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The data will be modified without notice for technique improvement.



Gas Heat Pump

**GHP
U SERIES**



Company Profile



Established in 1930, Panasonic takes "developing the national refrigeration industry" as the mission, devotes itself to the heat and cold, ecological and environmental protection industry and makes new contributions to the continuous development of the refrigeration industry and satisfying of people's livelihood needs. It involves five business areas: industrial refrigeration and Petrochemical general business area, foodstuff refrigeration business area, components and parts business area, Engineering • trade and service business area, Central and commercial air conditioning business area.



About Us

Sonyo Refrigeration(Dalian)Co.,Ltd. formerly known as Matsushita Refrigeration (Dalian) Co., LTD., was established on September 11, 1992. It is a professional manufacturer engaged in the research and development of resource recycling technology, the design, production, manufacturing, sales and after-sales service of special equipment for environmental protection, new energy dynamic equipment, special equipment, refrigeration and heating equipment and related equipment.

At present, the company's three business areas are lithium bromide absorption units (ABS) business, gas heat pump Air conditioning (GHP) business, and thermal equipment (SV) business.

After years of hard work, development and innovation, our products have been favored by domestic and global customers. As a high-tech enterprise, it has also made outstanding contributions to China's energy conservation and environmental protection. In the future, our company will continue to rely on Sanyo's large-scale air conditioning technology, and use Panasonic's advanced technology research and development, quality management system, to create a cleaner and more sustainable future for mankind.

Absorption central air conditioning (ABS) has steam type, warm water type, direct combustion type, heat pump type, flue gas utilization type and other models, especially the introduction and innovation of heat pump type technology, has caused revolutionary changes in the heating system, and has made significant contributions to the energy conservation and large-scale development of the city.

Gas-fired heat pump air conditioning (GHP) has refrigerant multiple units and chiller units. The company's gas heat pump air conditioner is a new product equipped with a special gas engine for vehicles, and it is particularly advanced in environmental protection because it uses primary clean energy. The heating capacity of gas heat pump air conditioning in winter is higher than that of electric refrigeration air conditioning, which opens up a new field of air conditioning market.

At present, the chemical, petroleum, steel, automobile, tobacco industry and large commercial facilities, heating companies, airports, buildings, government agencies, hotels, stadiums, schools and other fields of customers are used and recognized our products.

The conversion of world-leading technology into high-quality products stems from the outstanding professionalism and outstanding professional quality of Songyang Refrigeration employees and the widespread adoption of high-precision and cutting-edge processing equipment. In the future, Sonyo Refrigeration(Dalian)Co.,Ltd. will work harder to provide customers with the best quality innovative energy products and services, and contribute our strength to the realization of human sustainable development!

