Challenge IM

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TFF Done Right

Go with Challenge IM!

Pioneers in Fully Auto TFF Technology

Company Profile

Industry Leader, Global Reach
Dedicated to Biopharmaceutical Membrane Filtration Solutions

Focus

Challenge Intelligent Manufacturing (Challenge IM) is a global leader in biopharmaceutical membrane filtration, integrating R&D, manufacturing, sales, and service into a high-efficiency global network. We offer fully automated filtration systems and a wide range of high-performance membranes and consumables, widely used in key bioprocesses such as ADCs, CGT, vaccines,nucleic acid drugs, recombinant proteins, blood products, exosomes, and diagnostics.

Our proprietary fully automated “unattended” TFF system fills a key gap in the global market and drives ongoing industry innovation. As a certified national high-tech enterprise, we adhere strictly to ISO 9001:2015 quality standards.

Specialized

With 30+ core patents and software copyrights, Challenge IM has built a strong foundation of proprietary technology. Our R&D and technical team includes top talent, over 70% of whom hold advanced degrees or come from China's leading “Double First-Class” universities.

2,000 m^2 GMP facility and 2,000 m^2 Class C cleanroom ensure product quality and stable supply. Backed by a nationwide sales network, strong technical support, and reliable after-sales service, we provide professional, full-lifecycle solutions worldwide.

Driven by innovation and quality, we are accelerating biopharma advancement as a strategic partner to leading companies in China and expanding into global markets.

Vision

Challenge IM believes in “Challenge IM,Destined for Greatness” and embraces the mission of “Advancing Life and Health, Sharing Success with Value Creators.”

We are committed to understanding and exceeding customer needs through independent innovation and breakthroughs in key bioprocess technologies, delivering reliable, customized solutions to global clients.

Our vision is to become a globally respected leader in membrane filtration, known for growth, innovation, and contributions to human health—driven by Chinese ingenuity and the spirit of Challenge IM.

Contents

01

Challenge IM Tangential Flow Filtration (TFF) system

Challenge IM Tangential Flow Filtration (TFF) systems span the full development cycle, from small-scale laboratory trials to pilot-scale process optimization. Designed for flexibility, each solution is fully automated, seamlessly integrated, and engineered for exceptional cost performance—tailored precisely to customer's process needs.

[Applicable Products] Antibodies, Vaccines, Gene Therapies, Blood Products, Diagnostic Reagents, Antibiotics, Biochemical Products, Natural product extraction.

[Applicable Processes] Harvesting, Clarification, Separation and Purification, Concentration, Dialysis, Buffer Exchange, Microfiltration Experiments.

Product Features

01. R&D and production

Stable support for all needs from laboratory exploration to commercial production.

02. Enables linear transfer of process parameters

A GMP-compliant system that balances both exploratory and production needs, it ensures a robust and dependable environment for process development, with consistent parameters that support seamless scale-up.

03. Intelligent automated operation

Designed with a space-saving, plug-and-play architecture, the system allows seamless transitions between various process modes (concentration/diafiltration/MF) and operational phases (development/production), enhancing efficiency and maximizing utilization of fixed assets.

04. Electronic data management

Challenge Navigator software combines ease of use with advanced automation features and a 21 CFR Part 11-compliant data management system, guaranteeing stable and reproducible processes. Its design, referencing commercial production automation, provides significant convenience for process scale-up and scale-down.

[Typical Application]

> Cell Harvest & Concentration	> Plasmid Purification & Concentration	> Fractionation and Diafiltration of Latex and Nanoparticles	> Endotoxin Removal From Buffers and Animal Cell Culture Media
> Clarification of Cell Culture Broth and Lysate	> Concentration of Viruses, Virus-Like Particles (VLPs), and Viral Vectors	> Liposome Diafiltration and Concentration	> Endotoxin Removal for Biological Samples, Antibiotic APIs, and Herbal Materials
> Protein Concentration, Purification, and Diafiltration	> Polysaccharide Separation, Purification, and Concentration	> Diafiltration, Concentration, and Metal Ion Removal in Blood Product Processing	

System Advantage

A. Hardware

Integration

- Compact layout with minimal hold-up volume;
- Integrated design, overall aesthetic and elegant;

High Compatibility

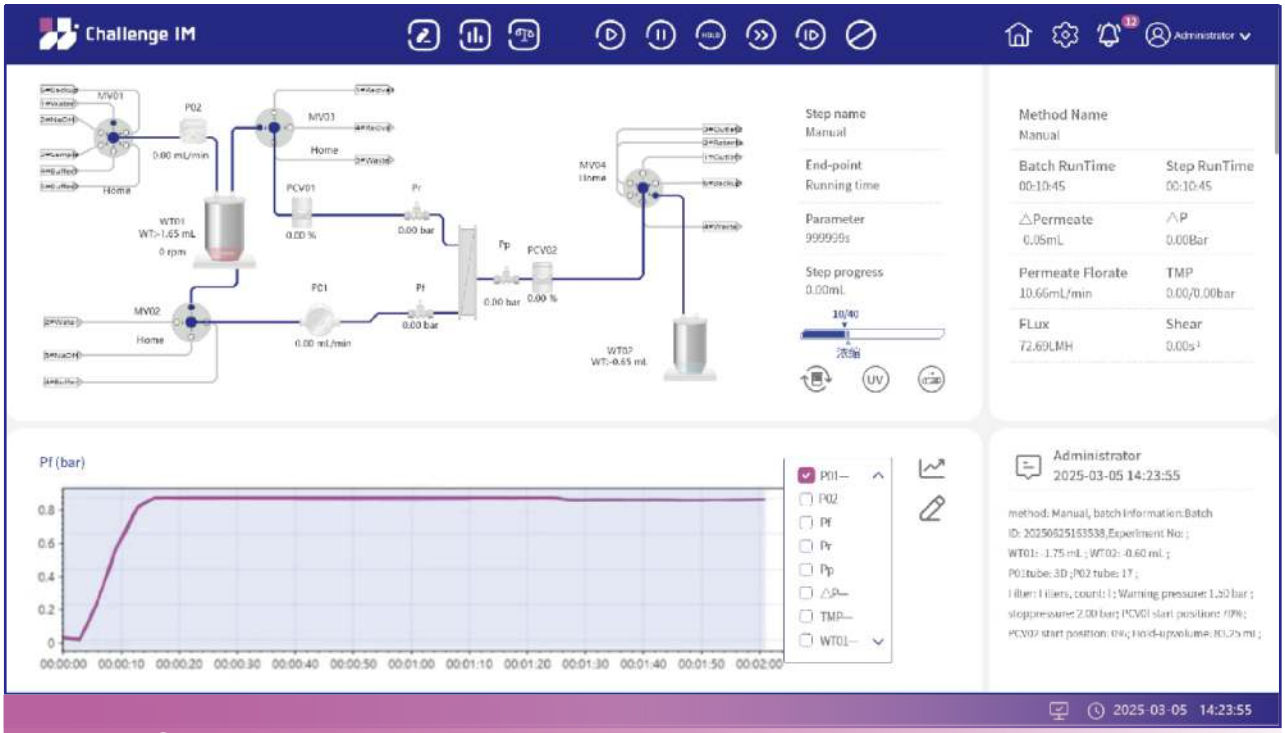
- Compatible with mainstream filters including hollow fibers and membrane cassettes from leading global brands;
- Supports applications ranging from process development to pilot-scale and small-scale commercial production.

