



AHST STEAM COMPRESSOR

AHST 蒸汽压缩机

Airhorse[®]
艾玛压缩机



广州艾玛压缩机有限公司
GUANGZHOU AIRHORSE COMPRESSOR CO.,LTD



YOUR CHOICE, OUR PROMISE
—— 您的选择·我们的承诺 ——



广州艾玛压缩机有限公司是集研发、制造、销售与服务于一体的高科技企业，产品畅销全球130多个国家和地区，不仅在中国大陆30多个大中城市设立销售与服务网点，同时拥有完善的全球销售服务体系。

艾玛 (Airhorse) 成立于2012年，拥有自己的研发、销售、生产、售后团队，公司在职人数200人，主要生产销售螺杆式空压机、螺杆式鼓风机、无油螺杆机、离心空压机、螺杆鼓风机、真空泵等，年销售15000台以上，年销售额2.5亿，海外占比70%，拥有自主研发专利30余项，公司诚信经营，连续三年被评为诚实守信企业。

艾玛压缩机在压缩机领域拥有多项专利，研发设计了高温升的单螺杆蒸汽压缩机。

Guangzhou Airhorse Compressor Co., Ltd. is a high-tech enterprise integrating R&D, manufacturing, sales, and service. Our products are sold in 130+ countries and regions worldwide. We have established sales and service networks in 30+ major Chinese cities, along with a comprehensive global sales and service system.

Founded in 2012, Airhorse (Airhorse) has an in-house team of 200 employees specializing in R&D, sales, production, and after-sales service. We manufacture and sell: Screw air compressors, Screw blowers, Oil-free screw compressors, Centrifugal air compressors, Vacuum pumps; Annual Production: 15,000+ units; Annual Revenue: 250 million RMB (70% from overseas markets); Patents: 30+ proprietary technologies; Reputation: Certified as an "Honest & Trustworthy Enterprise" for three consecutive years. Emma Compressors holds multiple patents in the compressor field, having developed and designed high-temperature-rise single-screw steam compressors.



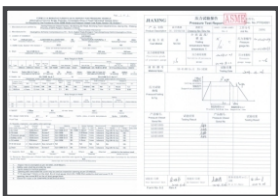
空压机 CE 证书
CE Certificate for Air Compressor



冷干机 CE 证书
CE Certificate for Refrigerated Air Compressor



ISO 证书
ISO Certificate



ASME 认证
ASME Certificate



高新技术企业认证
High-Tech Enterprise Certificate



无油认证
Oil-Free Certificate



UL 认证
UL Certificate



蒸汽压缩机系统原理

STEAM COMPRESSOR SYSTEM PRINCIPLE



蒸汽压缩机是一种专门回收利用低品位能源的蒸汽压缩机，通过电动机驱动蒸汽压缩机转动，当低品位热能介质进入螺杆齿槽，随着转子转动，齿槽容积迅速减少，利用流体压缩升压实现能量转换，充分利用能量将余热蒸汽由低品质状态转变为高品质状态，输出高温高压蒸汽，满足用户所需。

当前工矿企业生产过程中，产生了大量的低品位乏汽和闪蒸汽。他们的特点是低温低压湿度大，内部汽化潜热能无法充分利用，大多排空或冷凝成水加以回收，浪费大量能源，又不得不通过锅炉将冷凝水再汽化升温升压来满足生产所需，或向热电厂购买新蒸汽。如果利用蒸汽压缩机把低品蒸汽压缩，满足生产需要，使蒸汽实现循环利用，既能净化环境又能节能减排，还能给企业带来巨大的经济效益。



A steam compressor is a specialized device designed to recover and utilize low-grade energy. Driven by an electric motor, the steam compressor rotates, drawing in low-grade thermal energy medium into the screw rotor grooves. As the rotor turns, the groove volume rapidly decreases, compressing the fluid to increase pressure and achieve energy conversion. This process efficiently upgrades waste steam from a low-quality state to a high-quality state, delivering high-temperature, high-pressure steam to meet user requirements.

In industrial and mining operations, large quantities of low-grade waste steam and flash steam are generated. These steam streams are characterized by low temperature, low pressure, and high humidity, making it difficult to fully utilize their latent heat energy. Most of this steam is either vented or condensed into water for partial recovery, resulting in significant energy waste. To meet production demands, companies often rely on boilers to re-evaporate and repressurize the condensate or purchase fresh steam from thermal power plants.

By employing steam compressors to pressurize low-grade steam for reuse in production processes, a closed-loop steam recycling system can be established. This approach not only reduces environmental pollution and energy consumption but also delivers substantial economic benefits to enterprises.

