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Magnetic levitation series

磁悬浮系列

磁悬浮技术应用手册

Maglev Technology Application Manual

关于我们
ABOUT US

东莞市仟威机械设备有限公司是一家从事空压机、空气干燥机、空气过滤系统及配件的销售、生产、供应的专业公司。我们保证了高品质的性能和广泛的应用，低运营成本。

我们根据您的需求，为您的应用提供精确的空气和气体压缩系统，从各种标准化型号或定制设计，以满足特定要求，作为一个完整的调试包或作为一个适当的配置供应。

我们拥有近150名工人和销售团队，10645平方米的现代化厂房，优秀的设计团队，先进的加工制造设备，完整的喷涂线，完整的生产工艺，严格的质量管理。我们将最新的技术和工具与我们热情的承诺相结合，为您提供高品质的产品和完美热情的服务。

Dongguan Qianwei Machinery Equipment Co., Ltd. is a professional company engaged in the sales, production and supply of air compressors, air dryers, air filtration systems and accessories. We guarantee high-quality performance, wide application and low operating costs.

Based on your requirements, we provide precise air and gas compression systems for your application, from various standardized models or custom designs, to meet specific needs, either as a complete commissioning package or as an appropriate configuration supply.

We have nearly 150 workers and a sales team, a modern factory covering an area of 10,645 square meters, an outstanding design team, advanced processing and manufacturing equipment, a complete spraying line, a complete production process, and strict quality management. We combine the latest technologies and tools with our passionate commitment to provide you with high-quality products and perfect, enthusiastic services.

科技让环境更美、科技让能源延续

Technology makes environment better and makes energy sustainable

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01 磁悬浮电机

Maglev Motor

磁悬浮，我们执行ISO14839标准

We implement ISO14839 standard on maglev products

磁悬浮电机系统是一个复杂的机电一体化系统，要使其能够长期稳定可靠工作，需要对整个系统进行全方位检测和评估。

国际标准化组织（ISO）为了拓展磁悬浮轴承的应用，推动高速驱动行业发展，于 1990年成立了磁悬浮技术标准委员会，致力于制定磁悬浮轴承工程应用标准。

The maglev motor system is a complex mechatronic system that requires comprehensive inspection and evaluation to achieve long-term stable and reliable work.

To expand the application of magnetic bearings and promote the development of the high-speed drive industry, ISO established Maglev Technical Standards Committee in 1990, which is committed to develop the application standard of maglev bearings engineering.

ISO14839 标准对磁悬浮轴承的应用中，主要评估稳定性和振动两个标准。

The ISO14839 standard assesses stability and vibration of maglev bearings.

稳定性（依据ISO14839-3:2006 稳定性的评估）

Stability (According to ISO14839-3:2006, the assessment of stability)

稳定性对磁悬浮轴承系统的安全和稳定运行非常重要，这一部分通过系统灵敏度来反映，标准准则如下表，同样，测试结果落在下面定义的A区域B区才是合格的的机器。

Stability is critical for the safe and stable operation of maglev bearing system. It is reflected by the sensitivity of the system. The ISO standard' s criteria are shown in the table below. A qualified machine should have its test result falling in Zone A or Zone B as defined.

表1 - 区域界限的稳定性准则

Table 1 - Criteria of Stability

Zone limit 区域限制	系统灵敏度最大值 / Maximum system sensitivity
A/B	9.5dB
B/C	12dB
C/D	14dB

振动（依据ISO14839-2:2004 振动的评估）

Vibration (According to ISO14839-2:2004, the assessment of vibration)

对装有磁悬浮轴承的旋转机械进行振动位移、电流和电压的评估。

Evaluates the vibration displacement, current, and voltage of a rotating machine that is equipped with maglev bearing.

1、线圈电流评估

Coil Current Assessment

额定运行时磁线圈测量的电流波形I(t)的最大值Imax 应小于功率放大器的电流容量，每一个线圈电流都应该根据这个标准进行检查。

The maximum current waveform I(t) measured by the magnetic coil at rated operation should be less than the current capacity of power amplifiers, and each coil current should be checked against this standard.

2、放大器电压评估

Amplifier Voltage Evaluation

高线圈电流表明达到了承载能力，同时必须保证电压饱和效应不明显。在正常运行时，参考电流的斜率要小于放大器所能产生的最大斜率。

High coil current indicates that the carrying capacity has been reached, and it is necessary to ensure that the effect of voltage saturation is not significant. During normal operations, the slope of reference current should be less than the maximum slope that the amplifier can produce.

3、振动位移的评估

Assessment of Vibration Displacement

磁悬浮电机的运行过程必须避免电机的旋转部件和静止部件之间的接触。对于振动位移，标准有明确的建议准则，测试结果落在下面定义的A区或B区才是合格的的机器。

A区：新调试机器的振动位移通常会落在该区内。

B区：振动位移落在该区内的机器通常被认为可以长期无限制地运行。

C区：振动位移落在该区内的机器通常被认为不符合长期连续运行的要求。一般来说，在这种情况下，机器可在有限的时间内运行，直到有适当的补救措施。

D区：振动位移落在该区内的机器通常被认为足以严重到对机器造成损坏。

Contact between rotating parts and stationary parts of the maglev motor must be avoid during motor 's operation. For vibration displacement, the ISO standard has a clear recommendation that a qualified machine should have the test result fall in either zone A or Zone B as defined below.

Zone A: The vibration displacement of newly adjusted machine usually falls in this zone.

Zone B: Machines with vibration displacements falling in this zone are generally considered to be able to operate for long periods of time without limitation.

Zone C: Machines with vibration displacement falling in this zone are generally not considered to meet the requirements of long-term continuous operation. Generally, in such cases, the machine can be operated for a limited time until appropriate remedies are available.

Zone D: Machines with vibration displacements falling in this zone are generally considered severely damaged.

表2 – 区域界限的建议准则

Table 2 - Criteria of Vibration Displacement

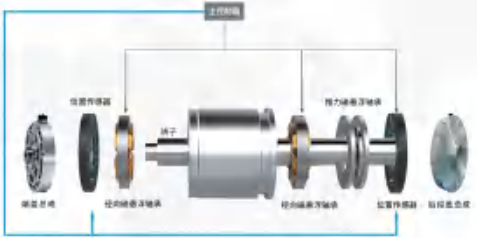
Zone limit 区域限制	Displacement 位移 Pmax
A/B	< 0.3 Cmin
B/C	< 0.4 Cmin
C/D	< 0.5 Cmin

注：C_{min} 是转子与定子之间径向或轴向间隙的最小值。

C_{min} is the minimum value of radial or axial clearance between rotor and stator.

MCC系列磁悬浮电机的特点

Features of MSC Series Maglev Motor



磁悬浮控制器可靠性高、稳定性强，具备自标定、自识别功能，能够做到随着磁悬浮设备运行时间增加，自适应调整和控制，无需人工干预，避免宕机等风险。

质量不平衡导致的振动在旋转机械中是个普遍问题，完美的平衡使转子集合中心与其惯性主轴完全重合，这对于带有叶轮和多个组件的磁悬浮电机转子来说无法实现，且不平衡可能在转子运行过程中发生改变（如：热变形、灰层等影响）。对于转子的残余不平衡，通过负反馈控制+UFRC算法，让转子在各个转速下均绕其惯性主轴旋转，消除轴承的反作用力，消除给整个机器带来的激振力，有效保证机器长时间安全可靠地工作。

通过扫频0-2000Hz可以在电机旋转之前测量转子和整机的固有频率，模拟旋转工况，并用于故障预诊断。

在机器工作时，通过扫频可以测量整机的抗扰动性能，保证每一台机器稳定可靠。

The magnetic levitation controller has high reliability and strong stability, with self calibration and self identification functions. It can achieve adaptive adjustment and control as the operating time of the magnetic levitation equipment increases, without the need for manual intervention, avoiding risks such as downtime.

