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Engineering The Future

工艺螺杆压缩机

Process Screw Compressor

浙江开山压缩机股份有限公司

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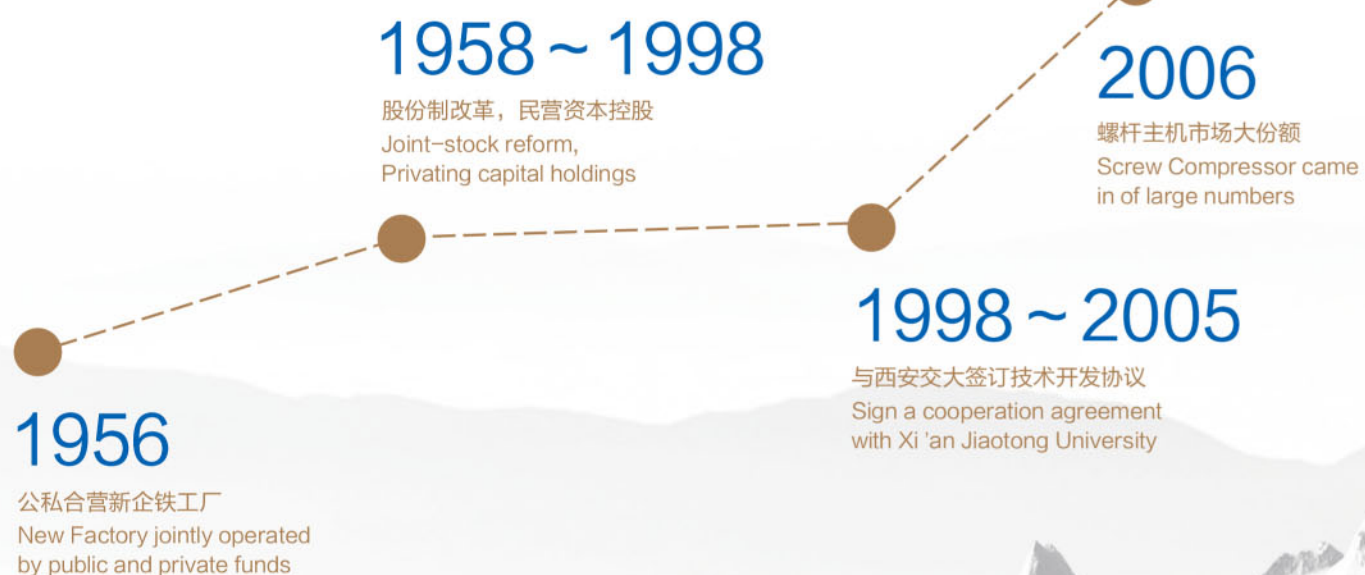
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浙江开山压缩机股份有限公司
ZHEJIANG KAISHAN COMPRESSOR CO., LTD.

追求卓越 铸就未来 Pursuing superior quality Engineering the future

1956年成立的开山，他的成长和发展是中国民族工业发展壮大的缩影。开山坚持掌握一流核心理念，伴随着北美研发中心的成立，正式迈向了国际；作为世界领先的压缩机公司，在美国、澳大利亚、俄罗斯、欧洲、东南亚、南美等国家和地区设立分支机构，世界知名的压缩机公司LMF、Turalwell也先后成为了开山的子公司。开山凭借悠久的历史、顶尖的技术和完整的市场网络，为用户提供量身定制的产品，传递了“高效”、“节能”、“可靠”的产品理念。

Established in 1956, Kaishan epitomizes the growth and development of Chinese national industry. Kaishan insists on possessing top-ranking core technology. Since Kaishan established a USA presence by opening its North America Development Center, it has become an international enterprise. As the world-leading compressor company in world, Kaishan has proceeded to set up branches spanning the U.S., Australia, Russia, Europe, Southeast Asia, South America, etc. In addition, LMF and Turawell is the famous compressor company in world as the subsidiary of Kaishan. With its long history, of industry manufacturing top-ranking technology and global market network, Kaishan custom tailors its products to meet individual customer demands while delivering high efficiency and high reliability.



