2, CO2, and pH adjustment
* Separated or Integrated Heater in the rocker unit
* User friendly control panel with touch screen display
* Separate gas inputs for N2, O2 and CO2
* Filter cooling module before exhaust filter to prevent formation of condensation to avoid filter blockage
* Temperature range: 5°C above room temperature to 40°C
* Integrated fixed speed peristaltic pumps
* Load cell for real-time weighing and perfusion control. (optional)
* Quick-release bag holders for various SinaBags
* Disposable optical chemical sensors are installed in all optical and perfusion SinaBag
* Sensors are pre-calibrated and supplied with calibration certificates
* Control Range: pH: 5 – 8.5, DO: 0 – 50%

Portable

Benchtop

For all your single-use applications

- GMP production of recombinant proteins, mAbs and vaccines
- Scale-up R&D
- Seed cultivation for large scale bioreactors
- Seed transfer from shake or T-flask
- Continuous cultures with high cell densities
- Production scale up to 100 L
- Virus production, growth of animal, insect and plant cells
- Expansion or differentiation of Stem cells
- Micro-organisms for low to medium density cultivation

Applications

- Monoclonal antibodies

Sina bioreactor can be used for cost efficient monoclonal antibody production. Culture can be started at low volume and then fresh media to be added whenever the cell count is sufficiently high. This enables inoculum scale up without transfers. Batches ranging from 500ml to 100L will be run with cell densities over $1x10^7$cells/ml and the productivity and product quality are comparable to stirred tank bioreactors. Dissolved oxygen concentrations can be kept fixed up to 50%.

- Adherent cells

Agitation in this system is powerful enough to mix and aerate the culture. However, it is gentle enough to cultivate adherent cells on various micro-carriers. The wave motion prevents settling and provides oxygenation without bubbles.

- Virus production

Sina bioreactors provides a closed system that is ideal for virus production. In gene therapy applications, viruses can be produce under complete containment without the need for biosafety cabinet.

- Insect cell / Baculovirus

High oxygen supply capability of the Sina bioreactor system makes it ideal for insect cell culture. Cell densities over $9x10^6$ are easily achieved. Baculovirus yields are higher compared with conventional bioreactors.
This system is extremely easy to operate and inoculum scale-up and infection can be done inside the bioreactor, reducing the need for transfers.

Economy Systems

Economy systems are designed for stand alone use and allow controlling rocking rate, temperature, CO2 and O2 concentrations. The internal gassing module is used for aeration with Oxygen and CO2 to work with a fixed CO2 concentration of 0–20% and oxygen concentrations up to 50% saturation in the process gas.

The digital controller is directly integrated into the main unit and operated with an easy to use colour touch screen.

Optical Systems

Sina optical bioreactors provides full process automation with sophisticated feed back control. The rocker unit is included with an integrated SinaDCU (digital control unit). This control unit is for monitoring and controlling the culture, including DO, pH, agitation, and temperature in batch and fed batch modes of operation.

Pre-calibrated, single-use optical sensors are included in the bag for measurement of DO and pH.

Perfusion Systems

Sina perfusion systems allow fully automated, continuous processes.

The single-use bag is equipped with optical pH and DO sensors. It contains an internal perfusion membrane for efficient cell retention. The feed and harvest pumps are controlled by gravimetric flow controllers, which monitor the weight of the feed and harvest containers to ensure precise flow rates.

