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Full Series of Homogenizers

www.yocellbio.com

About us

YOCELL Biotechnology is your trusted partner in the field of bioprocess. YOCELL has a team of energetic young scientists and engineers. From initial R&D to production, we are committed to providing the most reliable solutions for biotechnology scientists and engineers around the world. Accepting the challenges of continuous innovation in biotechnology and solving problems from multiple perspectives are the most impressive qualities of the team.

Pragmatic

Always listen carefully to your needs and provide the most competitive solutions.

Efficient

Respond quickly and have a strong supply chain to ensure fast delivery.

Focus

Continuous attention and passion for innovation in the field of biotechnology control.

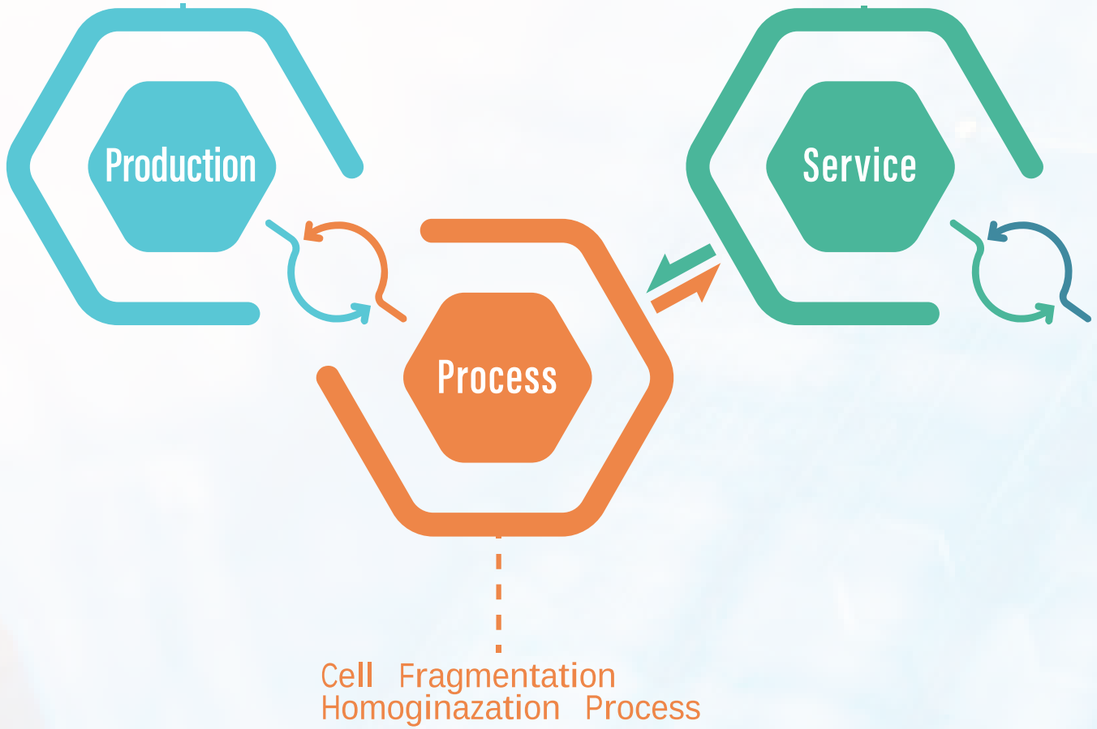
Content

Business Scope

Cell fragmentation System

Heterodisperse **System**

Cell Culture Lab
Ferment Lab
GMP Certification Document



Cell Fragmentation
Homoginazation Process

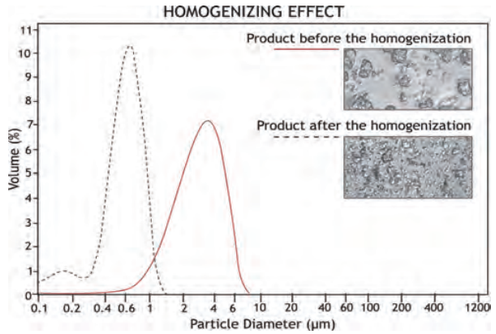
Professional Equipment

- Laboratory Type High Pressure Homogenizer
- Pilot Type High Pressure Homogenizer
- Production Type High Pressure Homogenizer
- Laboratory Type High Pressure Microfluidization Homogenizer
- Pilot Type High Pressure Microfluidization Homogenizer
- Production Type High Pressure Microfluidization Homogenizer

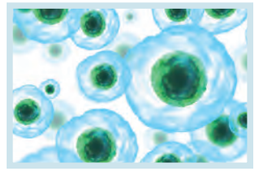
YC-BASIC Series

Laboratory High Pressure Homogenizer

We're experienced with every nuance of high pressure homogenization. YC-BASIC series offer process flexibility and control to achieve better results in fewer passes. Yocell Laboratory equipment enable us to verify the homogenization effects and optimize the use of pressure. YC-BASIC series high pressure homogenizer is for laboratory research — meets various experimental needs.



