



Product Features Introduction

(Gas-bearing Variable Frequency Centrifugal Chiller)

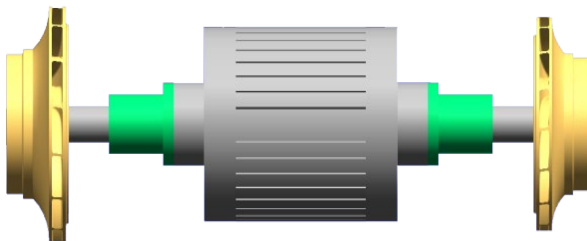
Overview

VECK Gas-bearing Variable Frequency Centrifugal Chiller is a permanent magnet synchronous variable frequency centrifugal chiller that utilizes dynamic pressure gas-bearing technology. Gas-bearing technology enables oil-free lubrication, ultra-high rotational speeds, and reliable control, achieving super first-level energy efficiency in cooling performance. The unit can be widely applied in various commercial buildings and process applications such as shopping malls, hotels, hospitals, office buildings, and factories, and is particularly suitable for large-scale air conditioning energy-saving renovation projects.



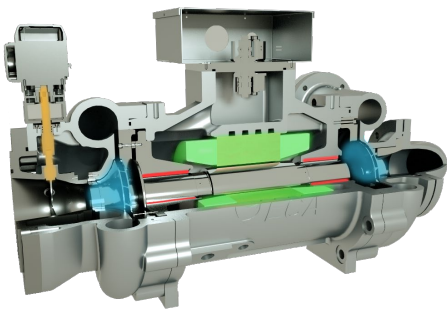
Oil-free, High Efficiency, Durability, Reliability

The compressor employs gas bearings, with the rotor suspended during operation, resulting in frictionless bearings, low operational noise, and minimal mechanical loss. The unit requires no pre-start preparation, allows continuous start-stop operation, and requires no maintenance. Oil-free operation avoids oil film coverage on heat exchange tubes, which could reduce heat exchange efficiency, minimizes the impact of lubricating oil on heat transfer,



and ensures sustainable performance throughout the product's lifecycle. The compressor has passed durability tests, with over 255,000 safe start-stop cycles without the need for air pump assistance.

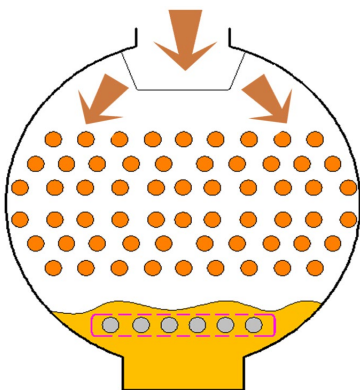
Ultra-High-Speed High-Power Permanent Magnet Synchronous Motor Technology



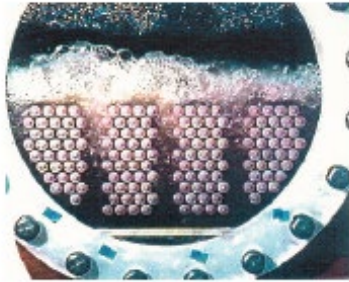
The motor features high power density, compact size, lightweight, and a compact structure. With high motor efficiency, liquid refrigerant cooling technology is applied to the motor within the unit's operational range. Low-temperature liquid refrigerant is sprayed from the compressor housing, uniformly distributed into the motor cavity through flow channels in the housing. The refrigerant evaporates and absorbs heat, effectively carrying away heat.

High-Efficiency Shell-and-Tube Condenser

Utilizes a new structural design with optimized tube bundle arrangement. The external threads of the heat exchange tubes feature an advanced thread structure, resulting in a thinner liquid film and reduced thermal resistance.



Oil-free operation-specific tube arrangement technology achieves optimal condenser tube spacing and positioning, further enhancing the heat transfer efficiency of the condenser-specific tube group layout.

