济辰生物
JICHEN BIOTECH

生物制药
不锈钢生物反应器

STAINLESS STEEL BIOREACTOR

Science to Success: Your Premier Bioreactor Partner

从实验室到商业化的生物反应器合作伙伴

济辰生物
JICHEN BIOTECH

Phone: 21-60717498（上海） / 311-83118162(石家庄)

Web: www.jichen-biotech.com.cn/ www.jichen-biotech.com Email: info@jichen-biotech.com

地址：上海浦东新区巴圣路160号6号楼4F / Add.: 4F, Building 6, 160 Basheng Road, Pudong New Area, Shanghai China

不锈钢发酵罐及生物反应器

Product Introduction

Stainless steel fermenters and bioreactors

济辰生物生产的不锈钢发酵罐及生物反应器覆盖了中试阶段到生产阶段，可依据客户工艺需求高度定制，适用于微生物及哺乳动物细胞培养，采用国际一流品牌的工业标准部件，易于与任何工艺系统集成。

The stainless steel fermentors and bioreactors produced by Jichen Biotechnology cover the pilot stage to the production stage. It and can be highly customized according to customer process requirements. They are suitable for microbial and mammalian cell culture and use industrial standard components from international first-class brands, making them easy to integrate with any process system.

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产品结构 /PRODUCT OVERVIEW

[1]定制化

[1] Customization

[2]带有CIP/SIP管道及阀门，能实现一键式自动CIP、SIP等功能，SIP能够采用空消和实消两种方式实现

[2] with CIP / SIP piping and valves The system, can perform automatic CIP, SIP other functions with a single buffon. SIP can be used in two ways to achieve the elimination of air and real elimination

[3]罐体带有夹套控温、搅拌、通气、排气

[3] Tank with jacket temperature control, mixing, ventilation, and exhaust

[4]能够实现罐压、温度、pH、溶氧、搅拌速度、通气流速的在线检测、实时记录和自动控制以及自动补料功能

[4] Can realize tank pressure, temperature, pH, dissolved oxygen, stirring speed, ventilation flow rate online detection, and real-time recording. It also offers automatic control and an automatic feeding function

[5]补料、加碱、接种、放料、取样系统等

[5] Feeding, alkali, inoculation, discharge, sampling system, etc

[6]整体设备的设计、制造符合相关法规和指南的要求

[6] The overall equipment is designed and manufactured in accordance with the requirements of relevant regulations and guidelines

CFD模拟-确定工艺要求

1、剪切—湍动能、剪切力模拟、循环时间

2、混合—混合时间模拟

3、沉淀—气固两相流，最小悬浮速度

4、传质—气液两相流，传质系数

CFD simulation
Determine process requirements

1.Shear -- turbulent kinetic energy, shear force simulation, cycle time

2.Mixing - mixing time simulation

3.Precipitation - gas-solid two-phase flow, minimum suspension speed

4.Mass transfer - gas-liquid two-phase flow, mass transfer coefficient

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产品特点 /PRODUCT FEATURES

控制系统 /Control system

- 带HMI SCADA的PLC控制系统
- 符合GAMP 5准则要求
- PLC control system with HMI SCADA
- Meets GAMP 5 guidelines

精确通气 /Precision Ventilation

- 表层通气
- 深层通气
- 配备气体质量流量计 (MFC)
- 减压阀
- 可实现SIP后吹扫
- Surface ventilation
- Deep ventilation
- Equipped with Gas Mass Flow meter (MFC)
- Pressure reducing valve
- Purging after SIP is possible

取样收获 /Sampling harvest

无菌取样
- 专用双口取样阀
- 取样装置可多次反复使用
- 取样阀可纯蒸汽清洗及灭菌

Aseptic sampling
- Special double port sampling valve
- The sampling device can be used multiple times
- The sampling valve can be steam cleaned and sterilized

多种补料方式 /Multiple refill options

四阀组
- 2个气动隔膜阀用于传输、蒸汽CIP/SIP排水
- 1个手动隔膜阀和1个气动隔膜阀用于隔离
- 蒸汽疏水器用于冷凝水的排出
- 温度传感器用于SIP过程的灭菌控制/监视