2008

上海临港工业园投产
Shanghai Lingang Industrial Park began to be built

2009

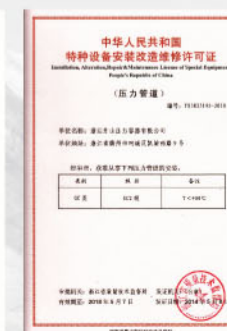
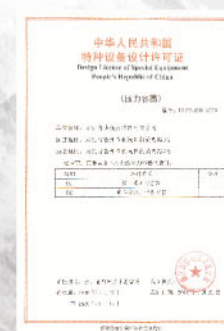
国际顶尖的螺杆压缩机专家
汤炎博士加盟
International top screw compressor expert Dr. Tang joined us.

2011

在深交所成功上市
(股票代码300257)
Successfully listed on the Shenzhen stock exchange (STOCK CODE 300257)

2016

收购奥地利LMF，
及匈牙利Turawell
Took over the Austrian company LMF, and the Hungarian company Turawell.



一流的工艺螺杆压缩机 Top-ranking Process Screw Compressor

掌握核心技术—锻造竞争优势

Mastering the core technology – Forging the competitive advantage

● 干式螺杆压缩机组 Dry Screw Compressor Unit

石油化工
炼油厂
化工厂
煤化工、能源行业
其他

Petrochemical Industry
Refinery
Chemical Plant
Coal Chemical Industry, Energy industry
Others

● 喷油螺杆压缩机组 Oil-injected Screw Compressor Unit

石化应用
燃料气体
酸烃气
危险气体

Petrochemical Application
Fuel Gas
Acid Gas
Dangerous Gas



专业的产品制造体系

Professional Product Manufacturing System

多年专业从事通用机械的设计、生产，包括空气压缩机、制冷压缩机、空调压缩机、螺杆气体压缩机、螺杆膨胀机等，积累了丰富的设计、制造、使用经验，能够从专业的角度提升螺杆压缩机的性能和使用可靠性。

For many years engaged in general machinery design and production, including air compressor, refrigeration compressor, air conditioning compressor, gas screw compressor, screw expander, etc., Kaishan has accumulated a wealth of design, manufacture and use experience. We can improve the performance, the reliability of screw compressor from a professional point of view.



先进的制造和加工工艺

Advanced Manufacturing and Processing Technology



德国HEXAGON转子测量中心
Germany Rotor Measuring Center
(HEXAGON)



德国KAPP加工中心
Germany KAPP Rotor CNC Milling Machine

英国霍洛依德(HOLROYD)
专用转子型线磨床
Britain HOLROYD
Rotor CNC Milling Machine

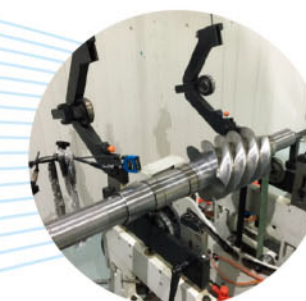


日本三井MHU630A加工中心
Japanese Mitsui MHU630A
Machining Center

德国进口三坐标测量仪
Germany Three Coordinates
Measuring Instrument



全球最大的三坐标测量仪ZEISS
The World's Largest Three Coordinate
Measuring Instrument (ZEISS)