Technical Specifications

Models / Specifications	Sina Eco-5	Sina Eco-20	Sina Opt-20	Sina Opt-100
Total Volume	10 L	40 L	40 L	200 L
Minimum working volume (bags with sensors may require higher minimum volumes)	500 ml	2 L	2 L	10 L
Maximum working volume	6 L	24 L	24 L	120 L
Bag Holder	Stainless steel			
Color touch screen	Yes			
Different user level log in	Optional		Yes	
Temperature modes	Heating			Heating/Cooling
Heating power	250 W	500 W	500 W	1400 W
Over temperature protection	Yes			
Gassing module				
O_2 Inlet	Single Port		Dual Port	
CO_2 Inlet	Single Port		Single Port	Dual Port
N_2 Inlet	-	-	Single Port	Dual Port
Fixed O2 gassing (%)	0-50		-	
Fixed CO2 gassing (%)	0-20		-	
Internal air pump	Yes			
Rocker speed (rocks/min)	5-40	5-30	5-30	5-20
pH range	-		5-8.5	
DO range	-		0-50	
Optical single-use DO sensor	-		Yes	
Optical single-usepH sensor	-		Yes	
Software	Yes			
Rocking Angle	5-30			5-20
Temperature range / °C	5°C above room temperature - 40			25-40
Temperature Accuracy	± 0.1°C			± 0.2°C
Peristaltic pump	1 Fixed Speed	1 Fixed Speed	3 Fixed Speed	3 Vary Speed
PID controller for	Temperature, O2, CO2		Temperature, DO, pH	
Bag Pressure sensor	Yes			
Internal Pressure Regulator	2		3	
Type	Bench top	Portable		
Wi-Fi module	Yes			
RFID card reader	Optional		Yes	
Power supply	100 V–230 VAC 1-phase | 3 A	100 V–230 VAC 1-phase | 5 A		100 V–230 VAC 1-phase |12 A
Dimensions (H x W x D)-mm	540x 630 x 540	114 0x 1110 x 500		1140 x 1600x 900

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CO2

Incubators

+ Shaker

SINA

Sina CO2 incubator

For cell cultivation, the precision and reliability of CO2 incubators are of crucial importance. During cultivation, the slightest deviation in the CO2 atmosphere, temperature or humidity can influence cell development.

Furthermore, your cultures are valuable and often irreplaceable, so you can trust Sina smart CO2 incubator for reliable and stable growth conditions. Sina air jacket CO2 Incubator offers a dependable Infra-red (IR) CO2 Sensor and is ideal for sensitive tissues and cell culture applications. Sina CO2 incubator is easy to operate and maintenance free allowing you to spend less time managing your incubator.

Benefits

*** Growing Cell Suspension**

Sina CO2 shaker incubator is designed to culture eukaryotic cells such as CHO, HEK, Hela etc. in suspension but can also be used as a static incubator if required.

*** Removable Shelves**

Removable shelves let you simultaneously shake suspension cells or incubate adherent cells under the same conditions.

*** Various Holders**

The orbital shaker can be used with sticky mats or dedicated flask holder trays or universal flask/tube holder plate.

*** Shaker Control**

The orbital shaker is controlled individually for setting time and speed.

*** Safe and Reliable**

Low voltage DC power for maximum safety while providing powerful, stable, uniform and vibration-free motion.

*** Stain Resistant**

The orbital shaker's body and internal parts are specially selected to resist stain.

Applications

Sina Shaker Incubators is ideal for use in Biosimilar and therapeutic protein production, proteomics, crystallography, genomics, cell biology and new drug development.
The shaking CO2 incubator with separable long life shaker provides the optimum solution for cell culture in suspension.

Advantages

* High temperature and CO2 uniformity
* Advanced PID control to maintain temperature accuracy
* Stable pH values and fast CO2 recovery thanks to drift-free CO2 IR sensor technology
* Fanless design eliminates a common source of repeated contamination and expensive HEPA filters
* Easy-to-clean interior
* Easy-to-manage incubator space with innovative interior design
* Sealed inner/outer doors
* Low gas consumption

Features

- CO2 Sensor
Standard NDIR sensor is used to speed up CO2 recovery and most stable performance.

- Accurate Temperature Control
All 6 sides are directly heated and combined with PID control to ensure that temperatures are reached quickly and uniformity is maintained.

- Humidity Display
LED display of actual humidity in the chambers informs the user about the right time of supplying water in the humidity tray.

- Stain Resistant Interior
The inner chamber and shelves are made of stainless steel ASTM 304 which is approved for use in GMP facility and is resistant to rust formation in high humidity conditions.

