



张謇 Zhang Jian

南通人，近代著名实业家、政治家、教育家。一生创办了20多个企业，370多所学校，为中国近代民族工业的兴起、教育事业的发展作出了宝贵贡献，被称为“状元实业家”。

Born in Nantong, a famous industrialist, politician and educationalist of modern times. Throughout his lifetime, he founded more than 20 enterprises and 370 schools, making essential contributions to the rise of China's modern national industry and the development of the education sector. He is known as "industrialist with top scholar".

## 南通大通宝富风机有限公司 NANTONG DART-RICH FAN CO.,LTD.

江苏省南通市经济技术开发区通盛大道88号  
No.88 Tongsheng Ave., Nantong Economic&Technological  
Development Area, Jiangsu Province, China



电话 (Tel) : 0086-513-85554411, 85554401  
服务热线 Service Hotline: 400-625-2668  
网址 (Website) : [www.dart-rich.com](http://www.dart-rich.com)  
邮箱: (Email): [ntfan@dart-rich.com](mailto:ntfan@dart-rich.com)

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南通大通宝富风机有限公司  
NANTONG DART-RICH FAN CO.,LTD.

**核级品质 节能专家**

NUCLEAR-GRADE QUALITY  
ENERGY-SAVING SPECIALIST







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# 公司简介

## COMPANY INTRODUCTION



南通大通宝富风机有限公司  
Nantong Dart-Rich Fan Co., LTD.



大通宝富（湖南）风机有限公司  
Dart-Rich (Hunan) Fan Co., Ltd

南通大通宝富风机有限公司（原国营南通风机厂）创建于1966年。2019年6月进行股权结构改革，成为合伙人制企业；为满足公司快速发展的需要，大通宝富（湖南）风机有限公司于2021年10月投产。1991年获得国务院颁发的“国家重大技术装备研制突出贡献奖”，2015年获得“中国电力科学技术进步一等奖”，2016年、2018年两次获得“中国机械工业科学技术二等奖”，2018年10月入选《寻找中国制造隐形冠军》（通用机械卷），2018年DM1000型MVR蒸汽压缩机被江苏省工信厅认定为江苏省首台（套）重大装备产品，2020年8月取得军工核安全设备设计与制造许可证，2022年10月获得中国质量认证中心颁发的“一级能效产品认证证书”，2022年11月荣获“江苏省专精特新中小企业”称号，2023年11月荣获“江苏精品”认证，2024年5月被商业信用中心评定为“商业信用AAA级”。是整体齿轮增速组装型离心式蒸汽压缩机团体标准主起草人。

Nantong Dart-Rich Co., Ltd. (former as State-Owned Nantong Fan Factory) was founded in 1966. In June 2019, the company underwent shareholding structure reform and became a partnership enterprise. To meet the needs brought by rapid development, Dart-Rich (Hunan) Fan Co., Ltd. was put into operation in October 2021. The company won the "Outstanding Contribution Award of the Development of Nantional Major Technical Equipment" issued by the State Council in 1991, the "First Prize of China Electric Power Science and Technology Progress" in 2015, the "Second Prize of China Machinery Industry Science and Technology" in 2016 and 2018, and was selected in the book of "Looking for the Hidden Champion Made in China" (General Machinery Volume) in October 2018, DM1000 MVR steam compressor was recognized by Jiangsu Provincial Department of Industry and Information Technology as the first (set) major equipment product in Jiangsu Province in 2018, and in August 2020, the company obtained the design and manufacturing license of military nuclear safety equipment. In October 2022, the company was awarded the "Level 1 Energy Efficiency Product Certificate" by the China Quality Certification Center. In November 2022, the company was awarded the title of "Jiangsu Province Specialized, Refined, Special, and New Small and Medium Sized Enterprise", and in November 2023, it was certified as "Jiangsu Boutique". And in May 2024, it was rated as "AAA Commercial Credit" by the Commercial Credit Center. Dart-Rich is the main drafter of the group standard for Packaged, integrally geared centrifugal watervapour compressor.

大通宝富一直坚持管理创新、机制创新、文化创新、技术创新，持续进行数智化、奋斗者文化和“三智”建设，深度洞察市场，不断推进组织裂变，提升客户服务综合能力，实现了快速健康发展。

Dart-Rich is always persisting in the management innovation, mechanism innovation, cultural innovation, and technological innovation, and continues to carry out the construction of digital intelligence, striver culture and "three wisdom", it has a deep insight into the market, constantly promotes the organization fission, improves the comprehensive ability of customer service, and realizes the rapid and healthy development.

目前，大通宝富已具备千万吨级炼化一体化装置，乙烯裂解炉，再生系统，煤化工气化装置，钢铁行业大型除尘系统、烧结主抽、干熄焦、能量回收系统，33000kVA工业硅矿热炉除尘系统，水泥生产线，大型循环流化床机组，军用核工业装置通风机；硫磺回收系统，煤气输送装置，制碱真空滤碱机装置，煤气化装置高压氮气循环系统鼓风机；以及废水处理，浓缩结晶工艺，余热回收与管道增压，热泵精馏等装置蒸汽压缩机（齿轮增速、低温升、高速直驱）等大型及高端设备的研发制造能力。

At present, Dart-Rich has the R&D and manufacturing abilities for large and high-end equipment, such as fans for integrated refining and chemical equipment with a capacity of millions of tons, ethylene cracking furnace, regeneration system, coal chemical gasification equipment, large dust removal system for steel industry, main exhaustor of sintering, dry quenching coke, energy recovery system, 33000kVA industrial silicon submerged arc furnace dust removal system, cement production line, large circulating fluidized bed units, military nuclear industry device; blowers for sulfur recovery system, gas transmission devices, vacuum alkali filter equipment for alkali production, high pressure nitrogen circulation system of coal gasification units; steam compressors (gear booster, low temperature rise, high-speed direct drive) for waste water treatment, concentration crystallization process, waste heat recovery and pipeline pressurization, heat pump distillation devices.

近年来，大通宝富先后添置了12米数控卧式车床和磨床、大型数控镗铣床和镗床、6米龙门刨铣床、德国哈默五轴加工中心、数控车铣复合中心、叶片自动成型机器人、叶轮自动焊接机器人、机壳自动焊接机、丹麦全自动旋压机、大型激光切割机等大、精、稀加工设备，12米德国申克动平衡机、三坐标测量仪等先进检测设备，装备和制造能力达到行业领先水平。

In recent years, Dart-Rich has successively installed many large, fine and rare equipment, such as the 12-meter CNC horizontal lathe and grinding machine, the large CNC boring-milling machine, the large boring lathe, the 6 meter planer milling machine, the German Hermle five-axis machining center, CNC turning and milling compound center, automatic blade forming robot, the impeller automatic welding robot, the casing automatic welding machine, the spinning machine imported from Denmark and the large-scale laser cutting machine and other large, fine, thin processing equipment. There are also some advanced testing equipment like the 12-meter German Schenck dynamic balancing machine, CMM and others. Equipment and manufacturing capacities reach industry-leading level.

大通宝富坚守“诚实守信、专注专业、利他共生”的核心价值观，始终坚持“以客户为中心，以奋斗者为本，长期艰苦奋斗，坚持自我批判”的基本理念。持续提升企业价值，不断为客户创造最大价值，实现所有利益相关方的共担共创共享，致力于成为可靠、绿色流体机械的引领者！

Dart-Rich adheres to the core values of "honest and trustworthy; concentrated and professional; Altruism and Mutualism", and always adheres to the basic concept of "customer-centered, striver-oriented, long-term hard work and self-criticism". Continuously enhance enterprise value, continuously create maximum value for customers, and realize the sharing of all stakeholders, and commitment to become the leader of reliable green fluid machinery!



# 发展历程

## DEVELOPMENT HISTORY

# 50+

### 年的发展历程 我们沉淀许久

With the development history of more than 50 years, we deposit a long-time substantial experience.

产品升级  
Product  
Upgraded

技术引进  
Technology  
Introduced

股份制  
改革  
Joint stock  
system reform

国产化  
Localized

国有化  
Nationalized

创立  
Founded

**2016年8月**，首台高温升MVR蒸汽压缩机出厂。  
In August 2016, The first high temperature rise MVR steam compressor shipped.

**2014年12月**，设立流体机械博士后工作站。  
In December 2014, Established post-doctoral workstation for fluid machinery.

**2013年4月**，为世界首台600MW超临界CFB电站机组提供一次、二次风机，获得2015年中国电力科技进步一等奖、2016年中国机械工业科技二等奖。

In April 2013, Provided primary and secondary fans for the world's first 600MW supercritical CFB power plant unit, which won the First Prize of China Electric Power Science and Technology Progress in 2015 and the Second Prize of China Machinery Industry Science and Technology in 2016.

**2011年—2013年**，申请并获得核级风机/风阀设计、制造许可证。  
In year 2011-2013, Obtained the design and manufacturing license of nuclear grade fan/air damper.

**2007年11月**，首批单级高速离心鼓风机出厂。  
In November 2007, The first batch of single-stage high-speed centrifugal blowers shipped.

**2004年12月**，与德国宝富合资成立了南通大通宝富风机有限公司，引进德国技术。  
In December 2004, A joint venture was established with German Pollrich GmbH, introduced German technology.

**2004年8月**，为沙钢供货360m³烧结主抽风机转子，风量19000m³/min、全压18500Pa、叶轮直径4020mm。  
In August 2004, Supplied rotor of main exhaust fan for 360m³ sintering in Sha-steel, with air flow of 19,000 m³/min, full pressure of 18500Pa and impeller diameter of 4020mm.

**1997年4月**，经江苏省人民政府批准进行改制，更名为江苏大通风机股份有限公司。  
In April 1997, The reform was approved by the People's Government of Jiangsu Province, changed the name into Jiangsu Dart Fan Co., Ltd.

**1991年3月**，获得国务院颁发的国家重大技术装备研制突出贡献奖。  
In March 1991, Won the State Council's Outstanding Contribution Award for the Development of National Major Technical Equipment.

**1990年12月**，为宝钢2#4063m³高炉提供优质设备，获得中国冶金设备总公司的贡献奖。  
In December 1990, Provided high-quality equipment for Baosteel's 2#4063m³ blast furnace and won the contribution award of China Metallurgical Equipment Corporation.

**1988年10月**，对宝钢进口风机测绘，开始了进口风机国产化的征程。  
In October 1988, The surveying and mapping of the imported fans of Baosteel, started the journey of localization for the imported fans.

**1984年5月**，实行国营集体联合经营，更名为国营南通风机厂。  
In May 1984, Implement the state-owned collective joint operation, changed the name into Nantong Fan Works.

**1970年4月**，更名为南通鼓风机厂。  
In April 1970, Changed the name into Nantong Fan Works.

**1966年11月20日**，南通市胜利人民公社冷作机械修配厂成立。  
In November 20, 1966, An enterprise was founded with name Nantong Shengli Communal Cold Working Machine Maintenance Shop.

国产化  
提速  
Localization  
accelerate

应用更广  
Wider application

合伙人  
新时代  
Equity structure  
reform

高速直驱  
突破  
Breakthrough in  
High-speed  
direct drive

**2023年**，大力推进国产化，实现多个领域进口风机国产化，如再生风机、干熄焦循环风机等。  
In 2023, The company will vigorously promote localization and achieve the localization of imported fans in multiple fields, such as regeneration fans and dry quenching circulating fans.

**2023年11月**，荣获“江苏精品”认证。  
In November 2023, It was certified as "Jiangsu Boutique".

**2023年9月**，《整体齿轮增速组装型离心式蒸汽压缩机》团体标准主起草单位。  
In September 2023, Dart-Rich became the main drafting unit of the group standard for the assembled centrifugal steam compressor with integral gear speed increase.

**2023年7月**，成为江苏省首批五星级上云企业。  
In July 2023, Dart-Rich became one of the first five-star cloud enterprises in Jiangsu Province.

**2022年11月**，荣获“江苏省专精特新中小企业”称号。  
In November 2022, Dart-Rich was awarded the title of "Jiangsu Province Specialized, Refined, Special, and New Small and Medium sized Enterprise".

**2022年9月**，“石化风机工程技术中心”在大通宝富设立。  
In September 2022, The Petrochemical Fan Engineering Technology Center was established in Dart-Rich.

**2022年9月**，甲醇介质压缩机成功运行，蒸汽压缩机已覆盖废水处理、生产工艺段、管道增压（余热利用）、热泵精馏等四大应用领域。

In September 2022, The methanol medium compressor was successfully operated, and the steam compressor has covered four major application areas: wastewater treatment, production process section, pipeline boosting (waste heat utilization), and heat pump distillation.

**2021年10月**，大通宝富（湖南）风机有限公司投产。  
In October 2021, Dart-Rich (Hunan) Fan Co., Ltd. was put into operation.

**2020年12月**，首台油膜轴承高速直驱蒸汽压缩机下线。  
In December 2020, The first oil film bearing high-speed direct drive steam compressor went offline.

**2020年8月**，取得军工核安全设备设计与制造许可证。  
In August 2020, Obtained the design and manufacturing license for military nuclear safety equipment.

**2020年4月**，首批裂解炉引风机出厂，跻身顶级离心通风机研制商行列。  
In April 2020, The first batch of induced draft fans for cracking furnaces were manufactured, ranking among the top centrifugal fan developers.

**2019年6月**，进行股权结构改革，成为合伙人制企业。  
In June 2019, The shareholding structure reform was carried out and it became a partnership enterprise.

**2019年5月**，行业首台磁悬浮蒸汽压缩机诞生。并于2022年7月通过“江苏省重点科技计划（产业前瞻与关键核心技术）项目”验收。

In May 2019, The industry's first maglev steam compressor was born. And passed the acceptance of the "Jiangsu Province Key Science and Technology Plan (Industry Outlook and Key Core Technology) Project" in July 2022.

**2018年10月**，入选《寻找中国制造隐形冠军》。  
In October 2018, Was selected in the book of "Looking for the Hidden Champion Made in China".

**2018年10月**，DM系列MVR蒸汽压缩机获得中国机械工业科技二等奖，并被认定为江苏省首台（套）重大装备产品。

In October 2018, DM series MVR steam compressor won the second prize of China Machinery Industry Science and Technology Award and was recognized as the first (set) major equipment product in Jiangsu Province.

**2017年12月**，首批军用核工业核安全级风机出厂。  
In December 2017, The first batch of military nuclear industry nuclear safety grade fans shipped.