Vibration caused by mass unbalance is a common problem in rotating machinery. Perfect balance can make the rotor assembly center completely coincide with its inertial principal axis, but it is difficult to achieve for rotor of maglev motor with impeller and multiple components, because the imbalance may change during rotor operation (for example, the influence of thermal deformation or ash layer.). As for the residual imbalance of the rotor, the negative feedback control + UFRC algorithm is adopted to make the rotor rotate around its inertial main shaft at each speed, eliminating reaction force on bearing and excitation force on the whole machine; finally, it effectively ensures the long-term reliable operation.

By sweeping the frequency from 0 to 2000Hz, the natural frequency of rotor and the whole machine can be measured before rotor rotates, the rotating condition can be simulated to make fault pre-diagnosis. When machine is working, the anti-interference performance is measured by sweeping to ensure each machine's stability.

电机组成部件

Motor Components

高速永磁电机具有体积小、功率密度高、效率高以及可与负载直接相连等优点，已成为鼓风机行业应用的优选。我们根据电机电磁方案优化、冷却系统设计、转子系统动力学分析等对高速永磁电机进行研究，建立了BOKES品牌系列MSC电机的解析模型。

High speed permanent magnet motors have the advantages of small size, high power density, high efficiency, and direct connection with loads, making them the preferred choice for application in the blower industry. We conducted research on high-speed permanent magnet motors based on optimization of motor electromagnetic schemes, design of cooling systems, and dynamic analysis of rotor systems, and established an analytical model for the BOKES brand series MSC motors.

轴向和径向磁轴承

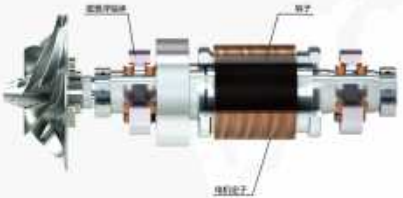
Axial and Radial Magnetic Bearings

组合电磁铁、功率放大器、位移传感器和电子控制系统，构建磁悬浮轴承设计优化模型，以最大承载力、最小涡流损耗、最小线圈发热损耗为目标，优化轴承几何结构，以提高系统的可靠性，降低系统功耗。

Combining electromagnets, power amplifiers, displacement sensors, and electronic control systems, a design optimization model for magnetic levitation bearings is constructed, with the goals of maximum bearing capacity, minimum eddy current loss, and minimum coil heating loss. The geometric structure of the bearings is optimized to improve system reliability and reduce system power consumption.

UFRC控制系统

UFRC Control System



UFRC控制（绕质量中心旋转算法），使转子绕惯性主轴旋转，该算法优点：对于转子必然存在的残余不平衡情况，通过让转子在各个转速下均绕其惯性主轴旋转，消除轴承传递出来的反作用力，消除给整个机器带来的激振力，能有效保证机器长时间安全可靠地工作。

Unbalance Force Rejection Control (algorithm of revolving around the center of mass) enables the rotor to rotate around the inertial spindle. The advantages of this algorithm: for the inevitable residual unbalance of rotor, by making the rotor rotate around its inertial spindle at each speed, the reaction force transmitted by the bearing and the excitation force brought to the entire machine can be eliminated, so that can effectively ensure the long-term reliable operation.

02 磁悬浮鼓风机

Maglev Blower

磁悬浮鼓风机的一体化设计

Integrated Design of Maglev Blower

风机采用“电气、机械、电子”一体化技术设计，包含三元流叶轮和涡壳的气动单元、高速变频器以及磁浮电机驱动单元、电机悬浮控制和风机运行控制的中央控制单元。

The blower features the integrated design of "electrical, mechanical and electronic". It comprises the pneumatic unit of ternary flow impeller and volute shell, the high-speed frequency inverter and the maglev motor drive unit, and the central control unit for motor suspension and blower operation.

磁悬浮鼓风机的原理

The Principle of Maglev Blower

MSC系列磁悬浮离心风机采用主动磁悬浮轴承和高速永磁同步电机。直接驱动三元流叶轮，通过磁力使转子系统悬浮，并通过高速旋转的叶轮产生动能，实现吹风功能。

MSC series maglev centrifugal blower adopts active magnetic bearing and high-speed permanent magnet synchronous motor. It is directly driven by ternary flow impeller, levitating the rotor system through magnetic force, and generating kinetic energy by high-speed rotating impeller to achieve blowing function.

新型三元流叶轮

New Ternary Flow Impeller

三元流叶轮是依据三元流动理论设计出多曲面形状的叶片，使流道更适应流体的真实流态，结合CFD分析，解决叶片复杂三维流动的数值计算问题，提高了风机的效率、可靠性和安全性。通过三元优化减少流道内的流动损失，减少分离流、漩涡、二次流等对气动性能的影响，终获得符合气流流动的优化设计。

Based on three-dimensional flowing theory, the ternary flow impeller is designed with multi-curved blade, so that the flow channel is more adapted to the true flow state of fluid. The CFD analysis is used to solve complex calculation of quantitative value of three-dimensional flow of the blade, so that improves the efficiency, reliability, and safety of blower. Through ternary optimization, the flow loss in the flow channel is reduced, the influence of separation flow, vortex, secondary flow and other effects on the aerodynamic performance are reduced, and then an optimized design that conforms to air flow is finally obtained.

高速永磁电机

High-Speed Permanent Magnet Motor

高速永磁电机具有体积小、功率密度高、效率高以及可与负载直接相连等优点，已成为鼓风机行业应用的优选。我们根据电机电磁方案优化、冷却系统设计，转子系统动力学分析等对高速永磁电机进行研究，建立了BOKES品牌系列MSC电机的解析模型。

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MSC系列磁悬浮鼓风机特点

Features of MSC Series Maglev Blower

» 节能优势

Energy Saving

与罗茨鼓风机相比，磁悬浮鼓风机的效率提高了30~40%，以160kW磁悬浮鼓风机为例，与罗茨鼓风机相比，每台磁悬浮鼓风机每年可以节约用电50多万度，节约电费30多万元。

Compared with Roots blower's efficiency, maglev blower's efficiency increased 30%~40%. Taking the 160kW maglev blower as an example, each blower can save more than 500,000 kWh electricity and ¥300,000 in bills per year.

» 环保优势

Eco-Friendly

磁悬浮鼓风机无需润滑，输送的空气清洁无污染。磁悬浮轴承完全无摩擦，鼓风机运行噪音低，不会影响周边办公及居住环境。以160kW磁悬浮鼓风机计算，每台鼓风机每年可减少约500吨的二氧化碳排放量。

Maglev blower is lubricant-free, the air transmitted is pollution-free. The Maglev bearing is frictionless and operates without noise, bringing no effect to the surrounding office and living environment. take 160kW maglev blower for example, each blower can reduce carbon dioxide emissions by approximately 500 tons per year.

