

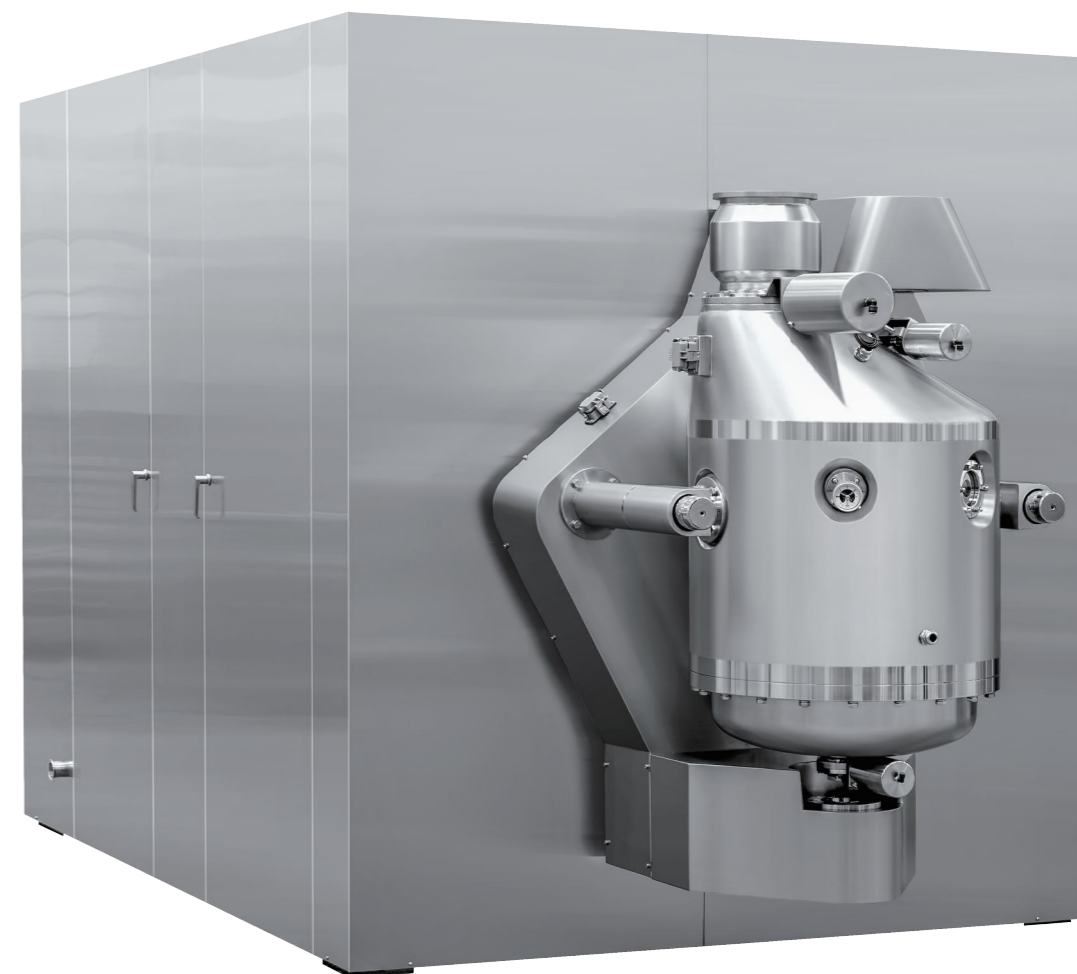
浙江亞光科技股份有限公司  
ZHEJIANG YAGUANG TECHNOLOGY CO.,LTD.

# LQSF翻转式立式(胶塞/铝盖)清洗机

LQSF Flip Type Vertical (Rubber Stopper/Aluminum Cap) Washing Machine

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Zhejiang Yaguang Technology Co., Ltd is a national certified high-tech enterprise specializing in the design, production and sales of pharmaceutical equipment since established on 1996. Yaguang has been focusing on pharmaceutical equipment industry for years and developed the first Rubber Stopper Washing Machine in 1997, the first Agitated Nutsche Filter Dryer and other core equipment of pharmaceutical process system in 2000, Yaguang has a leading position in China's pharmaceutical industry.