**2017年11月**，首批低温升MVR蒸汽压缩机出厂。  
In November 2017, The first batch of low temperature rise MVR steam compressors shipped.



# 蒸汽压缩机

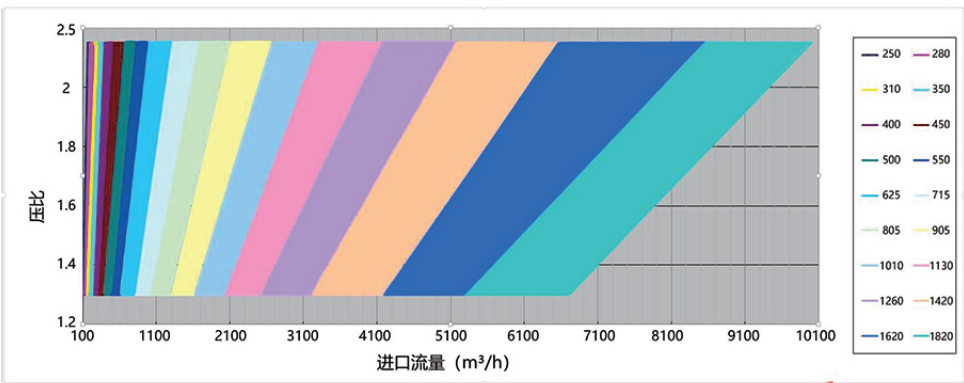
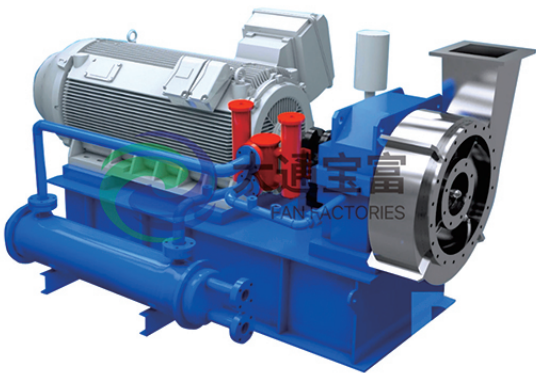
## STEAM COMPRESSOR

### 单级齿轮增速蒸汽压缩机

#### SINGLE-STAGE GEAR BOOSTER STEAM COMPRESSOR

DM系列单级齿轮增速蒸汽压缩机主要由压缩机本体、联轴器、齿轮箱、润滑系统、电动机、电气仪表及防喘振系统等组成，结构紧凑、便于维护。

DM series Single-stage gear steam compressor mainly includes compressor body, coupling, gearbox, lubrication system, motor, electric instrument and anti-surge control system. It is of compact structure and convenient for maintenance.



#### 产品特点 Product Features

- 采用高效三元流半开式叶轮，专业的气动和结构设计，叶轮型线先进、稳定工况范围宽，主机最高多变效率可达88%。
- 采用无叶扩压器，机组运行范围宽。
- 齿轮箱与压缩机结构整体一体化设计，结构紧凑。
- 压缩机、齿轮箱和电动机为整体撬装式设计，便于运输和安装。
- 自动化程度高，可靠性好，高效节能，操作方便。
- With the high-efficient 3D flow semi-open impeller, the professional aerodynamic and structural design, the impeller profile is advanced and the blower has a wide range of stable operating condition. The highest efficiency of the main machine can reach up to 88%.
- With the adoption of a bladeless diffuser, it has a wide operating range.
- The gearbox and compressor are integrated and designed in a compact structure.
- The product is an integral skid-mounted package, consisting of compressor, gear box and motor, which is easy for transportation and installation.
- High degree of automation, good reliability, high efficiency and energy saving, easy operation.

#### 性能范围 Performance Range

该产品气动技术全套引进国外成熟模型级及设计软件，为用户提供最快最优选型。产品分为18个系列，适用流量范围1-240 t/h、温升8-24℃。

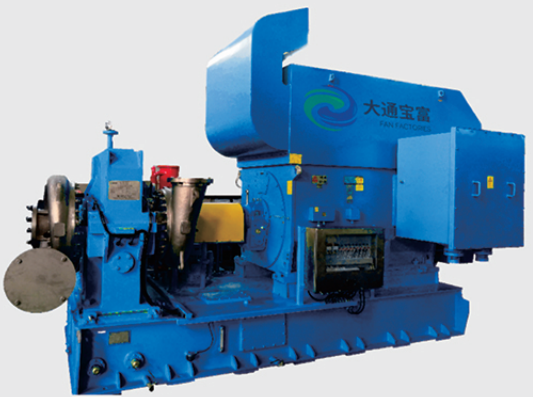
The complete set of pneumatic technology for this product is imported from foreign mature stage model and design software so that we can provide clients with fast and optimal model selection. The products can be divided into 18 series, with applicable flow rate of 1-240 t/h and temperature rise of 8-24℃.

### 多级齿轮增速蒸汽压缩机

#### MULTI-STAGE GEAR BOOSTER STEAM COMPRESSOR

DHM帝鸿系列多级齿轮增速蒸汽压缩机主要由主机、润滑系统、电动机、联轴器、电气仪表及防喘振系统等组成，结构紧凑、便于维护。

The DHM DiHong multi-stage steam compressor is mainly composed of a host, lubrication system, motor, coupling, electrical instruments and anti-surge system, with a compact structure and easy maintenance.



#### 产品特点 Product Features

- 采用高效三元流半开式叶轮，专业的级间气动匹配，整机稳定工况范围宽，主机最高多变效率可达88%。
- 采用IGV+循环线调节满足用户多工况需求，机组运行范围宽、效率高。
- 整体撬装式设计，多转子与增速箱整体一体化设计，结构紧凑。
- 蒸汽温升可达105℃。
- Adopting high-efficiency ternary flow semi-open impeller, professional inter-stage pneumatic matching, the whole machine has a wide range of stable working conditions, and the highest polytropic efficiency of the host can reach 88%.
- Adopting IGV+circulation line adjustment to meet the user's demand for multiple working conditions, the machine has a wide operating range and high efficiency.
- The overall skid-mounted design, multi-rotor and speed booster box overall integrated design, compact structure.
- The temperature rise of steam can reach 105℃.

#### 性能范围 Performance Range

该产品气动技术全套引进国外成熟模型级及设计软件，为用户提供最快最优选型。产品分为10个系列，适用流量范围1-120 t/h、温升25-105℃。

The pneumatic technology for this product is fully imported from foreign mature stage model and design software, providing users with the fastest and most optimized model. The product is divided into 10 series, with a suitable flow range of 1-120 t/h and a temperature rise of 25-105℃.

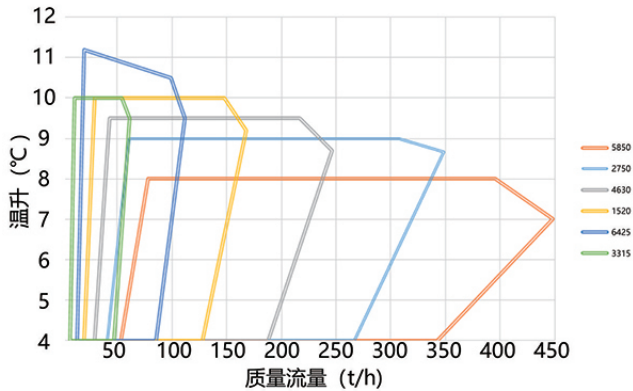
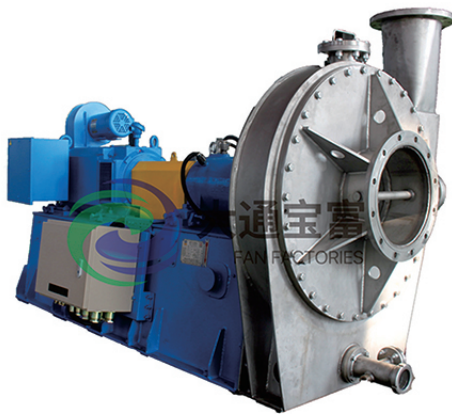


# 低温升蒸汽压缩机

## LOW TEMPERATURE RISE STEAM COMPRESSOR

DML系列低温升蒸汽压缩机主要由压缩机本体（壳体、叶轮、主轴、轴承箱、密封等）、联轴器、电动机、电气仪表等组成。

DML series low temperature rise steam compressor is mainly composed of a compressor body (volute, impeller, main shaft, bearing housing, seal, etc.), coupling, motor, electric instrument, etc.



### 产品特点 Product Features

- 叶轮通过模具成型，材质为双相不锈钢，具有良好的耐磨及抗腐蚀性。
- 采用SKF滚动轴承、喷油润滑。
- 轴端密封采用碳环密封结构并加装充气装置或真空装置，确保轴承箱与压缩机壳体充分隔离。
- 压缩机组为整体撬装式设计，便于运输和安装。
- 自动化程度高、操作方便，实时监控压力、振动等参数；通过变频调速或导叶调节实现压缩机变工况运行，确保系统高效运行。
- Impellers are forged and shaped using mould, and the materials are of duplex stainless steel, which is anti-corrosive and has a good wear resistance.
- SKF rolling bearing and oil spray lubrication are adopted.
- The shaft seal adopts carbon ring seal structure with an inflation or vacuum unit to ensure the sufficient isolation between the bearing housing and the compressor volute.
- The compressor unit is of integral skid-mounted design, which is convenient for transportation and installation.
- High degree of automation, easy handling, real-time monitoring on parameters of pressure and vibration; achieve variable working conditions of the compressor by frequency control or guide vane adjustment to ensure the high efficient running of the system.

### 性能范围 Performance Range

该产品气动技术全套引进国外成熟模型级及设计软件，为用户提供最快最优选型。产品分为5个系列，适用流量范围4-250 t/h、温升4-11.2℃。

The pneumatic technology of this product is fully equipped with foreign mature model series and design software, providing users with the fastest and best selection. The products are divided into 5 series, the applicable flow range is 4-250 t/h, and the temperature rise is 4-11.2℃.

# 高速直驱蒸汽压缩机

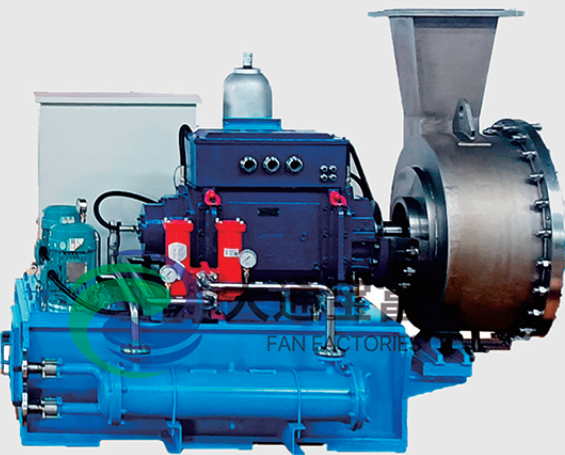
## HIGH-SPEED DIRECT DRIVE STEAM COMPRESSOR

### 1.油膜高速直驱蒸汽压缩机

#### OIL-FILM HIGH-SPEED DIRECT DRIVE STEAM COMPRESSOR

油膜高速直驱蒸汽压缩机是采用高效永磁电机的一种透平设备，主要结构为叶轮直接安装在电机轴伸端，转子部分由油膜轴承直接支撑，不需要增速箱及联轴器，实现由高速电机直接驱动。

Oil-film high-speed direct drive steam compressor is a kind of turbine equipment using high efficiency permanent magnet motor. Its main structure is that the impeller is directly installed at the shaft extension end of the motor, and the rotor is directly supported by oil film bearing, to realize direct drive by high-speed motor, without speed increasing box and coupling.



### 产品特点 Product Features

- 省去了齿轮增速装置，整机效率提高10%-20%。
- 结构更加紧凑，占地面积为齿轮增速型机组的1/2。
- 柔性轴系设计，适用参数范围更广。
- NVH特殊设计，使得噪声和振动达到极低水平。
- 整机载荷为齿轮增速的50%，土建要求、成本低。
- The gear speed increasing device is omitted, and the efficiency of the whole machine is improved by 10%-20%.
- The structure is more compact, and the occupied area is 1/2 of that of the gear speed-increasing unit.
- Flexible shafting design, wider range of applicable parameters.
- NVH is specially designed to make noise and vibration reach extremely low level.
- The load of the whole machine is 50% of the gear speed increase, which is required by civil engineering and has low cost.

### 性能范围 Performance Range

该产品适用流量范围1.5-15 t/h，温升8-20℃，最大功率500kW。

The product is suitable for flow range of 1.5-15 t/h, temperature rise of 8-20℃ and maximum power of 500kW.



2.磁悬浮蒸汽压缩机  
MAGNETIC STEAM COMPRESSOR

磁悬浮蒸汽压缩机是采用磁悬浮轴承透平设备的一种，其主要结构为叶轮直接安装在电机轴伸端，而转子被垂直悬浮于主动式磁性轴承上，不需要增速箱及联轴器，实现由高速电机直接驱动。

The magnetic steam compressor is a kind of turbine equipment using magnetic bearing. Its main structure is that the impeller is directly mounted onto the motor shaft extension end, and the rotor is suspended vertically on the active magnetic bearing, without speed increasing box and coupling. It is directly driven by a high-speed motor.



产品特点 Product Features

- 安全。三重保护，远程24h在线监测。
- 节能。比传统单级高速蒸汽压缩机整机效率高20%~35%。
- 安静。噪音比传统单级高速蒸汽压缩机低30~40dB。
- 洁净。不使用润滑油，告别油污，土壤零污染。
- 紧凑。是同等参数传统单级高速蒸汽压缩机占地面积的1/5左右、体积的1/10左右，节省更多的空间。
- Safe. Triple protection, 24 hours remote online monitoring.
- Energy saving. Compared with the traditional single-stage geared steam compressor, the overall efficiency is 20%-35% higher.
- Quiet. The noise is 30-40dB lower than the traditional single-stage geared compressor.
- Clean. No lubrication oil, no oil pollution and zero soil pollution.
- Compact. It can save more space as it is about 1/5 of the area and 1/10 of the volume of the traditional single-stage geared steam compressor with the same parameters.

机型 Model	入口温度℃ Inlet Temp. °C	温升16℃ Temp. rise16℃	温升17℃ Temp. rise17℃	温升18℃ Temp. rise18℃	温升19℃ Temp. rise19℃
		流量t/h Flow t/h			
KPM2	80	1.45 ~ 1.69	1.52 ~ 1.76	1.59 ~ 1.83	1.665 ~ 1.89
	85	1.715 ~ 2.01	1.795 ~ 2.09	1.88 ~ 2.17	1.965 ~ 2.2
	90	2.015 ~ 2.37	/		
KPM3	80	2.24 ~ 2.62	2.27 ~ 2.65	2.295 ~ 2.685	2.325 ~ 2.715
	85	2.7 ~ 3.155	2.735 ~ 3.195	2.765 ~ 3.23	2.8 ~ 3.27

标准磁悬浮机组  
Standard Magnetic Levitation Compressor

蒸汽压缩机主要应用领域 Main application areas of steam compressors

- [热泵精馏](#)
- [余热回收](#)
- [废水处理](#)：工业废水处理、锂电废水处理、废水循环再利用、垃圾渗滤液处理、垃圾焚烧飞灰浸取液钠钾分离等。
- [锂电](#)：盐湖提锂、磷酸铁装置及三元前驱体废水处理、锂电池拆解废水处理、电镍大循环等各种工艺装置。
- [新能源](#)：光伏废水处理、多晶硅废水处理等。
- [食品与饮料](#)：氨基酸（丙氨酸）等浓缩提取、糖液浓缩干燥、饮料果酱浓缩等。
- [医药](#)：中西药生产工艺过程中的蒸发、浓缩、结晶和干燥等。
- [化工](#)：已内酰胺工艺聚合装置、聚乳酸PLA装置、尼龙66生产装置、螯合剂蒸发结晶、甘露醇浓缩、元明粉蒸发结晶、有机物浓缩结晶、香料提纯、化工原料生产等。
- [冶金](#)：烧结脱硫废水处理、焦化废水处理、提钒废水处理、冶炼废水处理等。
- [电力](#)：电站脱硫废水处理、锅炉清洗废水处理等。
- [核工业](#)
- [Heat pump distillation](#)
- [Waste heat recovery](#)
- [Environmental protection field](#): industrial wastewater treatment, lithium battery wastewater treatment, wastewater recycling, landfill leachate treatment, waste incineration fly ash leachate sodium and potassium separation, etc.
- [Lithium-Ion battery industry](#): various process devices such as salt lake lithium extraction, iron phosphate device, ternary precursor wastewater treatment, lithium battery disassembly wastewater treatment, and nickel battery circulation.
- [New energy industry](#): photovoltaic wastewater treatment, polycrystalline silicon wastewater treatment, etc.
- [Food & beverage industry](#): concentration and extraction of amino acids (alanine), concentration and drying of sugar liquid, concentration of beverage jam, etc.
- [Pharmaceutical industry](#): evaporation, concentration, crystallization and drying in the production process of Chinese and Western medicines.
- [Chemical industry](#): caprolactam process polymerization device, polylactic acid PLA device, nylon 66 production device, chelating agent evaporation crystallization, mannitol concentration, anhydrous sodium sulfate evaporation crystallization, organic matter concentration crystallization, fragrance purification, chemical raw material production, etc.
- [Metallurgical industry](#): treatment of sintering desulfurization wastewater, coking wastewater, vanadium extraction wastewater, smelting wastewater, etc.
- [Power industry](#): Treatment of desulfurized wastewater from power stations, etc.
- [Nuclear industry](#)