» 用前沿科技

Cutting-Edge Technology

采用高性能变频器对转速进行控制，采用先进的控制系统，多种控制模式可以选择，运行转速可以实施监控，并且可以远程控制，无需人员现场值守。采用全封闭水冷、风冷系统对电机进行散热，确保风机处于稳定高效的运行状态，设备使用寿命长。模块化设计，维修方便快捷。

High performance frequency converter is adopted to control speed. Advanced control system is adopted to provide multiple control modes. The turntable can monitor running process and can be controlled remotely, saving labor costs. Fully enclosed water-cooling and air-cooling system are adopted to dissipate heat from motor, ensuring stable running and prolonging blower's service life. Modular design makes it easy to maintain.

» 低运营成本

Low Operating Costs

磁悬浮轴承完全无摩擦，减少产品的损坏几率，鼓风机的使用寿命可以达到20年以上。磁悬浮鼓风机维护简单，只需定期更换过滤器。磁悬浮鼓风机不需要润滑系统，节约了润滑油、清洁等费用。电机采用直联驱动，体积小，重量轻，节约空间。国内生产，可保障备品备件及时供应。

Frictionless maglev bearing reduces product damage and extends blower's service life to 20 years or more. Maglev blower is easy to maintain, requiring only regular filter change. The maglev blower is lubricant-free, which saves the cost of lubricating oil and cleaning. The motor adopts direct drive, small size, light weight, and space saving. Domestic production ensures timely supply of spare parts.

» 多种风机性能列表：

List of Blower Performance

对比项目		罗茨鼓风机	单级离心风机	空悬鼓风机	磁悬鼓风机
轴承	轴承类型	滚珠轴承	可倾瓦轴承	箔片轴承	磁浮轴
	使用寿命	2-3年	3-5年	5-7年	半永久
	承载	高	高	低	高
	机械摩损	有摩擦	有摩擦	有摩擦	无摩擦
叶轮	形式	铸造二叶/三叶	三元流叶轮	三元流叶轮	三元流叶轮
	寿命	5-8年	15年	15-20年	20年以上
	气动效率	低	高	高	高
电机	电机类型	低速同步电机	异步交流电机	高速永磁电机	高速永磁电机
	电机效率	88%	94%	95%	96%
	转速控制	不能	不能	精确调速	精确调速
	风量调节	需加装变频器	50-100%范围	45-100%范围	30-100%范围
维护	周期	定期专人保养	定期专人保养	定期更换过滤器	定期更换过滤器
	润滑油	定期添加	定期添加	无需润滑	无需润滑
	易损件	轴承、齿轮	轴承、齿轮、油泵	轴承、过滤器	过滤器
	维修费用	低	高	高	最低
运行	频繁启动	可以	可以	不可以	可以
	噪音	100分贝以上	90-100分贝	75-85分贝	≤80分贝
	震动	非常大	中小	非常小	非常小
	整机效率	45-60%	68-75%	70-77%	77-80%
	运行费用	最高	高	低	最低
整体概括		维修及时快捷，但维护过程繁琐噪音比较大，需要配备降音措施		技术壁垒严重国内无法维修能耗低，噪音小	维修及时快捷能耗低，噪音小

产品与选型

Model Selection

磁悬浮鼓风机的选型一般参考电机输出轴的额定功率、风量、风压三个参数。

The model selection should generally consider three parameters: the rated power of motor output shaft, air volume, and air pressure.

1、电机输出轴功率

Rated Power of Motor Output Shaft

指电机在额定电压下能够正常运转的最大输出功率，也是指电动机在规定的额定情况下运行时，其输出端的机械功率，单位一般为千瓦(kW)。

It generally refers to the maximum power that the motor can output under rated voltage. It also refers to motor's mechanical power at the output port when motor runs under specified conditions. The unit is generally kW.

2、风量和风压

Air Volume and Pressure

风量和风压是磁悬浮鼓风机选型的重要参数，通过常用风量和风压换算电机功率，选择对应型号的磁悬浮鼓风机。

The air volume and air pressure are important parameters in maglev blower selecting. The corresponding type of maglev blower could be selected by converting commonly used air volume and air pressure to motor power.

选型参数：

Selection of Parameters

气动需求 / 型号/轴功率	25kpa	30kpa	35kpa	40kpa	50kpa	60kpa	70kpa	80kpa	90kpa	100kpa	110kpa	120kpa	130kpa
15	31-22000	26-27000	23-33000	20-37000	17-45000	14-45000							
18.5	38-18000	32-23000	28-27000	25-31000	21-40000	18-45000							
22	46-18000	39-23000	34-27000	30-31000	24-40000	21-45000	18-45000	16-45000					
30				40-24000	33-31000	28-38000	25-45000	22-45000					
37				50-22000	41-28000	35-34000	31-40000	28-45000					
45				61-22000	50-28000	43-34000	37-40000	33-45000	30-45000	28-45000	26-45000	24-45000	
55				74-20000	62-25000	52-29000	46-34000	41-39000	37-45000	34-45000	32-45000	30-45000	
75				101-16000	83-20000	71-25000	62-29000	56-34000	51-39000	47-45000	43-45000	40-45000	
90					100-18000	85-22000	75-26000	67-30000	61-33000	56-37000	52-40000	48-40000	
110					122-18000	104-22000	91-26000	82-30000	74-33000	68-37000	63-40000	59-40000	
132					146-15000	125-19000	110-22000	98-25000	89-29000	82-32000	76-35000	71-38000	67-40000
145					161-15000	137-19000	121-22000	108-25000	98-29000	90-32000	84-35000	78-38000	73-40000
160					177-14000	152-17000	133-20000	119-23000	108-26000	99-28000	92-31000	86-34000	81-36000
185					205-14000	175-17000	154-20000	138-23000	125-26000	115-28000	107-31000	100-34000	94-36000
200						189-15000	166-18000	148-21000	135-23000	124-26000	115-28000	108-31000	101-34000
220						208-15000	183-18000	164-21000	149-23000	137-26000	127-29000	119-31000	111-34000
250						237-14000	208-16000	186-18000	169-21000	155-23000	144-25000	135-27000	127-30000
280						265-14000	233-16000	208-18000	189-21000	174-23000	161-25000	151-27000	142-30000
300						284-13000	249-15000	223-17000	203-20000	186-22000	173-24000	161-26000	152-28000
315						298-13000	262-15000	234-17000	213-20000	196-22000	181-24000	170-26000	159-28000
350						331-11000	291-13000	260-15000	237-17000	217-19000	202-21000	188-23000	177-25000
400						379-11000	333-13000	298-15000	270-17000	248-19000	230-21000	215-23000	202-25000

03 磁悬浮空气压缩机

Maglev Air Compressor

您可以获得100%无油的洁净压缩空气

You can obtain 100% oil-free clean compressed air

压缩机采用磁悬浮高速电机直驱技术，实现100%无油的压缩空气供给。消除了与润滑机油和有机硅污染相关的所有可能风险。它的设计和制造旨在让旨在压缩空气用户完全放心，提供100%无油洁净空气。

The compressor adopts magnetic levitation high-speed motor direct drive technology to achieve 100% oil-free compressed air supply, eliminating all possible risks related to lubricating oil and silicone pollution. Its design and manufacturing aim is to provide compressed air users with complete confidence and provide 100% oil-free clean air.