- Removable Shelves
The shelves and shelf supports are removable to clean and partition the inner chamber easily.

- Glass Inner Door
A glass inner door provides a good and safe view of the cultures.

Sina CO2 shaking incubator

Combining our smart CO2 incubator and shaker technologies, creats a highly stable environment for reliable cell growth.
Dual beam Infra-red sensor provides precise CO2 control while the six side heating system ensures excellent temperature control and recovery.
Sina orbital shaker is designed for highly humid environments and operates vibration-free without generating any particles. This unique patented orbital shaker is removable and could work for long time with DC power supplied by the CO2 incubator.

Shaker Technical Specifications

Power: Dual 24V 4 A / 9V 1A
Motor type: DC Stepper Motor
Shaking mode: Orbital
Shaking diameter: 21 mm
Shaking speed: 10-150 rpm
Soft start: yes
Soft stop: yes
Noise: <25 db
Max load: 6 Kg
Timer: 0-999 min (0 means continuous mode)
Auto restart at latest Run or Stop status

Applications

- Cell and Tissue Culture
- Immunology
- Genetic Engineering
- Protein Synthesis
- Virology
- Neurology
- Pharmacology
- In vitro Fertilization
- Human Vaccines
- Veterinary Vaccines
- Carcinogenicity Testing
- Monoclonal Antibodies

Equipment

- Microprocessor with LED display for temperature and CO2 concentration
- Over temperature and CO2 alarm
- Adjustable limit value for temperature and CO2
- Humidity display
- Automatic diagnostic system with alarm for sensor error
- Drift-free infra-red CO2 measurement system
- Internal gas pressure regulator
- Deep-drawn inner chamber is made of stainless steel
- Tightly-fitted inner glass door
- Perforated stainless steel shelves
- Removable shelves and shelf supports
- Fully insulated outer door with internal heater
- Door opening alarm

Experience stability and reliability with Sina CO2 incubators

Technical Specifications

Model sizes/Specifications	Sina60	Sina108	Sina144
Exterior dimensions			
Width (mm)	550	620	620
Height (including feet) (mm)	680	850	850
Depth (incl. door handle, connections) (mm)	550	580	690
Interior dimensions			
Width (mm)	416	490	490
Height (mm)	416	593	593
Depth (mm)	360	390	510
Interior Usable volume (L)	60	108	144
Shelves			
Construction	Stainless steel, perforated	Stainless steel, perforated	Stainless steel, perforated
Number standard/maximum	2 / 3	3 / 5	3 / 6
Load per shelf (kg)	5	5	5
Max. loading of chamber (kg)	10	15	15
Temperature			
Sensor Accuracy	± 0.1 °C		
Range °C	Ambient +8 up to 50		
Control setability	0.1		
Uniformity	± 0.3 °C	± 0.4 °C	± 0.6 °C
Recovery time after door was opened for 30 sec at 37 °C (Min.)	<5	<7	<9
CO2			
CO2 range (Vol.-% CO2)	0-20		
CO2 Sensor Type	Dual NDIR		
Control setability	0.1		
Recovery time after door was opened for 30 sec [1] at 5 vol. % (Min.)	<5	<6	<8
CO2 inlet pressure	5-10 psi		
Humidity			
RH range	>85% at 37° C		
Further data			
Power	110/230V,50/60Hz 2 Amp	110/230V,50/60Hz 2.7 Amp	110/230V,50/60Hz 4 Amp
Weight	40 Kg	51	59

[1] The recovery times of the gas concentrations inside the chamber following door opening refer to a connection pressure of 10 psi. Decreasing supply pressure leads to longer recovery times.

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Peristaltic Pumps

SINA

Sina Peristaltic Pumps

The peristaltic pump is a type of positive displacement pump used for pumping a variety of fluids. The fluid is contained within a flexible tube fitted inside a circular pump casing (though linear peristaltic pumps have been made).
Pump action is created by compressing the tube between rotating rollers and a track. Between each roller pass, the tube recovers to create a vacuum and draws in fluid. Complete tube closure provides the pump with its action, preventing back-flow and eliminating the need for check-valves when the pump is not running. Peristaltic pumps are very helpful when dispensing culture media, buffers or other solutions. As nothing but the tube touches the fluid, the risk of contamination in the pump is eliminated.