# 高效离心通风机

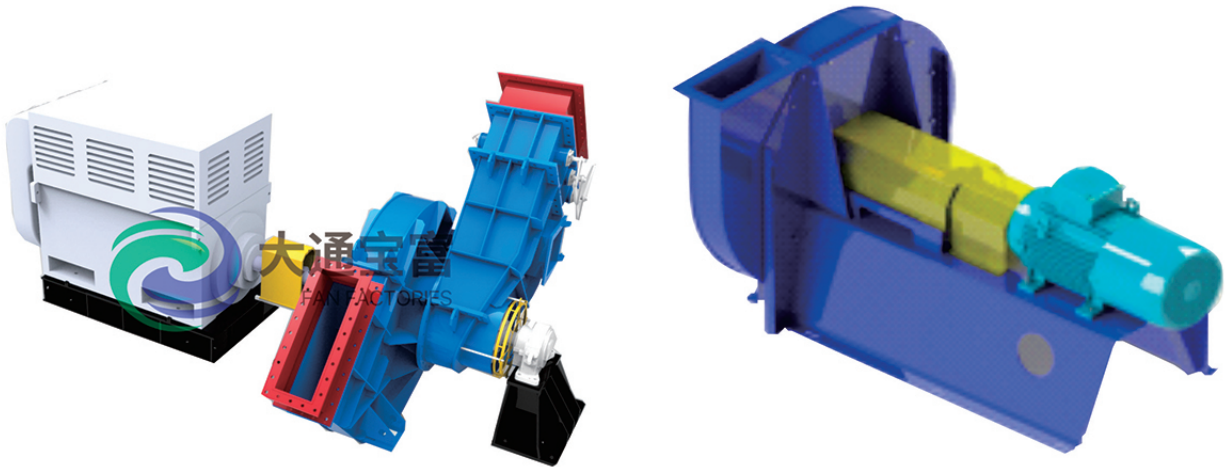
## HIGH EFFICIENT CENTRIFUGAL FAN

离心通风机主要由转子组（叶轮、主轴）、静止件（机壳、进气箱、进风口）、调节门等组成的本体及电机、液偶、执行器等辅机以及控制监测系统组成。

离心通风机的传动形式有：电机直联传动（A式）、皮带传动（B、C、E式）、联轴器传动（D式）、带进气箱联轴器传动（F式），其中E式、F式可设计成双吸入式风机。

The centrifugal fan is mainly composed of fan unit, auxiliaries along with the control and monitoring system. Fan unit consist of a rotor part (impeller and the main shaft), static part (housing, inlet box, air inlet), damper and etc. And the auxiliaries includes motor, hydraulic coupling, actuator and etc.

The centrifugal fans have various transmission methods, which are the motor direct connection (A type), the belt transmission (B, C, E type), the coupling transmission (D type) and the coupling transmission with inlet box (F type). Among these, the E type and F type can be designed as double suction fan types.



### 产品特点 Product Features

- 采用先进的模型级，使用CFD技术对叶轮等流道进行优化，使风机效率高、噪音低、高效区宽。
  - 使用CAE工具对产品进行强度、刚度和转子动力学校核，风机运行平稳，安全可靠。
  - 通过优化，使风机结构合理易于安装检修。
  - 通过采用各种材料，应用不同的技术，可提供耐磨、耐高温、耐腐蚀、高密封等要求工况的风机。
- With the advanced model series, and with the optimization of the impeller and other flow channel by CFD technology, the fan is of high efficiency, low noise and wide high efficiency range.
- Using CAE tools to verify the strength, stiffness, and rotor power of the product, ensuring smooth, safe and reliable operation of the fan.
- By optimization, the fan structure is reasonable and easy to install and maintain.
- By adopting various materials, and applying different technologies, we can provide fans used for many working conditions such as wear resistance, high temperature resistance, corrosion resistance and tight seal.

### 性能范围 Performance Range

结合西安交通大学、清华大学等著名高校的研究成果，并通过国际先进技术的引进消化吸收再创新，产品性能可覆盖市场所有需求。产品有30多个系列、800多种型号、2800多种规格。适用流量范围200~2800000 m³/h、压力范围550~30000 Pa。叶轮直径300~5000 mm、风机本体重量几十千克~几十吨。

Combined with the research results of famous universities such as Xi'an Jiaotong University, Tsinghua University and so on, and through the introduction, digestion, absorption, and innovation of international advanced technology the product performance can cover all market needs. The products have more than 30 series, more than 800 models and more than 2800 specifications. The applicable flow rate range is 200~2800000 m³/h, and the pressure range is 550~30000 Pa. The diameter of the impeller is 300~5000 mm, and the weight of the fan unit ranges from several tens of kilograms to several tens of tons.

### 主要应用领域 Main Application

- **化工行业**：动力站风机，裂解炉引风机，再生风机，常减压、催化裂化、加氢裂化、延迟焦化、催化重整、乙烯裂解、芳烃、丙烷脱氢、煤制油、合成氨、煤制乙二醇等装置的加热炉、重沸炉、焚烧炉、乙烯裂解炉、硫磺回收、干燥、气化炉、尾气处理等各种工艺用风机及特殊材料、高密封、防爆风机等，碳素煅烧及输送、废液焚烧、VOCs治理系统风机等。
  - **冶金行业**：高炉、转炉、电炉、精炼炉、LF炉、RH炉、混铁炉、AOD炉、焦化地面站除尘站、工业硅矿热炉除尘等系统除尘风机，喷煤系统主排烟风机、引风机，热风炉助燃风机，烧结系统主抽风机、烧结烟气循环风机、除尘风机、冷却风机，球团系统回热风机、废气主抽风机、鼓干风机、炉罩风机、环冷风机，干熄焦循环风机，炼钢、连铸系统排蒸汽风机，轧钢系统风机，烧结、焦炉、热风炉烟气脱硫脱硝系统增压风机，烧结余热发电系统循环风机、引风机，煤气发电系统送风机、引风机，铜冶炼、氧化铝、电解铝、熔炼、煅烧等各种工艺装置及各工艺流程用风机等。
  - **电力行业**：循环流化床及煤粉炉发电机组送风机、一次风机、二次风机、引风机、播煤增压风机，锅炉烟气循环风机，其他用途风机等。
  - **建材行业**：水泥线高温、循环等大风机，篦冷风机及各类辅助风机，水泥窑协同处置系统风机等；砖瓦厂烧结线及超低排放系统风机；玻璃线工艺段及余热发电系统风机等。
  - **环保领域**：垃圾焚烧及生物质发电焚烧炉一次风机、二次风机、引风机、各类冷却风机，烟气超低排放系统风机等；污泥干化及焚烧、固废协同处置、VOCs治理等领域专用风机。
  - **新能源**：锂辉石焙烧、酸化生产线助燃风机、冷却风机、引风机等， 储能电池火法工艺段、除尘系统、尾气处理系统等高温风机、废气风机、收尘风机等，正极材料烧结窑炉、正极和负极材料干燥系统风机，光伏玻璃、光热玻璃生产线风机。
  - **军用核工业**：军用核安全级风机等。
  - **其他领域**：纺织机械、粮食机械、新能源机械、造纸机械、除尘净化、工业炉窑、燃烧器、涂装线、干燥等领域专用风机。
- Chemical industry**: Fans for power station; induced draft fan for cracking furnace; regeneration fans; fans for various processes such as heating furnaces, reboilers, incinerators, ethylene cracking furnaces, sulfur recovery, drying, gasifiers, tail gas treatment, etc. in atmospheric and vacuum distillation, catalytic cracking, hydrocracking, delayed coking, catalytic reforming, ethylene cracking, aromatics, propane dehydrogenation, coal to oil, synthetic ammonia, coal to ethylene glycol, etc; as well as fans of special materials, high-sealing and explosion-proof fans, fans for carbon calcination, delivering and VOCs treatment system.
- Metallurgical industry**: Dust removal fans for blast furnace, converter, electric furnace, refining furnace, LF furnace, RH furnace, mix iron furnace, AOD furnace, coking ground dust removal station, industrial silicon submerged arc furnace dust removal and other systems, main exhaust fans and induced draft fans for coal injection system, hot blast furnace combustion fans, main exhaust fans, flue gas circulating fan, dust removal fans and cooling fans for sintering system, heat recycle fans, flue gas main exhaust fans, dry blower, furnace hood fan, annular cooling fans for pellet system, steam exhaust fan of steelmaking and continuous casting system, fans for steel rolling system; booster fans for sintering as well as coke oven flue gas desulfurization and denitration system, circulation fans and induced draft fans for sintering waste heat power generation system, air supply fans and induced draft fans for gas power generation system, various process equipment and fans for copper smelting, alumina, electrolytic aluminum, smelting, calcination, and other processes.
- Power industry**: Air supply fans, primary air fans, secondary air fans, induced draft fans and fuel spreading booster fans for circulating fluidized bed and pulverized coal furnace generator; boiler flue gas circulation fans, and fans for other purposes.
- Building material industry**: Large fans of cement line high temperature and circulation, grate cooling fans and various auxiliary fans, fans of cement kiln cooperative disposal system etc.; Brick and tile factory sintering line and ultra-low emission system fans; Glass line process section and waste heat power generation system fans, etc.
- Environmental protection industry**: Primary air fans, secondary air fans, induced draft fans, various cooling fans and ultra-low flue gas emission system fans etc. for waste incineration and biomass power generation incinerator; sludge drying and incineration, solid waste co-processing, VOCs treatment and other fields.
- New energy industry**: combustion supporting fans, cooling fans, induced draft fans, etc. for spodumene calcination and acidification production lines; high-temperature fans, exhaust gas fans, dust collection fans, etc. for energy storage battery pyrometallurgical process section, dust removal system, exhaust gas treatment system, etc.; fans for drying system of positive electrode material sintering furnace, positive electrode and negative electrode material; photovoltaic glass and photothermal glass production line fans.
- Military nuclear industry**: Military nuclear industry safety grade fans, etc.
- Others**: Special fans for textile machinery, grain machinery, new energy machinery, papermaking machinery, dust removal and purification, industrial furnaces, burners, coating lines, drying, and other fields.



# 离心鼓风机

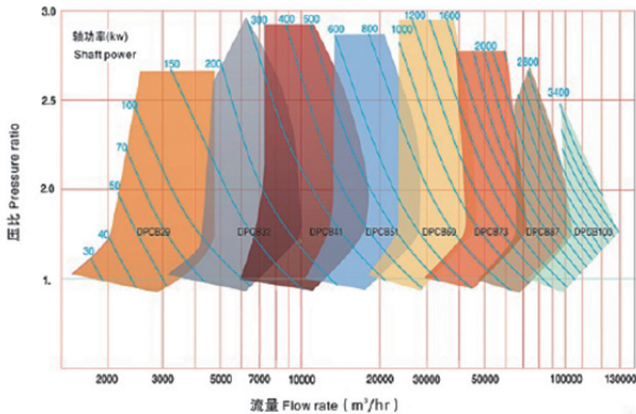
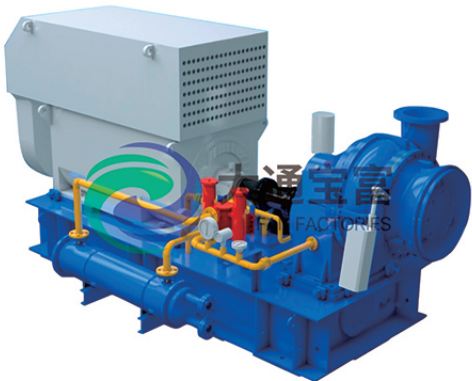
## CENTRIFUGAL BLOWER

### 单级高速离心鼓风机

#### SINGLE-STAGE HIGH SPEED CENTRIFUGAL BLOWER

单级高速离心鼓风机主要由鼓风机本体（蜗壳、叶轮、密封、进口导叶调节系统、扩压器调节系统等）、联轴器、齿轮箱、油站及润滑系统、电动机等构成的主机系统，同时包含进口过滤消音器、进口膨胀节、出口膨胀节、出口消音器、出口电动阀、止回阀、放空消音器、放空电动阀、就地控制柜、管路及电气仪表等辅助系统。

The single-stage high speed centrifugal blower is mainly composed of a blower unit (volute, impeller, seal, inlet vane adjusting system, diffuser-adjusting system etc.), gearbox, motor, coupling, lubrication station, and etc. It also comprises auxiliary systems such as inlet filter and silencer, inlet soft joint, outlet expansion joint, outlet silencer, outlet electric valve, check valve, vent silencer, vent electric valve, local control cabinet, pipe, electric instruments etc.



#### 产品特点 Product Features

- 采用IGV+DV双导叶控制，恒速运行下，流量范围40%~100%可调，保证机组高效率运行。
- 采用高效三元流半开式叶轮，专业的气动和结构设计，叶轮最高效率可达到95%。
- 运行平稳，无压力脉冲，噪音低。
- 一体化集成设计，结构紧凑，占用空间小，方便替代老式、低效风机。
- 采用油封+气封双密封设计，输送空气中不含油份。
- 高质量轴承结构，寿命持久，减少维修维护保养，降低运行成本。
- 仪器仪表及控制系统标准定制，方便用户操作。

- Under constant speed operation, adopting IGV+DV double vanes control, the flow rate is adjustable with the range of 40%~100% to ensure that the equipment can work with high efficiency.
- With the high-efficient 3D flow semi-open impeller, professional pneumatic and structural design, the highest efficiency of the impeller can reach up to 95%.
- Smooth operation, no pressure pulse and low noise.
- Integrated design, compact structure and occupying small space, easy to replace with the old and low efficient fans.
- Uses oil and gas double seal design to ensure oil-free conveying of air.
- High quality bearing structure with long life can reduce the maintenance frequency and cut down the operation cost.
- The instruments and control system are standard customized for the easy operation.

#### 性能范围 Performance Range

该产品全套引进国外技术，与国外专家联合开发，可满足不同客户的市场需求。产品分为8个系列，适用流量范围3000~130000 m³/hr、压力范围50~200 kPa。

The product is fully equipped with foreign technology, and with the help of joint development by foreign experts, the products can meet the market demands of different clients. The products can be divided into 8 series, with the applicable flow range of 3000~130000 m³/hr, and pressure range of 50~200 kPa.