革命性的无油压缩空气技术

Revolutionary oil-free compressed air technology

与传统无油螺杆技术相比，磁悬浮离心式空气压缩机具有显著优势，出色的整机效率、高可靠性和低环境影响，还提供69dB(a)的低噪音水平，同时完全符合ISO8573-1(2010)关于压缩空气清洁度的CLASS0等级要求。

Compared with traditional oil-free screw technology, magnetic levitation centrifugal air compressors have significant advantages, such as excellent overall efficiency, high reliability, and low environmental impact. They also provide a low noise level of 69dB (a) and fully comply with the Class0 level requirements of ISO8573-1 (2010) for compressed air cleanliness.

是什么让磁悬浮压缩机与众不同?

What sets magnetic levitation air compressors apart?

所有磁悬浮压缩机均为变频调速控制，采用高速永磁电机直接驱动，为客户生产完全无油、洁净的压缩空气，叶轮直接集成在电机转子上，无需额外传动齿轮箱和联轴器。

All magnetic levitation compressors are controlled by variable frequency speed regulation and directly driven by high-speed permanent magnet motors, producing completely oil-free and clean compressed air for customers. The impeller is directly integrated onto the motor rotor without the need for additional transmission gearbox and coupling.

压力范围覆盖	流量范围覆盖	电机功率范围
1bar至8 bar	17至120m3/min	75至450kW

磁浮控制完全符合国际磁悬浮ISO14839标准

Complies with the international magnetic levitation ISO14839 standard

不需齿轮箱，不需润滑油，不需联轴器。采用主动式磁悬浮轴承和高速永磁电机技术，实现磁悬浮高速直驱，没有任何部件发生接触或摩擦，转动部件悬浮于其中，转速可高达60000rpm。

No gearbox no lubricating oil no coupling required. Adopting active magnetic levitation bearings and high-speed permanent magnet motor technology to achieve magnetic levitation The floating high-speed direct drive system has no contact or friction with any components and the rotating components are suspended in it, with a speed of up to 60000 rpm.

» 额定转速下，转子振动幅值小于10um
磁悬浮轴承各个控制自由度灵敏度均小于9.5dB
启动之后，磁悬浮轴承同频控制电流小于偏置电流5%

At rated speed, the rotor vibration amplitude is less than 10um, The sensitivity of each control degree of freedom of the magnetic levitation bearing is less than 9.5dB, After startup, the same frequency control current of the magnetic levitation bearing is less than 5% of the bias current.

» 操作省心

Easy to operate

机组配有零损耗排水管，可根据液位传感器自动排出机组中的冷凝水。这些都安装在中冷器和后冷器上，冷凝水粗滤器也安装在排放口上，也提供可选的手动排水管。

The unit is equipped with a zero loss drainage pipe, which can automatically discharge condensate from the unit based on the liquid level sensor. These are all installed on the intercooler and aftercooler, and the condensate coarse filter is also installed on the discharge port. Optional manual drainage pipes are also available

» 安装简单

Simple installation

采用一体化撬装形式，重量和尺寸只是同等螺杆压缩机的一部分，这意味着它的物理占地面积要小得多。此外，压缩机包含软启动VSD驱动，以确保启动时没有电流峰值。非常便于安装和启动。

Adopting an integrated skid mounted form, the weight and size are only a part of the same screw compressor, which means its physical footprint is much smaller. In addition, the compressor includes a soft start VSD drive to ensure that there is no peak current during startup. Very easy to install and start.

» 绝无意外

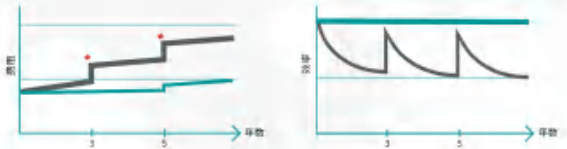
No accidents

我们会密切关注您的压缩机，通过远程数据平台解除您的后顾之忧，提供远程支持和诊断以及优化，并在需要预防性维护之前给予提醒。

We will closely monitor your compressor and relieve your worries through a remote data platform. Provide remote support, diagnosis, and optimization, and provide reminders before preventive maintenance is required.

先进的磁悬浮空气压缩技术

Magnetic levitation air compression technology



● 磁悬浮压缩机
Magnetic levitation compressor

● 干式无油螺杆压缩机
Oil free screw compressor

*随着螺杆元件的改变，需要定期大修

*With the changes at screw components, regular major repairs are required

与“无油”螺杆压缩机不同，磁悬浮压缩机无需齿轮传动装置，主轴始终悬浮，不产生摩擦或磨损，效率随着时间的推移可保持不变。不会出现“无油”螺杆压缩机典型的能耗峰谷值特征。

Unlike the "oil free" screw compressor, the magnetic levitation compressor does not require a gear transmission device, and the main shaft is always suspended Produce friction or wear, and the efficiency can remain unchanged over time. There will be no "oil free" screw compressors Typical peak to valley energy consumption characteristics.

减少电费支出

Reduce electricity expenses

我们领先于行业的磁悬浮高速离心式压缩机，针对宽容量范围进行优化，容量调节范围高达63%。不会因为排出压缩空气而浪费能源，同时相较于传统压缩机电费账单可以减少15-25%。

Our industry-leading magiev high-speed centrifugal compressor is optimized for a wide capacity range, with a capacity adjustment range of up to 63%. It does not waste energy due to the discharge of compressed air, and can reduce electricity bills by 15-25% compared to traditional compressors.

高质量的组件

High quality components

为了确保最高的可靠性，我们在产品中不断优化方案。例如叶轮可选用钛合金材料；可选不锈钢或紫铜中冷器和后冷器核心组件；推荐采用标准纯铝超级智慧管道，使用寿命长，效率损失低。我们的主机设计巧妙而简洁，只有高速电机和主动磁浮轴承系统以及叶轮，没有任何齿轮、联轴器、机械轴承或油封。

To ensure the highest reliability, we continuously optimize our solutions in our products. For example, titanium alloy materials can be used for impellers; Optional stainless steel or copper intercooler and aftercooler core components; It is recommended to use standard pure aluminum super smart pipes, which have a long service life and low efficiency loss. Our host design is clever and simple, with only high-speed motors, active magnetic levitation bearing systems, and impellers, without any gears, couplings, mechanical bearings, or oil seals.

最少的检修维护

Minimal maintenance and repair

无论计划内还是计划外停机，都会给企业运营造成损失。与典型的螺杆机需要安排特定时段进行维护不同，磁悬浮压缩机仅在必要时维护没有可磨损的运动零件，不需要更换机油或组件，维护工作实际仅限于更换空气过滤器和垫片等少量耗材。所以磁悬浮压缩机无需停止运行，且压缩机的整体寿命远超于“无油”干式螺杆压缩机。

The magnetic levitation compressor only needs to be maintained when necessary without any wearable moving parts, and does not require the replacement of oil or components. Maintenance work is actually limited to replacing a small amount of consumables such as air filters and gaskets.

