



AIR-SOURCE GAS ENGINE HEAT PUMP (GEHP)

空气源燃气机热泵 (GEHP)



AIR-SOURCE GAS ENGINE HEAT PUMP (GEHP) FOR HEATING AND COOLING
空气源燃气机热泵 (GEHP)

PRODUCT OVERVIEW

产品概述

Air-source gas engine heat pump (GEHP) is a high-efficiency heating and cooling air conditioning system powered by natural gas. Unlike traditional electric heat pumps, GEHP uses a gas engine instead of an electric motor to drive the compressor, achieving summer cooling and winter heating through the vapor compression heat pump cycle. The indoor unit operates in the same way as a conventional air conditioner, with no gas combustion indoors, ensuring safety and reliability.

During operation, the system uses natural gas as fuel to drive the gas engine, which in turn drives the compressor to form a heat pump cycle, realizing cooling or heating. At the same time, the system recovers engine waste heat and flue gas waste heat through heat exchangers, producing hot water and storing it in a water tank, achieving cascade energy utilization and low-temperature flue gas emission.

Since natural gas is used as the main energy source, the annual electricity consumption of GEHP is only 6% of that of electric heat pump units. When used on a large scale, there is no need for power capacity expansion, which significantly reduces construction costs, labor costs, and operating expenses. It is an ideal choice to replace electric heat pumps and achieve energy saving and consumption reduction.

空气源燃气机热泵（GEHP）是一种以天然气为驱动能源的高效冷暖空调系统。与传统电动热泵不同，GEHP 采用燃气发动机替代电动机驱动压缩机，通过蒸汽压缩式热泵循环实现夏季制冷与冬季制热。室内机运行方式与普通空调一致，无气体在室内燃烧，安全可靠。

在工作过程中，系统以天然气为燃料驱动燃气发动机运转，进而驱动压缩机形成热泵循环，实现制冷或制热。与此同时，系统通过换热器回收发动机余热及烟气余热，产生热水并储存于水箱中，实现能源的梯级利用与烟气低温排放。

由于采用天然气作为主要能源，GEHP 全年耗电量仅为电热泵机组的 6%，大规模使用时无需电力增容，可显著降低施工费用、人员费用及运行成本，是替代电热泵、实现节能降耗的理想选择。

APPLICATION FIELDS

应用领域

Air-source gas engine heat pumps (GEHP) can be used in scenarios such as hotels, commercial apartments, bathing centers, fitness centers, hospitals, nursing homes, gate station applications, factory dormitories, high-temperature drying, and feed processing. They provide heating and cooling supply, domestic hot water, and emergency power generation, significantly reducing electricity consumption and operating costs.

酒店、商用公寓、洗浴中心、健身中心、医院、养老院、门站应用、工厂宿舍、高温烘干、饲料加工等场景，均可采用空气源燃气机热泵（GEHP）实现冷暖供应、生活热水及应急发电，显著降低电耗和运营成本。



PRODUCT FEATURES

产品特点

REMOTE CONTROL, INTELLIGENT MANAGEMENT

Supports one-key power on/off and mode switching. Adopts IoT technology for real-time remote monitoring of equipment operation status, making management more convenient and efficient.

MULTIPLE OPERATING MODES, FLEXIBLE ADAPTATION

Provides single cooling mode, cooling + hot water mode, and heating mode. Can be flexibly switched according to different working conditions and requirements to meet diverse application scenarios.

MULTI-UNIT PARALLEL CONNECTION, GROUP CONTROL OPERATION

A single host supports group control mode and can operate up to 10 units in parallel, suitable for large-load commercial and industrial sites.

INTELLIGENT FROST-FREE TECHNOLOGY, STABLE HEATING AT LOW TEMPERATURES

Utilizes engine waste heat for intelligent defrosting — more defrosting when there is more frost, no defrosting when there is no frost — ensuring stable and reliable heating under low-temperature conditions.

HIGH EFFICIENCY AND ENERGY SAVING, FREE HOT WATER PRODUCTION

Free domestic hot water can be produced while cooling in summer. Primary energy ratio (PER) reaches up to 167%, significantly improving energy utilization efficiency.