#### 主要应用领域 Main Application

- [化工行业](#)：硫磺回收鼓风机、向燃烧或反应装置输送压缩气体的鼓风机、各工艺流程用鼓风机等。
- [冶金行业](#)：向燃烧装置输送压缩气体的鼓风机、煤气鼓风机等。
- [其他领域](#)：烟气脱硫脱硝氧化风机、工业及市政污水处理曝气鼓风机、干燥装置用鼓风机、制药和食品等行业发酵及酶生产等生物工艺流程处理用鼓风机等。
- [Chemical industry](#):Sulfur recovery blowers, blowers for conveying compressed gas to a combustion or reaction unit, blowers for various process, etc.
- [Metallurgical industry](#):Blowers for delivering compressed gas to combustion unit, oven gas blowers, etc..
- [Others](#):Flue gas desulfurization and denitrification oxidation blowers, industrial and municipal sewage treatment aeration blowers, drying device blowers, boilers for biological process treatment such as fermentation and enzyme production in medicine and food industries, etc.

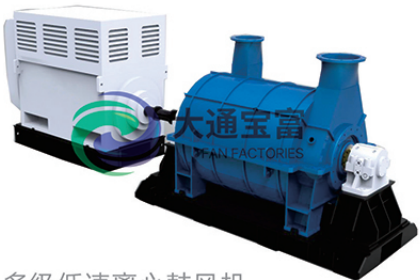


# 多级离心鼓风机

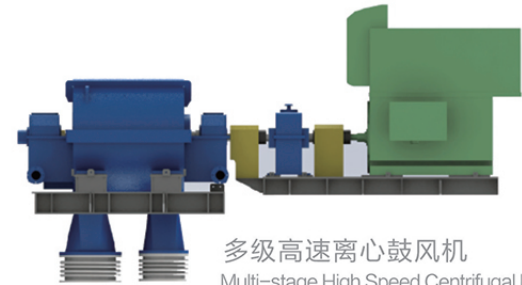
## MULTI-STAGE CENTRIFUGAL BLOWER

多级离心鼓风机分多级低速离心鼓风机和多级高速离心鼓风机两种。多级离心鼓风机主要由鼓风机本体（叶轮、主轴、轴套、密封、平衡盘、壳体、隔板和轴承座等）、联轴器、电气仪表和驱动设备等组成。多级低速离心鼓风机的驱动设备是电动机，多级高速离心鼓风机的驱动设备有“增速齿轮箱+电动机”驱动或汽轮机直接驱动两种。另外，多级高速离心鼓风机还配置有油站及润滑系统。

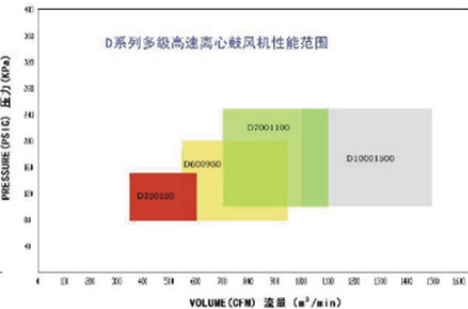
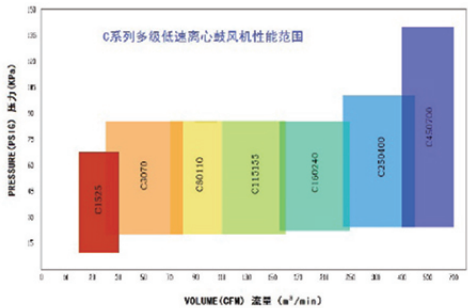
Multi-stage centrifugal blowers are divided into multi-stage low speed centrifugal blowers and multi-stage high speed centrifugal blowers. The multi-stage centrifugal blower is mainly composed of a blower unit (impeller, main shaft, shaft sleeve, seal, balancing disc, volute, diaphragm and bearing seat etc.), coupling, electric instruments and diving equipment etc. The driving equipment of the multi-stage low speed centrifugal blower is an electric motor. The driving equipment of the multi-stage high speed centrifugal blower can either be a “speed increasing gear box + electric motor” driving, or a direct driving of a steam turbine. In addition, the multi-stage high speed centrifugal blower is also equipped with oil station and lubrication system.



多级低速离心鼓风机  
Multi-stage Low Speed Centrifugal Blower



多级高速离心鼓风机  
Multi-stage High Speed Centrifugal Blower



### 产品特点 Product Features

- 三元流叶轮，经CFD分析及试验验证，叶轮效率高、性能曲线平坦。
- 高效蜗壳，采用自由运动速度法设计出等外径不对称的高效低成本方形焊接蜗壳。通过运用流体动力学专业软件进行数值模拟分析和优化改进，改善蜗壳内部气流速度分布，有效降低蜗壳内部流动损失，使得整机效率得到提高（最高近2个百分点）。
- 转子经动力学和润滑分析，加上严格的精密动平衡后，振动小、特性优异、安全可靠。高。
- 自主研发控制系统，我公司开发的控制系统可实现下列功能：机组运行状态监控，包括温度、压力、轴振动、轴位移，防喘振控制等。其中仪表盘可提供一次信号、供上位机采样。
- 低噪音技术，与清华大学流体声学实验室合作研究的气动降噪机理、预测与控制，保证气流平稳噪音低，工况范围广。
- 水平剖分结构，壳体寿命三十年以上，易安装维护。

- 3D flow impeller: with CFD analysis and test verification, the impeller has high efficiency and smooth performance curve.
- Highly efficient volute, using the free motion speed method to design an efficient and low cost square welded volute with outer diameter asymmetry. Numerical simulation analysis, optimization and improvements are carried out by adopting hydrodynamics software to improve the velocity distribution of the flow inside the volute, and reduce flow loss inside the volute, so that the overall efficiency is improved (highest by nearly 2%).
- After making dynamic and lubrication analysis, additionally with strict dynamic balance, the rotor has small vibration characteristics with excellent safety and high reliability.
- Independently developed control system: the control system developed by our company can realize the following functions: equipment unit operating condition monitoring including temperature, pressure, shaft vibration and shaft displacement and anti-surge control. The instrument panel can supply a primary signal for sampling by the host computer.
- Low-noise technology, the pneumatic noise reduction mechanism, prediction and control are jointly researched by hydro acoustics laboratory of Tsinghua University and our company, to ensure smooth flow, low noise and wide operating range.
- Horizontal split structure, easy to install and maintain, service life of volute is more than 30 years.

### 性能范围 Performance Range

该产品为我公司采用德国技术与西安交通大学联合开发，完全满足市场需求。多级低速离心鼓风机分为7个系列，适用流量范围15~700 m³/min、压比范围1.3~2.5；多级高速离心鼓风机分为6个系列，适用流量范围350~1500 m³/min、压比范围2~3.5。

This product is jointly developed by our company with German technology and Xi 'An Jiaotong University, the products can completely meet the market demands. The multi-stage low speed centrifugal blower can be divided into 7 series, with the applicable flow range of 15~700 m³/min, and pressure ratio range of 1.3~2.5; The multi-stage high speed centrifugal blower can be divided into 6 series, with the applicable flow range of 350~1500 m³/min, and pressure ratio range of 2~3.5.

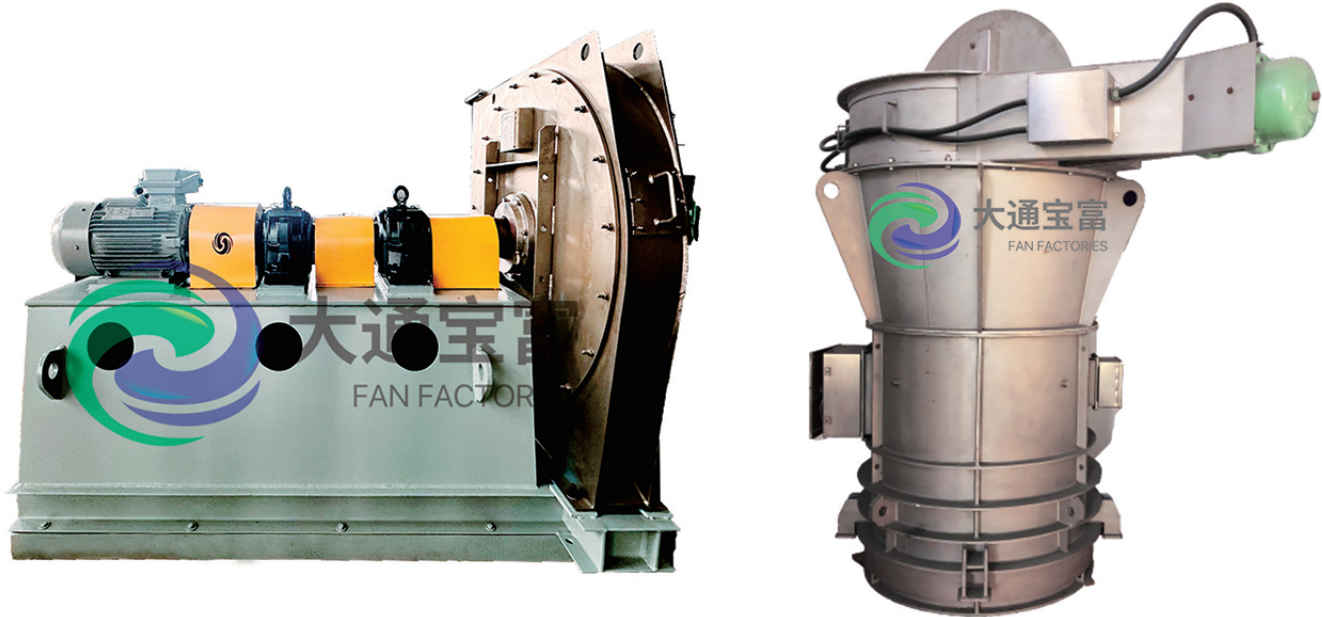
### 主要应用领域 Main Application

- **化工行业**：制碱真空滤碱机装置用真空机、向燃烧或反应装置输送压缩气体的鼓风机、苯酐及顺酐等化工原料装置、硫酸装置、硫磺回收、各工艺流程用鼓风机等。
- **冶金行业**：转炉一次除尘风机、煤气加压风机、焦炉煤气鼓风机、向燃烧装置输送压缩气体的鼓风机等。
- **电力行业**：循环流化床锅炉高压流化风机等。
- **其他领域**：烟气脱硫脱硝氧化风机、工业及市政污水处理曝气鼓风机、造纸行业真空系统鼓风机、干燥装置用鼓风机、制药和食品等行业发酵及酶生产等生物工艺流程处理用鼓风机等。
- **Chemical industry** : Vacuum alkali filter equipment for alkali production, blowers for delivering compressed gas to combustion or reaction unit, blower for various process, etc.
- **Metallurgical industry** : Primary dedusting fan of converter, Gas booster fan ,blowers for delivering compressed gas to combustion unit.
- **Power industry** : Circulating fluidized bed boiler high-pressure fluidization blowers, etc.
- **Others** : Flue gas desulfurization and denitrification oxidation blowers, industrial and municipal sewage treatment aeration blowers, paper industry gas compression blowers, blowers for drying devices, blowers for biological process treatment such as fermentation and enzyme production in pharmaceutical and food industries, etc.



# 核级风机

## NUCLEAR-GRADE FANS



产品  
及  
应用

我公司设计制造的核级风机包括民用核电站风机和军用核工业风机，同时还可以根据客户的不同需求提供定制化产品。

核级风机由风机本体（壳体、叶轮、进风口、传动部、密封等）、联轴器（皮带及皮带轮）、测温测振元件、自动加油装置、执行器、电动机等组成。

There are two main nuclear grade fans designed and manufactured by our company namely civil nuclear power plant fans and military nuclear industry fans. However, customized products can be provided according to different needs of customers.

The nuclear grade fan consists of a fan unit (casing, impeller, air inlet, transmission part, seal, etc.), coupling (belt and pulley), temperature and vibration sensor, automatic lubrication device, actuator, motor and etc.

### 产品特点 Product Features

- 采用高效模型级，风机稳定运行工况区宽、效率高。
  - 所有非金属部件都经过热老化、辐照试验，整机设计寿命可达60年。
  - 可实现自动加油，连续24个月免维护。
  - 整体抗震设计，最高加速度达到10g。
  - 采用全密封结构，可实现输送介质零泄漏。
  - 非不锈钢表面满足核级涂装要求，抗辐照、老化及腐蚀。
- 
- It adopts the high-efficient model series. The fan has wide stable operating conditions and high efficient.
  - Thermal ageing tests and irradiation tests are carried out for all metal components. The design life span of the complete machine can be up to 60 years.
  - Self-lubrication is available. No maintenance is required for 24 months.
  - With the integrated seismic design, the maximum acceleration can reach up to 10g.
  - Fan is of full sealed structure, which brings about zero leakage of the transport medium.
  - Non-stainless steel surfaces are painted following the nuclear grade coating requirement, which is radiation resistant, ageing resistant and corrosion resistant.

### 主要应用领域 Main Application

- 核电站HAVC通风系统。
  - 核电站安全壳大气监测系统。
  - 控制棒驱动冷却系统。
  - 安全壳循环冷却系统。
  - 军用核工业安全级风机等。
- 
- Nuclear Power Plant HAVC System Ventilation System.
  - Nuclear Power Plant ETY.
  - CRDM Cooling System.
  - Containment Circulating Cooling System.
  - Military nuclear industry safety grade fans, etc.

产品  
及  
应用



# 风系统优化服务

## WIND SYSTEM OPTIMIZATION SERVICE

风机是我国工业领域最主要的耗能设备之一，广泛应用于石油、化工、煤炭及矿产开采、电力、冶金、环保、建材、城建等国民经济各领域。据统计，风机的耗电量约占全国发电量的10%，在国家节能减排的大背景下，提高风机的实际运行效率对企业完成节能降耗的目标有至关重要的作用。

Fan is one of the most important energy-consuming equipment in China's industrial field, which is widely used in petroleum, chemical industry, coal and mineral exploitation, electric power, metallurgy, environmental protection, building materials, urban construction and other national economic fields. According to statistics, the power consumption of fans accounts for about 10% of the national power generation. Under the background of national energy saving and emission reduction, improving the actual operation efficiency of fans plays a vital role in achieving the goal of energy saving and consumption reduction for enterprises.