先进的转子动平衡仪
Advanced Rotor Dynamic
Balancing Instrument



国内最大的螺杆压缩机测试台
The Largest Screw Compressor
Test Facility in China

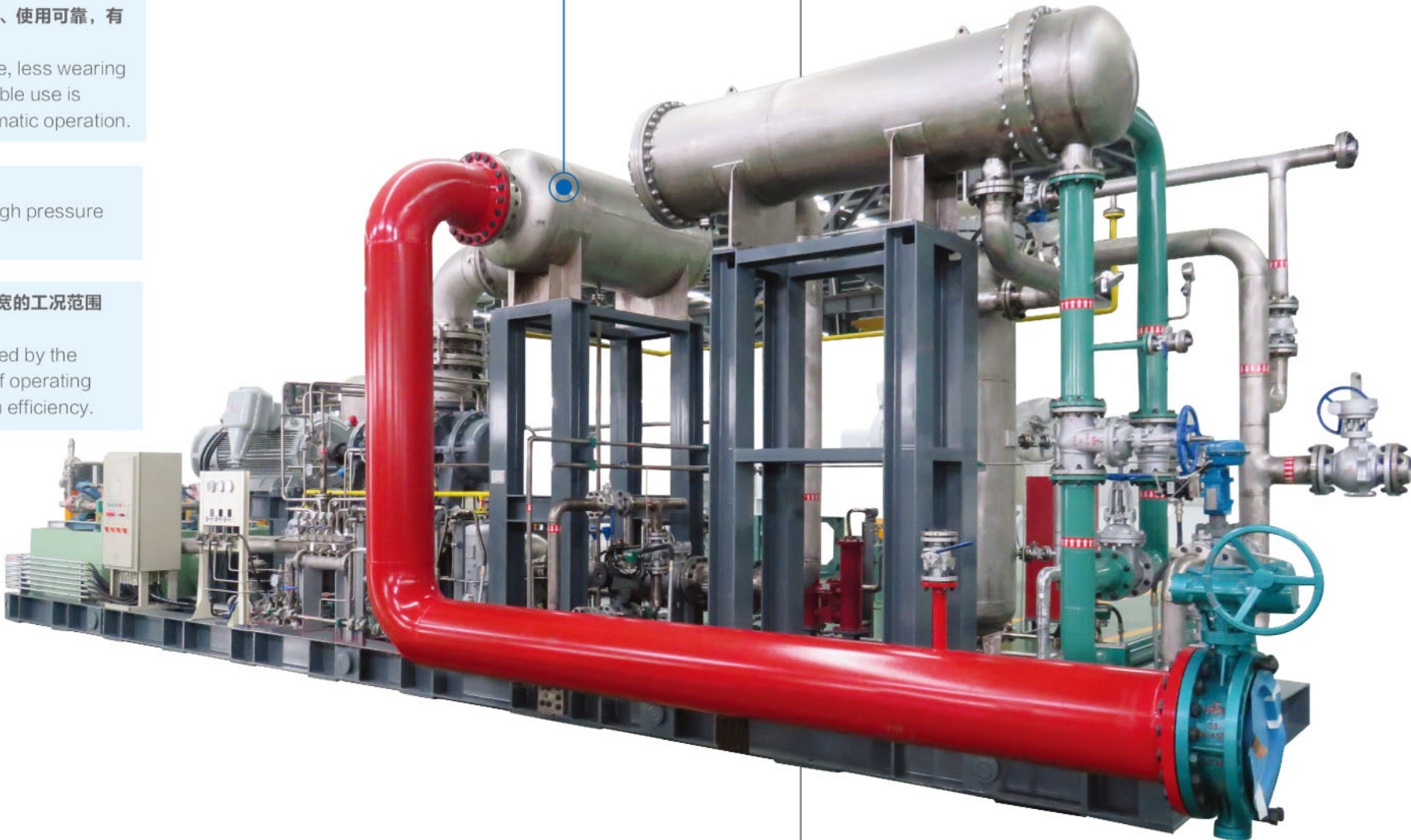
干式螺杆压缩机 Dry Screw Compressor Unit

开山干式螺杆压缩机系统压缩机的压缩腔内不注入润滑油，因而能提供纯净、无油、无尘的压缩介质，常用于压缩易燃、易爆、有毒的介质气。针对介质的工况变动（如气体组分和压力）等基本特征，开山专门设计出一套密封系统来兼顾高效、安全和可靠的理念。

No injection of lubricating oil, Kaishan dry compressor can provide pure, oil-free and clean gas. It is used in flammable, explosive and toxic dielectric gas. According to the working condition of medium changes (such as gas composition and pressure) and other basic features, Kaishan specialized in designing a set of sealing system to ensure the efficient, safe and reliable concept.