Modular & Flexible Configuration

- Equipped with high-quality fluid handling, weighing modules, and sensing modules from leading international brands, ensuring stable and reliable system performance;
- Online sensors for pressure, conductivity, pH, flow rate, and UV can be freely combined, with reserved capacity for future upgrades.

Single-Use (SU)Components

- Single-Use components provide flexible reuse or fast replacement, removing the need for cleaning validation, minimizing contamination risk, and speeding up process development.



B. Software

Automation & Intelligence

- Multiple Automated Process Modes including manual/automatic, UF, DF, rinse, and NWP test, all easily switchable as needed;
- Software comes with pre-set methods for one-click automated execution of various process modes;
- Powerful data analysis combined with easy and efficient method setup allows effortless experiment execution through simple parameter input, with all calculations fully managed by the system.

Digital & User-Friendly Interface

- Powered by the next-generation Challenge Navigator software, delivering intuitive operation with a comprehensive feature set that is easy to learn and operate;
- Advanced multi-level user access management enables flexible, role-based permission assignment;
  Instant monitoring of system status, alerts, and alarms;
- The software features a clear and comprehensive interface with intuitive data visualization, allowing users to easily monitor system performance and track experiment progress at a glance.

Comprehensive Audit Trail

- Robust audit trail functionality compliant with 21 CFR Part 11, ensuring data integrity, authenticity, traceability, and security;
- Fully compliant with GMP regulations.

C. Service

High efficiency low maintenance cost

- Provides disposable systems, saving CIP validation time, and more efficient
- Simple maintenance operations, low maintenance costs extend the instrument's service life

Comprehensive Document System

- Provides DQ/IQ/OQ documentation and validation services

Process Method

Mode	Method Editing	Remarks
Automatic Mode	UF Mode	Preset methods with one-click startup. The system calculates complex values automatically for you.
	NWP Mode	
	DF Mode	
	Rinse Mode	
	Disinfection Mode	
	Rehydration Mode	
	TMP Optimization	
	Pump Priming Mode	
	Drain Mode	
Manual Mode	Custom Mode	Process development, permissions relaxed, make methods more flexible.

Workable for R&D, Pilot, and Commercial Production
The Complete Family of Tangential Flow Filtration (TFF) Systems

Dream⁺ Series
Fully Automated TFF System

Free Your Hands
Achieve Genuine Unattended Operation!

Dream⁺ 05D	Dream⁺ 3P	Dream⁺ 20P	Dream⁺ 40D-SU
Dream⁺ 05D-SU	Dream⁺ 3D (SU)	Dream⁺ 20D (SU)	Dream⁺ 80D-SU

Dream Series
Automated TFF System

Versatile and Flexible
Your Reliable Process Assistant!

Dream 05D	Dream 3P	Dream 20P	Dream 40D-SU
Dream 05D-SU	Dream 3D (SU)	Dream 20D (SU)	Dream 80D-SU

Hope Series
Automated TFF System

Simplifies Every Step
User-Friendly Design with Streamlined Interaction!

Hope 1P	Hope 1D (SU)	Hope 3P	Hope 3D (SU)

Smart Series
Automated TFF System

Outstanding Cost-Performance
Automatic control of TMP (Transmembrane Pressure)

Smart 3P Smart 3D	Smart 3D-SU	Smart 20P	Smart 20D (SU)

[Product Model Naming Rules]

D: Diaphragm Pump P: Peristaltic Pump SU:Single-Use

Challenge Dream Series Parameters

Product Model	Flow Range	Recommended Volume		Filter Area	
		Hollow Fiber	Membrane Cassette	Hollow Fiber	Membrane Cassette
Challenge Dream 05D(SU)	0-0.5L/min	20mL-5L	20mL-5L	50cm²-0.1m²	50cm²-0.1m²
Challenge Dream 3P	0-2.3L/min	20mL-10L	20mL-15L	50cm²-0.37m²	50cm²-0.5m²
Challenge Dream 3D(SU)	0-3L/min	20mL-15L	20mL-15L	50cm²-0.37m²	50cm²-0.5m²
Challenge Dream20P	0-13L/min	10L-200L	10L-200L	0.1m²-2.5m²	0.1m²-2.5m²
Challenge Dream 20D(SU)	0-20L/min	10L-500L	15L-500L	0.1m²-2.5m²	0.1m²-2.5m²
Challenge Dream 40D-SU	1-40L/min	50L-1000L	50L-1000+L	0.5m²-5m²	0.5m²-5m²
Challenge Dream 80D-SU	3-80L/min	100L-2000L	100L-2000+L	0.5m²-12m²	0.5m²-12m²

Notes1：The specific volume range and processing time depend on process conditions. Notes2：The abbreviation "CDM" refers to Challenge Dream.