艾玛高温升单螺杆蒸汽压缩机

AIRHORSE HIGH-TEMPERATURE-RISE SINGLE-SCREW STEAM COMPRESSOR

长久以来，单螺杆一直没有成功运用于蒸汽领域。艾玛压缩机有限公司经过数年的研发创新，结合诸多种类压缩机的优点，充分利用单螺杆压缩机的优势，克服直接压缩水蒸汽的诸多技术难点，开发出世界首台并投入实际运用的单螺杆水蒸汽压缩机，并在2023年成功实验达到192°C的排气温度，该温度在螺杆压缩机行业中处于领先地位。随着行业对蒸气余热回收需求的增长，艾玛压缩机高温升单螺杆蒸汽压缩机广泛应用于各领域150~192°C的使用场景，表现出极为稳定的运行状况，充分证明了艾玛压缩机压缩机的可靠品质。

For a long time, single-screw technology had not been successfully applied in the steam sector. After years of R&D and innovation, Airhorse Compressor Co., Ltd. combined the advantages of various compressor types, fully leveraged the strengths of single-screw compressors, and overcame numerous technical challenges in directly compressing water vapor. The company developed the world's first single-screw water vapor compressor for practical application. In 2023, it successfully achieved an exhaust temperature of 192°C in testing—a leading performance in the screw compressor industry. With increasing industry demand for waste steam heat recovery, Airhorse Compressor's high-temperature-rise single-screw steam compressors have been widely adopted in applications requiring 150–192°C across various fields. They demonstrate extremely stable operation, fully validating the reliable quality of Emma Compressor's products.

产品特点

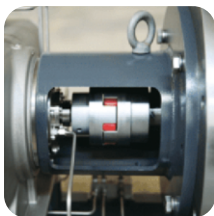
PRODUCT FEATURES

变频+直联驱动

FREQUENCY CONVERSION + DIRECT DRIVE

采用联轴器连接主机和电机，减少了齿轮箱的空间，并提升了压缩机的可靠性。采用变频电机+变频器使用，无极调速，可根据客户实际工况进行调节，适应性更强。

The coupling is used to connect the main engine and the motor, which reduces the space of the gearbox and improves the reliability of the compressor. Using variable frequency motor + frequency converter, stepless speed regulation can be adjusted according to the customer's actual working conditions, making it more adaptable.

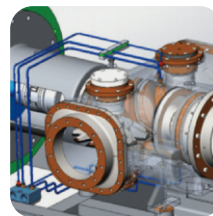


多点喷水，有效润滑

MULTI-POINT WATER SPRAYING

压缩机内部最佳位置多点喷水，有效润滑螺杆转子和星轮片，确保压缩机的可靠性。

Water is sprayed at multiple points at the best position inside the compressor to effectively lubricate the screw rotor and star wheel blades, ensuring the reliability of the compressor.



可靠的连接方式

RELIABLE CONNECTION METHOD

用高强度的转接盘把B35安装方式电机与压缩机连接起来，确保机组同心度。

A high-strength adapter plate connects the B35-mounted motor to the compressor, ensuring unit concentricity.



啮合部件特殊性

SPECIAL FEATURES OF MESHING PARTS

星轮片采用特殊的复合材料(类塑料)，转子采用金属材质，决定了压缩机无火花、安全防爆、应用行业更广。

The star wheel plate is made of special composite material (plastic-like), and the rotor is made of metal, which determines that the compressor is spark-free, safe and explosion-proof, and can be used in a wider range of industries.



特殊的星轮片材料

CORROSION-RESISTANT MATERIAL

星轮片采用特殊的复合材料，耐200°C高温，强度高、韧性好，耐磨，热稳定性好，不易膨胀和变形。

The star wheel plate is made of special composite material, which is resistant to high temperatures of 200°C, has high strength, good toughness, wear resistance, good thermal stability, and is not easy to expand and deform.



耐腐蚀的材质

CORROSION-RESISTANT MATERIAL

除特殊要求外，所有材质均采用耐腐蚀性极好的316L不锈钢。

Except for special requirements, all materials are made of 316L stainless steel with excellent corrosion resistance.

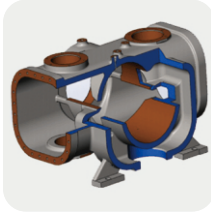


优化的吸排气内容积比

OPTIMIZED INTAKE AND EXHAUST INTERNAL VOLUME RATIO

最优化设计的吸、排气内容积比，使压缩机获得高排气温度的同时避免过压缩损失，有效降低压缩机的输入功率。

The optimally designed suction and exhaust internal volume ratio enables the compressor to achieve high exhaust temperature while avoiding over-compression loss, effectively reducing the compressor input power.