Applications:



Cell disruption
- E. coli
- Yeast
- Algae

Food / beverage
- Dairy products
- Fat substitutes
- Flavours

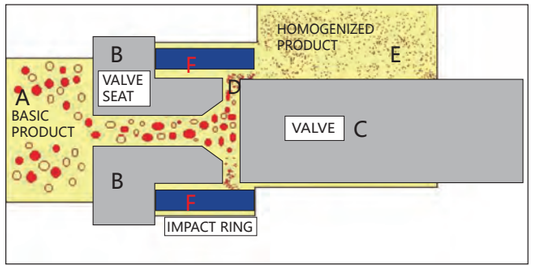
Pharmaceutical
- Injection
- Nutrients
- Ointment

Cosmetics
- Liposome emulsions
- Skin care cream
- Lipstick

Chemical / Material
- Graphene
- Nanocellulose
- Lithium battery

Working principle:

Under the reciprocating motion of the plunger, the material is transported to a valve group with adjustable size, and is subjected to extremely strong compression. When passing through the current limiting slit, the material hits the valve at a very fast speed, resulting in cavitation effect, impact effect and shear effect, so that the aggregated material is evenly dispersed.



Technical Features:

- **Modular structure, easy to operate and maintain**
- **Automated operation**

  Automatic sample injection, continuous operation, no venting required.
- **Safety control**

  Automatically cut off the controller circuit.
- **Equipment material**

  Adopt 316L stainless steel with high hygienic level, high-temperature resistant, wear-resistant and anti-corrosion.

The core components are made of special ceramics, which are durable and have a long service life.

- **Temperature controllable**

  The inlet and outlet of the cooling joint are connected to the constant temperature bath, which effectively controls the temperature rise of the homogeneous material.
- ***Triple overvoltage safety protection system***

  Equipped with BOS inverter for overload start protection.

  Equipment adopts Italian GEFRAN, when pressure exceeds 10% of sensor range value, the sensor will sends the signal of the unit, and then the machine stops for self-protection.

  Equipped with safety valve for pressure relief system.

Pharmaceutical

Mass production

Technical Parameters

Model	YC-NANO10	YC-BASIC15	YC-BASIC30
Material	316L stainless steel The core components are made of special ceramics		
Flow rate	10L/h	10~15L/h	20~30L/h
Design pressure	2000bar	1500bar	1000bar
Pressure gauge	0~2000bar digital display, accuracy 1bar		
Minimum throughput	15ml	25ml	50ml
Material consumption	0mL(no residue)		
Feed pellet size	＜500μm		
Product Process viscosity	<2000cPs		
Power	1.5kW, 220V/50Hz	1.5kW, 220V/50Hz	2.2kW, 380V/50Hz