Four-valve manifold
- 2 pneumatic diaphragm valves for transmission, steam CIP/SIP drainage
- 1 manual diaphragm valve and 1 pneumatic diaphragm valve for isolation
- Steam traps are us d for the removal of condensed water
- Temperature sensors for sterilization control/moni toring of SIP processes

磁力搅拌 /Magnetic stirring

磁力搅拌模块
- 无需双机械密封
- 无需机械密封冷凝系统
- 密封稳定，易清洁

Magnetic stirring module
- No need for double mechanical seals
- No mechanical seal condensing system required
- Stable seal, easy to clean

转速范围：TBD
- 检测精度 ±1rpm
- 控制精度5%

Speed range: TBD
- Detection accuracy ±1rpm
- Control accuracy 5%

CIP/SIP及控温 /CIP/SIP and temperature control

其他项目选配
- 双端面机械密封冷凝装置
- 机械消泡装置

Other items optional
- Double mechanical seal condensing mounting
- Mechanical defoaming

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产品参数 /PRODUCT PARAMETER

	中试规模不锈钢生物反应器/发酵罐 Pilot scale stainless steel bioreactor/fermenter	生产规模不锈钢罐生物反应器 Production-scale stainless steel tank bioreactor
微生物发酵罐体积及搅拌类型 Microbial fermenter volume and agitation type	30L-200L 顶部/底部磁力耦合搅拌/机械搅拌 30L-200L Top/bottom magnetic coupling mixing/mechanical mixing	200L-30000L 机械搅拌 200L-30000L mechanical mixing
细胞培养生物反应器体积搅拌类型 Cell Culture Bioreactor Volume Stirring Type	30L-200L 顶部磁力耦合搅拌/机械搅拌 30L-200L Top/bottom magnetic coupling mixing/mechanical mixing	200L-5000L 磁力耦合搅拌/机械搅拌 200L-5000L magnetic coupling mixing/mechanical mixing
	·选配罐盖提升装置 ·Optional lid lifter ·标配PLC控制器 ·Standard with PLC controller	·DCS控制系统 ·DCS control system ·PLC控制器 ·PLC controller ·配备平台 ·Configuration platform
特点 Specificities	316L带视镜不锈钢罐体，不锈钢顶盖、罐体的上侧部、下侧部及底部配有相应的端口分别用于通气、补料、传感器接口、取样和收获/排液等。罐体配有压力表及压力安全保护装置（爆破片） 罐体外表面镜面抛光R_a<0.8μm：罐体及管道内表面电解抛光R_a<0.4μm 选配自动/手动在位清洗功能 (CIP) pH、DO、温度、细胞密度（选配）、搅拌、泡沫等控制回路模块式设计和系统的灵活性，方便用户根据工艺的要求增加功能模块 316L stainless steel tank with sight mirror, stainless steel top, upper side, lower side and bottom of the tank are equipped with corresponding ports for ventilation, feeding, sensor interface, sampling and harvesting/draining, etc. Tank with pressure gauge and pressure safety device (burst disc) Tank surface mirror polishing R_a<0.8μm: tank and pipe surface electrolytic polishing R_a<0.4μm Optional automatic/manual in-place cleaning (CIP) pH, DO, temperature, cell density (optional), mixing, foam and other control loop modular design and system flexibility, convenient for users to add functional modules according to the requirements of the process	
应用 Appliance	放大研究/小规模生产/培养基优化/细胞培养和微生物发酵/过程工艺优化/批次、流加、灌流和连续培养 Scale-up study/Small-scale production/Medium optimization/Cell culture and microbial fermentation/Process optimization/Batch, fed-batch, perfusion and continuous culture	
适用领域 Field of application	人用/兽用疫苗、单克隆抗体、基因工程药以及合成生物学研发、中试、生产 Human/veterinary vaccines, monoclonal antibodies, genetically engineered drugs, and synthetic biology R&D, pilot testing, and manufacturing.	