The main products of Yaguang fall into three categories: Washing Machine (including Rubber Stopper / Aluminum Cap Washing Machine), API production line (Reaction Tank, Crystallizing Tank, Agitated Nutsche Filter Dryer, Conical Pulse Mixing Dryer, Split Charging Weighing System and so on), Efficient Rotating Distillation Bed. More than that, Yaguang is the drafting unit for industry standards of Rubber Stopper Washing Machine and Agitated Nutsche Filter Dryer, has obtained more than 100 patented technologies, the equipment has passed certifications such as American FDA, EU cGMP, Japanese GMP in a number of domestic and abroad pharmaceutical industries.

Yaguang has a provincial R&D center with manufacturing licenses of D1, D2 pressure vessel in China. With the solid technical foundation, advanced management concepts and excellent corporate culture, Yaguang is developing with a steady pace and being a global professional pharmaceutical process program supplier.

### 优秀的技术和质量推动明天中国制药装备的发展

Advanced technology and excellent quality facilitate the development of pharmaceutical and chemical equipment in China

## 公司简介 Company Profile

浙江亚光科技股份有限公司创建于1996年,是专业从事制药机械的研发、生产与销售的高新技术企业。亚光公司多年来一直专注于制药装备领域,1997年研制出第一台胶塞清洗机、2000年研制出第一台过滤洗涤干燥机制药工艺系统核心设备,树立起行业产品细分市场的龙头地位。

公司的主要产品有:清洗机系列(包括胶塞、铝盖清洗机)、API精烘包生产线(反应釜、结晶罐、过滤洗涤干燥机、单锥混合干燥机、分装称重系统等)、高效旋转精馏床。其中胶塞清洗机、过滤洗涤干燥机为国家行业标准起草单位,拥有专利技术100余项,产品分别在国内外众多药企通过美国FDA、欧盟cGMP、日本GMP验证。

公司拥有一个省级研发中心,中心具有一、二级压力容器及ASME设计资质。凭借着扎实的的技术基础,先进的管理理念和优秀的企业文化,亚光公司一路稳步向前,努力将公司打造成一流的面向全球的专业制药工艺方案服务商。



## 人力资源 Human Resource

公司始终把人才培养作为企业发展的基础,通过多层次、多形式、多渠道的培训,全方位培养各级各类人才;亚光招贤纳士,不断引进经验丰富的中高级人才,加大人才储备力度,讲究专业门类齐全、重视理论与实践经验并行,以雄厚的技术实力,为客户提供“诚信公正,优质高效”的服务。

Our company always regards talent cultivation as the foundation for enterprise development. Through trainings at various levels, in multiple forms and from varied channels, we cultivate all kinds of talents. Yaguang continuously introduces experienced senior and intermediate talents, enhances talent storing, reinforces combination of theory and practical experience and provides customers with services of "sincerity, fairness, high quality and high efficiency" with our powerful technical strength.



## 生产实力 Production Strength

市场竞争的基础,离不开生产实力,离不开完善先进的硬件设施。深知硬件设施重要性的亚光,在同行业内率先引进国外先进的生产设备,几年来更先后投入资金对硬件设施进行更新换代,以国际化的生产设施生产出符合GMP标准的高端优质产品。

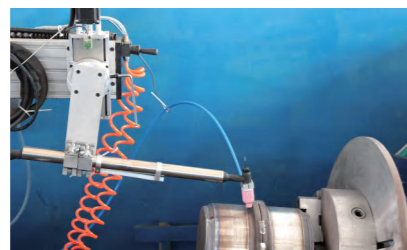
The basis of market competition, inseparable from the production capability, and can not do without an advanced hardware facilities. Fully aware of the importance of hardware facilities, Yaguang takes the lead in the introduction of foreign advanced production equipment in the industry; during recent years Yaguang has further invested in updating the hardware facilities, to produce high-end quality products with the internationalized production facilities to meet the GMP standard.