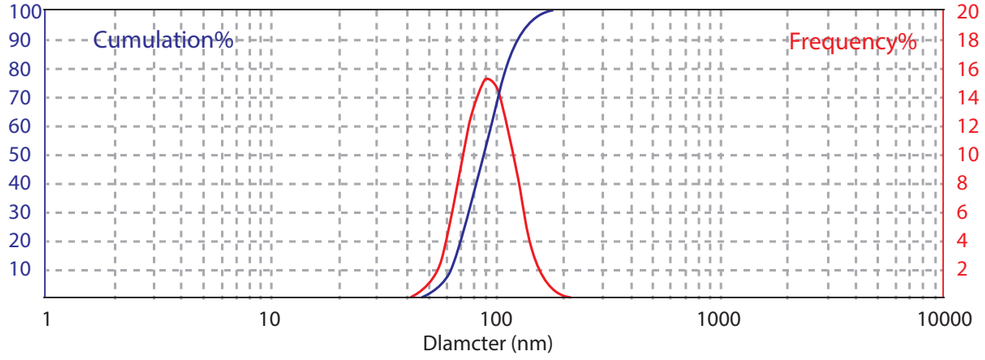
YC-MH Series

Micro-fluidization High Pressure Homogenizer

The user-friendly, laboratory-scale microfluidization high pressure homogenizer is designed for laboratory R&D and small-scale production at ultra-high pressure. YC-MH series is a type of bench-top electric micro-jet homogenizers which operated on the touch screen and controlled intelligently by program. With compact design, especially suitable for laboratory preparation of fat emulsion, liposome, nano suspension, micro-emulsion, lipid microsphere, nano-emulsions, dairy products, infusion solutions, cell disruption, juice homogeneity, fine chemical engineering, dye and etc. The maximum working pressure is 45000 Psi/3100 Bar. All parts touching with medium are 316L stainless steel, 17-4ph stainless steel, titanium alloy, tungsten carbide, PTFE, UHMWPE or other corrosion resistance materials.

Applications:

Dav Diameter:		
Dav Diameter: Xav=102.55nm	Dispension Index: PI=0.0685	Photon Count:43
D10=63.32nm	D50=88.38nm	D90=122.72nm
Nav=72.44m	Lav=107.815nm	



Pharmaceutical

- Microemulsion (Nanoemulsion)
- Liposome
- Nano particles
- Fat emulsion
- Nano suspensions
- Inhalation formulations

Cosmetics

- Nano wrapped raw materials
- Liposomal Cosmetics
- Essential oil delivery systems
- Bifidic yeast crushing
- Liquid crystal system finished products
- Collagen dispersion

Fine Chemical

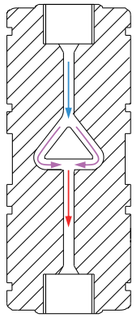
- Hydrogen fuel cell catalyst
- Water electrolysis catalyst dispersion
- Chemical mechanical polishing solution
- Conductive polymers
- Graphene, carbon tube, carbon black
- Nano oxide dispersion
- MLCC binder dispersion

Food Industry

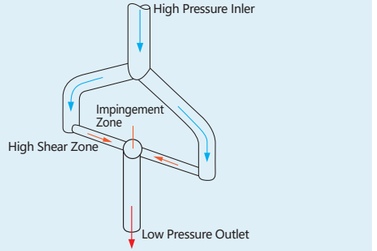
- Food Nanomilk
- Macromolecular modification
- Active substance lipid encapsulation
- Plant protein drinks
- Solids dispersion

Working Principles

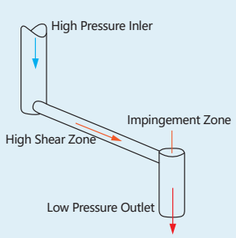
In order to emulsify and disperse particles in the material liquid at the nanoscale, high-pressure micro-jet technology uses hydraulic pressure of 200Mpa or less to pass materials through specialized diamond micro-porous channels (Y-type and Z-type) in the interactive capacitance cavity. This increases product transparency and aesthetics, stability, encapsulation rate, penetration and absorption, slow release targeting, and cavitation of supersonic jets.



Core components



Y-type chamber internal jet path



Z-type chamber internal jet path

PLC control screen

Ceramic plunger

Diamond interaction chambers with Y-type or Z-type

Optional configuration

Items	Standard	Optional
Control system	High pressure programming control systems®: touch screen, speed control, auto stop control by time, pressure or temperature, settable volume control as low as 1mL	
Pressure gauge	Digital display on the touch screen	
Parts	Single diamond interaction chamber	Multi-model diamond interaction chamber with cooling jacket
Feed port	300ml stainless steel hopper	Multi-model stainless steel hopper
Outlet port	Luer flexible hose	Multi-model Luer syringe
Material cooling	150 material heat exchanger	Multi-model material heat exchanger
Cooling system	None	Cryogenic cooling circulating pump
High pressure cylinder	316L stainless steel	Titanium alloy

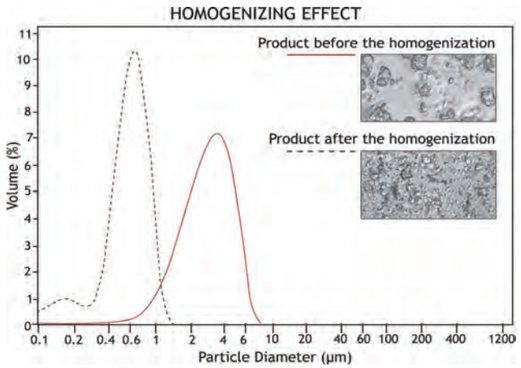
Technical Parameters

Model	YC-MH20k	YC-MH30K	YC-MH45K
Max. pressure	20,000psi	30,000psi	45,000psi
Flow rate	100mL/min	120mL/min	120mL/min
Min. sample	5mL		
Feed viscosity	＜2000cPs		
Min. residue	1ml		
Dimensions (W×D×H)	70×36×30cm		
Weight	35kg		
Max. feed temperature	90°C		
Power	1.5kW, 220V/50Hz		