压缩机P200系列 型号model	首级气量 m^3/min	压力 bar	A电机功率 kw
MCC200-70	70	2	176
MCC200-75	75	2	188
MCC200-80	80	2	201
MCC200-85	85	2	214
MCC200-90	90	2	226
MCC200-95	95	2	239
MCC200-105	100	2	251
MCC200-110	105	2	264
MCC200-120	110	2	276
MCC200-125	120	2	302
MCC200-130	125	2	314
MCC200-135	130	2	327
MCC200-140	135	2	339
MCC200-145	140	2	352
MCC200-150	145	2	365
MCC200-155	150	2	377
MCC200-160	155	2	390
	160	2	402

压缩机P250系列 型号model	首级气量 m^3/min	压力 bar	A电机功率 kw
MCC250-95	95	2.5	274
MCC250-100	100	2.5	289
MCC250-105	105	2.5	303
MCC250-110	110	2.5	318
MCC250-115	115	2.5	332
MCC250-120	120	2.5	347
MCC250-125	125	2.5	361
MCC250-130	130	2.5	376
MCC250-135	135	2.5	390
MCC250-140	140	2.5	405

压缩机P300系列 型号model	首级气量 m^3/min	压力 bar	A电机功率 kw
MCC300-40	40	3	130
MCC300-45	45	3	146
MCC300-50	50	3	162
MCC300-55	55	3	179
MCC300-60	60	3	195
MCC300-65	65	3	211
MCC300-70	70	3	227
MCC300-75	75	3	244
MCC300-80	80	3	260
MCC300-85	85	3	276
MCC300-90	90	3	293
MCC300-95	95	3	309
MCC300-100	100	3	325
MCC300-105	105	3	341
MCC300-110	110	3	358
MCC300-115	115	3	374
MCC300-120	120	3	390
MCC300-125	125	3	406

压缩机P350系列 型号model	首级气量 m^3/min	压力 bar	A电机功率 kw
MCC350-40	40	3.5	142
MCC350-45	45	3.5	160
MCC350-50	50	3.5	177
MCC350-55	55	3.5	195
MCC350-60	60	3.5	213
MCC350-65	65	3.5	231
MCC350-70	70	3.5	248
MCC350-75	75	3.5	266
MCC350-80	80	3.5	284
MCC350-85	85	3.5	302
MCC350-90	90	3.5	319
MCC350-95	95	3.5	337
MCC350-100	100	3.5	355
MCC350-105	105	3.5	373
MCC350-110	110	3.5	390
MCC350-115	115	3.5	408
MCC350-120	120	3.5	426

压缩机P500系列 型号model	入口气量 m³/min	三级出口压力 bar	总功率 kw
CXPLC500-50	50	5.02	207
CXPLC500-55	55	5.02	229
CXPLC500-60	60	5.02	249
CXPLC500-65	65	5.02	270
CXPLC500-70	70	5.02	291
CXPLC500-75	75	5.02	311
CXPLC500-80	80	5.02	332
CXPLC500-85	85	5.02	353
CXPLC500-90	90	5.02	373
CXPLC500-95	95	5.02	393
CXPLC500-100	100	5.02	414
CXPLC500-105	105	5.02	435
CXPLC500-110	110	5.02	456
CXPLC500-115	115	5.02	476
CXPLC500-120	120	5.02	497

压缩机P600系列 型号model	入口气量 m³/min	三级出口压力 bar	总功率 kw
CXPLC600-50	50	6.07	228
CXPLC600-55	55	6.07	252
CXPLC600-60	60	6.07	273
CXPLC600-65	65	6.07	296
CXPLC600-70	70	6.07	318
CXPLC600-75	75	6.07	341
CXPLC600-80	80	6.07	364
CXPLC600-85	85	6.07	386
CXPLC600-90	90	6.07	410
CXPLC600-95	95	6.07	432
CXPLC600-100	100	6.07	455
CXPLC600-105	105	6.07	477
CXPLC600-110	110	6.07	501
CXPLC600-115	115	6.07	522
CXPLC600-120	120	6.07	545

压缩机P700系列 型号model	首级气量 m³/min	出口压力 bar	总功率 kw
CXPLC700-50	50	7.00	245
CXPLC700-55	55	7.00	270
CXPLC700-60	60	7.00	294
CXPLC700-65	65	7.00	319
CXPLC700-70	70	7.00	344
CXPLC700-75	75	7.00	367
CXPLC700-80	80	7.00	392
CXPLC700-85	85	7.00	417
CXPLC700-90	90	7.00	440
CXPLC700-95	95	7.00	464
CXPLC700-100	100	7.00	489
CXPLC700-105	105	7.00	514
CXPLC700-110	110	7.00	538
CXPLC700-115	115	7.00	562
CXPLC700-120	120	7.00	587

压缩机P800系列 型号model	首级气量 m³/min	出口压力 bar	总功率 kw
CXPLC800-50	50	8.00	261
CXPLC800-55	55	8.00	288
CXPLC800-60	60	8.00	312
CXPLC800-65	65	8.00	338
CXPLC800-70	70	8.00	363
CXPLC800-75	75	8.00	390
CXPLC800-80	80	8.00	416
CXPLC800-85	85	8.00	441
CXPLC800-90	90	8.00	468
CXPLC800-95	95	8.00	494
CXPLC800-100	100	8.00	520
CXPLC800-105	105	8.00	545
CXPLC800-110	110	8.00	572
CXPLC800-115	115	8.00	596
CXPLC800-120	120	8.00	623

04 磁悬浮透平真空泵

Magnetic Vacuum Pump

无润滑、免维护，100%无油磁悬浮轴承系统

No lubrication, maintenance free, 100% oil-free magnetic levitation bearing system

磁悬浮真空泵是基于磁悬浮轴承技术、高速永磁电机技术、高频矢量变频技术以及高效流体机械技术研发的智能透平装备，比传统设备节能30-70%，节水100%，广泛应用于造纸行业真空脱水工艺节能改造。

Magnetic levitation vacuum pump is an intelligent turbine equipment developed based on magnetic levitation bearing technology, high-speed permanent magnet motor technology, high-frequency vector frequency conversion technology, and high-efficiency fluid machinery technology. It saves 30-70% energy and 100% water compared to traditional equipment, and is widely used in energy-saving renovation of vacuum dehydration processes in the paper industry.

磁悬浮透平真空泵工作原理

Working principle of magnetic levitation turbine vacuum pump

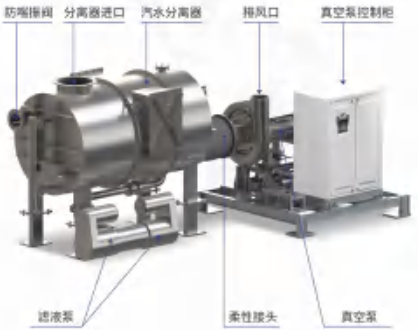
从真空抽吸点处来的气体在真空泵中经过高速旋转叶轮作用，将动能转换成气体压力势能，形成负压真空，经过蜗壳后转换成高温气体排出。

The gas from the vacuum suction point passes through the high-speed rotating impeller in the vacuum pump, converting kinetic energy into gas pressure potential energy, forming a negative pressure vacuum. After passing through the volute, it is converted into high-temperature gas and discharged.