SILENT DESIGN, LOW-NOISE OPERATION

Adopts professional vibration damping design and sheet metal noise reduction treatment. Operating noise is as low as 63 dB, without disturbing commercial or industrial environments.

远程操控，智能管理

支持一键开关机及模式切换，采用物联网技术，可实时远程监控设备运行状态，管理更加便捷高效。

多种运行模式，灵活适配

提供单制冷模式、制冷 + 热水模式、制热模式，可根据不同工况和需求灵活切换，满足多样化使用场景。

多台并联，群控运行

单台主机支持群控模式，最多可并联 10 台 联合运行，适合大负荷商业及工业场所。

智能无霜技术，低温稳定制热

利用发动机余热进行智能除霜，多霜多除、无霜不除，确保低温环境下制热稳定可靠。

高效节能，免费制取热水

夏季制冷同时可免费制取生活热水，一次能效 PER 高达 167%，大幅提升能源利用率。

静音设计，低噪运行

采用专业减震设计及钣金降噪处理，运行噪音低至 63 dB，不干扰商业及工业环境。

AIR-SOURCE GAS ENGINE HEAT PUMP TECHNI-CAL PARAMETER TABLE

空气源燃气机热泵技术参数表

model			GARC- KFX71CH-80	GEHP- KFXHW-90	GARC- KFX55CH-200	GARC- KFXHW-200
Heating capacity		kW	80	90	200	200
Refrigeration capacity		kW	71		55	
Recirculated water flow rate		m³/h	≥ 12.1	≥ 11.8 (9.46)	≥ 12.1	≥ 13.7
Waterway nominal pressure drop		kPa	≥ 70	≥ 110	≥ 70	≥ 70
Minimum inlet water temperature		℃	10	10	10	10
Maximum outlet water temperature		℃	65	65	65	65
Minimum ambient temperature		℃	-30	-30	-30	-30
Maximum environmental temperature		℃	43	43	43	43
boundary dimension	length	mm	2200	2300	2300	2300
	Width	mm	1100	1400	1400	1400
	Height	mm	2360	2660	2660	2660
Water-side pressure-bearing		MPa	≤ 1.6	≤ 1.6	≤ 1.6	≤ 1.6
rated power input	refrigeration	kW	54.5			
	heating	kW	47.5			167.5
Input power adjustment range	refrigeration	kW	16.7-54.5			
	heating	kW	15.8-47.5			15.8-167.5
Rated natural gas flow rate	refrigeration	m³/h	5.45		5.45	
	heating	m³/h	4.75	6	16.8	16.8
Gas flow regulation range	refrigeration	m³/h	1.7-5.45		1.7-5.45	
	heating	m³/h	1.6-4.75	1.6-6	1.6-16.8	1.6-16.8
Full-load operating weight		kg	1500	1600	1600	1600
Noise		dB(A)	63	63	63	63
power supply			380V/3PH/50Hz	380V/3PH/50Hz	380V/3PH/50Hz	380V/3PH/50Hz
Electrical input power		kW	2.8	3.1	3.1	3.1
engine	The amount of lubricating oil injected	L	46	46	46	46
	power supply		12VDC	12VDC	12VDC	12VDC
	Antifreeze filling volume	L	60	60	60	60
Air intake port			Side-in ventilation	Side-in ventilation	Side-in ventilation	Side-in ventilation
Air outlet			Blowout Ventilation	Blowout Ventilation	Blowout Ventilation	Blowout Ventilation
Related piping	exhalent siphon		DN50	DN50	DN50	DN50
	return pipe		DN50	DN50	DN50	DN50
	natural gas hose		DN25	DN25	DN25	DN25
	condensate pipe		DN20	DN20	DN20	DN20
gas pressure			2000-3000Pa	2000-3000Pa	2000-3000Pa	2000-3000Pa