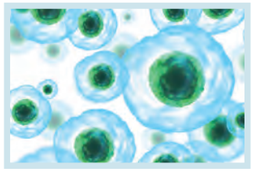
YC-PILOT Series

Pilot Type High Pressure Homogenizer

YC-Pilot series homogenizer offers new versatility for batch or continuous operation in a wide range of all kinds of applications. It is available for R&D and pilot, small-scale productions include preparations, biology, food, etc. Comply with GMP and FDA hygiene standards. High crushing rate, one-time crushing rate can exceed 95%.



Applications:



Cell disruption
- E. coli
- Yeast
- Algae

Food / beverage
- Dairy products
- Fat substitutes
- Flavours

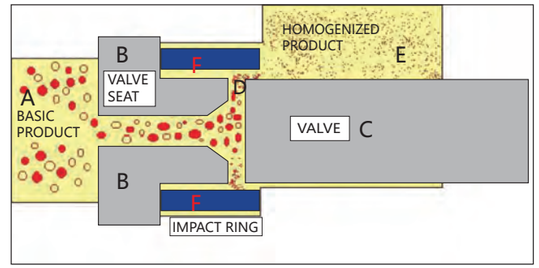
Pharmaceutical
- Injection
- Nutrients
- Ointment

Cosmetics
- Liposome emulsions
- Skin care cream
- Lipstick

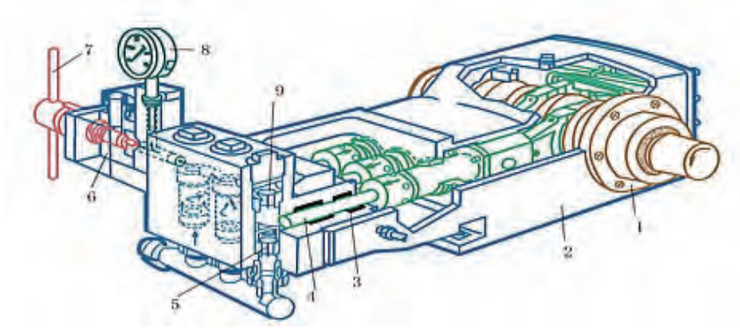
Chemical / Material
- Graphene
- Nanocellulose
- Lithium battery

Working principle:

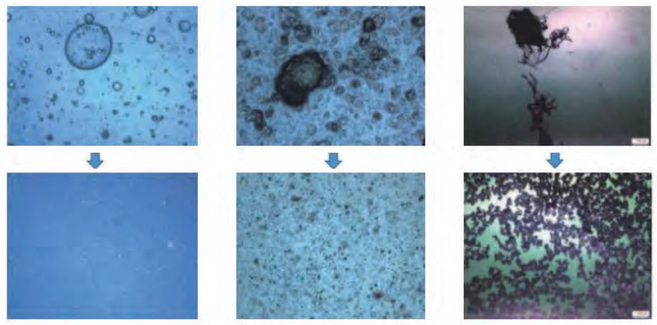
Under the reciprocating motion of the plunger, the material is transported to a valve group with adjustable size, and is subjected to extremely strong compression. When passing through the current limiting slit, the material hits the valve at a very fast speed, resulting in cavitation effect, impact effect and shear effect, so that the aggregated material is evenly dispersed.



Main Features



- Specially designed double homogenization and crushing valve set, which can achieve higher level of emulsification and crushing effect in one go.
- Unique two-stage homogenizing valve, which can be made of ceramic or alloy.
- Easy-to-see digital display pressure gauge and electronic overpressure protection system.
- Small size - easy to place on the lab bench.
- Modular structure, easy to operate, simple maintenance.
- With operating pressures up to 2000 Bar and throughputs from 5 L/h to 30 L/h, with a minimum of 35 ml of sample, it can be used in a wide range of emulsification and dispersion medium applications Equipment material.
- Adopt 316L stainless steel with high hygienic level, high-temperature resistant, wear-resistant and anti-corrosion.
- The core components are made of special ceramics, which are durable and have a long life span.