磁悬浮透平真空泵性能优势

Performance advantages of magnetic levitation turbine vacuum pump

- 节能高效
- 智能化
- 稳定可靠
- 安静低噪
- 无油无水
- 易安装 免维护



性能对比

PERFORMANCE COMPARISON

性能比较		水环真空泵	国产透平真空泵	进口主流透平真空泵	磁悬浮透平真空泵
轴承	轴承	滑动轴承	可倾瓦轴承	陶瓷轴承	磁悬浮轴承，技术成熟，稳定性高
	技术背景	国产	进口/国产	进口	自主研发
	机械损失	大	大	中	无
叶轮	形式	焊接叶轮	开式/闭式叶轮	闭式叶轮	钛合金三元流叶轮
	空气动力学效率	低	高	高	高
	维护	复杂	复杂	复杂	简便
高速电机	电动机类型	低速异步电机	低速异步电机	高速异步电机	高速永磁同步电机
	传动形式	皮带或联轴器	联轴器加齿轮	直连	直连
	冷却	大量循环水冷却	外接冷却水塔	每台真空泵配备一台冷却风机	自循环水冷且需外注少量冷却水
	控制转速	不能	能	能	高速精确
	类型	无调速系统	变频调节	变频调节	智能化自适调速系统改变轴的转速改变风量
	工作范围	很小	流量和压力调节幅度较小	流量和压力调节幅度较小	流量和压力调节幅度较大
控制系统	控制系统	无控制和保护系统	有控制和保护系统	有控制和保护逻辑但需要客户进行编程	智能的控制和保护系统对真空泵运行进行全面的监测和保护
	远程网络监控	无	无	无	运行状态全过程24小时远程网络监控，预防现场突发状况
维护	润滑油	每班检查、定期添加，费用较高	每班检查、定期添加，费用较高	每班检查，三个月全部更换，费用较高	无需润滑油
	易损件	轴承、密封、润滑油泵	轴承、密封、润滑油泵、冷却水塔	轴承、密封、润滑油泵、冷却风机、冷却水塔	无
	费用	低	高	高	低
运行	运行费用	最高	高	中	最低
售后服务		周期短、费用低、故障率较高	周期较长、费用较高、故障率较高	进口维保周期长，费用高，故障率较低	响应迅速，自主核心部件免维护，费用低

选型参数：

Selection of Parameters

电机功率(kw)	-58KP		-55KP		-50KP		-45KP		-40KP		-35KP	
	风量-转速		风量-转速		风量-转速		风量-转速		风量-转速		风量-转速	
15	17	48000	18	48000	19	48000	20	48000	21	48000	24	43000
18.5	21	48000	22	48000	23	48000	24	48000	26	48000	29	40000
22	25	48000	26	48000	27	48000	29	48000	31	44000	35	36000
30	35	48000	35	48000	37	48000	40	43000	43	37000	47	31000
37	43	48000	44	48000	46	45000	49	39000	53	33000	58	28000
45	52	48000	53	47000	56	41000	60	35000	64	30000	71	25000
55	63	47000	65	43000	68	37000	73	32000	79	27000	87	23000
75	87	40000	89	37000	93	32000	99	28000	107	23000	118	20000
90	104	36000	106	34000	112	29000	119	25000	129	21000	142	18000
110	127	33000	130	30000	137	26000	145	23000	157	19000	173	16000
132	152	30000	156	28000	164	24000	175	21000	189	18000	208	15000
145	167	29000	171	26000	180	23000	192	20000	207	17000	228	14000
160	185	27000	189	25000	199	22000	212	19000	229	16000	252	13000
185	214	25000	219	23000	230	20000	245	18000	265	15000	291	12000
200	231	24000	236	22000	248	20000	264	17000	286	14000	315	12000
220	254	23000	260	21000	273	19000	291	16000	315	14000	346	11000
250	289	22000	295	20000	310	18000	331	15000	358	13000	394	11000
280	323	21000	331	19000	348	17000	370	14000	400	12000	441	10000
300	346	20000	354	18000	372	16000	397	14000	429	12000	472	10000
315	364	19000	372	18000	391	16000	417	13000	451	11000	496	10000
350	404	18000	414	17000	434	15000	463	13000	501	11000	551	9000
400	462	17000	473	16000	497	14000	529	12000	572	10000	630	8000
450	520	16000	532	15000	559	13000	595	11000	644	10000	708	8000
500	577	15000	591	14000	621	12000	661	11000	715	9000	787	8000
550	635	15000	650	14000	683	12000	727	10000	787	9000	866	7000
600	693	14000	709	13000	745	11000	793	10000	858	8000	945	7000

05 磁悬浮增氧机

Maglev Aerator

磁悬浮增氧机性能优势

Performance advantages of magnetic levitation aerator

磁悬浮增氧机采用磁悬浮高速驱动技术，叶轮直接集成在电机转子上，通过负反馈控制+UFRC算法，让转子在各种转速下均绕其惯性主轴旋转，消除转子的残余不平衡，消除轴承的反作用力，消除转子给整个机器带来的激振力，并通过高速旋转的叶轮产生动能，实现鼓风机功能。

The magnetic levitation aerator adopts magnetic levitation high-speed drive technology, and the impeller is directly integrated on the motor rotor. Through negative feedback control+UFRC algorithm, the rotor rotates around its inertia main axis at various speeds, eliminating residual imbalance of the rotor, eliminating the reaction force of the bearings, eliminating the excitation force brought by the rotor to the entire machine, and generating kinetic energy through the high-speed rotating impeller to achieve the function of the blower.

性能比较：

Performance Comparison

性能比较		罗茨风机	陶瓷球轴承风机	空气悬浮风机	磁悬浮风机
能效	产品节能	不节能	一级节能	一级节能	高效节能
轴承	轴承	滑珠轴承	陶瓷轴承	箔片轴承	磁悬浮轴承
	机械损失	大	大	停电无保护，易损坏	停电有保护
叶轮	形式	铸造二叶或三叶	铝合金三元流叶轮	铝合金三元流叶轮	铝/钛合金三元流叶轮
	空气动力学效率	低	较高	低	高
	维护	复杂	简 便	简 便	简 便
高速电机	电动机类型	低速异步电机	高速永磁电机	高速永磁电机	高速永磁电机
	传动形式	皮带或联轴器	直 连	直 连	直 连
	冷 却	风冷	风冷	风冷	风冷
	控制转速	不调	变频0-25krpm	变频18krpm以上	变频0-60krpm
	类型	低速运行，效率低	高速运行，轴承易损坏	最低转速有限制，效率低	可根据最佳效率点调整转速
	工作范围	流量和压力调节幅度很小	流量和压力调节幅度很小	流量和压力调节幅度小	流量和压力调节幅度大