### 风系统运行效率低的主要原因

Main reasons for low efficiency of wind system operation

- 设计制造**

  - 既有风机模型型谱偏少
  - 风机模型效率低
  - 加工精度低
- 现场使用**

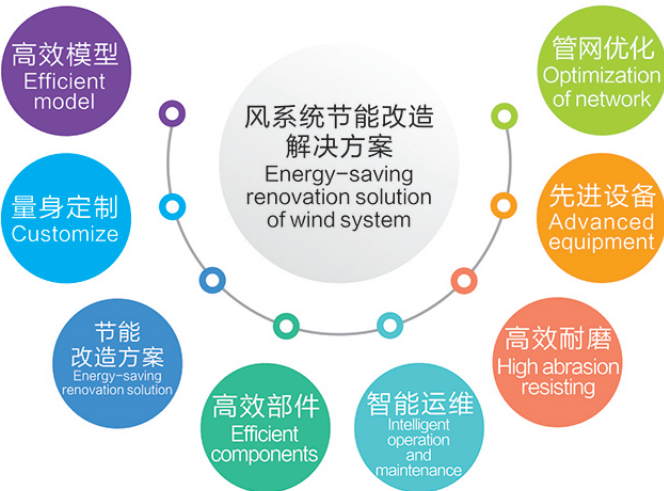
  - 存在“大马拉小车”现象
  - 存在“漏风”现象
  - 管网设计不合理
  - 调解方式不合理
  - 偏工况运行
  - 运维不到位
- Designing and Manufacturing**

  - Existing fan model class type chart is limited
  - Fan model has low efficiency
  - Low machining accuracy
- On-Site Use**

  - Excessive motor power
  - Air leakage
  - Unreasonable pipeline network design
  - Unreasonable adjusting method
  - Deviation from operating conditions
  - Inadequate operation and maintenance

### 风系统节能改造解决方案

Energy-saving renovation solution of wind system



### 风系统节能改造主要措施

Main measures for energy saving renovation of wind system

- 只更换大通宝富高效风机叶轮，保持原风机基础、风机进出口管道等。
- 更换大通宝富高效风机，保持原风机基础、风机进出口管道等。
- 更换大通宝富高效风机及高效电机，对原风机基础进行部分改造。
- 对风机系统管网进行优化，同时更换大通宝富高效风机，保持原风机基础、风机进出口管道等。
- 对风机系统管网进行优化，同时更换大通宝富高效风机叶轮、进风口，保持原风机基础、风机进出口管道等。
- 采用高效风机替换低效风机，在风系统不作任何调整的情况下，实现风系统高效运行。
- Only replace the impeller of Dart-Rich high-efficiency fan, and keep the original fan foundation, fan inlet and outlet pipes, etc.
- Replace Dart-Rich high-efficiency fan, and keep the original fan foundation, fan inlet and outlet pipelines, etc.
- Replace Dart-Rich high-efficiency fan and high-efficiency motor, and partially transform the original fan foundation.
- Optimize the pipe network of the fan system, replace the impeller of Dart-Rich high-efficiency fan, and keep the original fan foundation, fan inlet and outlet pipes, etc.
- Optimize the fan system pipeline network and replace it with a Dart-Rich high-efficiency fan、air inlet, while maintaining the original fan foundation, fan inlet and outlet pipelines, etc.
- The efficient fan is used to replace the inefficient fan, and the efficient operation of the air system can be realized without any adjustment of the air system.

风机系统改造后，提高了风机的出力、降低了风机的能耗，风机系统节电率约10%~28%、部分达到45%左右。

After the transformation of the fan system, the output of the fan is increased and the energy consumption of the fan is reduced. The power saving rate of the fan system is about 10%~28%, and some of them reach about 45%.

### 主要应用领域 Main Application

- **化工行业**：动力站锅炉风机，加热炉、重沸炉、焚烧炉等空气鼓风机及烟气引风机，催化裂化装置烟气达标排放氧化风机、密封风机，汽化炉循环风机等。
- **冶金行业**：自备电站锅炉风机，钢铁厂各类除尘风机、冷却风机、助燃风机、烟气超低排放增压风机（引风机）、轧钢加热炉煤烟风机及空烟风机等，铜冶炼、氧化铝、电解铝等有色冶炼烟气净化系统排烟风机等。
- **新能源**：工业硅矿热炉除尘主风机，锂辉石焙烧引风机，储能电池火法工艺除尘风机等。
- **建材行业**：水泥生产线高温风机、原料磨循环风机、窑头排风机、窑尾排风机、篦冷机冷却风机等，水泥粉磨生产线循环风机、排风机、球磨排风机、斗提排风机等，玻璃线余热发电系统引风机等。
- **电力行业**：锅炉风机，锅炉烟气循环风机，脱硫氧化风机等。
- **Chemical industry**: Power station boiler fan, heating furnace, reboiler, incinerator and other air blowers and flue gas induced draft fans, catalytic cracking unit flue gas emission standard oxidation fan, sealing fan, gasification furnace circulating fan, etc.
- **Metallurgical industry**: Self-provided boiler fans for power stations, various dust removal fans, cooling fans, combustion-supporting fans, ultra-low emission booster fans (induced draft fans) for steel mills, soot fans and air fans for steel rolling heating furnaces, exhaust fans for flue gas purification systems for non-ferrous smelting such as copper smelting, alumina and electrolytic aluminum, etc.
- **New energy industry**: Main dust removal fan of industrial silicon ore furnace, spodumene roasting induced draft fan, dust removal fan of energy storage battery pyrometallurgical process, etc.
- **Building materials industry**: High-temperature fan of cement production line, circulating fan of raw material mill, exhaust fan of kiln head, exhaust fan of kiln tail, cooling fan of grate cooler, etc., circulating fan of cement grinding production line, exhaust fan of ball mill, exhaust fan of bucket elevator, induced draft fan of waste heat power generation system of glass line, etc.
- **Electric Power Industry**: Boiler fan, boiler flue gas circulating fan, desulfurization and oxidation fan, etc.



# 蒸汽压缩机 STEAM COMPRESSOR

## 余热回收 WASTE HEAT RECOVERY



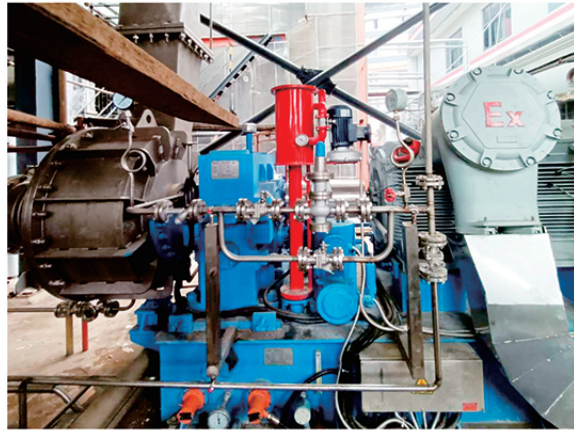
电厂末端蒸汽管道增压  
Boosting of steam pipeline at the end of a thermal power plant



造纸工艺段余热回收  
Waste heat utilisation of low-grade steam



多晶硅闪蒸罐高温水余热利用（闪蒸+蒸汽压缩机）  
两台串联、二级升温  
High temperature water waste heat utilization of a polycrystalline silicon flash tank (flash+steam compressor)  
Two stages connected in series, two-stage heating

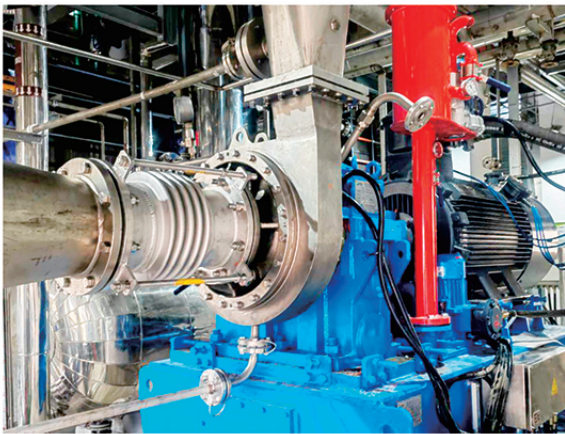


酿酒厂蒸发罐余热回收  
两台串联  
Energy-saving renovation project waste heat recovery  
Two stages connected in series

## 热泵精馏 HEAT PUMP DISTILLATION

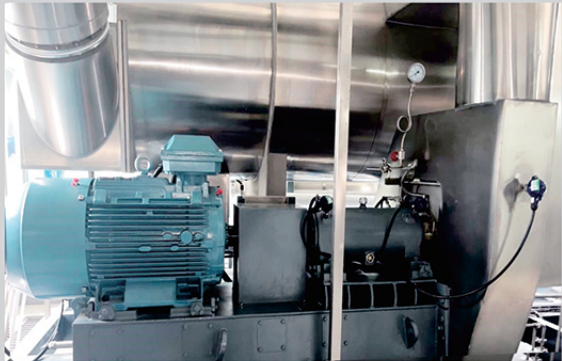


甲醇精馏装置用甲醇压缩机  
Methanol compressor for methanol distillation unit

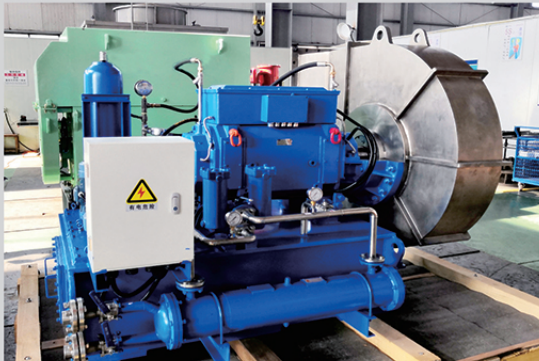


维生素生产用甲醇压缩机  
Methanol compressor for a certain vitamin project

## 医药 PHARMACEUTICAL INDUSTRY



西药生产低温浓缩  
Low temperature concentration of Western medicine



微生物发酵浓缩  
Microbial fermentation concentration



废水处理 ENVIRONMENTAL PROTECTION FIELD



制药废水处理  
Pharmaceutical wastewater evaporation  
crystallisation project



水泥窑协同处置垃圾焚烧飞灰浸取液钠钾分离  
Collaborative disposal of waste incineration fly ash  
leaching solution sodium and potassium separation  
project

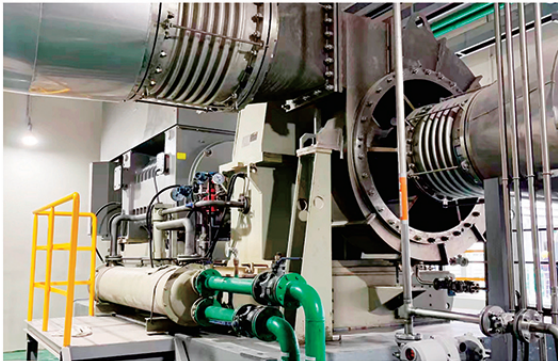


纺织印染废水处理  
Textile printing and dyeing wastewater treatment



煤矿矿井废水处理  
Coal mine wastewater treatment

锂电 LITHIUM-ION BATTERY INDUSTRY



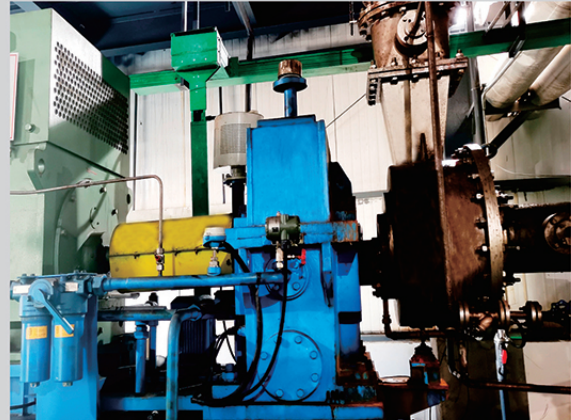
电镍大循环硫酸镍蒸发浓缩  
Nickel sulfate evaporation and concentration unit  
of a certain electric nickel large cycle



锂电池生产废水处理  
The treatment of the wastewater in a lithium battery  
project



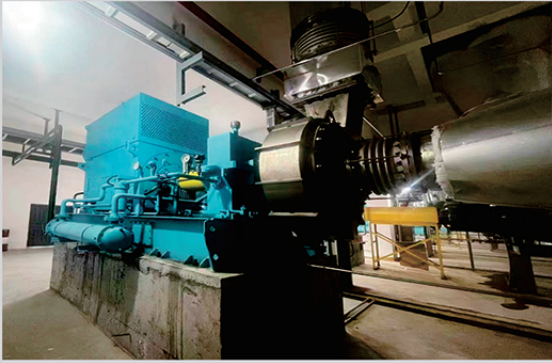
电池新材料前驱体中水回用  
Water reuse device in a battery new material  
precursor project



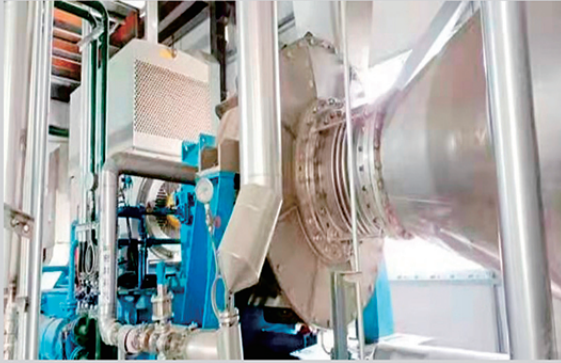
盐湖提锂  
Salt lake lithium extraction project



冶金行业 METALLURGICAL INDUSTRY



稀土回收废水处理  
Rare earth recycling wastewater treatment



提钒废水处理  
Vanadium wastewater treatment

食品与饮料 FOOD & BEVERAGE INDUSTRY



番茄酱浓缩  
Tomato sauce concentration project

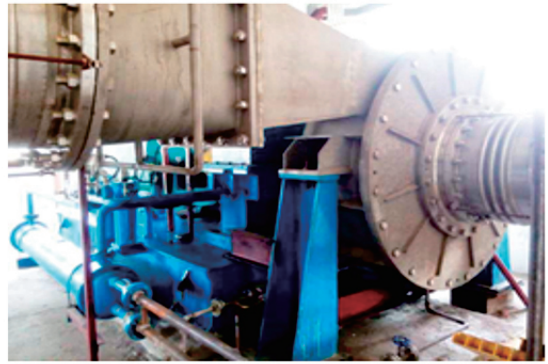


饲料添加剂蒸发浓缩  
Feed additive evaporation and concentration project

化工行业 CHEMICAL INDUSTRY

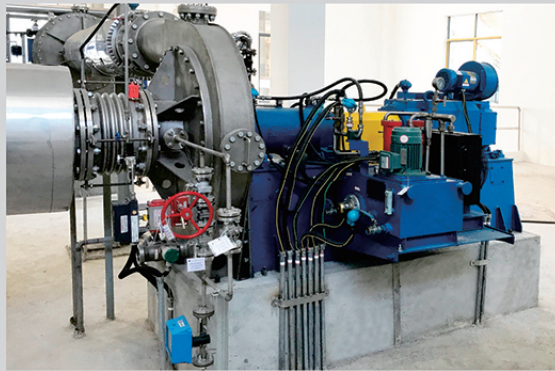


己内酰胺聚合装置  
两台串联  
Caprolactam polymerization unit  
Two stages connected in series



螯合剂浓缩  
The chelating agent concentration project

电力行业 POWER INDUSTRY



电站脱硫废水零排放  
两台串联  
Zero discharge project of desulfurization  
wastewater in a power plant  
Two stages connected in series

新能源 NEW ENERGY INDUSTRY



高纯晶硅污水处理  
两台串联  
The sewage treatment device in a polysilicon project  
Two stages connected in series