自润滑风冷式循环系统

SELF-LUBRICATING AIR-COOLED CIRCULATION SYSTEM

采用电机+油泵供回油，风扇+换热器强制冷却，有效避免高温对轴承和机械密封的影响，确保压缩机高效、长久运行。

The motor + oil pump supply/return oil system, combined with fan + heat exchanger forced cooling, prevents high-temperature effects on bearings and mechanical seals, ensuring efficient and long-lasting operation.



流量性能表

FLOW PERFORMANCE TABLE

蒸汽量 Steam Capacity		进气温度 Inlet Temperature														
		70°C	80°C	90°C	100°C	110°C	120°C	130°C	140°C	150°C	160°C	170°C	180°C	190°C		
1T/H		5044														
实际流量 Actual Flow Rate m3/h		5044														
排气温度 Discharge Temperature	80°C	27.5	3409													
	90°C	56	26.4	2362												
	100°C	87.7	53.6	25.4	1674											
	110°C	120.4	85	51.3	24.4	1211										
	120°C	154.6	116.4	77.8	49.2	23.4	893									
	130°C	190.4	149.3	107.8	76.6	47.2	22.5	669								
	140°C	224.3	181	140	104.5	73.4	45.3	21.6	509							
	150°C		212.6	172	135.7	100	70.4	43.5	20.8	393						
	160°C		244.7	202	164	130	96.7	65.6	41.8	20	308					
	170°C			232	192.2	156.3	122.1	91.7	65.7	41.3	19.3	243				
	180°C				221	183.2	149.3	118.6	90.6	65	40.3	19.1	194.2			
	190°C				249.5	210.2	175	143	113.6	87	62.5	40	19.2	156.6		
200°C					237.2	200.1	167	136.7	108.9	83.4	60	38.4	18.5			

进气温度
 进气流量
 排气温度
 轴功率

应用领域 / 客户案例

APPLICATION FIELDS / CUSTOMER CASES

应用项目：广东某蒸汽回收升温增压项目

APPLICATION PROJECT : GUANGDONG STEAM RECOVERY, HEATING AND PRESSURE BOOSTING PROJECT



● 气源参数

110°C 饱和蒸汽
压力 0.04Mpa (表压)
流量1T/H

● STEAM SOURCE PARAMETERS

110°C SATURATED STEAM
PRESSURE 0.04 MPA (GAUGE PRESSURE)
FLOW RATE: 1T/H (TONS PER HOUR)

● 压缩后蒸汽参数

170°C 饱和蒸汽
压力 0.7MPa (表压)
流量1T/H

● COMPRESSED STEAM PARAMETERS

170°C SATURATED STEAM
PRESSURE: 0.7 MPA (GAUGE PRESSURE)
FLOW RATE: 1T/H (TONS PER HOUR)

● 技术参数

进气参数: 110°C 饱和蒸汽 0.04Mpa (表压)
排气参数: 170°C 饱和蒸汽 0.7MPa (表压)
流量1T/H

● TECHNICAL PARAMETERS

INLET PARAMETERS:
110°C SATURATED STEAM 0.04 MPA (GAUGE PRESSURE)
OUTLET PARAMETERS:
170°C SATURATED STEAM 0.7 MPA (GAUGE PRESSURE)
FLOW RATE: 1T/H

● 设备参数

型号: AHST-160kW-1T/H-20
轴功率: 159kW
电机功率: 160kW

● EQUIPMENT PARAMETERS

MODEL:AHST-160kW-1T/H-20
SHAFT POWER:159kW
MOTOR POWER:160kW

经济效益 ECONOMIC BENEFITS

	数量 Quantity	单价 Unit Price	总成本 Total Cost
外购蒸汽 Purchased Steam	7290 (吨) (tons)	280 (元/吨) (RMB/ton)	2,218,000 (元/年) (RMB/year)
回收蒸汽 Recovered Steam	159 kW	0.7 (元/度) (RMB/kWh)	881,000 (元/年) (RMB/year)
节省成本 Cost Savings			1,337,000 (元/年) (RMB/year)

热泵蒸汽发生系统

HEAT PUMP STEAM GENERATION SYSTEM

- ✔ 根据需求可选空气源热泵系统或水源热泵系统
Depending on requirements, either an air-source heat pump system or a water-source heat pump system can be selected.
- ✔ 出气温度可调，最高192°C，根据需求实现饱和蒸汽或过热蒸汽
The outlet steam temperature is adjustable, up to 192°C, producing saturated or superheated steam as needed.
- ✔ 系统简单、安装方便，闪蒸罐与水泵为工厂撬装，现场安装管路即可
The system is simple and easy to install, with the flash tank and water pump pre-assembled at the factory—only piping connections are required on-site.
- ✔ 可规避压力容器要求，或按照一般压力容器管理，无需单独司炉工，仅需压力容器检验即可
It can avoid pressure vessel regulations or be managed as a standard pressure vessel, eliminating the need for a dedicated boiler operator—only pressure vessel inspection is required.
- ✔ 负压或微压运行，降低了安全风险
Operating under negative or low pressure reduces safety risks.