选型参数：

Selection of Parameters

型号 MODEL	15kpa	20kpa	25kpa	30kpa	35kpa	40kpa	45kpa	50kpa
	气量(Nm^3/min)-转速(rpm)							
MOB15	50-13krpm	40-18krpm	32-24krpm	27-29krpm	24-34krpm	21-40krpm	18-41krpm	16-43krpm
MOB22	75-11krpm	60-15krpm	47-20krpm	40-24krpm	35-29krpm	30-34krpm	26-33krpm	24-37krpm
MOB30	100-10krpm	80-13krpm	64-17krpm	54-21krpm	48-24krpm	42-29krpm	36-31krpm	32-35krpm
MOB37	125-9krpm	100-11.5krpm	80-15krpm	66-19krpm	60-22krpm	52-26krpm	45-29krpm	40-33krpm
MOB45	150-8krpm	120-10.5krpm	96-14krpm	81-17krpm	72-20krpm	63-23krpm	54-27krpm	48-31krpm
MOB55	185-7krpm	150-9.5krpm	118-12.5krpm	100-15krpm	88-18krpm	77-21krpm	66-25krpm	60-28krpm
MOB75	250-6krpm	200-8krpm	160-10.5krpm	135-13krpm	120-15krpm	105-18krpm	90-21krpm	80-24krpm

06 磁悬浮冷水机组/热泵

Maglev Chiller/Heat pump

磁悬浮冷水机组/热泵性能优势

Performance advantages of magnetic levitation aerator

磁悬浮冷水机组/热泵涉及了磁场力、电磁学以及热泵技术的综合运用。在电机启动时，控制系统通过调整磁力轴承中的电流，产生适当的磁场力，使转子悬浮在定子中心位置。然后，控制系统向定子中的线圈施加电流，产生旋转磁场。电机转子受到旋转磁场的作用而开始旋转。由于这种转子因磁场而悬浮的工作方式，电机工作的过程中不会受到机械摩擦的阻碍，大大减少了效力的浪费从而提高了电机的效率。又因磁悬浮的稳定性而进一步的提高了电机的可靠性。

电机的热泵系统通过循环工作介质（如制冷剂）来吸收和释放热量，从而实现加热或冷却的目的。

在磁悬浮热泵电机中，热泵系统的工作与电机的旋转是相互独立的，但它们通过控制系统进行协调，以确保整个系统的稳定运行。

由于磁悬浮本身的设计优势该类型电机噪音低、振动水平低，不仅提高了使用舒适性，电机的寿命也得到了显著延长。此外，磁悬浮热泵电机还具有高效、节能、环保等优点，使其在许多领域具有广阔的应用前景。

Magnetic levitation chillers/heat pumps involve the comprehensive application of magnetic field force, electromagnetics, and heat pump technology. When the motor starts, the control system adjusts the current in the magnetic bearing to generate appropriate magnetic field force, causing the rotor to suspend at the center position of the stator. Then, the control system applies current to the coils in the stator, generating a rotating magnetic field, and the motor rotor begins to rotate under the action of the rotating magnetic field. Due to the suspension of the rotor due to the magnetic field, the motor is not hindered by mechanical friction during operation, greatly reducing the waste of power and improving the efficiency of the motor. Furthermore, the stability of the magnetic suspension further enhances the reliability of the motor.

The heat pump system of the motor absorbs and releases heat through a circulating working medium (such as refrigerant), thereby achieving the purpose of heating or cooling.

In the magnetic levitation heat pump motor, the operation of the heat pump system and the rotation of the motor are independent of each other, but they are coordinated through the control system to ensure the stable operation of the entire system.

Due to the design advantages of maglev, this type of motor has low noise and vibration levels, which not only improves the comfort of use, but also significantly extends the lifespan of the motor. In addition, the magnetic levitation heat pump motor also has advantages such as high efficiency, energy conservation, and environmental protection, making it have broad application prospects in many fields.

07 智能制造

Smart Manufacturing

智能制造是先进制造技术与新一代信息技术、新一代人工智能等新技术深度融合形成的新型生产方式和制造技术。

它以产品全生命周期价值链的数字化、网络化和智能化集成为核心，以企业内部纵向管控集成和企业外部网络化协同集成为支撑，以物理生产系统及其对应的各层级数字孪生映射融合为基础，建立起具有动态感知、实时分析、自主决策和精准执行功能的智能工厂进行虚拟物理系统融合的智能生产，实现高效、优质、低耗、绿色、安全的制造和服务。

Smart manufacturing is a new production method formed by deep integration of advanced manufacturing technology, new generation of information technology and artificial intelligence.

Smart manufacturing takes digitalization, networking and intelligent integration of the product lifecycle value chain as core, supported by enterprise internal vertical control integration and external networked collaborative integration, and based on physical production system and its corresponding level of digital twin mapping fusion to build up a smart factory with dynamic perception, real-time analysis, independent decision-making and accurate execution functions, achieving efficient, high-quality, low-consumption, green and safe manufacturing.

高端设备是质量保障的基石

High-End Equipment is the Guarantee of Quality

磁悬浮轴承的加工
Magnetic Levitation Bearing

永磁电机定子下线车间
Motor Stator

刚性主轴的加工
Motor Shaft Manufacturing

三元流叶轮的加工
Ternary Flow impeller Manufacturing

涡壳的生产
Production of volute

机箱钣金的生产线
Production line of Metal Plate on Chassis

机箱涂装生产线
Chassis coating production line

转子动平衡检测
Rotor dynamic balance test

产品检测线
Product Testing

08 安装与调试

Installation & Adjustment

管道安装

Piping Installation

确认风机的工艺空气进口方向，装入过滤棉，但不需要管道连接；
出气口管道需要对准风机的出气口法兰，并且需要独立支撑架，避免管道对风机产生应力；
风机出气口的法兰和用户出气管道之间需安装柔性膨胀节（软连接）、止回阀、管道消音器；
管道内壁要清洁光滑，粗糙的管道内壁会增加气流的声噪；
放空阀由气口要用管道连接，并且朝向安全区域，避免意外伤害；
风机冷却排风口需朝向安全区域，避免烫伤；
旋转底部支撑脚，调整风机的水平。

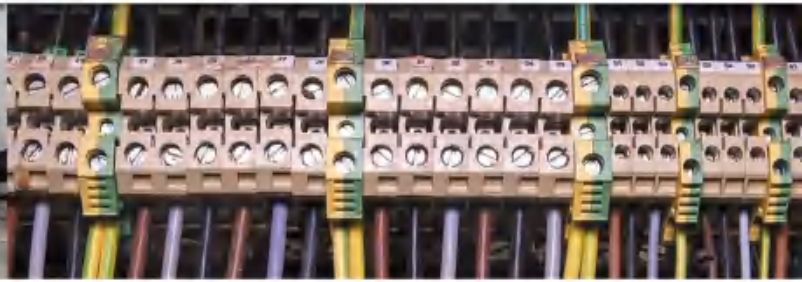
Confirm the direction of air inlet, and then install the filter cotton, no need for pipe connection.
The air outlet pipe should be aligned with the air outlet flange, and an independent support leg is required to avoid pipe stressing on blower.
Flexible expansion joint (soft connections), check valve and pipe muffler should be installed between the flange's air outlet and the user's air outlet pipe.
The inner shell of pipeline should be clean and smooth. Rough inner shell will increase air flow noise.
The air release valve's outlet should connect with pipe and face safe area to avoid accident.
The cooling air outlet should face safe area to avoid burns.
Rotatable support leg can adjust the level of the blower.