# 通风机、鼓风机

## FANS, BLOWERS

### 化工行业 CHEMICAL INDUSTRY



- 中国石油化工集团有限公司百万吨级乙烯装置裂解炉引风机
- 中国石化海南炼化有限公司PX及制氢装置空气鼓风机、烟气引风机，该PX及制氢装置是首个成套技术国产化的大型芳烃装置
- 中国石化北海炼化有限责任公司硫磺装置主风机、焚烧炉风机
- 中国石油广东石化分公司炼化一体化项目动力中心4 × 450t/h锅炉、300万吨/年石脑油加氢装置、300万吨/年连续重整装置、260万吨/年芳烃联合装置、乙烯装置等
- 中海油惠州石化有限公司质量升级项目芳烃联合装置及连续重整装置等
- 中化泉州石化有限公司100万吨/年乙烯及炼油改扩建项目
- 260万吨/年连续重整装置、220万吨/年柴油加氢裂化装置等
- 恒逸实业（文莱）有限公司PMB石油化工项目加氢裂化、灵活焦化和加氢精制三大主装置所有工艺风机，该项目是首个全面执行中国标准的海外大型石化项目
- 哈密广汇环保科技有限公司荒煤气综合利用年产40万吨乙二醇项目所有风机，为世界首套荒煤气制乙二醇项目
- 陕煤集团榆林化学有限责任公司煤炭分质利用制化工新材料示范项目180万吨/年乙二醇气化装置所有循环风机，该项目为全球最大煤化工项目
- 神华榆林能源化工有限公司煤炭综合利用项目煤气化装置高压氮气循环压缩机
- 青海五彩碱业有限公司110万吨/年纯碱项目汽轮机拖动真空机等
- 万华化学集团股份有限公司120万吨/年乙烯及下游高端聚烯烃项目乙烯裂解炉引风机等
- 惠生工程（中国）有限公司俄罗斯西西伯利亚丙烷脱氢装置等
- 东华能源股份有限公司丙烷脱氢装置
- 湖北宜化磷化工有限公司20万吨/年精制磷酸、65万吨/年磷铵搬迁及配套装置升级改造项目等
- 浙江卫星能源有限公司多碳醇装置等
- 中国天辰工程有限公司鲁南化工己内酰胺节能减碳一体化项目气化装置、巴基斯坦6万吨/年纯碱项目等
- 中国五环工程有限公司赞比亚联合资本30万吨/年化肥项目等
- 东华工程科技股份有限公司新疆曙光绿华 BDO 联产 PBAT项目等
- 山东华鲁恒升40万吨尿素大颗粒项目等
- 宿迁逸达新材料有限公司60万吨/年短纤项目

- Induced draft fan for cracking furnace in a million ton ethylene plant of China Petrochemical Corp
- Air blowers, flue gas induced draft fans for PX and hydrogen production unit of SINOPEC Hainan Petrochemical Co., Ltd.
- This PX and hydrogen production unit is the first large-scale aromatics unit with complete technology domestically produced
- Main fan for sulfur unit and incinerator fan of Sinopec Beihai Refining & Chemical Co., Ltd.
- 4 × 450t/h boiler, 3 million tons/year naphtha hydrogenation unit, 3 million tons/year continuous reforming unit, 2.6 million tons/year aromatics combined unit, ethylene unit, etc. for the integrated refining and chemical project power center of Sinopec Beihai Refining & Chemical Co., Ltd.
- Aromatics combined unit and continuous reforming unit, etc in quality upgrade project of CNOOC Huizhou Petrochemicals Company Limited
- 1 million tons/year ethylene and refining renovation and expansion project of Sinochem Quanzhou Petrochemical Co., Ltd.
- 2.6 million tons/year continuous reforming unit, 2.2 million tons/year diesel hydrocracking unit, etc
- Hengyi Industry (Brunei) Co., Ltd.'s PMB petrochemical project includes all process fans for the three main units of hydrocracking, flexible coking, and hydrofining. This project is the first overseas large-scale petrochemical project to fully implement Chinese standards
- Hami Guanghui Environmental Protection Technology Co., Ltd.'s comprehensive utilization of raw gas with an annual output of 400000 tons of ethylene glycol project includes all fans, making it the world's first raw gas to ethylene glycol project
- All circulating fans of the 1.8 million ton/year ethylene glycol gasification unit in the demonstration project of coal quality utilization and chemical new materials of SHCCIG Yulin Chemical Co., Ltd., which is the world's largest coal chemical project
- High pressure nitrogen circulation compressor for coal gasification equipment in coal comprehensive utilization project of Shenhua Yulin Chemical Co., Ltd.
- Steam turbine driven vacuum machine for 1.1 million tons/year soda ash project of Qinghai Wucai Alkali Industry Co., Ltd.
- Ethylene cracking furnace induced draft fan for 200000 tons/year ethylene and downstream high-end polyolefin project of Wanhua Chemical Group Co., Ltd.
- Propane dehydrogenation unit in West Siberia, Russia of Wison Engineering Ltd.
- Propane dehydrogenation unit of Oriental Energy Co., Ltd.
- 200000 tons/year refined phosphoric acid, 650000 tons/year ammonium phosphate relocation and supporting equipment upgrading and renovation project of Hubei Yihua Phosphorus Chemical Co., Ltd.
- Polycarbon alcohol device of Zhejiang Satellite Energy Co., Ltd.
- Lunan Chemical's Caprolactam Energy Conservation and Carbon Reduction Integrated Project Gasification Unit, Pakistan's 60000 tons/year Soda Ash Project, etc of China Tianchen Engineering Corporation
- Zambia United Capital 300000 tons/year fertilizer project of Wuhuan Engineering Co., Ltd.
- Xinjiang Shuguang Lvhua BDO Co production PBAT Project of East China Engineering Science and Technology Co., Ltd.
- 400000 ton urea large particle project of Shandong HUALU-HENGSHENG Group Co., Ltd.
- 600000 tons/year short fiber project of Suqian Yida New Material Co., Ltd.



冶金行业 METALLURGICAL INDUSTRY

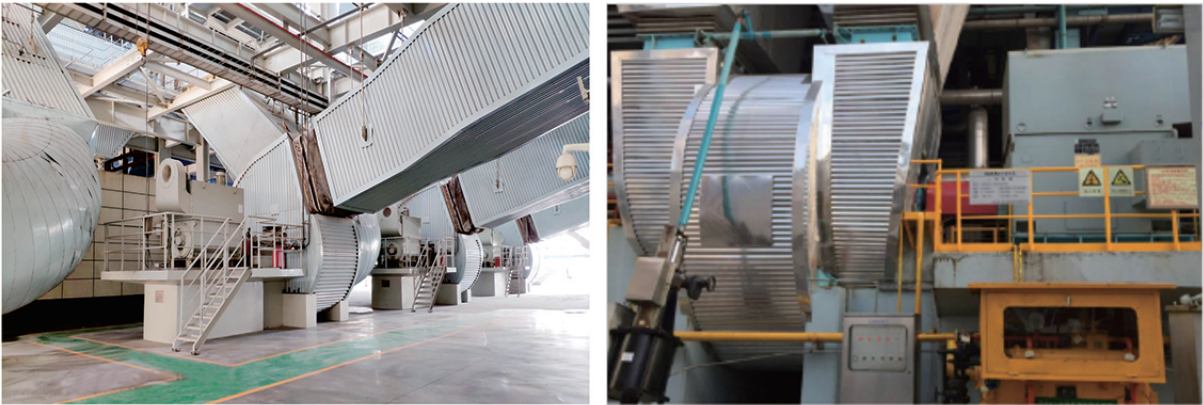


- 宝钢湛江钢铁有限公司3 × 5050m<sup>3</sup>高炉及3 × 500m<sup>2</sup>烧结机、含铁固废处置中心转底炉系统等
- 中国宝武韶钢转炉炉料预热系统，为中国首套节能减排型金属熔融炉系统等
- 中国宝武武钢有限一、四烧结及五烧结节能环保提升改造余热发电项目等
- 湖南华菱湘潭钢铁有限公司360m<sup>2</sup>烧结机全烟气脱硫改造项目等
- 太原钢铁(集团)有限公司炼钢系统技术改造工程合金熔化炉、高端冷轧取向硅钢项目等
- 广西柳州钢铁集团有限公司防城港钢铁基地（一期）炼钢连铸工程炼钢环境除尘项目等
- 安钢集团信阳钢铁有限责任公司360m<sup>2</sup>烧结机烧结烟气循环项目等
- 中冶长天国际工程有限责任公司越南和发集团榕橘钢厂二期 2\*360m<sup>2</sup>烧结及180万吨/年球团项目等
- 中冶南方工程技术有限公司越南和发集团榕橘钢厂原料场、炼钢、2 × 2500m<sup>3</sup>高炉炼铁项目等
- 江苏宏大特种钢机械厂有限公司伊朗PASCO炼钢厂配套240万吨/年球团厂工程等
- 南京钢铁集团有限公司400万吨/年带式焙烧球团项目等
- 首钢京唐钢铁联合有限责任公司60孔7.63m焦炉项目等
- 中天钢铁集团超高强精品钢帘线项目等
- 江苏利淮钢铁有限公司干熄焦循环风机
- 山西建龙实业有限公司高炉热风炉烟气脱硫项目等
- 青山控股集团有限公司印尼昭辉60万吨/年镍铁项目等
- 马鞍山钢铁股份有限公司长材产品产线规划-新特钢项目等
- 湖南华菱湘潭钢铁有限公司2 × 135MW、150WM煤气发电项目等
- 北京佰能蓝天科技股份有限公司阿尔及利亚电炉及麦尔兹窑除尘系统
- 天津铁厂高炉煤气、转炉煤气、混合煤气加压机
- 新疆东部合盛硅业有限公司（二期）32 × 33000kVA工业硅矿热炉除尘系统主风机
- 紫金铜业有限公司硫酸尾气及环集烟气活性焦脱硫装置等
- 江西铜业股份有限公司贵溪冶炼厂熔炼车间闪速炉排风机
- 青海铜业有限责任公司阴极铜工程熔炼项目
- 白音华煤电有限责任公司高精铝板带产品项目电解铝烟气净化系统

- Baosteel Zhanjiang Iron & Steel Co., Ltd. 3 × 5050m<sup>3</sup>blast furnace and 3 × 500m<sup>2</sup> sintering machine, as well as the bottom furnace system of the iron containing solid waste disposal center
- Baosteel Group Corporation Shao Steel converter material preheating system, the first energy-saving and emission reducing metal melting furnace system in China
- Baosteel Group Corporation No.1&No.4 sintering and five sintering energy-saving and environmental protection improvement renovation waste heat power generation project
- Hunan Valin Xiangtan Iron & Steel Co., Ltd. 360 m<sup>2</sup> sintering machine full flue gas desulfurization renovation project
- Taiyuan Steel (Group) Co., Ltd. Steel making system technology transformation project, alloy melting furnace, high-end cold-rolled oriented silicon steel project
- Guangxi Liuzhou Iron and Steel Group Company Limited Fangchenggang Steel Base (Phase I) steelmaking and continuous casting project steelmaking environmental dust removal project
- Xinyang Iron & Steel Co.,ltd of Angang Group 360m<sup>2</sup> sintering machine sintering flue gas circulation project
- Zhongye Changtian International Engineering Co., Ltd. Vietnam Hefa Group Rongju Steel Plant Phase II 2 \* 360m<sup>2</sup> Sintering and 1.8 million tons/year Pellet Project
- WISDRI Engineering and Research Incorporation LIMTED Vietnam Hefa Group Rongju Steel Plant Raw Material Yard, Steelmaking, and 2 × 2500m<sup>3</sup> Blast Furnace Ironmaking Project
- Jiangsu HONGDA SPECIAL Steel Machinery PLANT Co., Ltd. Iran PASCO Steel Plant Supporting 2.4 million tons/year Pellet Plant Project
- Nanjing Steel (Group) Co., Ltd. 4 million tons/year belt roasting pellet project
- Shougang Jingtang United Iron & Steel Co., Ltd. 60 hole 7.63m coke oven project
- Zenith Steel Group Co., Ltd. Ultra high strength boutique steel curtain line project
- Jiangsu Lihuai Iron & Steel Co., Ltd. Dry quenching circulating fan
- Shanxi Jianlong Industrial Co., Ltd. Blast furnace hot blast furnace flue gas desulfurization project
- TSINGSHAN Holding Group Co., Ltd. Indonesia Zhaohui 600000 tons/year nickel iron project
- Maanshan Iron & Steel Company Limited Production Line Planning for Long Rod Products – New Special Steel Project
- Hunan Valin Xiangtan Iron & Steel Co., Ltd. 2 × 135MW, 150WM gas power generation project
- Beijing Bestpower Bluesky Engineering Co., Ltd. Dust removal system for Algerian electric furnaces and Maerz kilns
- Tianjin Iron PLANT Co., Ltd. Booster fans for blast furnace gas, converter gas, and mixed gas
- Xinjiang EASTERN Hoshine Silicon Industry Co., Ltd. (Phase II) 32 × 33000kVA industrial silicon ore furnace dust removal system main fan
- Zijin Copper Co., Ltd. Sulfuric acid tail gas and circulating flue gas activated coke desulfurization device
- Jiangxi Copper Co., Ltd. Flash furnace exhaust fan in the smelting workshop of Guixi Smelter
- Qinghai Copper Co., Ltd. Cathode Copper Engineering Melting Project
- State Power Investment Group Inner Mongolia Baiyinhua Coal Electricity Co., Ltd. Electrolytic aluminum flue gas purification system of high precision aluminum plate and strip product project



电力行业 POWER INDUSTRY



- 四川白马循环流化床示范电站有限责任公司世界首台600MW超临界循环流化床机组一次风机、二次风机，荣获2015年度中国电力科学技术进步一等奖、2016年度中国机械工业科学技术二等奖
- 中国能源建设集团广东火电工程有限公司约旦阿塔拉特页岩发电项目2×235MW机组一次风机、二次风机
- 大唐雷州发电厂2×1000MW超超临界机组二次再热工程烟气再循环风机
- 皖能铜陵发电有限公司1000MW机组工程脱硫系统氧化风机
- 西南电力设计院有限公司越南海阳2×600MW燃煤电厂工程
- 厦门华夏国际电力发展有限公司1×660MW超超临界燃煤发电工程烟气再循环风机
- 华电十里泉发电厂深度优化用水及水污染防治改造工程末端高含盐废水浓缩减量和零排放项目增压风机

■Sichuan Baima Cycle Fluidized Bed Demonstration Power Plant Co., Ltd.  
The world's first 600MW supercritical circulating fluidized bed unit, with primary and secondary fans, won the first prize of China Electric Power Science and Technology Progress Award in 2015 and the second prize of China Machinery Industry Science and Technology Award in 2016

■China Energy Engineering Group Guangdong Power Engineering Co., Ltd.  
The primary and secondary fans of the 2x235MW unit in the Atarat Oil Shale Power Generation Project in Jordan

■Datang Leizhou Power Plant 2 × 1000MW Ultra supercritical Unit Secondary Reheat Project Smoke Recirculation Fan

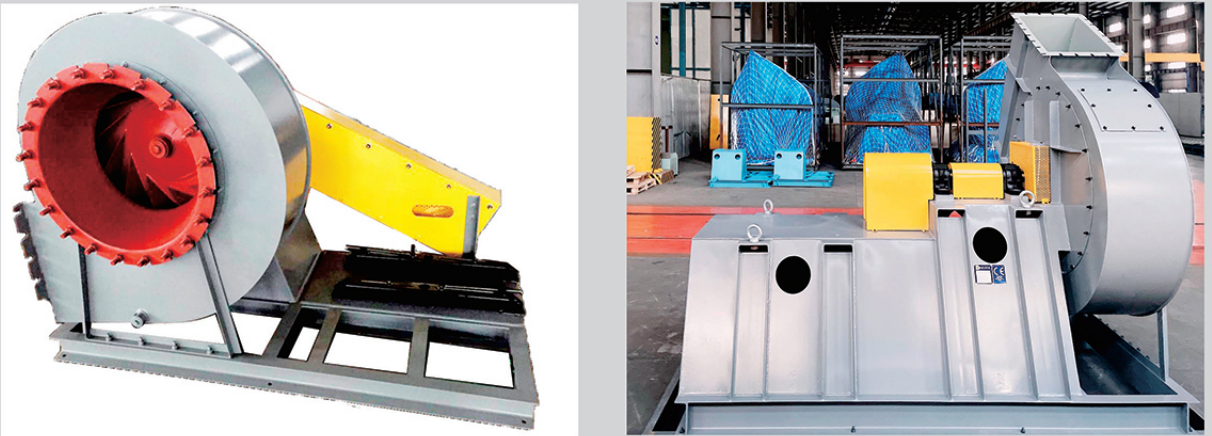
■Wanneng Tongling Power Generation Co., Ltd.  
Oxidation fan for desulfurization system of 1000MW unit project