Effect and Comparison

Model	YC-PILOT	YC-PILOT16	YC-PILOT22	YC-PILOT30
Material	316L stainless steel The core components are made of special ceramics			
Flow rate	30~40L/h	50~60L/h	80L/h	80~100L/h
Design pressure	1800bar	1000bar	600bar	1500bar
Pressure gauge	0~2000bar digital display,accuracy 1 bar			
Minimum throughput	60ml	60ml	2000ml	5000ml
Material consumption	0ml (no residue)			
Feed pellet size	< 500pm			
Product process viscosity	< 2000cPs			
Power	5.5kW, 380V/50Hz			7.5kW, 380V/50Hz

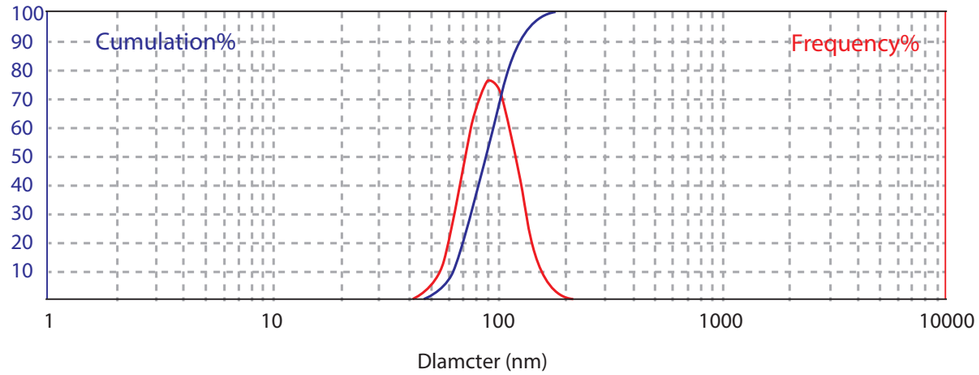
YC110IP-EH

Pilot Type Microfluidization High Pressure Homogenizer

The second-generation pilot microfluidization high-pressure homogenizer equipped with diamond interaction chambers. It has unique homogeneous dispersion effect, efficient and stable structural design, and is used for homogeneous dispersion treatment of products in various industries. YC110IP-EH has 200Mpa pressure, 24L/H flow rate, process easily enlarged. Hydraulic modular design, stable use under high pressure for more than 10 years.

Applications:

Dav Diameter:		
Dav Diameter: Xav=102.55nm	Dispension Index: PI=0.0685	Photon Count:43
D10=63.32nm	D50=88.38nm	D90=122.72nm
Nav=72.44m	Lav=107.815nm	

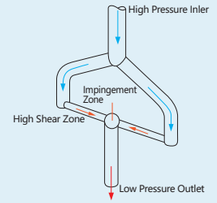


Pharmaceutical

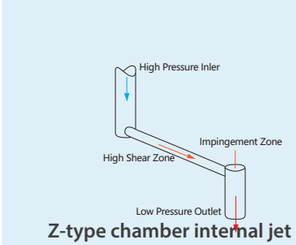
- Microemulsion (Nanoemulsion)
- Liposome
- Nano particles
- Fat emulsion
- Nano suspensions
- Inhalation formulations

Cosmetics

- Nano wrapped raw materials
- Liposomal Cosmetics
- Essential oil delivery systems
- Bifidic yeast crushing
- Liquid crystal system finished products
- Collagen dispersion



Y-type chamber internal jet path



Z-type chamber internal jet path

Standard Configuration

- The core of homogenizer adopts diamond interaction chamber, Y type and Z type can be configured, and the particle size can be homogenized below 100nm.
- The contact materials include SUS 316L stainless steel, SUS630 stainless steel, UHMWPE, PEEK, PTFE.
- Support high-pressure plunger seal cooling design to extend service life.
- Equipped with material heat exchanger, it can cooperate with cooling water to effectively control the discharge temperature, protect product activity.
- Standard with 1Lstainless steel hopper.
- Equipped with emergency stop button.
- Equipped with roller wheels at the bottom for easy movement.