These pumps have no valves, seals or glands and have a number of advantages over other pump types such as superior flow rate stability and metering accuracy, extensive chemical compatibility and inherently hygienic.

The Sina peristaltic pumps are perfect in the laboratory and manufacturing plant.

Applications

* **Research & Development**
* **Industrial**
* **Food & Beverage**
* **Biopharmaceutical**

DG8
0.1 - 100 ml/min
8 Channel

VP200
0.5 - 1500 ml/min
1 - 2 Channel

SP15
0.1 - 100 ml/min
1 Channel

VP600
100- 10000 ml/min
1 - 2 Channel

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Water Chiller

SINA

Technical specification

* Efficiency : up to 65%
* Pump pressure: 3 bar
* Pump flow: 1 Lit/min
* Water capacity: 3 Lit
* Temp min: 2 °C
* Noise: less than 39 db
* Digital panel
* Water volume indicator
* Thermostatic temp control
* Portable
* Overall dimensions (w.d.h): 51.36.57 cm
* Weight: 25 Kg
* Power consumption : 450W - 220v Ac

Compressor: 1/4Hp up to 1Hp (optional)

Applications

* Rotary evaporators
* Electrophoresis tank cooling
* Cold plates for vaccines dispencing
* Bioreactors condensation
* Gel documentation heat dumping
* Multi purpose cooling system

SINA

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Sina – FPSL 120 HS

Smart

Laminar

Farayand Pardis Sina company, manufacturer of microbiology hoods under SINA brand name, being focused on meeting consumers requirements, has designed and manufactured its first smart and unique laminars.

At the moment Farayand Pardis Sina, enjoing an electronic and programming team, superior microbiology and biotechnology advisors, R&D laboratory and Q.C. unit, is capable of manufacturing single and double sided laminars with exclusive micro-control system and fascinating features.

Sina class II laminar - a cabinet with a front aperture through which the operator can carry out manipulations inside the cabinet. It provides both worker and product protection.

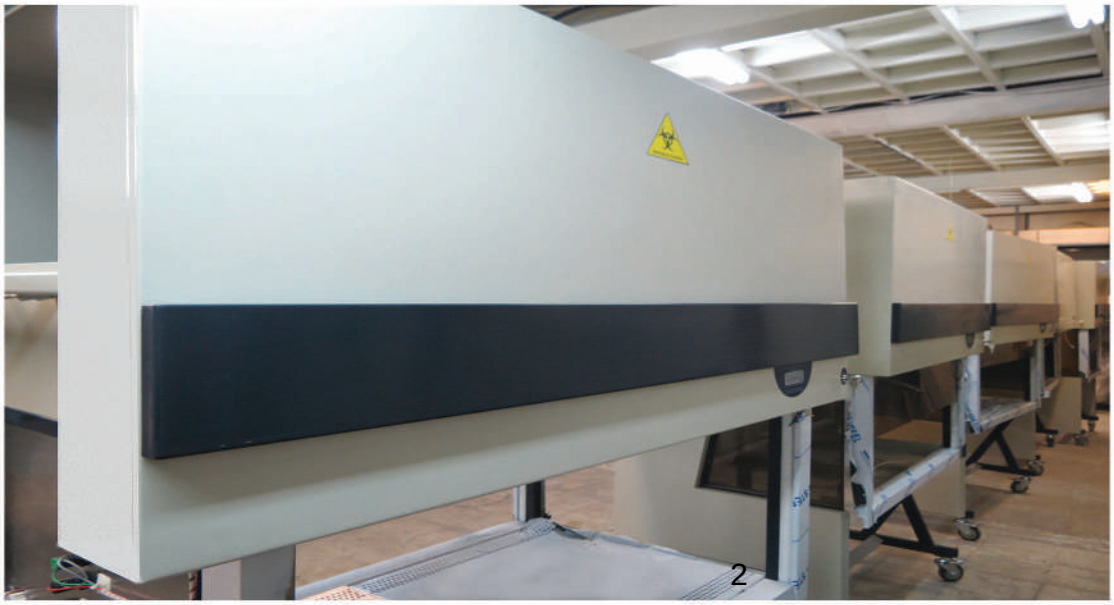
The escape of airborne particles generated within the cabinet is controlled by means of an inward airflow at the front of the cabinet which is filtered before circulation within it, while the down flow of HEPA filtered air over the working surface protects the work. This type of BSC is also suitable for work with all categories of microbiological agents.