Standard Configuration

Item	Model	Specification / Description
Feed Pump	CDM 05D(SU)	Quattroflow QF30s(SU), PP pump head, max flow 0.5 LPM, 4 bar pressure, 1/8" barb fitting
	CDM 3P	Easy-load pump head, max flow 2.3 LPM, compatible with tubing sizes #13, #14, #16, #25, #17, #18
	CDM 3D(SU)	Quattroflow QF150s(SU), stainless steel pump head, max flow 3 LPM, 6 bar pressure, 1/4" Tri clamp fitting
	CDM 20P	Easy-load pump head, max flow 13 LPM, compatible with tubing sizes #26, #73, #82
	CDM 20D(SU)	Quattroflow QF1200s(SU), stainless steel pump head, max flow 20 LPM, 6 bar pressure, 3/4" Tri clamp fitting
	CDM 40D-SU	Quattroflow QF2500SU, stainless steel pump head, max flow 41 LPM, 6 bar pressure, 1" Tri clamp fitting
	CDM 80D-SU	Quattroflow QF5K, stainless steel pump head, max flow 100 LPM, 6 bar pressure, 1.5" Tri clamp fitting
Transfer Pump	CDM 05D(SU)	Easy-load pump head, max flow 0.365 LPM, compatible with tubing sizes #13, #14, #16, #25
	CDM 3P/3D(SU)	Easy-load pump head, max flow 2.3 LPM, compatible with tubing sizes #13, #14, #16, #25, #17, #18
	CDM 20P/20D(SU)	Easy-load pump head, max flow 2.3 LPM, compatible with tubing sizes #13, #14, #16, #25, #17, #18
	CDM 40D-SU/80D-SU	Easy-load pump head, max flow 13 LPM, compatible with tubing sizes #26, #73, #82
Pressure Sensor	All CDM Models	Single-Use pressure sensor, PSU material; pressure range: ~7-75 psi (0.48-5.2 bar)
HMI	All CDM Models	IPC, stable and reliable; pre-installed with Challenge Navigator software
Automatic Back Valve	All CDM Models	Automatic, precise TMP regulation
Weighing System	CDM 05D(SU)/3P/3D(SU)	Capacity 0-20Kgs, ±0.1g (multiple range options available)
	CDM 20P/20D(SU)	Capacity 0-50Kgs, ±0.1g (multiple range options available)
	CDM 40D-SU/80D-SU	Custom holder
Magnetic stirring	All CDM Models	Equipped with a weighing system and variable-speed control
Minimal-Residual Vessel	All CDM Models	Replaceable PSU-based sanitary vessel with minimal residual hold-up
Tubing	All CDM Models	Platinum-cured silicone tubing or thermoplastic tubing available per process requirements and specifications
Hollow Fiber Holder	All CDM Models	Integrated hollow fiber holder with a compact and spatially efficient design
Permeate Flow Control Valve	All CDM Models	In the microfiltration process, permeate flux is regulated to prevent membrane polarization and fouling
Permeate Module	All CDM Models	Permeate module equipped with weighing system, clean and streamlined appearance

Optional Configuration

Item	Specification / Description
pH	0-14
Conductivity Sensor	With temperature compensation,0.02-200mS/cm
UV	200–800 nm, variable wavelength
Flow meter	Optional installation at feed, retentate, or permeate
Multi-Channel Valve	Up to four multi-channel valves (MV01, MV02, MV03, MV04) can be selected simultaneously

Supporting Services

Item	Specification / Description
Equipment Installation	Installation, commissioning, and training services, 1–2 days
3Q Validation	After purchasing the 3Q validation service, a certified engineer from Challenge IM will perform on-site 3Q validation within 1–2 days
Regular Maintenance	After purchasing the annual maintenance service, monthly and annual maintenance services will be provided

Dimensions

Item	Model	Specification / Description
Feed Module	CDM 05D(SU)/3P/3D(SU)	510*480*500 (L×W×H)
	CDM 20P/20D(SU)	520*540*590 (L×W×H)
Transfer Module	CDM 05D(SU)/3P/3D(SU)	210*270*100 (L×W×H)
	CDM 20P/20D(SU)	460*440*210 (L×W×H)
Permeate Module	CDM 05D(SU)/3P/3D(SU)	210*185*100 (L×W×H)
	CDM 20P/20D(SU)	380*405*120 (L×W×H)
Weight	CDM 05D(SU)/3D(SU)	55kg
	CDM 3P	40kg
	CDM 20P	70kg
	CDM 20D(SU)	90kg

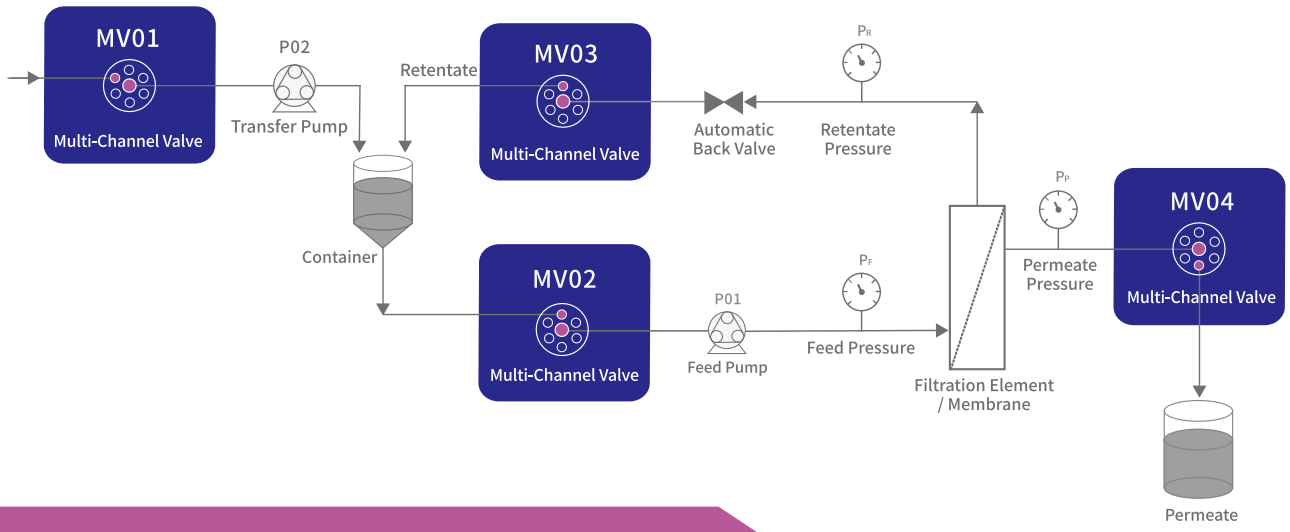
Environmental Requirements

Item	Specification / Description
Operating Temperature / Humidity	0-40°C/10-90%
IP Rating	IP33, the entire unit is wipe-cleanable
Power Supply	AC220V (CDM05-20)/AC380V (CDM40-80)

Challenge Dream+
Fully Automated TFF System

Proprietary Patented Product

Patent Numbers: ZL 2023 2 2202654.X
ZL 2023 2 0555872.9



Free Your Hands
Achieve Genuine Unattended Operation!