## 生产实力 Production Strength

先进的高、精、尖  
设备保证了高品质的产品

The sophisticated equipment bring up  
high quality products



## 产品和服务 Production Strength

### 产品

- 1、清洗机系列:主要产品有药用胶塞清洗机、铝盖清洗机等。为胶塞清洗机国家行业标准起草单位。
- 2、固液分离和粉体处理系列:主要产品有无菌溶解罐、结晶罐、过滤洗涤干燥机、粉碎机、混合机、自动称量分装系统等。其中过滤洗涤干燥机为国家行业标准起草单位。
- 3、溶媒回收:精馏床。

### Products

1. Washing machine series: The main products include medical rubber stopper washing machines, aluminum cap washing machines and etc. Yaguang is the drafting unit of national industrial standard of rubber stopper /aluminum cap washing machines.
2. Solid-liquid separation and powder treatment series: The main products include Aseptic Dissolving Tanks, Crystallizing Tanks, Agitated Nutsche Filter Dryer, Comminutor, Mixers, Automatic Weighing and Split-charging Systems. Yaguang is the drafting unit of national industrial standard of pharmaceutical Agitated Nutsche Filter Dryer.
3. Solvent recovery: Distillation Bed.

### 服务

设备的设计、制造、安装、调试及技术支持。

### Services

Design, manufacturing, installation, commissioning  
and technical support for the equipment.



## LQSF翻转式立式(胶塞/铝盖)清洗机系列

LQSF Flip Type Vertical (Rubber Stopper/Aluminum Cap) Washing Machine

### LQSFD翻转式单工位立式清洗机系统

LQSFD Flipped Single Working Position Vertical Cleaning Machine System

### LQSFS翻转式双工位立式清洗机系统

LQSFS Flipped Double Working Position Vertical Cleaning Machine System



## 适用产品

# Applicable Products

- 粉针胶塞、冻干胶塞、水针西林瓶胶塞、大输液胶塞
- 药用铝盖、铝塑复合盖
- Serum Stoppers, Lyophilization Stoppers, Penicillin stoppers, Infusion stoppers.
- Medicinal aluminum cover, aluminum plastic composite cover.