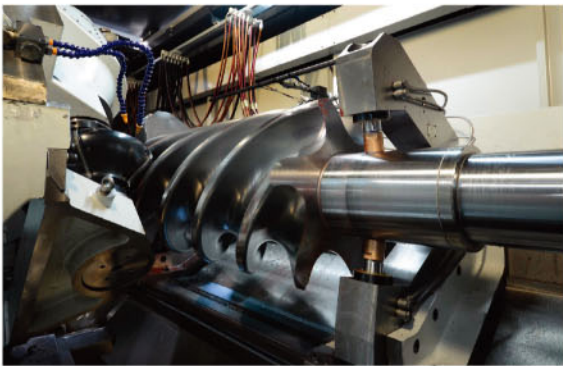
优点 Advantage

- ✓ **转速较高、质量轻、体积小、占地面积小。**
High speed, light weight, small size and small area covered.
- ✓ **动力平衡性能好，易损件少、维修简单、使用可靠，有利于实现操作自动化。**
Good dynamic balance performance, less wearing parts, simple maintenance and reliable use is conducive to the realization of automatic operation.
- ✓ **对液击不敏感，单级压比高。**
Be not sensitive to liquid hammer, high pressure ratio at the single stage.
- ✓ **输气量几乎不受排气压力的影响。在较宽的工况范围内，仍可保持较高的效率。**
Gas transmission is almost unaffected by the exhaust pressure. In a wide range of operating conditions, it can still maintain a high efficiency.



气体处理 Gas Species

● 焦炉气	Coke Oven Gas	● 乙炔	Acetylene
● 煤矿瓦斯	Coal Gas	● 石灰窑气	Lime-kiln Gas
● 天然气	Natural Gas	● 氢气	Hydrogen
● 煤层气	Coalbed Methane	● 二氧化碳	Carbon Dioxide
● 沼气	Biogas	● 火炬气	Flare Gas
● 乙烯	Ethylene	● 乙烷	Ethane
● 苯乙烯	Styrene	● 丙烯	Propylene
● 高炉煤气	Blast-furnace Gas	● 丙烷	Propane
● 丁二烯	Butadiene	● 氨	Ammonia
● 酸性碳氢化合物	Acid Hydrocarbon	● 氯气	Chlorine
● 蒸汽回收	Vapor Reclamation	● 一氧化碳	Carbon Monoxide=
● 水蒸气	Steam	● 减粘裂化炉排放气体	The Exhaust Gas of Viscosity Breaking Furnace
● 分解气体	Destruction Producer		
● 氮气	Nitrogen	● 其他气体	Others