电气的安装

Electrical Installation

风机供电三相五线制（TN-S）380V/50HZ，输入电压偏差小于10%，电压波差小于2%。
电缆采用管线或桥架保护，零线与地线不能混用。
电缆外观无磨损，电缆相间绝缘阻值和接地阻值应符合标准。
供电侧断路器的规格不得小于风机的内部断路器的配置。
电缆接头规范处理，三相线分别标注黄、绿、红，地线用黄绿相间热管标注。
地线接入接地铜排，接地阻值应小于4欧姆，为减少电磁干扰，建议就近接地。
通电后，动力线缆与铜管接头的温度应小于50℃。

The blower is powered by three-phase five-wire system (TN-S) 380V/50HZ, the input voltage deviation is less than 10%, and the voltage difference is less than 2%.
The cable should be protected by pipeline or cable tray, and the null line and ground wire should not be mixed use.
The appearance of cable should not show abrasion, and the interphase insulation resistance and grounding resistance of cable should meet standards.
The configuration of circuit breaker on power supply side should greater than the configuration of internal circuit breaker of blower.
Cable joints should be treated in a standard manner. The three-phase wires should be marked with yellow, green and red respectively, and the ground wires should be marked with yellow and green heat pipes.
The ground wire should be connected to the ground copper bar, and the resistance should be less than 4Ω. In order to reduce electromagnetic interference, nearby grounding is recommended.
After power on, the temperature of power cable and copper joint should be less than 50℃.



09 运营与服务
Operations & Services

磁悬浮产品日常保养工作是什么?
What is the Daily Maintenance of Maglev Products?

用户采购了磁悬浮产品，却对磁悬浮鼓风机的保养知识了解不够。正确的维护、保养，是风机安全可靠运行，提高磁悬浮产品使用寿命的重要保证。因此，在使用磁悬浮产品时，日常维护保养必须引起充分的重视。

磁悬浮鼓风机日常保养工作：仅需更换过滤棉、过滤器。为确保磁悬浮鼓风机出风洁净，确保电机、电气等部件安全、稳定和长期运行，在鼓风机工艺空气进风口和冷却空气进风口安装初效过滤棉和中效过滤器两级过滤。在运行过程中，请定期检查进口过滤器的堵塞情况，堵塞严重会导致机箱内外压差过大，从而造成电机过热、风机运行效率降低、喘振等不良现象。

建议初效过滤棉每月更换一次，如不及时更换会降低中效过滤器的使用周期。中效过滤器2～3个月更换一次。具体时间间隔，应根据当地空气含尘量而定。

通过磁悬浮鼓风机保养的说明，可以看出磁悬浮风机从根本上解决了传统风机因为润滑油、机械摩擦，振动大引起的问题。

Correct maintenance is an important guarantee for safe and reliable operation and long service life. Therefore, pay attention to routine maintenance during daily use.

Maglev products routine maintenance: only need to replace the filter and filter cotton. To ensure clean air discharge, stable and long-term operation of motor and other components, two stages of filter, primary filter cotton and medium efficiency filter, are installed in the air inlet and cooling air inlet. Please check the blockage of inlet filter regularly. Serious blockage may cause a large pressure difference between the inside and outside of cabinet, resulting in motor overheating, efficiency reduction, surge, and other adverse phenomena.

It is recommended to replace the primary filter cotton once a month. Otherwise, the medium efficiency filter's service life will be reduced. Normally,the medium efficiency filter should be replaced every 2-3 months. The specific time interval should be determined according to the local air dust content.

By comparing the above maintenance methods, it can be seen that the maglev blower does not have the problem of lubricant, mechanical friction and vibration that traditional blower has.

我们的服务
Our Services

秉承“专业、专注、便捷、共赢”的服务宗旨，持续提高规范化、专业化、精细化管理水平，为用户设计灵活多变的服务方案。

Adhering to the service tenet of "professional, dedicated, convenient and win-win cooperation", we continue to improve the standardized, specialized, and refined management level, and design flexible service plans for our users.

品牌保证 售后无忧
Quality Guarantee

10 应用领域
Areas of Application







应用现场
Application Site

磁悬浮技术机在工业领域多种行业应用
Magnetic levitation blower is used in various industries of industrial field

1、物料气体输送

可用于水泥厂、化工、食品等行业；

应用场景为：工业原料、粉尘、食品等气力输送。

1. Conveying material and gas

Can be used in cement factory, chemical, food and other industries;

Application scenarios: pneumatic conveying of industrial raw materials, dust and food.

2、污水处理（市政、工业）

可应用于向污水曝气，使污水处理池中的生物活性物能充分与污水中的物质接触，从而达到除污的目的。

2. Sewage treatment (municipal, industrial)

The maglev blower can be applied to aeration of sewage tank, so that the biological active substances in sewage treatment tank can fully contact with the substances in sewage, achieving the purpose of decontamination.

3、水产养殖业

通过对水产品养殖池底部充入空气，增加池内氧气含量，增加水产品存活率。

3. Aquaculture

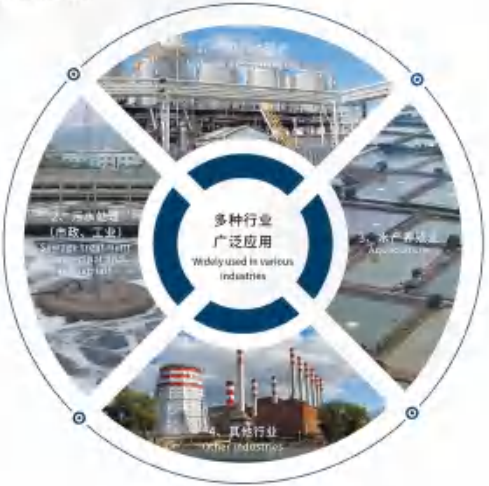
By pumping air into the bottom of the aquaculture tank, the oxygen content in the tank is increased and the survival rate of aquatic products is increased.

4、其他行业

例如造纸厂、酿造业、纺织业、乳制品加工业、热电行业等。

4. Other industries

Paper mill, brewing industry, textile industry, dairy industry, thermal power industry, etc.



11 物邻网系统的应用

www.w360.com

物邻网平台以网络为基础、平台为中枢、数据为要素、安全为保障，是智能设备应用数字化、网络化、智能化的基础设施。平台利用信息通信技术与磁悬浮电机、鼓风机、压缩机等智能设备深度融合，全面连接人、机、物、系统，构建起全新的产品应用模式和售后服务体系。

智能设备通过平台数字化管理，网络化协同，服务化延伸，有力的促进了产品提质、节能增效、生产降本、排放绿色、安全发展。

Taking the network as foundation, platform as pivot, data as element, and security as barrier, W360 platform integrates with maglev motor, blower, compressor and other intelligent equipment through information and communication technology, so that connects people, machines, objects, and systems to build a new product application mode and post-sales service system.

Smart equipment has effectively promoted quality improvement, energy saving, efficiency enhancement, cost reduction in production, green emission and safe development through platform digital management, network collaboration and service-oriented extension.

物邻网给工业设备行业带来新的机遇：连接产生无限可能

W360 brings new opportunities to the industrial equipment : connection creates infinite possibilities

工业互联之磁悬浮产品

Maglev Product in Industrial Interconnection

设备信息化管理
实时数据采集
历史数据查看
设备状态实时监控与报警
设备运行数据累计与统计
设备远程控制与管理

Information management of equipment
Real time data collection
Historical data retrieval
Real time status monitoring and alarming
Operating data accumulation and statistics
Remote control and management of equipmen