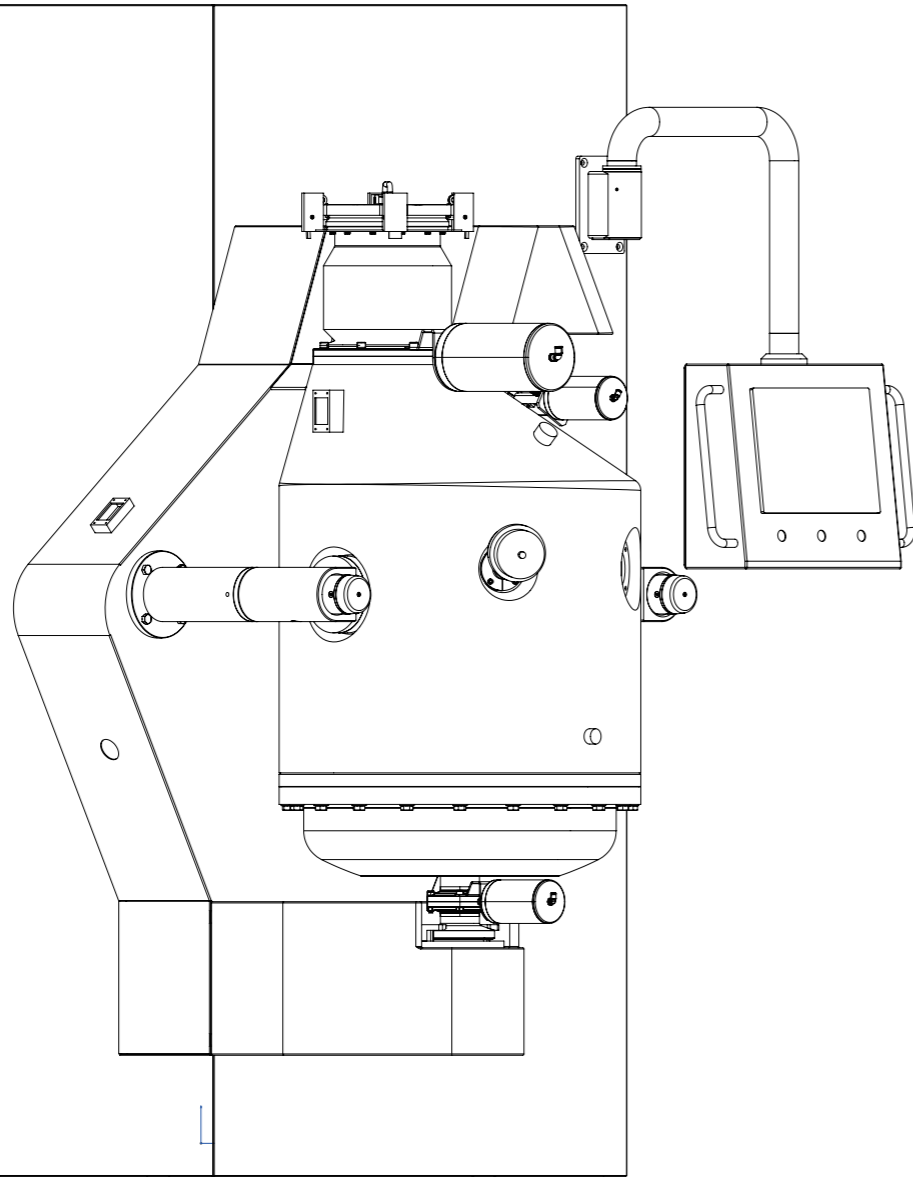
## 工作原理

# Working Principle

- 进料:采用人工进料的方式。
- 罐体对接定位:采用人工将罐体与清洗站系统叉臂对接胀紧定位。
- 清洗:采用罐体翻转和气冲混合清洗相结合的方式。清洗水注入到设定液位后,洁净压缩空气从罐体底部引入对物料进行强力气冲混合清洗。
- 灭菌:采用饱和蒸汽灭菌。灭菌时,饱和蒸汽通过罐体灭菌阀进入罐内,向罐内均匀喷洒纯蒸汽,通过罐体翻转,使得罐内的物料均匀受热,灭菌效果良好。
- 干燥:采用真空干燥或者热风干燥的方式。真空系统通过抽吸罐体内湿热蒸汽使物料水分蒸发,同时采用热风吹扫加热使物料达到干燥的要求。
- 冷却:采用冷却后的洁净压缩空气吹扫及脉动真空的方式进行冷却。
- 出料:采用提升机将罐体与灌装线的无菌阀对接出料。
- Feeding: manual feeding.
- Tank docking and positioning: manually connect and expand the tank body with the arm of the cleaning station system for positioning.
- Cleaning: a combination of tank flipping and air impact mixed cleaning is used. After the cleaning water is injected to the set liquid level, clean compressed air is introduced from the bottom of the tank to perform strong air impact mixed cleaning on the material.
- Sterilization: saturated steam sterilization. During sterilization, saturated steam enters the tank through the tank sterilization valve and evenly sprays pure steam into the tank. By flipping the tank, the materials inside the tank are evenly heated, resulting in good sterilization effect.
- Drying: vacuum drying or hot air drying. The vacuum system evaporates the moisture of the material by suction of damp and hot steam inside the tank, and uses hot air to blow and heat the material to meet the drying requirements.
- Cooling: carried out by blowing clean compressed air and vacuum for cooling.
- Discharging: a lifting machine is used to dock the equipment body with the sterile valve of the filling line for discharging.

## 产品概述 Product Overview

- 主要用于药厂中小批量胶塞(铝盖)的清洗、灭菌、干燥、冷却、无菌密闭储存转运工序的专用设备,全过程采用电脑自动控制操作
- Mainly used for the cleaning, sterilization, drying, cooling, and sterile sealed storage and transportation processes of small and medium-sized rubber stoppers (aluminum caps) in pharmaceutical factories, the entire process adopts computer automatic control operation