■Southwest Electric POWER Design Institute Co., Ltd.  
Vietnam Haiyang 2 × 600MW coal-fired power plant project

■Xiamen Huaxiapower International Development Co., Ltd.  
Flue gas recirculation fan of 1 × 660MW ultra supercritical coal-fired power generation project

■Shiliquan Power Plant of Huadian International Power Co., Ltd.  
Booster fan for deeply optimize water use and water pollution prevention and control renovation project, concentrate and reduce high salinity wastewater at the end of the project, and zero discharge

建材行业 BUILDING MATERIAL INDUSTRY



- 长期为艾法史密斯（FLSmidth）配套，每年供货500台以上风机
- 中国中材国际工程股份有限公司尼加拉瓜等多个出口项目
- 成都建筑材料工业设计研究院有限公司海德堡摩洛哥水泥粉磨项目等
- 江苏鹤林水泥有限公司195万吨水泥粉磨站搬迁技改工程
- 南京西普水泥工程集团有限公司越南黄龙和平水泥厂6000t/d水泥熟料生产线项目等
- 福莱特玻璃集团股份有限公司
- 亿钧玻璃有限公司
- 湖北粤玻实业有限公司
- 迎新玻璃有限公司
- 上海耀皮玻璃集团股份有限公司
- 咸阳燕矿新型建材有限公司煤矸石新型材料项目排烟风机、排潮风机、送热风机等
- Long term support for FLSmidth, supplying over 500 fans annually
- Nicaragua and other export projects of Sinoma International Engineering Co., Ltd.
- Heidelberg Moroccan Cement Grinding Project of Chengdu Design & Research Institute Limited Company of Building MATERIALS Industry
- 1.95 million ton Cement Grinding Station Relocation and Technical Renovation Project of Jiangsu Helin Cement Co., Ltd.
- Vietnam Huanglong Heping Cement Plant 6000t/d Cement Clinker Production Line Project of Nanjing C-Hope Cement Engineering Group Co., Ltd.
- Flat Glass Group Co., Ltd.
- Guangxi Yijun Glass Technology Co., Ltd.
- Hubei Yuebo Industrial Co., Ltd.
- Jilin Yingxin Glass Co., Ltd.
- Shanghai Yaohua Pilkington Glass Group Co., Ltd.
- Smoke exhaust fan, moisture exhaust fan, and hot air supply fan for coal gangue new material project of Xianyang Yankuang New Building Materials Co., Ltd.



环保 ENVIRONMENTAL PROTECTION INDUSTRY



- 苏州吴江光大环保能源有限公司吴江区生活垃圾焚烧发电扩容建设（二期）项目（3 × 1000t/d），该项目是国内首个生活垃圾、一般工业固废及污泥大型协同处理项目
- 深圳市能源环保有限公司深圳市宝安区老虎坑垃圾焚烧发电厂5 × 850t/d 垃圾焚烧发电项目
- 湖南军信环保集团有限公司长沙市生活垃圾深度综合处理6 × 850t/d 垃圾焚烧发电项目
- 浙江伟明环保股份有限公司750t/d 垃圾焚烧发电项目等
- 溧阳市欣峰废弃物综合处置有限公司3 × 300t/d城市固体废弃物焚烧发电水泥窑协同处置项目
- 江苏天楹环保能源成套设备有限公司越南河内厂5 × 800t/d生活垃圾焚烧发电项目等
- 中节能（保定）环保能源有限公司1000t/d生活垃圾焚烧发电项目
- 成都市万兴环保发电厂污泥干化及协同焚烧处置项目
- 同方环境股份有限公司澳门垃圾焚化中心特殊和危险废物处理站
- 南通爱可普环保设备有限公司多个污泥干化项目
- 浙江逸盛石化有限公司PTA装置VOCs治理
- 杜尔涂装系统工程（上海）有限公司中煤图克绿色低碳示范产业项目VOCs治理

- Wujiang District Domestic Waste Incineration Power Generation Expansion Construction (Phase II) Project (3 × 1000t/d) of Suzhou Wujiang Everbright Environmental Energy Limited. This project is the first large-scale collaborative treatment project for household waste, general industrial solid waste, and sludge in China
- Shenzhen Bao'an District Laohukeng Waste Incineration Power Plant 5 × 850t/d Waste Incineration Power Generation Project of Shenzhen Energy and Environmental Protection Co., Ltd.
- Changsha Municipal Solid Waste Comprehensive Treatment 6 × 850t/d Waste Incineration Power Generation Project of Hunan Junxin Environmental Protection Group Co., Ltd.
- 750t/d Waste Incineration Power Generation Project of Zhejiang Weiming Environment Protection Co., Ltd.
- 3 × 300t/d Urban Solid Waste Incineration Power Generation Cement Kiln Collaborative Disposal Project of Liyang Xinfeng Waste Comprehensive Disposal Co., Ltd.
- Vietnam Hanoi Plant 5 × 800t/d Domestic Waste Incineration Power Generation Project of Jiangsu Tianying Environmental Protection Energy Equipment Co., Ltd.
- 1000t/d Household Waste Incineration Power Generation Project of Hebei Construction Lingfeng Environmental Protection Power Generation Co., Ltd.
- Sludge Drying and Collaborative Incineration Disposal Project of Chengdu Wanxing Environmental Protection Power Generation Co., Ltd.
- Macau Garbage Incineration Center Special and Hazardous Waste Treatment Station of Tongfang Environment Co., Ltd.
- Multiple sludge drying projects of Nantong Aikepu Environment-Protection Equipment Co., Ltd.
- Treatment of VOCs in PTA Equipment of Zhejiang YISHENG Petrochemical Co., Ltd.
- VOCs Governance of Nantional Coal Tuke Green Low-carbon Demonstration Industry Project of Durr Paintshop Systems Engineering (Shanghai) Co., Ltd.



风系统优化服务

WIND SYSTEM OPTIMIZATION SERVICE

浦项（张家港）不锈钢股份有限公司

POHANG (ZHANGJIAGANG) STAINLESS STEEL CO., LTD.

项目及设备名称 PROJECT AND EQUIPMENT NAME



BPRP热到场除尘风机节能改造EPC项目  
EPC Project of Energy Saving Reconstruction of BPRP Hot Field Dust Removal Fan

改造内容：更换大通宝富高效风机、保持原基础不改造、适当优化进口管道。  
Transformation content: Replace Dart-Rich high-efficiency fan, keep the original foundation unchanged, and properly optimize the inlet pipeline.

改造效果  
Transformation effect

序号 No.	项目 Item	改造前 Before transformation	改造后 After transformation
1	入口流量 ( m³/h ) Inlet flow	567753	597600
2	全压 ( Pa ) Total pressure	2687	2872
3	电机平均负荷 ( kW ) Motor average load	923.16	517.03
4	风机运行效率 Fan operating efficiency	52%	85%
5	节电率 Power saving rate	43.99%	

承德建龙特殊钢有限公司

CHENGDE JIANLONG SPECIAL STEEL CO., LTD.

项目及设备名称 PROJECT AND EQUIPMENT NAME



转炉二次除尘风机节能改造  
Energy-saving transformation of converter secondary dust removal fan

改造内容：更换大通宝富高效风机、适当优化进出口管道。  
Transformation content: Replace Dart-Rich high-efficiency fan, and properly optimize the inlet pipeline.

改造效果  
Transformation effect

序号 No.	项目 Item	改造前 Before transformation	改造后 After transformation
1	入口流量 ( m³/h ) Inlet flow	622072	970193
2	全压 ( Pa ) Total pressure	7317	6668
3	轴功率 ( kW ) Shaft power	1884.92	2059
4	风机运行效率 Fan operating efficiency	65.41%	87.19%



德清绿能热电有限公司

DEQING GREEN ENERGY THERMAL POWER CO., LTD.

项目及设备名称 PROJECT AND EQUIPMENT NAME



锅炉一次风机节能改造  
Energy-saving transformation of boiler primary fan

改造内容：更换大通宝富高效风机叶轮和进风口。  
Transformation content: Replace the impeller and air inlet of Dart-Rich high efficiency fan.

改造效果  
Transformation effect

序号 No.	项目 Item	改造前 Before transformation	改造后 After transformation
1	入口流量 ( m³/h ) Inlet flow	51500	52536
2	全压 ( Pa ) Total pressure	13000	13500
3	轴功率 ( kW ) Shaft power	380	236
4	风机运行效率 Fan operating efficiency	50%	85%
5	节电率 Power saving rate	37.89%	

石家庄杰克化工有限公司

SHIJIAZHUANG JACKCHEM CO., LTD.

项目及设备名称 PROJECT AND EQUIPMENT NAME



废水零排放MVR蒸发系统蒸汽压缩机节能改造  
Energy-saving transformation of steam compressor in zero-emission MVR evaporation system

改造内容：大通宝富研制的磁悬浮蒸汽压缩机替换原罗茨蒸汽压缩机。  
Transformation content: The maglev steam compressor developed by Dart-Rich replaces the original Roots steam compressor.

改造效果  
Transformation effect

序号 No.	项目 Item	罗茨蒸汽压缩机 Roots Steam Compressor	磁悬浮蒸汽压缩机 Magnetic levitation steam compressor
1	蒸发量 ( t/h ) Evaporation	1.1	1.6
2	总能耗 ( kW ) Total Energy Consumption	80	70
3	吨水能耗 Energy consumption per ton of water	80/1.1=73	70/1.6=44
4	节电率 Power saving rate	39.73%	



# 合作伙伴

## COOPERATIVE PARTNERS

大通宝富主要产品有：蒸汽压缩机、通风机、鼓风机、军用核级风机。产品广泛应用于电力、冶金、石化、环保、建材、轻工业、军用核工业、生物质发电、新能源等行业及领域。与各行业多家头部企业建立了战略合作关系。

Main products of Dart-Rich are: steam compressors ,fans, blowers, military nuclear grade fans. These products are widely used in electric power, metallurgy, petrochemical, environmental protection, building materials, light industry, military nuclear industry, biomass energy development and other industries. The company has established the strategic cooperation relations with many leading enterprises in various industries. Established strategic partnerships with multiple leading companies in various industries.

### 蒸发结晶领域

#### EVAPORATIVE CRYSTALLIZATION FIELD



### 化工行业

#### CHEMICAL INDUSTRY



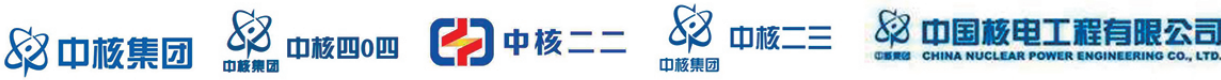
### 冶金行业

#### METALLURGICAL INDUSTRY



### 民用核电站/军用核工业

#### CIVIL NUCLEAR POWER PLANT MILITARY NUCLEAR INDUSTRY





# 合作伙伴

## COOPERATIVE PARTNERS

### 电力行业 POWER INDUSTRY



### 建材行业 BUILDING MATERIAL INDUSTRY



### 环保领域 ENVIRONMENTAL PROTECTION INDUSTRY



### 新能源 NEW ENERGY INDUSTRY



### 其他领域 OTHER FIELDS





# 出口业务

## EXPORT BUSINESS

公司业务遍布全球，产品出口到丹麦、俄罗斯、乌克兰、印度、印尼、泰国、新加坡、菲律宾、伊朗、越南、巴基斯坦等三十多个国家和地区。与史密斯、达涅利、陶氏化学等建立了长期战略合作关系。

The company's business covers the whole world and its products are exported to more than 30 countries and regions such as Denmark, Russia, Ukraine, India, Indonesia, Thailand, Singapore, Philippines, Iran, Vietnam and Pakistan. We have established a long-term strategic cooperation with FLSmith, Danieli and Dow Chemical, etc.

### 丹麦 DENMARK

与丹麦FLSmidth公司建立了长期战略合作关系，全年供货量达500台以上  
Established a long-term strategic cooperation FLSmidth in Denmark, with the annual supply over 500 sets

### 约旦 JORDAN

为全球最大的油页岩电站约旦阿塔拉特油页岩发电项目2\*235MW机组提供一次风机、二次风机  
Supplied PA fan and SA fan for 2\*235MW Units in Jordan's Attarat oil shale power plant project

### 蒙古 MONGOLIA

为蒙古Oyu Tolgoi LLC锅炉岛项目提供一次风机、二次风机、引风机  
Supplied PA fan, SA fan and ID fan for Mongolia Oyu Tolgoi LLC Boiler Island Project

### 伊朗 IRAN

伊朗PASCO炼钢厂配套球团厂工程单次出口23台套风机  
Iran PASCO Steel Mill single export 23 sets fans for pellet plant project

### 文莱 BRUNEI

恒逸实业（文莱）有限公司150万吨/年芳烃联合装置单次出口31台套风机  
Hengyi Industries Sdn Bhd single export 31 sets fans for aromatics complex plant of 1.5 million tons/year

### 东南亚 SOUTHEAST ASIA

常年为印度、印尼、泰国、菲律宾、新加坡等多个东南亚国家供货  
Perennial supply to India, Indonesia, Thailand, Philippines, Singapore and other countries in Southeast Asia





# 研发能力

## DEVELOPMENT ABILITY

### 国家级高新技术企业

NATIONAL HIGH-TECH ENTERPRISE

大通宝富是国家高新技术企业，水蒸气压缩机团体标准第一主笔人。技术中心是大通宝富的研发设计中心，是江苏省认定的企业技术中心、江苏省工程技术研究中心。技术中心下设通风机研究所、压缩机研究所、工艺研究所和共性研究所，设有流体机械博士后工作站。技术人员经验丰富，能够熟练利用计算机辅助设计、分析软件进行风机设计，同时能够根据客户需求进行产品定制化设计，为客户提供最优系统解决方案。

公司一直坚持走自主研发、进口产品国产化、引进国际先进技术以及与知名高校科研院所（企业）合作开发相结合的产品研发创新之路，长期与清华大学、浙江大学、西安交通大学、西安热工研究院、合肥通用机械研究院、沈阳鼓风机研究所等知名高校科研院所开展联合开发设计与科学研究，使科研成果快速转化为生产力，为社会和企业创造了较高的效益。2004年引进德国先进技术，并与美国、日本、欧洲等国际著名风机制造公司有多项技术合作。

公司自主开发了通风机、鼓风机选型设计软件；全套引进国外成熟蒸汽压缩机模型级，并在此基础上开发了先进的蒸汽压缩机选型设计软件（全自动设计软件基于10万个实际蒸汽介质工况点数据库），实现蒸汽压缩机快速选型及图纸输出，提高了售前技术支持的速度和效率。

博士后工作站  
江苏省企业技术中心  
江苏省工程技术研究中心

POSTDOCTORAL WORKSTATION  
JIANGSU ENTERPRISE TECHNOLOGY CENTER  
JIANGSU ENGINEERING TECHNOLOGY RESEARCH CENTER

DART-RICH is a national high-tech enterprise and the chief author of the group standard of steam compressors. The technology center is the R&D and design center of DART-RICH, the enterprise technology center recognized by Jiangsu Province and the engineering technology research center of Jiangsu Province. The Technology Center consists of Fan Research Institute, Compressor Research Institute, Process Research Institute and Commonality Research Institute, and a postdoctoral workstation of fluid machinery. The engineers have rich experience, able to be proficient in the use of computer-aided design and analysis software for fan design, and can customize the product design according to customer's demand, and provide customers with the best system solutions.