干式螺杆压缩机技术特性

Technology specification for dry screw compressor

KSG系列

吸气压力: $-0.03 \sim 0.6$ MPa

排气压力: $0.2 \sim 2.0$ MPa

排气量: $10 \sim 1069$ m³/min

KSG Series

Suction Pressure: $-0.03 \sim 0.6$ MPa

Discharge Pressure: $0.2 \sim 2.0$ MPa

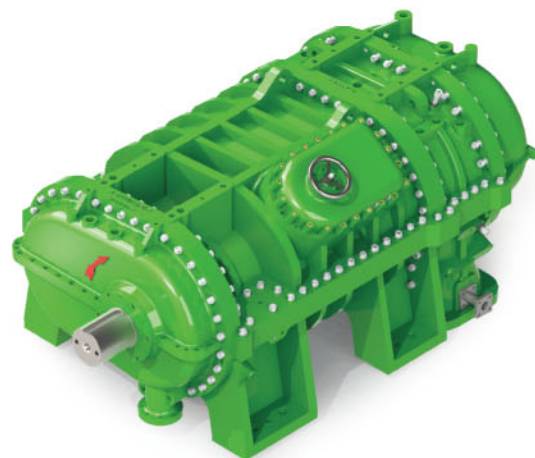
Capacity: $10 \sim 1069$ m³/min

适用于各种复杂工况

Applicable to all kinds of complex conditions

高可靠性、维护费用低、基础简单、运行费用低、初始投资少、无负荷工况下功耗低

High reliability, low maintenance cost, simple foundation, low operating cost, low initial investment and low power consumption at the condition of no load.



多种密封设计, 确保运行安全

Various seal design, safety ensurance.



机械密封 Mechanical seal



干气密封 Dry gas seal



碳环密封 Carbon ring seal



迷宫密封 Labyrinth seal

优良转子型线、减少泄漏、提升阀、优化孔口设计

Excellent rotor profile, reducing leakage, Lift valve, optimization design of orifice.

无齿轮箱、较小转子直径、较大轴承直径、短长径比、整体锻造转子

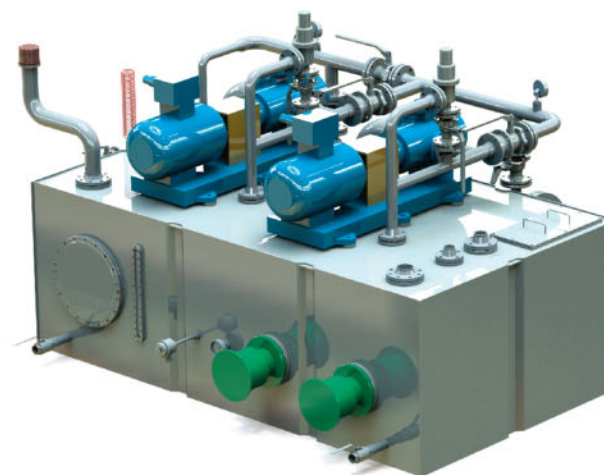
No gear box, smaller diameter of rotor, large bearing diameter, short diameter ratio, the whole forging rotor

无矩形密封条、低排气流速、低齿顶速度、直联驱动

No rectangular seal, low exhaust flow rate, low tooth top speed, direct drive.

独立的润滑油系统

Independent lubricating oil system



开山专利——提升阀

有效降低了流量调节的能耗

Kaishan Patent——Lift Value

Decrease the energy loss effectively

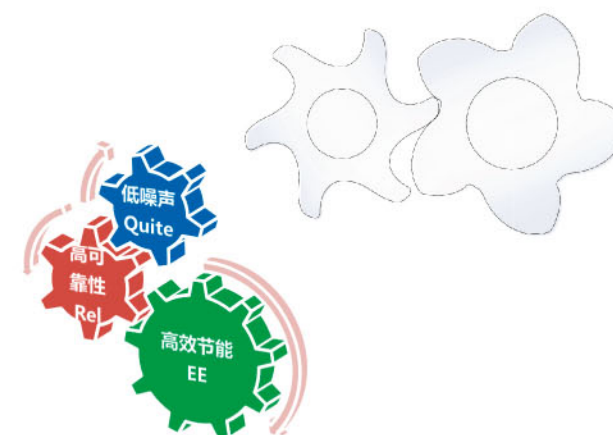


机体 Housing

阀盖 Value housing cover

阀芯 Spool value

驱动机构 Driving mechanism



确保了轴承的安全可靠运行

guarantee the operating safety



喷油螺杆压缩机

Oil-injected Screw Compressor Unit

喷油螺杆压缩机系统是当今压缩机发展的主流。开山喷油螺杆机系统具有优越而且可靠的性能，运行振动小、噪音低、效率高、无易损件。阴阳转子间以及机体外壳间的精密配合减小了气体回流泄露，提高了效率；独特的润滑方式简化了机械结构、增加了气密的作用、降低了噪音。

Oil-injected screw compressor system is the mainstream of the development of compressor. Kaishan Oil-injected screw machine system has superior and reliable performance, small vibration, low noise, high efficiency, no wearing parts. The precision fit between the rotor and the outer shell of the body reduces the leakage of the gas flow and improves the efficiency. The unique lubrication mode simplifies the mechanical structure, increases the function of the air tight, and reduces the noise.