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空气源燃气机热泵技术参数表

型号			GARC- KFX71CH-80	GEHP- KFXHW-90	GARC- KFX55CH-200	GARC- KFXHW-200
制热能力		kW	80	90	200	200
制冷能力		kW	71		55	
循环水流量		m³/h	≥ 12.1	≥ 11.8 (9.46)	≥ 12.1	≥ 13.7
水路名义压降		kPa	≥ 70	≥ 110	≥ 70	≥ 70
最低进水温度		℃	10	10	10	10
最高出水温度		℃	65	65	65	65
最低环境温度		℃	-30	-30	-30	-30
最高环境温度		℃	43	43	43	43
外形尺寸	长	mm	2200	2300	2300	2300
	宽	mm	1100	1400	1400	1400
	高	mm	2360	2660	2660	2660
水侧承压		MPa	≤ 1.6	≤ 1.6	≤ 1.6	≤ 1.6
额定输入功率	制冷	kW	54.5			
	制热	kW	47.5			167.5
输入功率调节范围	制冷	kW	16.7-54.5			
	制热	kW	15.8-47.5			15.8-167.5
额定天然气流量	制冷	m³/h	5.45		5.45	
	制热	m³/h	4.75	6	16.8	16.8
天然气流量调节范围	制冷	m³/h	1.7-5.45		1.7-5.45	
	制热	m³/h	1.6-4.75	1.6-6	1.6-16.8	1.6-16.8
满负荷运行重量		kg	1500	1600	1600	1600
噪音		dB(A)	63	63	63	63
电源			380V/3PH/50Hz	380V/3PH/50Hz	380V/3PH/50Hz	380V/3PH/50Hz
电输入功率		kW	2.8	3.1	3.1	3.1
发动机	润滑油注入量	L	46	46	46	46
	电源		12VDC	12VDC	12VDC	12VDC
	防冻液封入量	L	60	60	60	60
空气吸入口			侧进风	侧进风	侧进风	侧进风
空气吹出口			顶出风	顶出风	顶出风	顶出风
相关配管	出水管		DN50	DN50	DN50	DN50
	回水管		DN50	DN50	DN50	DN50
	天然气管		DN25	DN25	DN25	DN25
	冷凝水管		DN20	DN20	DN20	DN20
燃气压力			2000-3000Pa	2000-3000Pa	2000-3000Pa	2000-3000Pa

PRODUCT STRUCTURE

产品结构

Fan: Adopts a high-airflow, low-noise fan and high-efficiency motor.

风机：采用大风量、低噪音风机以及高效率电机。

Fin-type Heat Exchanger: Adopts a triple heat exchange structure design for efficient heat transfer and rapid defrosting.

翅片式换热器：采用三重换热结构设计，高效换热，快速除霜。

Plate Heat Exchanger: Adopts opposite-side parallel reverse heat exchange, providing a high heat transfer coefficient and strong heat exchange capacity.

板式换热器：采用异侧平行逆向换热，换热系数高，换热能力强。

Waste Heat Recovery Heat Exchanger: Recovers engine waste heat to achieve efficient heat recovery from flue gas and jacket water.

余热回收换热器：回收发动机余热，实现排烟与缸套水高效热回收。

Oil Separator: Equipped with a double-layer metal wire mesh to effectively separate oil and refrigerant, ensuring a safe and efficient refrigerant system.

油分离器：内设双重金属丝网，将油和制冷剂有效分离，确保冷媒系统安全高效。



PRODUCT STRUCTURE

产品结构



SIX PRODUCT SERIES

六大产品系列

1. Heating-type air-source gas engine heat pump
2. Cooling-type air-source gas engine heat pump
3. Domestic hot water supply-type air-source gas engine heat pump
4. Heating and cooling dual-purpose air-source gas engine heat pump
5. Heating + cooling + domestic hot water type gas engine heat pump
6. Heating + cooling + emergency power generation type gas engine heat pump

- 1、制热型空气源燃气机热泵
- 2、制冷型空气源燃气机热泵
- 3、供生活热水型空气源燃气机热泵
- 4、制热制冷两用型空气源燃气机热泵
- 5、供热 + 制冷 + 生活热水型燃气机热泵
- 6、供热 + 制冷 + 应急发电型燃气机热泵



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