01 Multiple Application Scenarios

The "Challenge Dream" is a fully automated, digital, and intelligent filtration system developed based on Tangential Flow Filtration (TFF) technology. It complies with 21 CFR PART 11 and meets high demands for automation, intelligence, and efficiency. It can be applied to various scenarios such as membrane cassette lifetime validation, ultrafiltration process development, parameter optimization, and routine filtration.

02 Automation & Intelligence

Automatic and intelligent regulation.The system enables automatic, precise, and stable control of TMP. With a built-in TMP optimization algorithm, it helps users identify the optimal process flow rate and TMP parameters. The process method can be executed with one click, and flow paths are automatically switched during batch operation, allowing the entire filtration workflow — including membrane pre-use preparation, NWP test, system equilibration, sample loading, UF/DF, sample recovery, membrane post-use treatment, and storage — to be fully automated and unattended.

03 Digitalization

The system can display and record over 20 process parameters in real time, including TMP (transmembrane pressure), flow rate, flux, and processing progress, allowing users to easily view and analyze data at any time. The data management system is compliant with 21 CFR Part 11.

04 Modular Design

The system integrates transfer module, weighing and mixing module, and automatic valves. It can be configured with more than 20 sensor modules such as pH, conductivity, UV, and flow meter. These modules support plug-and-play functionality according to user needs, ensuring stable and accurate operation of the Tangential Flow Filtration process.

Challenge Hope Series Parameters

Model	Flow Rate	Recommended Volume		Filter Area	
		Hollow Fiber	Membrane Cassette	Hollow Fiber	Membrane Cassette
Challenge Hope 1P	0-1L/min	20mL-2L	20mL-2L	50cm²-0.1m²	50cm²-0.1m²
Challenge Hope 1D (SU)	0-1L/min	20mL-5L	20mL-5L	50cm²-0.1m²	50cm²-0.1m²
Challenge Hope 3P	0-2.3L/min	20mL-10L	20mL-15L	50cm²-0.37m²	50cm²-0.37m²
Challenge Hope 3D (SU)	0-3L/min	20mL-15L	20mL-15L	50cm²-0.37m²	50cm²-0.5m²

Note (Processing Range*):The specific values depend on process conditions such as processing time.

Item	Description	Specification / Description
Basic Configuration	Feed Pump	Peristaltic pump, compatible with tubing sizes #13, #14, #16,and #25,with a maximum flow rate of up to 1 LPM
	Pressure Sensor	Made of PEEK material, with a pressure range of 0–145 psi (0–6 bar)
	HMI	Industrial PC, stable and reliable; pre-installed with Challenge Navigator control software
	Automatic Back Valve	Automatically controls TMP based on the set parameters
	Weighing System	Capacity: 0–20 kg, accuracy ±0.2 g
	Magnetic Stirring	Integrated with the main circulation weighing system, featuring adjustable speed and real-time parameter recording
	Minimal-Residual Vessel	Replaceable PSU-based sanitary vessel with minimal residual hold-up
	Tubing	Platinum-cured silicone tubing or thermoplastic tubing available per process requirements and specifications
	Hollow Fiber Holder	Integrated hollow fiber holder with a compact and spatially efficient design
Optional Configuration	Transfer Pump	Peristaltic pump, compatible with tubing sizes #13, #14, #16, and #25, with a maximum flow rate of up to 1 LPM
	Multi-Channel Feed Valve	Multi-channel feed valves are available as an option, enabling automated switching between multiple sample feeds
	pH	0-14
	Conductivity Sensor	With temperature compensation, 0.02–200 mS/cm
	Holder	The standard configuration includes a hollow fiber holder. Optional membrane cassette holders can be provided, or users may connect their own membrane cassette holders.
Environmental Requirements	Operating Temperature	0-40°C
	Operating Humidity	10%-90%
	Body design	the entire unit is wipe-cleanable,IP33
	Power Supply	1.1A,220V,50/60HZ
Dimensions	Feed Module	465x420x566(L×W×H)
	Transfer Module	175x179x102(L×W×H)
	Permeate Module	175x179x102(L×W×H)
	Weight	35kg
Supporting Services	Equipment Installation	Installation, commissioning, and training services, 1–2 days
	Regular Maintenance	After purchasing the annual maintenance service, monthly and annual maintenance services will be provided

Note: The technical specifications listed above apply exclusively to the Challenge Hope 1P. For more detailed information, please contact your sales representative directly or dial 0086-10-53676660

Challenge Smart Automated TFF System

A compact, elegant, and user-friendly membrane filtration system with a sleek design and excellent cost performance. Challenge Smart integrates both Tangential Flow Filtration (TFF) and Depth Filtration (DF) technologies, meeting diverse daily filtration needs. Easy to operate with no complex settings required — just one-button start for faster and more efficient filtration.

Automatic control of TMP

01 Dual TFF and NFF Modes

The Smart Series integrates both Tangential Flow Filtration (TFF) and Depth Filtration technologies. Users can seamlessly switch modes to meet diverse filtration process needs.

02 Easy and Intuitive Operation

Equipped with Challenge Navigator software, the Smart Series requires no complex parameter setup. Designed with user habits in mind, the system offers one-touch operation for faster and more efficient filtration.

03 Digital Data Management

- All operational data can be digitally recorded, eliminating the hassle of manual data entry and ensuring no critical information is missed during experiments.
- Fully compliant with 21 CFR Part 11, ensuring data integrity, authenticity, legality, and traceability.
- The software's data analysis module generates real-time charts and reports, which can be conveniently exported for documentation or review.

04 Suitable for Biosafety Cabinets

Challenge Smart Series features a sleek and minimalist design, delivering true compact elegance in both form and function. Featuring an external display and a space-saving design, the series fits seamlessly into biosafety cabinets and limited-space environments, ensuring flexible operation wherever needed.

Challenge Smart Series Parameters

Model	Flow Rate	Recommended Volume		Filter Area	
		Hollow Fiber	Membrane Cassette	Hollow Fiber	Membrane Cassette
Challenge Smart 3P	0-2.2L/min	20mL-10L	20mL-15L	50cm²-0.37m²	50cm²-0.5m²
Challenge Smart 3D (SU)	0-3L/min	20mL-15L	20mL-15L	50cm²-0.37m²	50cm²-0.5m²
Challenge Smart 20P	0-13L/min	10L-200L	10L-200L	0.1m²-2.5m²	0.1m²-2.5m²
Challenge Smart 20D (SU)	0-20L/min	10L-500L	15L-500L	0.1m²-2.5m²	0.1m²-2.5m²

Note (Processing Range*): The specific values depend on process conditions such as processing time.