Optional Configuration

- 2L、 4L stainless steel hopper
- Diaphragm pressure sensor with digital display
- Temperature detection and digital display of outlet port
- Explosion-proof design
- Cooling jacket for diamond interaction chamber
- CIP, SIP
- Low design pressure and high flow rate configuration

Technical Parameters

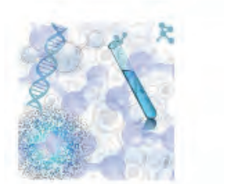
Model	YC110IP-EH
Operating pressure	3000~30,000psi
Flow rate	≈ 24 L/h (related to pressure, viscosity)
Min. Sample	120mL
Dimensions (W×D×H)	80×80×130cm
Weight	245kg
Max. Feed Temp.	80°C
Power	4kw, 380V/50Hz 3 phase electrical service

YC100/150 Series

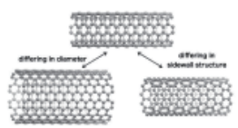
Production Type **High Pressure Homogenizer**

YC100/150 series offer the largest capacity the highest pressure on the market with the lowest total cost of ownership. Customer can benefit from a superior pump operational efficiency. These state of the art homogenizers represent excellent functions in wide range of industries: dairy, food, beverage, pharmaceutical, chemical, biotech and cosmetic.

Applications:



Cell disruption
- E. coli
- Yeast
- Algae



Food / beverage
- Dairy products
- Fat substitutes
- Flavours

Pharmaceutical
- Injection
- Nutrients
- Ointment

Cosmetics
- Liposome emulsions
- Skin care cream
- Lipstick

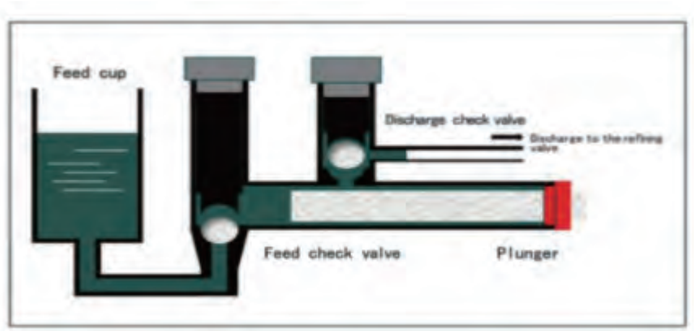
Performance

Comply with GMP and FDA hygiene standards.

- High crushing rate, one-time crushing rate can exceed 95%.
- High hygienic level, and can meet the requirements of food and medicine production

Working Principles

Heating in a small space, generating high pressure and then Instant release of accumulated pressure which produces powerful impact crushing force.



Equipment material:

Adopt 316L stainless steel with high hygienic level, high-temperature resistant, wear-resistant and anti-corrosion. The core components are made of special ceramics, which are durable and have a long service life.