Sina laminar flow workstation works according to the horizontal flow principle. The air is drawn in through the intake prefilter situated at the top of the upper section; the air passes the pressure chamber through the HEPA filter into the working area horizontally in a unidirectional air stream.

A biological safety cabinet (BSC) is a ventilated enclosure intended to offer protection, to the user and the environment, from aerosols generated when handling biological agents or material that may contain such agents.

The effectiveness of the biological safety cabinet depends on:
- Good design
- Suitable installation
- Correct use, and ongoing maintenance

Member of Organization for Development of Biotechnology
Member of National Centre for Coding of Services & Merchandise
Member of Iranian Society of Biotechnology
Appreciated in The third Innovation Festival - National Elites Foundation
ISO 9001, ISO 13485, ISO 100002



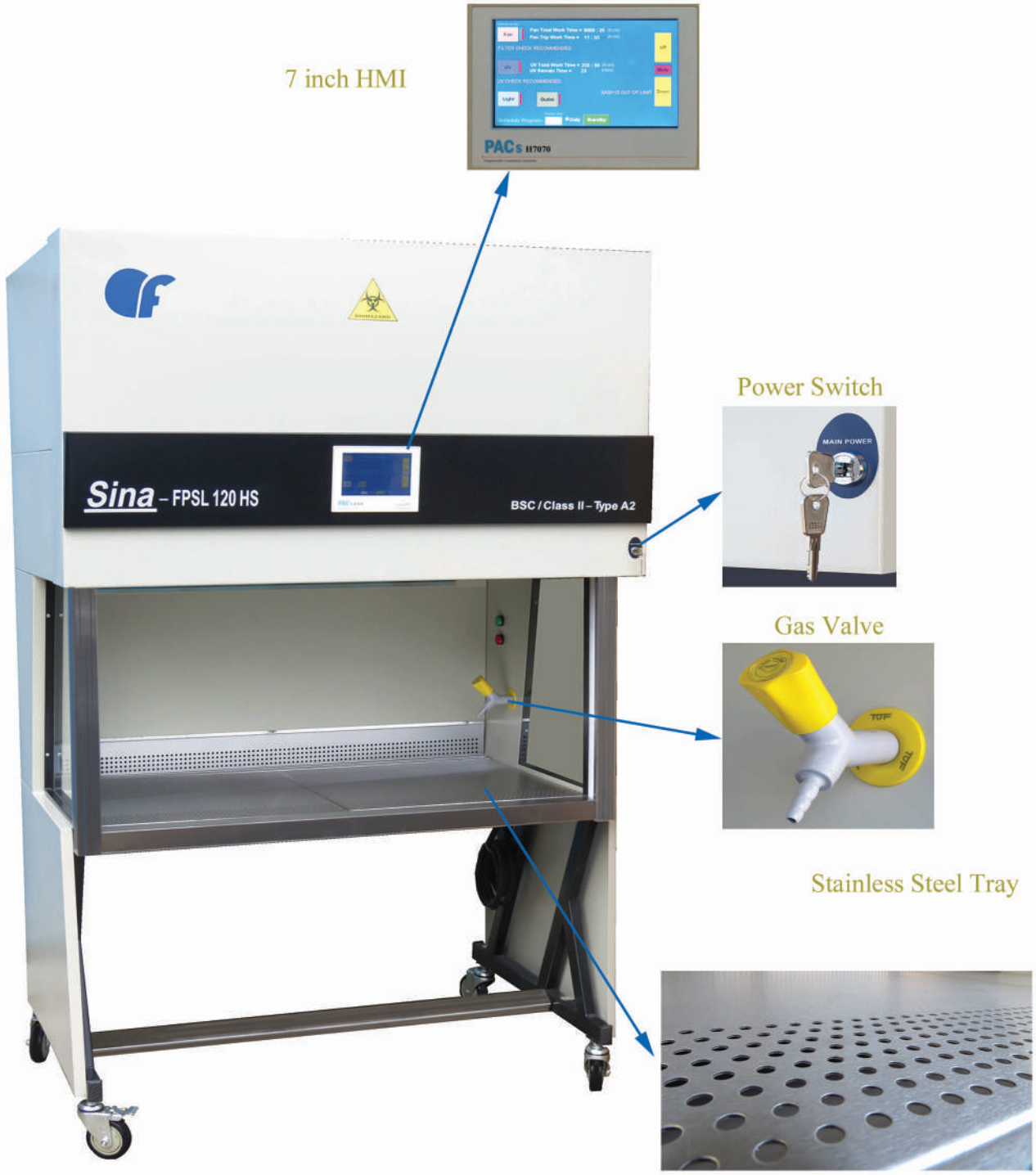
TECH

Technical specifications:

- Equipped with an ARM microcontroller and intelligent software program with the ability to upgrade
- Automatic diagnostic program at start up
- Silent and non-vibration centrifugally fan
- Graphical touch screen HMI
- Two-speed window elevator for fast opening and slow closure
- I.R sash optical position controller
- Two main and exhaust filters type HEPA with 99.997% efficiency along with pre-filters
- Ultraviolet crystal lamp
- Fluorescent lamp inside the cabin
- Very low power consumption and consequently longevity of electromotor and reduction in power costs
-Air Flow uniform distributer
-Standard gas valve
-Electrostatic anti-scratch paint
-Stainless steel tray
-Maintenance-free electromotor
-Increased life of the filters by standard pre-filters

On display screen:

- User errors and important notices
- Counter for work duration separately for each user
- Filter or U.V. check recommendation
- Total working time of the filter and UV (resettable after every service)
- Visual and audible Alarm (mutable)
- U.V. elapsed timer
- Electricity Outlet (controllable)
- Filtered air speed meter (optional)
- Schedule function for auto restart at request time
- Olpa filter with 99.997% efficiency (suitable for virus related works)
- Flowmeter sensor for main filter (indicating the filter condition and the quantity of filtered air)
- Filter air flow measure display, smart fan speed control according to the condition of the filter
- Security systems such as fingerprint detection or RFID cards with 5 recognition management levels
- Carbon Activated filter for odours and poisonous gases



Outer dimensions (W.D.H): 1300X900X2100 mm

Workbench dimensions: 1200X700 mm

Function	at normal speed	at maximum speed
Rotor speed	950 rpm	1350 rpm
Air flow speed through main filter	0.45 m/s	0.55 m/s
Average air suction (5 different points on the working area)	1.5 m/s	1.9 m/s
Amount of air circulating inside	75 %	70 %
Electromotor noise	< 40 dB	< 50 dB
Power consumption	5± 180 W	5± 200 W


BIOHAZARD
Sina – FPSL 120 HS
BSC / Class II – Type A2

The quality control unit of the company performs all required checks and controls complying with NSF/ ANSI 49 and EN 12469 throughout the manufacturing process and in accordance with requirements of ISO 10002, ISO 13485 and ISO 9001.

The equipment used in this unit are as follows:

- **Met one GT- 526 Particle counter**
- **ST 8880 flow meter**
- **Lutron UVC- 254**
- **Testo 512 differential pressure meter**
- **Lutron laser tachometer DT-2268**
- **Rigol Oscilloscope**
- **ST 8851 sound level meter**
- **Digital thermometers**