Item	Description	Specification / Description
Basic Configuration	Feed Pump	Easy-load pump head, maximum flow rate up to 2.3 LPM, compatible with #13, #14, #16, #25, #17 and # 18tubing
	Pressure Sensor	Single-use pressure sensor, made of PSU material; pressure range: -7 to 75 psi (-0.48 to 5.2bar)
	HMI	Industrial PC, stable and reliable; pre-installed with Challenge Navigator control software
	Automatic Back Valve	Automated and precise TMP regulation
	Weighing System	Capacity: 0–20 kg, accuracy ±0.2 g
	Magnetic Stirring	Equipped with a weighing system and variable-speed control
	Tubing	Platinum-cured silicone tubing or thermoplastic tubing available per process requirements and specifications,compatible with #13, #14, #16, #25, #17 and #18 tubing
	Hollow Fiber Holder	Integrated hollow fiber holder
Environmental Requirements	Operating Temperature	0-40°C
	Operating Humidity	10-90%
	Body design	IP33, the entire unit is wipe-cleanable
	Power Supply	AC220V
Dimensions	Main Unit Dimensions	490*415*415 (L×W×H)
Supporting Services	Equipment Installation	Installation, commissioning, and training services, 1–2 days
	3Q Validation	After purchasing the 3Q validation service, a certified engineer from Challenge IM will perform on-site 3Q validation within 1–2 days
	Regular Maintenance	After purchasing the annual maintenance service, monthly and annual maintenance services will be provided

Note: The technical specifications listed above apply exclusively to the Challenge Smart 3P. For more detailed information, please contact your sales representative directly or dial 0086-10-53676660

02

Challenge Jump Smart Pump

Built on quaternary diaphragm and precision peristaltic pump technologies, the Challenge Jump Smart Pump series features an intelligent HMI and advanced control software, delivering reliable liquid handling solutions for every stage of biopharmaceutical processes.

[Applications]

- Tangential Flow Filtration
- Chromatography
- Sterile Filtration
- Lysate Transfer
- Direct Flow Filtration
- Buffer/Media Preparation
- Fermenter Feeding
- Other Liquid Transfer

[Applicable Feed Solution]

- Cell Culture Media
- Enzymes
- Viral Culture Media
- Viral Vaccines
- Recombinant Proteins
- Monoclonal Antibodies
- Cell Culture Supernatant

Product Features

1 Multiple Operating Modes

- By integrating components such as pressure sensors and flow meters, the system enables specialized liquid transfer including constant pressure, constant flow, and time/volume-regulated delivery. Additionally, it features a unique Direct Flow Filtration (DFF) mode;
- Built-in manual, calibration, and dispensing modes with storage for up to 10 process recipes—designed to meet users ' daily operations.

2 Multi-level Access Control

The system features a three-level access control that optimizes access allocation, facilitating efficient laboratory data management.

3 Audit Trail

Features audit trail functionality in compliance with 21 CFR Part 11 requirements.

4 Alarm Regulation

Equipped with alarm control capabilities for real-time monitoring of overpressure and overload conditions. Alarm events are recorded in real time; after clearing the alarm, the process can be resumed by pressing the reset button.

5 Intuitive Interface

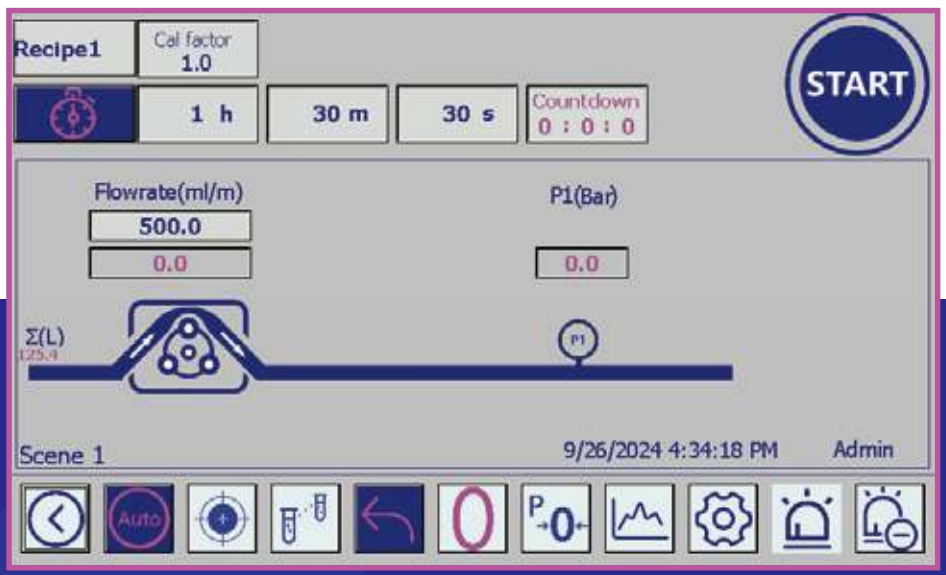
Equipped with Jump Sys control system for a more intuitive and user-friendly human-machine interface.

6 Advanced Algorithms

Built-in efficient experimental process algorithms enable users to run the system with one click by simply setting basic parameters, eliminating the hassle of calculations. Experimental data are recorded in real time and easy to export. Experimental methods can be launched with one click, with real-time display of operating status and the ability to view running trend charts.

7 Multiple Port Reservation

Capable of installing various functional modules/components.



Typical Application

[Direct Flow Filtration System]

Features constant flow, constant pressure, timed dispensing, volumetric dispensing, and a unique direct flow filtration mode.

A Smart pump connected to a single-use capsule filter forms a sterile filtration system. A pressure sensor is installed between the pump and the capsule filter to set an appropriate initial filtration flow rate, ensuring that the membrane does not clog prematurely due to excessive flow. When the filtration system pressure reaches the preset control pressure, the pump smoothly switches to constant pressure mode, maintaining system pressure by reducing the flow rate. This prevents overpressure that could cause pipe rupture or membrane damage. The entire process operates unattended, significantly saving labor.