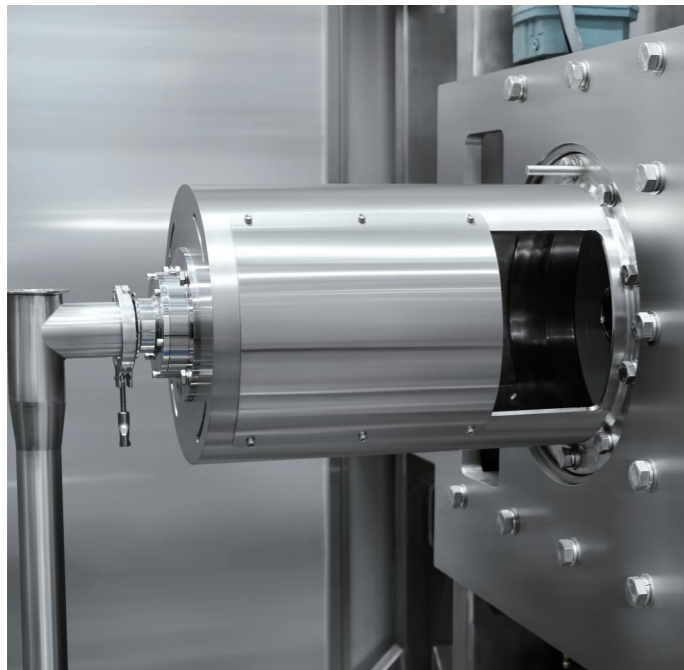


## 主要技术特点 Main Technical Features

- 罐体与清洗站采用上下充气静态密封,避免泄露风险。
- 除菌过滤器可实现在线灭菌和在线完整性测试,设备性能更加安全可靠。
- 单、双工位清洗站系统,可以同时或者独立对物料进行处理,满足客户不同的产量需求。物料可采用手动或无菌阀进料的方式,满足客户各种需求。排水口设置防倒灌装置避免因水汽倒灌所引起的污染风险。
- 物料直接装在罐体里,采用罐体摇臂翻转和气水冲击相结合的清洗方式,避免内部机械结构对物料可能产生摩擦损伤的风险。
- 物料可实现同一清洗站上分罐清洗,分罐转运,一站多用,节约厂房空间布局。
- The tank body and cleaning station are statically sealed with upper and lower inflation to avoid leakage risks.
- The sterilization filter can achieve SIP and online integrity testing, making the equipment performance safer and more reliable.
- Single or double working position cleaning station systems can handle materials simultaneously or independently, meeting different production needs of customers. Materials can be fed manually or through sterile valves to meet various customer needs.
- Install anti backflow filling devices at the drainage outlet to avoid pollution risks caused by water backflow.
- The materials are directly loaded into the equipment body and cleaned using a combination of tank arm flipping and air water impact to avoid the risk of friction damage to the materials caused by internal mechanical structures.
- Materials can be cleaned and transported in separate tanks at the same cleaning station, with multiple uses at one station, saving the layout of factory space.



## 主要技术特点 Main Technical Features



### 翻转机构设计

Flipping component design

- 罐体摇臂翻转:采用电磁制动电机和二级蜗轮蜗杆减速机组合,快速自锁定位。
- 双旋转接头:上下总管采用双旋转接头设计,避免采用金属软管在翻转过程中摇摆,减少泄露风险,增加管道整体美观性。
- Equipment arm flipping: It adopts a combination of electromagnetic brake motor and two-stage worm gear reducer to quickly self-lock and locate.
- Double rotary joint: The upper and lower main pipes adopt a double rotary joint design, avoiding the use of metal hoses swaying during the flipping process, reducing the risk of leakage, and increasing the overall aesthetics of the pipeline.



### 配备无菌阀 Sterile valve

- 无菌阀对接转运实现了物料从清洗到出料的全程密闭,避免了交叉污染的风险,更加符合GMP的要求。在C级区就能实现物料的无菌转移,使用房间洁净等级要求降低,方便操作以及节能减排。
- The docking and transportation of sterile valves achieve the complete sealing of materials from cleaning to discharge, avoiding the risk of cross contamination and more in line with GMP requirements. In the C-level area, sterile transfer of materials can be achieved, with reduced requirements for room cleanliness, convenient operation, and energy conservation and emission reduction.

### 罐体锁紧装置

Tank locking component

- 罐体与清洗站采用专用机械张紧臂结构进行锁紧,确保罐体在运行时候位置保持不变,安全可靠。
- The tank body and cleaning station are locked by a dedicated mechanical tensioning arm structure to ensure that the position of the tank remains unchanged during operation and ensure equipment safety.



### 生产方式更灵活

Flexible production method

- 可配多个罐体,利用配套能快速锁定对接的转运小车也可作物料储存桶和转移,可以根据不同时间的生产需求选择罐体数量满足生产需求。
- It can be equipped with multiple tank bodies, and can be quickly locked and docked with a transfer cart. It can also achieve material storage and transfer functions, and the corresponding number of tank bodies can be selected according to different production needs at different times.