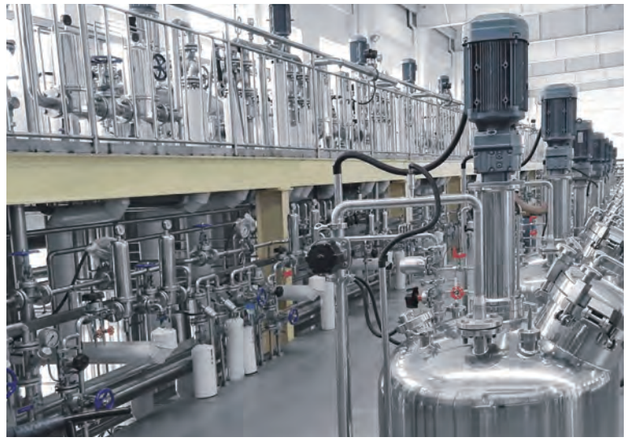
Technical Parameters

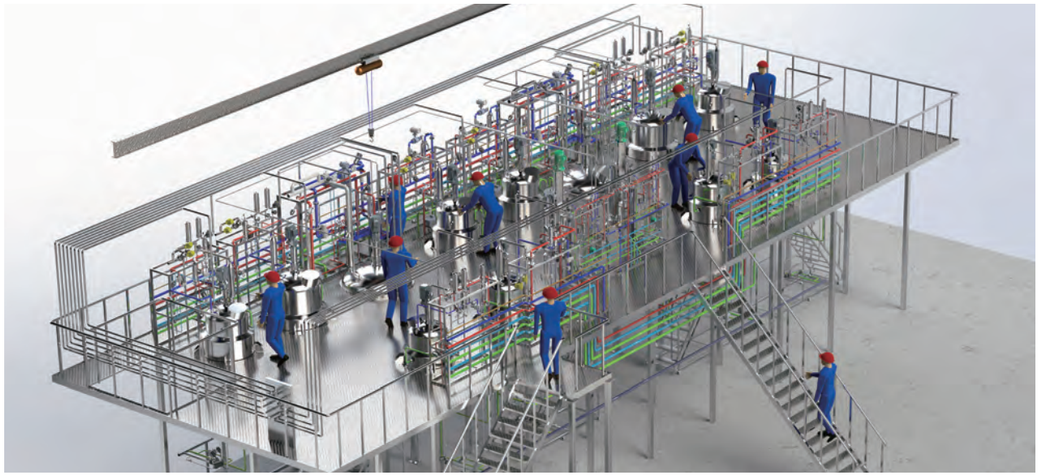
Model	YC150-12	YC150-22	YC150-30	YC150-37
Material	316L stainless steel The core components are made of special ceramics			
Flow Rate	120~150L/h	200-300L/h	300-500L/h	800~1000L/h
Pressure Gauge	0~2000bar digital display, accuracy 1bar			
Material consumption	0mL (no residue)			
Feed pellet size	< 500μm			
Product process viscosity	< 2000cPs			
Power	11kW, 380V/50Hz	18.5kW, 380V/50Hz	30kW, 380V/50Hz	37kW, 380V/50Hz
Design Pressure	1800bar	1500bar	1800bar	1500bar

Model	YC100-12	YC100-22	YC100-30	YC100-55
Material	316L stainless steel The core components are made of special ceramics			
Flow Rate	260~300L/h	500~600L/h	800~1000L/h	1800~2000L/h
Pressure Gauge	0~2000bar digital display, accuracy 1bar			
Material consumption	0mL (no residue)			
Feed pellet size	< 500μm			
Product process viscosity	< 2000cPs			
Power	11kW, 380V/50Hz	18.5kW, 380V/50Hz	30kW, 380V/50Hz	55kW, 380V/50Hz
Design Pressure	1000bar	1000bar	1000bar	1000bar

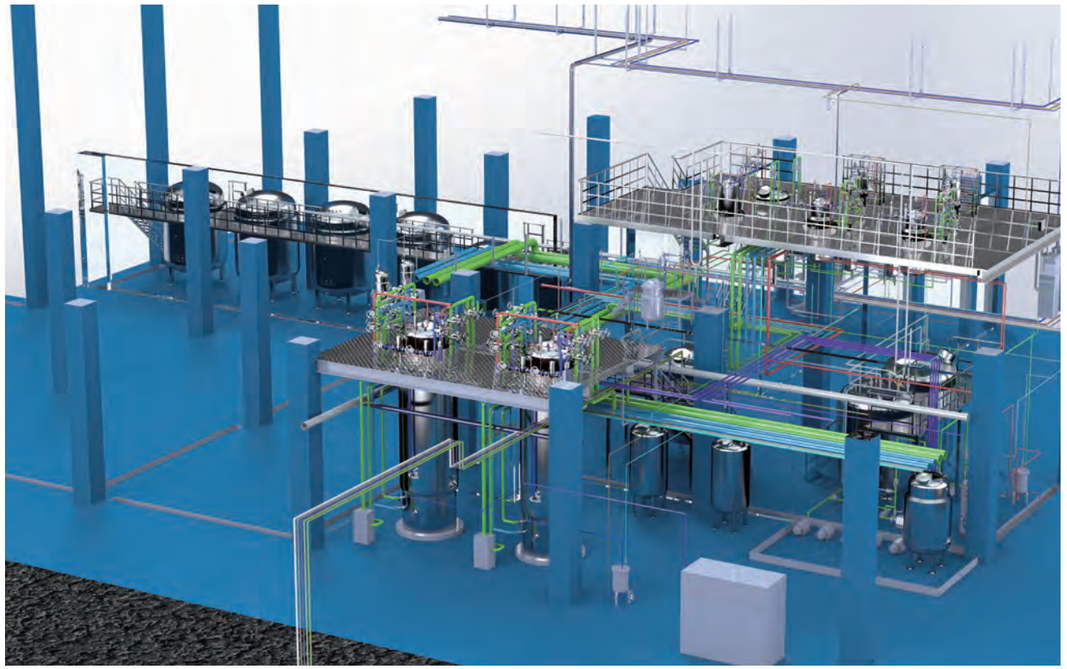
Engineering Reference

Our company has many technicians who are specialized in such fields as fermentation engineering, biochemical industry, automation control, computer, mechanical engineering, etc., and have rich experience in fermentation engineering design and field construction. Helping our users to solve various problems in production and processes.