Multiple Operating Modes

■ Timed Mode	■ Unique Direct Flow Filtration Mode	■ Calibration Mode
■ Quantitative Mode	■ Dispensing Mode	■ Soft Start Mode
■ Constant Flow Mode	■ Maximum Flow Rate Mode	■ Three-Level Access Control
■ Constant Pressure Mode	■ Automatic Operation Mode	■ Display Mode

Challenge Jump Series

The Challenge Jump series Smart Pump integrates components such as pressure sensors and flow meters to meet various liquid transfer requirements, including constant pressure and constant flow delivery. It supports a wide range of applications such as ultrafiltration, dispensing, and feed solution transfer.

- Made of 316L stainless steel
- Surface roughness Ra≤0.4μm
- Supports Clean-In-Place (CIP) / Sterilize-In-Place (SIP)

- Made of PP or PE
- Pumping performance comparable to stainless steel heads
- No need for cleaning validation and sterilization

- Single-use tubing
- Compatible with various sizes of tubing
- No contact between pump head andfeed solution
- Low shear force

Note: Challenge Jump D series offers both reusable stainless steel and single-use pump head options.
Challenge Jump P Series is equipped with an Easy-load pump head.

Comparison between D series and P series

Type	D Series Smart Diaphragm Pump	P Series Smart Peristaltic Pump
Pump Head	SS316L pump head and SU pump head of PP	Easy-load pump head
Features	① SS316L pump head: reusable, supports online cleaning and sterilization ② PP pump head: single-use, reduces cleaning validation costs	① Easy to install and can be stacked ② Tubing is single-use, minimizing cross-contamination risk
	Siemens industrial HMI ensures stable system operation	
	Touchscreen interface for faster data input	
	Multi-sensor interface enables rapid process automation	
	Sleek design with a strong sense of technology	

Challenge Jump Technical Specifications

Item	D Series Smart Diaphragm Pump				P Series Smart Peristaltic Pump	
Pump Head Type	Multi-use pump head		Single-use pump head		Easy-load II	Easy-load
Model	Jump 150D	Jump 1200D	Jump 150D-SU	Jump 1200D-SU	Jump 150P	Jump 1200P
Flow Rate	1-180LPH	10-1200LPH	1-180LPH	10-1200LPH	3.6-174LPH	36-1560LPH*
Flow Rate Accuracy	±2%				±2%	
Tubing	/				#13,14,16,25,17,18 / 15,24,35,36	#26,73,82/ 70,88,89
Max Pressure	6bar(fluid temperature<40°C) 4bar(fluid temperature>40°C)		4bar		2.5Bar	
Max Temperature	Fluid temperature:80°C; CIP:90°C;SIP:130°C High-pressure sterilization:130°C		Fluid temperature:60°C High-pressure Sterilization:130°C		/	
Connector Size	1/4" TC or 3/4" TC				/	
Elastomer Wetted-Part Certification (Optional)	USP <88> Class VI certified;FDA 21 CFR 177 compliant;BSE/TSE free				/	
Stainless Steel Wetted-Part Certification (Optional)	Surface finish roughness (Ra): ⩽ 0.4 μm; Ferrite phase content: less than 1%;				/	
HMI computer	7" Siemens display				7" Siemens display	
Software system	Jump Sys				Jump Sys	
Housing material	SS316L				SS316L	
Power supply	220 VAC				220VAC	
Rated speed	3000 rpm	2400 rpm	3000 rpm	2400 rpm	0.1-600 rpm	
Rated power	200W	900W	200W	900W	200W	600W
Operating Temperature	0-40°C				0-40°C	
Operating Humidity	(10%-90%) RH, no condensation				(10%-90%) RH, no condensation	

Note 1: The motor frequency and the resulting pump speed may vary depending on the combination of motor and variable frequency drive.

Note 2: Parameters are based on dual pump head configuration.

Challenge Jump Ordering Information

Model	Pump Type	Flow Rate	Order Number
Challenge Jump 150D	Diaphragm Pump	1-180L/h	CJP150D
Challenge Jump 1200D	Diaphragm Pump	20-1200L/h	CJP1200D
Challenge Jump 2500D	Diaphragm Pump	50-2500L/h	CJP2500D
Challenge Jump 4400D	Diaphragm Pump	150-5000L/h	CJP4400D
Challenge Jump 5000D	Diaphragm Pump	200-6000L/h	CJP5000D
Challenge Jump 30D-SU	Diaphragm Pump	0.06-30L/h	CJP30D-SU
Challenge Jump 150D-SU	Diaphragm Pump	1-180L/h	CJP150D-SU
Challenge Jump 1200D-SU	Diaphragm Pump	20-1200L/h	CJP1200D-SU
Challenge Jump 2500D-SU	Diaphragm Pump	50-2500L/h	CJP2500D-SU
Challenge Jump 4400D-SU	Diaphragm Pump	150-5000L/h	CJP4400D-SU
Challenge Jump 150P	Peristaltic Pump	3.6-174L/h	CJP150P
Challenge Jump 1200P	Peristaltic Pump	36-780L/h	CJP800P

[Product Model Naming Rules] D: Diaphragm Pump P: Peristaltic Pump SU:Single-Use

03

Challenge FIT5 Integrity tester

Challenge FIT5 Integrity testers are characterized by their portability, ease of use, and automation, aiding you in accurately and reliably completing the integrity testing of filters and process equipment. They offer high testing precision, good repeatability, and stable performance, having already served hundreds of customers. The latest model, FIT5, complies with FDA 21CFR PART 11, meeting the latest requirements for data integrity.