传统锅炉

Traditional Boiler System

热泵蒸汽发生系统

Heat Pump Steam Generation System

传统锅炉与空气源热泵蒸汽发生系统优势对比

Comparison of advantages of traditional boiler and air source heat pump steam generation system

● 需要燃气管道初装费和变压器容量
Requires gas pipeline installation fees and larger transformer capacity

● 特种压力设备，需要年检
Special pressure equipment requiring annual inspection

● 专用锅炉房，长距离输热损耗大
Dedicated boiler room with significant long-distance heat transfer losses

● 持证司炉工1~3名
Requires 1-3 certified boiler operators

● 安全隐患大
Significant safety hazards

● 变压器容量仅电锅炉的60%
Transformer capacity only 60% of electric boiler

● 无需年检
No annual inspection required

● 点对点近距离安装，效率高
Point-to-point installation with high efficiency

● 无需专人值守
No dedicated personnel required

● 无任何安全隐患，永远不会爆炸
Completely safe operation, explosion-proof design

VS



常用不同锅炉吨蒸汽运行费用对比

OPERATING COST COMPARISON PER TON OF STEAM FOR DIFFERENT BOILER TYPES

项目 Item	电锅炉 Electric Boiler	天然气锅炉 4/Nm ³	热泵蒸汽发生系统 Heat Pump Steam System
能源单价 Energy Unit Price	0.6 元 /kWh (RMB/kWh)	4 元 /Nm ³ (RMB/Nm ³)	0.6 元 / kWh (RMB/kWh)
吨蒸汽运行费用 Energy Consumption	750 kWh	85 Nm ³	400 kWh
吨蒸汽每小时运行费用 Operating Cost per Hour	450 元 /h (RMB/h)	340 元 / h (RMB/h)	240 元 / h (RMB/h)
每天24H运行费用 Daily 24H Cost	10800 元 (RMB)	8160 元 (RMB)	5760 元 (RMB)
与电锅炉差值 Cost Difference vs Electric Boiler	0	-2640 元 / 天 (RMB/day)	-5040 元 / 天 (RMB/day)

* 备注：能源价格参考一般工业项目能源价格中位值，能源消耗量按一般值估算
根据每天运行时段甚至全年运行时段不同，差别较大，上表仅按照每天 24h 运行计算作为参考

* Note: The energy prices referenced are median values for general industrial projects, and energy consumption estimates are based on typical usage levels.
Actual operating costs may vary significantly depending on daily runtime schedules and seasonal operation patterns throughout the year. The above table is calculated based on 24-hour continuous operation for reference purposes only.



艾玛压缩机在国内具有较完善的经销商服务体系及5个公司直属售后服务办事处，海外40多个国家分布约130家经销商。可有效对接客户及国内外各种订单，并提供及时有效的售后服务。

AirHorse Compressor has a complete dealer service system in China and 5 after-sales service offices directly under the headquarters, and we have about 130 dealers in more than 40 countries overseas. It can effectively provide service for our customers and process various orders in China and abroad market, we will provide timely and effective after-sales service for you.

AirHorse® 艾玛

广州艾玛压缩机有限公司

办公室：广州市黄埔区新阳西路38号生广场4栋1503-1505室

工厂：广州市增城区中新镇迳贝路8号

电话：86-20-38090459 \ 32376170 传真：86-20-38090400 \ 32376096

GUANGZHOU AIRHORSE COMPRESSOR CO.,LTD

OFFICE ADDRESS : Room 1503-1505, Building 4, Shengsheng Plaza, No. 38 Xinyang West Road, Huangpu District, Guangzhou

FACTORY ADDRESS : No.8, Jingbei Road, Zhongxin Town, Zengcheng District, Guangzhou China

TEL : 86-20-38090459 \ 32376170 FAX : 86-20-38090400 \ 32376096

▶ 微信



▶ WHATSAPP



📞 销售热线 / WHATSAPP
Sales Hotline

+86 137 2522 4016

📞 售后热线
After-Sales Hotline

+86 181 4486 2868

🌐 www.ahaircompressor.com

✉ export@ahaircompressor.com

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