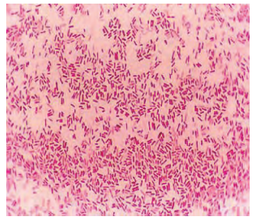


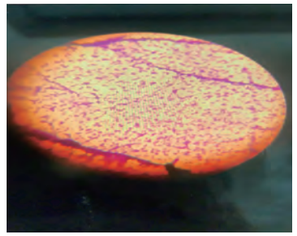
YOCELL provides complete biopharmaceutical upstream and downstream process equipment and comprehensive solutions. We are able to meet different process requirements of customers for cell culture or microbial fermentation, including culture medium preparation, seed expansion, harvesting and clarification, buffer solution preparation, storage system, ultrafiltration system, etc. Helping our users to realize high-standard and high-efficiency technological processes.



Application Cases

Case 1. E.coli breaking the wall





30L E. coli rupture test

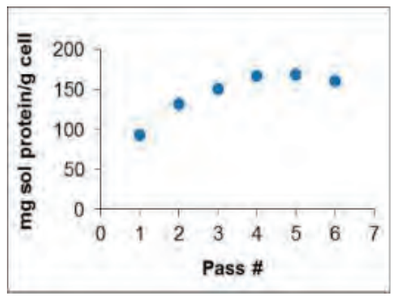
Process conditions : 750bar
Homogenous times：3 passes

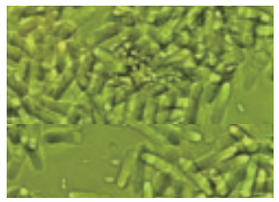
Crushing rate＞99%

Case 2. Saccharomyces cerevisiae breaking the wall

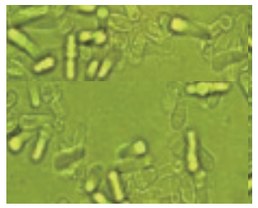
Process conditions : 1200bar

Homogezation valve :Special valve for yeast breaking

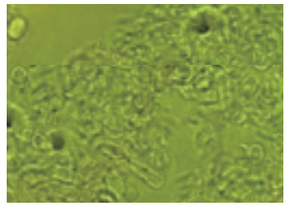




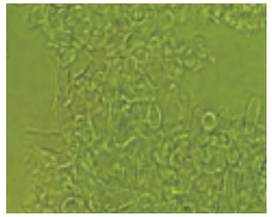
Before processing



One process effect

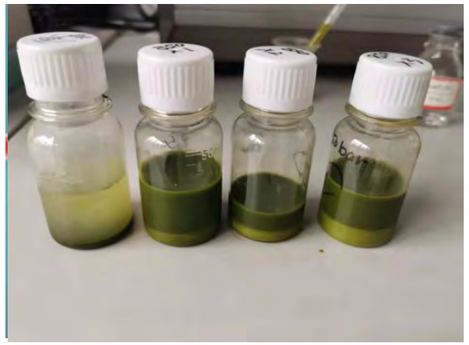


Two process effect



Three process effect

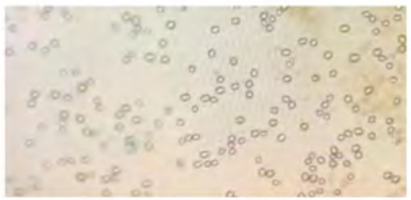
Case 3. Chlorella



Sample preparation:
100g chlorella dissolved in 1L of water, shear 8000rpm for 1 minute
Homogenization process: PILOT, first-stage pumphead, low temperature control, special valve for wall breaking, wall breaking 3 times, pressure 850-900bar

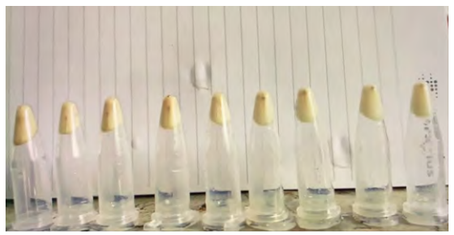
Case 4.Hansenula Polymorpha Yeast

Hansen's yeast cell high pressure homogenization process were finally obtained as 1200 bar, 4 times homogenization and 12% yeast mass fraction. Under these conditions, the yeast cell fragmentation rate was 85.05%.



Before processing

After processing



Centrifugation of yeast cells after crushing