## 主要技术特点 Main Technical Features

### 自动化控制及计算机验证

Automation and computerized system

控制系统由工业级触摸式平板电脑(IPC)+可编程序控制器(PLC)组成, 轻松实现全自动控制, 画面显示友好, 监控界面、操作界面、配方界面等界面分布合理, 企业在使用过程中简单化完成批次生产。根据GAMP指南, 使得计算机化系统符合预定的用途并满足现有法规, 我司可自主的做计算机系统验证, 满足企业验证需求。

The control system is composed of an industrial grade touch tablet computer (IPC) and a programmable logic controller (PLC), which can easily achieve full automatic control. The screen display is friendly, and the monitoring interface, operation interface, formula interface, and other interfaces are distributed reasonably. The enterprise simplifies the process of batch production during use. According to the GAMP guidelines, in order to ensure that the computerized system meets the intended use and existing regulations, our company can independently conduct computer system verification to meet the verification needs of enterprises.

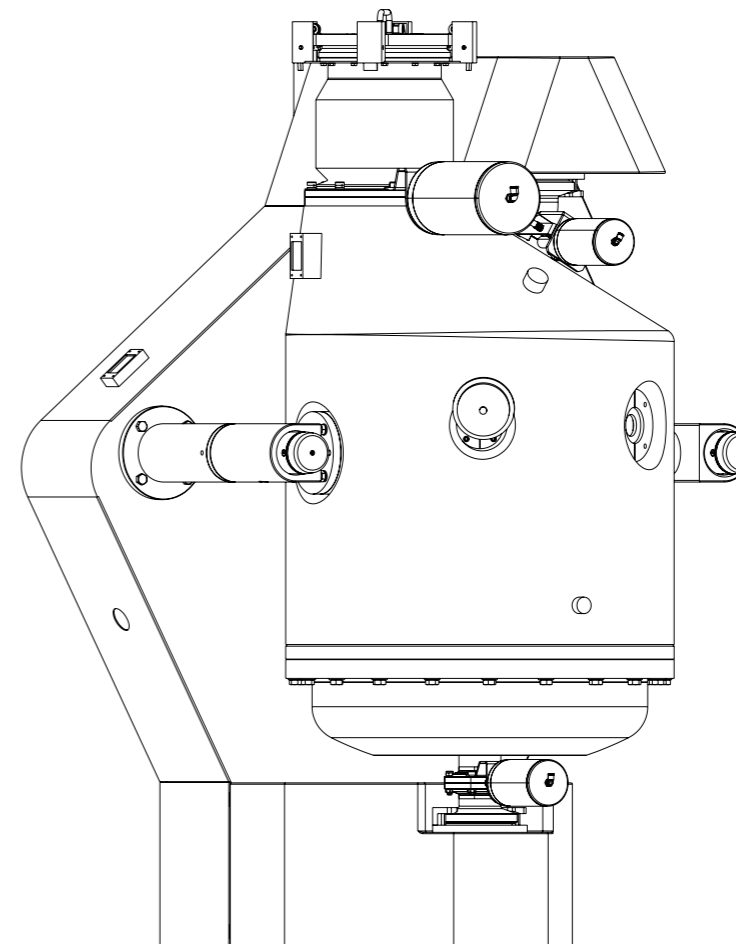


## 基本参数 Basic Parameters

型号 Model	产量(只) Output(Pcs)	罐体有效容积(L) Effective volume	长L (mm)	宽W (mm)	高H (mm)	净重(kg) Net weight
LQSFD-4	40000	200	2900	2100	2300	3000
LQSFD-6	60000	280	2900	2100	2400	3200
LQSFD-8	80000	350	2900	2100	2500	3400
LQSFS-12	120000	560	2900	3800	2400	4400
LQSFS-16	160000	700	2900	3800	2500	4500

注:产量中胶塞以Φ19x8.5粉针西林瓶胶塞为标准, Φ20复合铝盖与Φ19粉针胶塞充装率比约为1.5~1.7:1

Note: Production capacity of rubber stoppers calculates by the powder injection antibiotic bottle ofΦ19 x 8.5, the filling rate betweenΦ20 composite aluminum cap andΦ19 powder injection rubber stopper is about 1.5 1.7:1.



### 控制系统主要功能

Main functions of control system



用户权限管理  
User permission management



访问权限设置  
Access permission settings



电子签名  
Electronic signatures



审计追踪  
Audit trails



配方管理  
Formula management



批次报表  
Batch reports



数据备份  
Data backup



实时监控  
Online monitoring