气体处理 Gas Species

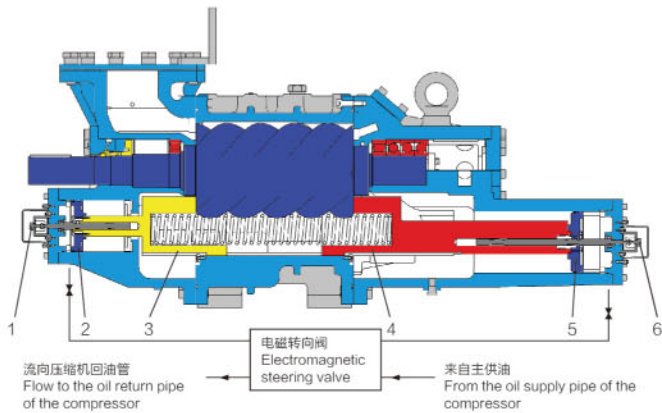
- 焦炉气 Coke Oven Gas
- 煤矿瓦斯 Coal Gas
- 天然气 Natural Gas
- 煤层气 Coalbed Methane
- 沼气 Biogas
- 氮气 Nitrogen
- 丙烷 Propane
- 制冷剂 Refrigerant
- 燃料气体 Fuel Gas
- 火炬气 Flare Gas
- 氦 Helium
- 氢气 Hydrogen
- 碳氢化合物混合物 Hydrocarbon Mixture
- 丙烯 Propylene
- 氨 Ammonia
- 丁烷 Tetrane
- 甲烷 Methane
- 酸气 Sour Gas
- 其他气体 Others

双滑阀

Double slide valve

流量滑阀——无级调节排气量，无需变频器
volume slide valve——Stepless capacity regulation needs no frequency converter.

容积比滑阀——调节内容积比，使螺杆压缩机始终工作于最佳排气压力
Volume ratio slide valve —— Adjusting the volume-reduction ratio makes the screw compressor always output best discharge pressure.



- 1. 内容积比滑阀电位计 The potentiometer of the volume ratio slide valve
- 2. 内容积比滑阀活塞 The piston of the volume ratio slide valve
- 3. 内容积比滑阀 The volume ratio slide valve
- 4. 流量滑阀 The volume slide valve
- 5. 流量滑阀活塞 The piston of the volume slide valve
- 6. 流量滑阀电位计 The potentiometer of the volume slide valve



开山喷油螺杆压缩机的特点

The Features of Kaishan Oil-injected Screw Compressor

- ✓ 定制化孔口，可变内容比，自动匹配背压，减少功耗，提升效率
Customized orifice, flexible volume-reduction ratio, automatically matching the back pressure to decrease the energy cost and improve efficiency.
- ✓ 模块化设计、全撬装化布局，结构紧凑，快速部署
Modularized-design, Skid-mounted layout, compact structure, rapid installation for users.
- ✓ 完善的集成化电气及控制系统，基于互联网的远程监控
Integrated electrical and control system, internet remote monitoring and control.