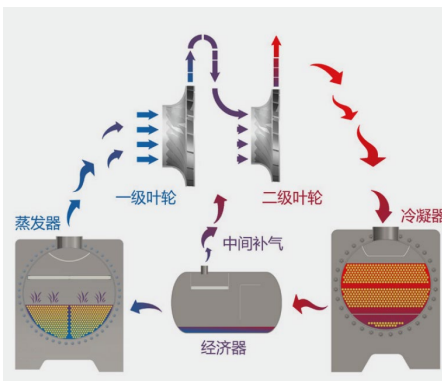


Flooded Evaporator

The evaporator adopts a flooded structure, with heat exchange copper tubes fully immersed in refrigerant liquid, enabling more sufficient heat exchange between chilled water and refrigerant within the evaporator. This allows the unit to achieve higher heat exchange efficiency.

Two-Stage Compression with Economizer Technology

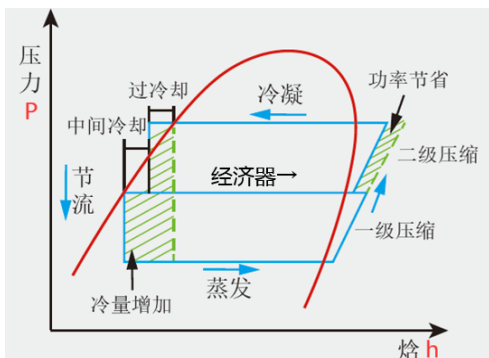
The unit employs two-stage compression with economizer technology to enhance the efficiency of the refrigeration cycle system. Two-stage compression ensures more stable and reliable compressor operation and extends service life. The impeller outlet airflow angle in two-stage compression is larger, providing greater surge margin, a wider operational range, and enhanced unit safety.



Two-Stage Subcooling Technology

High-Efficiency Economizer: Subcooling can be directly increased to over 10°C, significantly boosting cooling capacity.

High-Efficiency Subcooling Zone: An additional separate subcooling tube group is added at the bottom of the condenser, increasing subcooling to over 5°C and improving energy efficiency by more than 2%.





Throttling Device

The electronic expansion valve uses internationally renowned brands, with a failure rate close to 0%. It features bidirectional flow inside the valve body and enables rapid response. The electric ball valve employs high-precision integrated ball-butterfly components. Intelligent adaptive flow regulation ensures system pressure remains optimal.

Patented Precise Liquid Level Control Technology

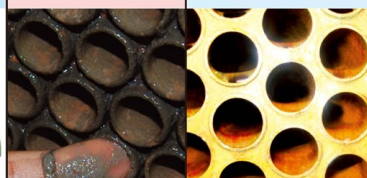
Equipped with a dedicated capacitive liquid level meter for refrigerant measurement, offering higher accuracy, sensitivity, and reliability. The refrigerant-specific liquid level sensor uses Teflon for probe insulation and sealing materials, providing excellent corrosion resistance.



Heat Exchanger Self-Cleaning Technology (Optional)

Utilizes special rubber balls and copper tube water pressure differential to scrub dirt from the inner walls of the heat exchanger. The ball injection frequency is adjusted based on operational status, ensuring the temperature approach remains within 1.5°C. This fully maintains condenser cleanliness and saves energy consumption by 5% to 15%.

ORIGINAL 新机	传统解决污垢的方案	彻底解决污垢的方案
冷凝器管内壁洁净	化学水处理+周期机械捅刷	前置过滤+胶球在线清洗
温差: 平均1.2℃左右	冷凝器管内壁沉积大量污垢粘泥	温差: 平均1.5℃以下
能耗不增加	温差: 平均2.7~5.0℃ 多耗能: 5~15%	节省运行费用: 5~15%





Industrial-Grade High-Reliability Touchscreen

The touchscreen panel has an IP65 protection rating, with a built-in power isolation protector and coated motherboard for safety and reliability. Touchscreen-controller network port communication is anti-interference and reliable, enabling real-time monitoring of various unit operational parameters. The interface is rationally laid out, simple, and user-friendly, making unit operational status clear at a glance and enhancing the user experience. Three-tier advanced account management: user permissions, maintenance permissions, and manufacturer permissions. Password access ensures dedicated permissions, providing security and peace of mind.



Advanced Controller

The air-bearing host control system offers optional cloud services. For users requiring building integration and comprehensive monitoring, corresponding communication modules can be selected based on specific requirements, supporting open standard protocols such as MODBUS, BACNET, LON, and ADv.WEB.