Product Features

1 Reliability

- IP54 dust and splash protection rating
- Cleanable and replaceable sleeve interface module to eliminate contamination risk
- Automated self-check program provides timely calibration verification

2 Advantages

- Robust dust and water protection design with automated inspection and calibration functions
- Optimized test calculations to shorten testing time and simplify test procedure creation
- Clear and intuitive user interface with comprehensive prompts supporting every step
- Flexible information display, operation status, and test grouping to meet diverse process requirements
- Standard wireless and LAN connectivity, local area network support for multi-unit management and synchronization

3 Compliance

- Compliant with GMP and FDA 21 CFR Part 11
- Supports multi-level user access permission settings to ensure data integrity and complete audit trails
- Login with username and password, featuring 4-level access control, and supports both manual and electronic signatures
- This instrument is certified by the EU CE mark

4 Practicality

- Bilingual Chinese and English operating interface
- Built-in thermal printer
- Streamlined workflow interface for easy operation
- Supporting multiple input methods
- The diffusion flow–pressure display curve supports the visualization and printing of three curves simultaneously
- The intake control unit has been optimized, significantly improving intake speed and stability
- The use of high-precision sensors and optimized algorithms allows for gas lines to be extended up to 100 meters, making the testing of upstream volume more accurate

5 Integration

- Supports data input through Wifi and USB printers
- Offers a wide range of data interfaces, with RS232 and USB as standard, and supports customization of various industrial buses and analog control ports to meet the requirements of a digital factory

Technical Specification

Item	Description
Operating system	Linux
User interface	Chinese-English bilingual user interface
Display Screen	10" high-resolution color touchscreen
Operating pressure	100-10000 mbar (150psi)
Unit of measure	mbar , kpa, psi, kgf/cm^2
Operating conditions	Temperature:+5°C - +40°C;Humidity:10-80%
Testing function	Manual bubble point test,Basic bubble point test,Enhanced bubble point test,Pressure hold test, Diffusion flow test,Water intrusion test,Ultrafiltration membrane cassette test
Testing accuracy	Net volume test: ± 4%
	Bubble point: ± 50 mbar
	Diffusion flow:± 4%
	Water intrusion method: ± 0.01 ml
Testing range	Symmetric and asymmetric membrane testing, needle filters, stack filters, flat sheet filters, cartridge filters (up to 12"×20"), ultrafiltration membrane cassettes, ultrafiltration columns, various irregular filters
Audit trail	Comprehensive event logs, exportable but not modifiable
Access control	Username and password login with 4 levels of access control, compliant with FDA 21 CFR PART 11 requirements
Pre-stored Test Protocols	1000
Audit Trail Record	⩾5 years
Anti-backflow device	Optional
Number of users	1000
Dustproof and splash-proof rating	IP54 enclosure/ IP56 front
Printing function	Built-in thermal printer to eliminate risk of particle and ink contamination; Printouts remain clear for over 10 years under proper conditions
Test Log History	Unlimited record storage
Log Backup	Supports data export via USB (including test curves)
Serial port connection method	RS232 serial port, USB interface; supports wireless connectivity
Mode of use	Online and offline modes supported
Applicable Environment	Grade D or higher
Power Supply	100–240 VAC, 50HZ, 120W
Weight	10KG
Signal output	4-20mA、RS485、12V alarm output.
Outer dimensions (mm)	480*300*190 (L×W×H)

04 Accessories

Challenge Base™ series membrane cassette holders, compatible with mainstream brand membrane cassettes, customizable according to customer requirements, can be used individually or in combination with Tangential Flow Filtration systems.

Cassette Holder

Product Features:

1. The entire structure is made of 316L stainless steel;
2. Manufactured in compliance with GMP standards and according to ASME BPE specifications;
3. Hygienic fluid groove design with no residue or dead corners, facilitating easy cleaning;
4. Inner and outer surfaces are electropolished with a surface roughness of Ra ⩽ 0.4 μm;
5. Pressure monitoring is done via a pressure gauge, with optional pressure sensors that perfectly integrate with the Challenge Jump Smart pump.

Model	Membrane Cassette Size & Quantity	Accessories
CBEM0F	100 cm^2, 1-5 pcs; 0.1 m^2 × 1	Complete Set
CBEM0D	0.1 m^2, 1-5 pcs	Complete Set
CBEM0E	0.5 m^2, 1-5 pcs; 2.5 m^2 × 1	Complete Set

Minimal-residual vessel

- ☐ Patented design [Note], zero residue
- ☐ Constructed from PSU material; robust, durable, and drop-resistant
- ☐ Resistant to acids and alkalis, pH 0-14
- ☐ High stability with leachables compliant with pharmaceutical standards
- ☐ Capable of repeated high-temperature sterilization; compliant with USP Class VI standards

Note1: China Utility Model Patent, Patent No.: ZL 2022 2 3020116.0
Note 2: China Utility Model Patent, Patent No.: ZL 2022 2 2821171.3

Single-use Pump Chamber

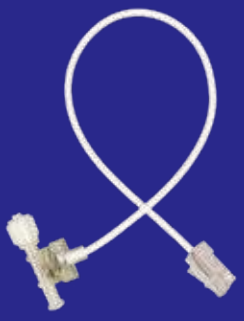
Model:

- ☐ QF12DISPP-3
- ☐ QF12DISPP-3-M
- ☐ QF25D
- ☐ QF44D
- ☐ QF12DISPP-3-EZ
- ☐ QF15DISPP-3-EZ
- ☐ QF30D
- ☐ QF5D

Single-Use Pressure Sensor

The single-use pressure sensor is intended for real-time monitoring of fluid pressure and transmits signals to higher-level control systems. It complies with biopharmaceutical hygiene standards, offers a cost-effective solution, and is ideal for single-use applications.

Y-type Connector



RJ-Style Connector

Luer Connector

Barbed Connector

Tri-Clamp Connector

Technical Specifications

Specifications	Value
Measurement Range	0-6.005bar
Accuracy	0-0.41bar, +1% 0.41-2.07bar, +2% 2.07-4.14bar, +4%
Operating Temperature Range	0-50°C
Input Voltage	4-5V
Connection Type	Y-type quick connector / 4-pin RJ-style connector
Cable Length	Y-type connector: 350 mm
	RJ-Style connector: 1000 mm

Ordering Information

Model	Inner Diameter	Connector Type	Model	Inner Diameter	Connector Type
PSV-N-000-U	/	Luer	PSV-N-100-U	1/2"	Barb
PSV-N-000-R	/	Luer	PSV-N-5-5-U	3/4"	Tri-Clamp
PSV-N-012-U	1/8"	Barb	PSV-N-1-1-U	1"	Tri-Clamp
PSV-N-025-U	1/4"	Barb	PSV-N-15-15-U	1½"	Tri-Clamp
PSV-N-038-U	3/8"	Barb	PSV-N-1-100-U	1" Tri-Clamp to 1" Barb Connector	
PSV-N-050-U	1/2"	Barb	PSV-N-5-038-U	3/4" Tri-Clamp to 3/8" Barb Adapter	
PSV-N-075-U	3/4"	Barb	PSV-N-5-050-U	3/4" Tri-Clamp to 1/2" Barb Adapter	