产品参数 Product Specification



CT系列

吸气压力: $-0.05 \sim 0.6$ MPa
排气压力: $2.5 \sim 3.0$ MPa
排气量: $3 \sim 140$ m³/min

CT Series

Suction pressure: $-0.05 \sim 0.6$ MPa
Discharge pressure: $2.5 \sim 3.0$ MPa
Capacity: $3 \sim 140$ m³/min



SGY系列 低压主机

吸气压力: $-0.05 \sim 0.3$ MPa
排气压力: $0.3 \sim 0.6$ MPa
排气量: $6.2 \sim 92$ m³/min

SGY Series

Low pressure bare block
Suction pressure: $-0.05 \sim 0.3$ Mpa
Discharge pressure: $0.3 \sim 0.6$ Mpa
Capacity: $6.2 \sim 92$ m³/min



中高压主机

吸气压力: $-0.05 \sim 0.3$ MPa
排气压力: $0.6 \sim 1.8$ MPa
排气量: $2.2 \sim 136$ m³/min

Middle-high pressure bare block

Suction pressure: $-0.05 \sim 0.3$ Mpa
Discharge pressure: $0.6 \sim 1.8$ Mpa
Capacity: $2.2 \sim 136$ m³/min



高压主机

吸气压力: $-0.05 \sim 0.3$ MPa
排气压力: $2.4 \sim 4.0$ MPa
排气量: $20 \sim 40$ m³/min

High pressure bare block

Suction pressure: $-0.05 \sim 0.3$ Mpa
Discharge pressure: $2.4 \sim 4.0$ Mpa
Capacity: $20 \sim 40$ m³/min

干式螺杆鼓风机 Dry screw blower



开山干式螺杆鼓风机系统高度集成化。螺杆主机采用先进的“型线”与传统罗茨风机相比，大大节约了能耗；通过孔口与齿间的优化，大大降低了机组的噪音。针对于每一个用户的要求，开山都会量身定做特定的方案，使产品做到最优质、最高效、最可靠。

Kaishan dry screw compressor system is highly integrated. The bare block adopts advanced "Profile". Compared with the traditional Roots Blower, Kaishan bare block saves energy consumption greatly; the optimized orifice and rotors, make the whole system noise in operation smaller. According to the requirements of customers, Kaishan will be tailored to particular providing the best quality, the most efficient and the most reliable product.



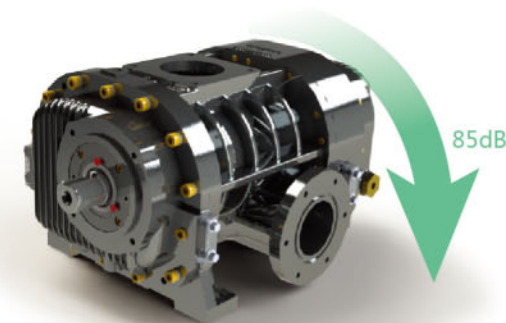
气体处理 Gas Species

- | | | | |
|-------|-------------------|--------|----------------|
| ● 煤层气 | Coalbed Methane | ● 二氧化碳 | Carbon Dioxide |
| ● 天然气 | Natural Gas | ● 二氧化硫 | Sulfur Dioxide |
| ● 沼气 | Anaerobic Methane | ● 其他气体 | Others |

产品特点 Product Feature

独特的进、排气消音设计，“静”无止尽

Unique inlet and outlet sound attenuation design, beyond silent.