Our company always adheres to the product development path of combining "production, study and research". It focuses on technical research and development investment. It has established long-term close cooperation with well-known universities and research institutes in China, including Zhejiang University, Tsinghua University, Xi'an Jiaotong University, Xi'an Institute of Thermal Engineering, Hefei General Machinery Research Institute and Shenyang Blower Research Institute. The company has successively established research and development institutions such as "Postdoctoral workstation", "Jiangsu enterprise technology center" and "Jiangsu engineering technology research center", and has been qualified as the "National high-tech enterprise". German advanced technology was introduced in 2004, and it has many technical cooperation with famous international fan manufacturers such as the United States, Japan and Europe. At present, it has obtained 16 invention patents (including 4 PCT patents), 45 utility model patents and 6 software copyrights.

Our company has solely developed software for selecting and designing fans and blowers. A full set of mature steam compressor model series imported from abroad have been introduced. Based on this, advanced steam compressor type selection design software (fully automatic design software is based on 100,000 actual steam medium operating point databases) have been developed to realize quick steam compressor type selection and output drawing, thus bettering the speed and efficiency of the pre-sales technical support.







# 国产化之路

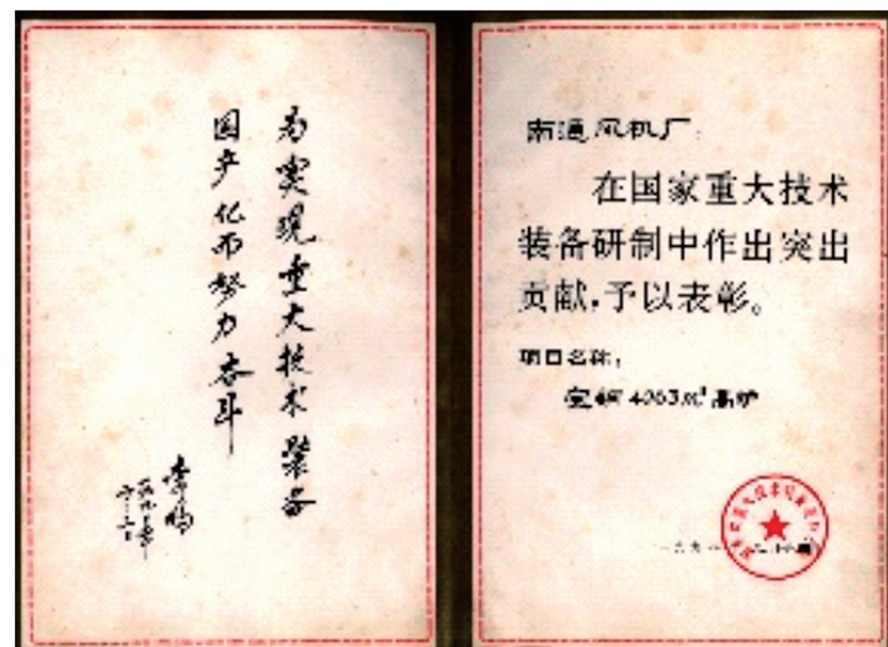
## THE ROAD TO LOCALIZATION

### 消化吸收

#### DIGESTION AND ABSORPTION

1988年10月起，对宝钢一期工程进口风机测绘、设计和制造，开启了进口风机国产化的征程。为宝钢二期工程提供了多台套消化进口技术的风机，实现了进口产品国产化。

Starting from October 1988, Dart-Rich began the journey of localization of imported fans for the Baosteel Phase I project by surveying, designing, and manufacturing imported fans. We have provided multiple sets of fans with imported technology for Baosteel's Phase II project, achieving the localization of imported products.



### 自主研发

#### INDEPENDENT RESEARCH AND DEVELOPMENT

2011年，开始自主研发、设计、制造国内首台非能动核电站反应堆AP1000堆顶冷却风机，并于2013年向客户供货，现场运行及各项性能等都完全满足设计要求。实现了自主技术替代进口产品的国产化。

In 2011, Dart Rich began independent research and development, design, and manufacturing of the first passive nuclear power plant reactor AP1000 top cooling fan in China, and supplied it to customers in 2013. The on-site operation and various performance fully meet the design requirements. We have achieved localization by replacing imported products with independent technology.



### 自主设计

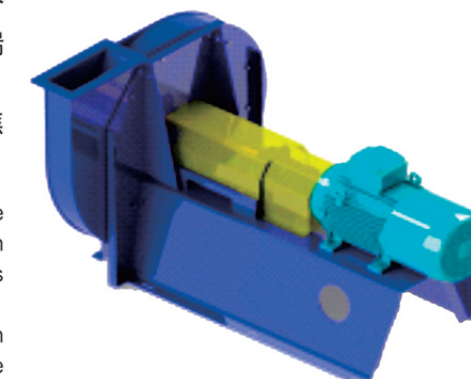
#### INDEPENDENT DESIGN

2018年，开始自主设计和制造进口化工装置配套的输送特殊介质的进口高端专用风机，为多套化工装置提供了替代进口的高端专用风机。

另外，还实现了连续重整和丙烷脱氢制丙烯装置再生风机、焦化干熄焦循环风机等进口风机的国产化。

In 2018, Dart-Rich began to independently design and manufacture imported high-end specialized fans for transporting special media in imported chemical plants, providing alternative high-end specialized fans for multiple chemical plants.

In addition, domestic production of imported fans such as regeneration fans for continuous reforming and propane dehydrogenation to propylene units, and circulating fans for coking dry quenching have also been achieved.





# 制造能力

## MANUFACTURING ABILITY

大通宝富本部工厂生产车间建筑面积约8万m<sup>2</sup>、湖南工厂生产车间建筑面积约1.3万m<sup>2</sup>。公司一直致力于智能制造建设，先后从德国、丹麦等国家引进了多台高端智能制造设备，拥有德国哈默五轴加工中心、数控车铣复合中心、叶轮自动焊接机器人、风机蜗壳仿形焊接专机、龙门视觉焊接系统、丹麦全自动旋压机、大型激光切割机、数控火焰切割机、数控金属切削机床、数控折弯机、铣边机、滚压/油压机等各种先进制造设备400余台（套），完全满足通风机、鼓风机、压缩机、核级风机等全品类产品的制造需求，确保从一块钢板到一台完整产品的全周期精准加工制作。

The construction area of production workshop in DART-RICH headquarter factory is about 80,000m<sup>2</sup>, and that in Hunan factory is about 13,000m<sup>2</sup>. The company has been committed to the construction of intelligent manufacturing, and has introduced several sets of high-end intelligent manufacturing equipment from Germany, Denmark and other countries. There are more than 400 sets of advanced manufacturing equipment such as German Hammer five-axis machining center, CNC turning and milling compound center, impeller automatic welding robot, fan volute copying welding machine, gantry vision welding system, Danish automatic spinning machine, large laser cutting machine, CNC flame cutting machine, CNC metal cutting machine tools, CNC bending machine, edge milling machine, rolling/hydraulic press, etc., which fully meet the manufacturing requirements of all kinds of products such as fans, blowers, compressors, nuclear fans, etc., and ensure the full-cycle accurate processing and manufacturing from a steel plate to a complete product.



1 叶轮自动焊接机器人  
IMPELLER AUTOMATIC WELDING MACHINE

2 全自动数控旋压机  
FULL-AUTOMATIC SPINNING MACHINE

3 大型激光切割机  
LARGE LASER CUTTING MACHINE

4 12米重型数控车床  
12-METER HEAVY CNC LATHE

5 12米重型数控磨床  
12-METER HEAVY GRINDING MACHINE

6 哈默五轴加工中心  
FIVE-AXIS MACHINING CENTER (HERMLE)

7 3080龙门数控铣床  
3080 GANTRY CNC MILLING MACHINE

8 160落地数控镗铣床  
160 FLOOR CNC BORING AND MILLING MACHINE

9 叶片成型机器人  
BLADE FORMING ROBOT





# 检测能力

## INSPECTION & TEST ABILITY



中国认可  
国际互认  
检测  
TESTING  
CNAS L20958

公司检测中心主要从事风机性能检测、原材料分析检测、铸锻件检测及计量器具管理等相关工作。2024年6月，检测中心获CNAS实验室认可证书。公司拥有40余台套高端先进检测及试验设备，以及风机叶轮超速试验平台、风机转子运转及超速试验平台、风机运转及性能测试平台、风管性能试验平台、无损检测室、材料机械力学性能及理化实验室、高温大型风机性能测试系统等。实现对进厂原材料检测、加工过程检验、部件检验及试验、产品出厂试验等全流程的检验和试验，保证每台产品都在严格的质量控制之下产成，最终将合格产品送达客户。

Our Inspection & Test Center is mainly engaged in fan performance test, raw material analysis and testing, steel and forged piece testing, measuring instruments management and other related works. In June 2024, our testing center obtained CNAS laboratory accreditation certificate. We have more than 40 sets of advanced sophisticated inspection and testing equipment, and fan impeller over-speed test platform, fan rotor operation and over-speed test platform, fan operation performance test platform, duct performance test platform, nondestructive testing room, mechanical properties of materials ,physical and chemical laboratories and high temperature large fan performance testing system. To realize the inspection and test of incoming raw materials, processing process inspection, parts inspection and test, product delivery test and other whole process, to ensure that each product is produced under strict quality control, and finally qualified products to customers.



1 德国申克动平衡机  
GERMANY SCHENCK DYNAMIC BALANCING MACHINE



2 高温大型风机性能测试系统  
HIGH TEMPERATURE LARGE FAN PERFORMANCE TESTING SYSTEM



- 3 三坐标测量仪  
CMM
- 4 液晶式金属摆锤冲击试验装置  
LCD TYPE METAL PENDULUM SHOCK TESTING DEVICE
- 5 风机运转/性能检测试验平台  
BLOWER TEST CONTROL ROOM AND PLATFORM
- 6 微机电子万能拉伸试验机  
MICROCOMPUTER ELECTRONIC UNIVERSAL TENSILE TESTING MACHINE
- 7 光谱分析仪  
SPECTRUM ANALYZER
- 8 风机叶轮运转/超速试验平台  
FAN ROTOR OVER-SPEED RUNNING TEST PLATFORM



资质荣誉  
QUALIFICATION





# 智能服务

## INTELLIGENT SERVICE

我们有专业的售前支持服务团队，为您提供专业的咨询服务，并能根据您的需求，快速为您提供最优的解决方案。

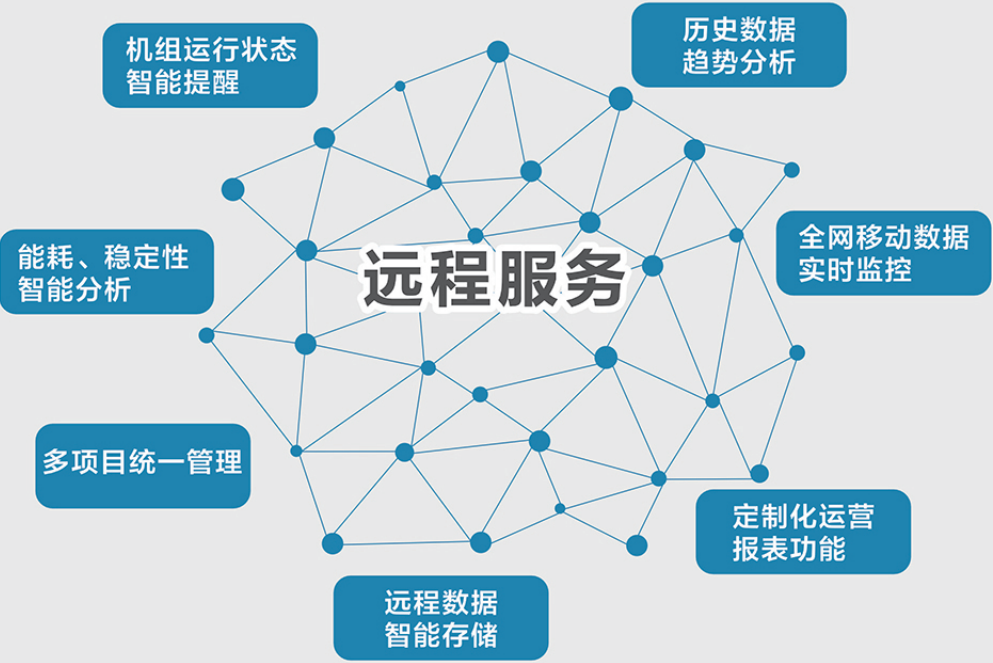
We have a professional pre-sales support service team to provide you with professional consulting services, and quickly provide you with the best solution according to your needs.

我们在国内设有十二处营销服务中心，并有覆盖全球的销售和服务网络。坚持1191售后服务承诺（1分钟内反馈、1小时内响应、9小时内解决方案、1天内到达现场）。我们以“更精准、更全面”为宗旨的“智能服务”，为您提供项目执行过程中的24小时全天候服务，并提供客户现场及本公司培训。我们可根据您的需求为您定制最合适的维护保养方案以及风系统节能改造等系统优化解决方案，为您提供全生命周期的服务。

We have twelve marketing service centers in China and a global sales and service network. Adhere to the 1191 after-sales service commitment (feedback within 1 minute, response within 1 hour, solution within 9 hours, and on-site arrival within 1 day). We adhere to the "intelligent service" with the aim of "more accurate and comprehensive", and provide you with 24-hour round-the-clock service in the process of project implementation, and provide customer on-site and the company training. We can customize the most suitable maintenance plan and system optimization solutions such as energy-saving renovation of wind system for you according to your needs, and provide you with full-life service.

我们有自主开发的物联网云系统服务平台，能够实现对设备运行状况的远程检测、故障预警及会诊，确保您的设备安全稳定、绿色低碳运行。

We have a self-developed IoT (Internet of Things) cloud platform, which enables remote detection, early fault warning and consultation of equipment operation conditions to ensure the safe and stable operation of your equipment.



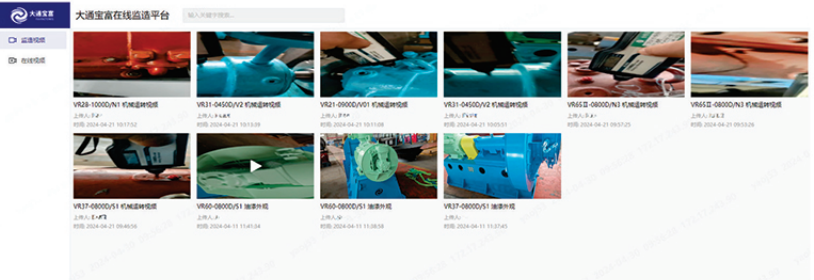
### 客户视窗 CUSTOMER WINDOW

序号	客户名称	合同名称	合同金额	合同日期	合同状态	合同备注
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合同执行 Contract Execution



在线选型 Online Selection



在线监造 Online Supervision

### 服务宗旨 SERVICE TENET

快速

RAPID

果断

DECISIVE

准确

ACCURATE

彻底

THOROUGH



# 企业愿景

ENTERPRISE PROSPECT

可靠、绿色流体机械的引领者！  
Leader of reliable and green fluid machinery!