Basic Accessory Kit for D3

Applicable:3P, 3D, 05D-SU, 3D-SU Series

- 1/8" Female & Male Luer, Barb Connector
- 3/16" Female & Dual-Ended Luer (Female & Male), Barb Connector
- 1/4" Female & Male Luer, Barb Connector
- Female & Male Luer Cap
- 1/4" MPC Female & Male Connector
- Luer Lock 3-Way Stopcock Valve
- Luer Lock 2-Way Stopcock Valve
- Male-Female Luer Elbow Connector, 90° Bend
- 1/8" & 1/4" Equal Y-Type Connector
- 3/4" Tri-Clamp to 1/4" Barb Adapter
- 3/4" Tri-Clamp to 1/8" Barb Adapter
- Sanitary Gasket, 3/4" Platinum-Cured Silicone
- TC25 End Cap / Blind Flange
- Roberts Clamp (#5), for #14 Tubing
- Roberts Clamp (#3), for #16, #17, #18, and #25 Tubing
- TC25 PA Clamp

Other Accessories Information

Peristaltic Pump Tubing

Long-Life Peristaltic Pump Tubing

Crimped Hose Assembly

Membrane Kit for Quaternary Diaphragm Pump

Clamp(SS316L)

Clamp (PA)

Flow Control Valve

Tri-Clamp Equal Tee

Blind Plate (SS316L)

Blind Plate (PP)

O-ring (Silicone)

O-ring (EPDM)

Quick Connector (SS 316L)

Quick Connector

CPC Connector

Feed Port Connector

Cassette Holder

Pressure Gauge

Inline Pressure Sensor

Tri-Clamp Pressure Sensor

Note: For more detailed information, please contact your sales representative directly or dial 0086-10-53676660

Customers

CDMO/CRO	WuXi Biologics, XDC, GenScript, Intellective, Hillgene, Haoshi Bio, ATON
Antibody	正大天晴 CHIATAI TIANQING, BeiGene, Innovent 信达生物制药, Henlius, 万邦医药, GenSci
CGT	Everest Medicines, CirCode, PersonGen 博生吉, 艾妙神州 IMUNOPHARM, Virogin, Cell&Gene, Carbiogene 康佰裕
Vaccines Proteins	中国生物 CNBG, SINOVAC 科兴, GenSci, 金宇生物 JINYU BIO-TECHNOLOGY, zoetis
Res. Inst. / Other	广东工业大学, 华南理工大学, 深圳大学, Hongene Biotech, TIDE 泰德制药, Acro, Beilu

Certificates

Certified as a National High-Tech Enterprise

Over 30 patents granted

ISO 9001 certified

On-Site Customer Installations

05 Excellent + Service

Specialized

- Comprehensive pre-sales support system;
- Customized solutions tailored to your needs

Thoughtful

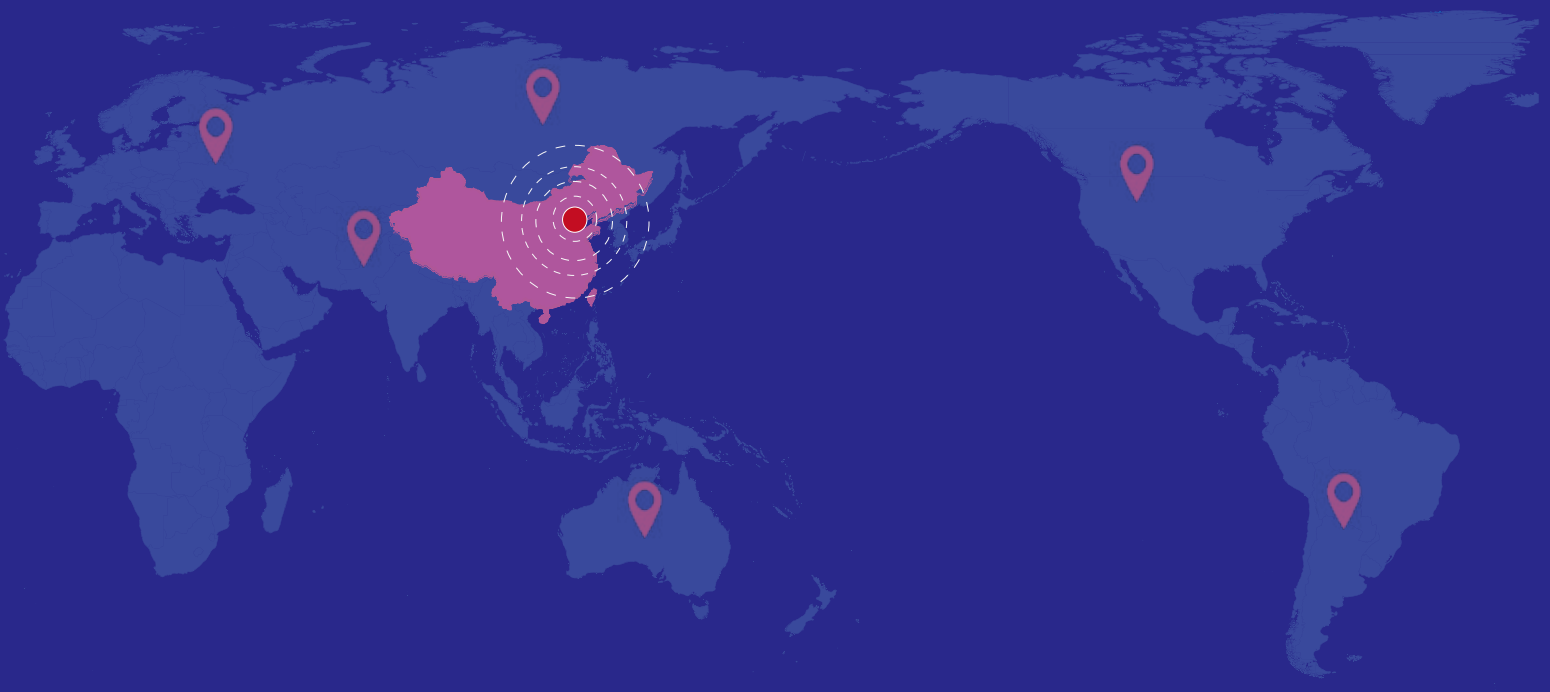
- Comprehensive service process including installation and user training for seamless operation

Efficient

- Short lead times to meet urgent needs;
- Professional after-sales team with 2-hour response and support within 24 hours

Peace Of Mind

- Scheduled maintenance services for reliable and worry-free operation



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