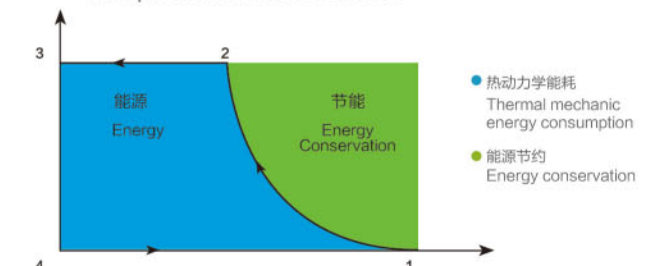
高效节能+高稳定性，量身定制的转子型线

High efficiency & High stability, customized rotor sharp



与罗茨风机相比

Compared with Roots Blower



产品参数 Product Specification

增压范围: 0.06 ~ 0.12 MPa

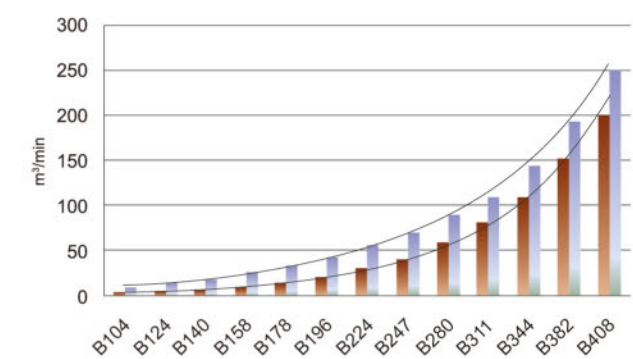
最高工作压力: 0.3 MPa

排气量: 3 ~ 252 m³/min

Discharge pressure: -0.06 ~ 0.12 Mpa

Maximum working pressure: 0.3 MPa

Capacity: 3 ~ 252 m³/min



注：本表数据供选型参考，开山会根据机型改进修改数据。
Note: Data for reference only.

安装简便、适应性强

Easy installation, Strong adaptability



螺杆压缩机系统集成 Screw Compressor System

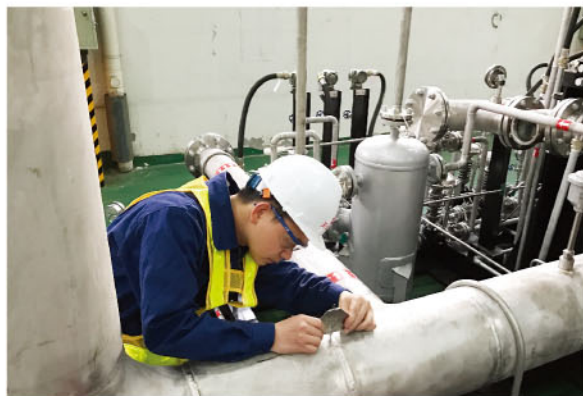
电气控制系统 Electric Control System

设计完善的压缩机电气控制系统是保证其安全可靠运行的重要措施。电气控制系统电路配线简洁、可靠，检修方便。

The perfect design of the electric control system is an important measure to ensure the safety and reliability of the compressor. Electrical control system is concise, reliable and convenient.



Screw Compressor System



运行状态监控系统 Running State Monitoring System

根据设备运行过程中产生的各种信号，进行数据采集、存储、处理和分析，掌握设备的运行现状，对已经形成或将要形成的故障进行分析诊断。判定故障的部位和产生原因，预测预报设备未来的技术状况。

According to various signals generated during the operation of equipment, data acquisition, storage, processing and analysis, customers can grasp the status of the equipment operation, the formation or the failure to analyze and diagnosis. Judge the location and the cause of the failure, and forecast the future technical condition of the equipment.

运行保障系统 Operation Ensurance System

充分考虑机组现场条件与特殊要求，为压缩机定制合理的润滑、密封、冷却等运行保障系统。

Taking full account of the site conditions and special requirements for the compressor unit, customizing a reasonable system of lubrication, sealing, cooling and other operational support.

噪音控制 Noise Control

开山在各方面增加隔音处理，主机转子优化、撬装化隔音房、消音器、隔音材料等各个方面，以此来达到工业上“静”的诠释。

In order to increase noise processing, Kaishan optimizes rotor, soundproof room, muffler, etc. all the time. Customers will be satisfied with the "silence".

安全 Safety

开山一直把安全放在首位，在压力、温度、断水、断油等各方面，做到多重保护，把由于人为或非人为的事故，发生的概率降低到最低点。

Kaishan puts the safety in the first place, in all aspects of pressure, temperature, water or oil, etc, accomplishes multiple protection. Due to the human or non-human accident, Kaishan reduces the probability of occurrence to the lowest point.