Green energy creators



—工厂

ABS Production Line
SV Production Line

Founded : 1992
Area : 30000m²



二工厂

R&D Design Center
GHP Production Line
ABS Production Line

Founded : 1994
Area : 50000m²

Award and Recognition

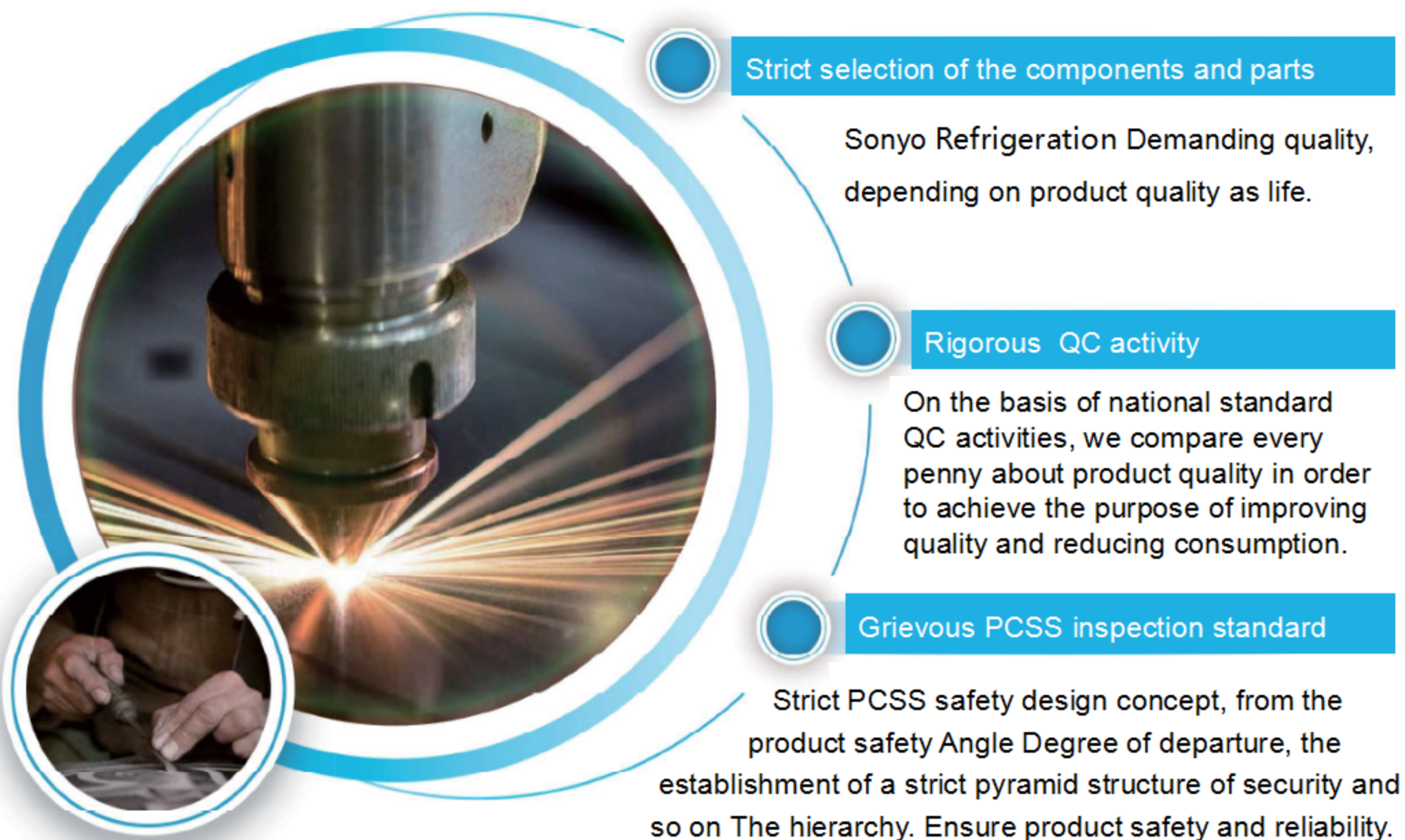
China coalition for decentralized energy
Postdoctoral programme
National high-tech enterprise certificate
China quality nomination award
Advanced enterprise of the national quality management
Credit rating assignment: AAA
National corporate culture
Technology research and development centre designated by the government
The national new products porogram



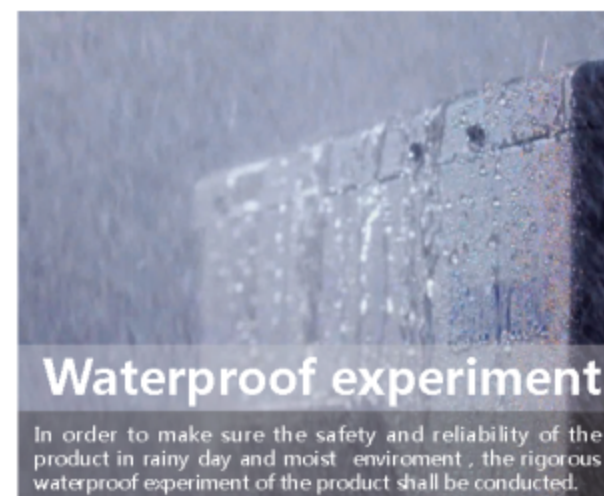
Worldwide Certification



As the leader of the industry, Sonyo Refrigeration spends much money to create the largest lithium bromide set test platform and the largest Enthalpy Lab in Bingshan Group. It interprets the high-quality brand image with the new mode and new connotation based on the quality idea of "century-long tradition, produce with wisdom" and the quality spirit of "firm, earnest, keep improving". It keeps the core competitiveness in market.



Performance test



Detection experiment of components



The way to success is fighting and keeping. In the aspect of production and manufacturing, Sonyo Refrigeration interprets the kind of persistence by "craftsmanship spirit".



Precision production equipment

It has automatic production equipment imported from Japan, Germany, the United States, Italy and other countries.

Specialized production technology

In terms of production and manufacturing, we are skilled in the work, the craftsman is in the heart, the product is in the line, and the advanced "intelligent manufacturing" concept is integrated into the professional production technology system, and the "intelligent" manufacturing of the iceberg is inherited.

Modern production management

Information management mode, through the production history and production line monitoring system, the establishment of a unique production management system, a unique hybrid production mode, customized for the different needs of customers diversified, personalized solutions, in the complex market environment, has a unique core competitiveness.



The one and only GHP manufacturing base in China.

Warming every client is our understanding and comprehension of service. The link made of true friendship is harder than the iron stone. SonyoRefrigeration has 26 sales offices and after-sale service centers across the country. Base on the service principle of "customer first", sincere service is carried out in the whole process, including pre-sale, in-sale and after-sale process. The professional, fast, reliable and all-round service is provided to the customer at any time and customer's needs are met based on the principle of "one-to-one".

When the malfunction occurs, the service network can be started by only a telephone call and the customer's demands will be guaranteed.



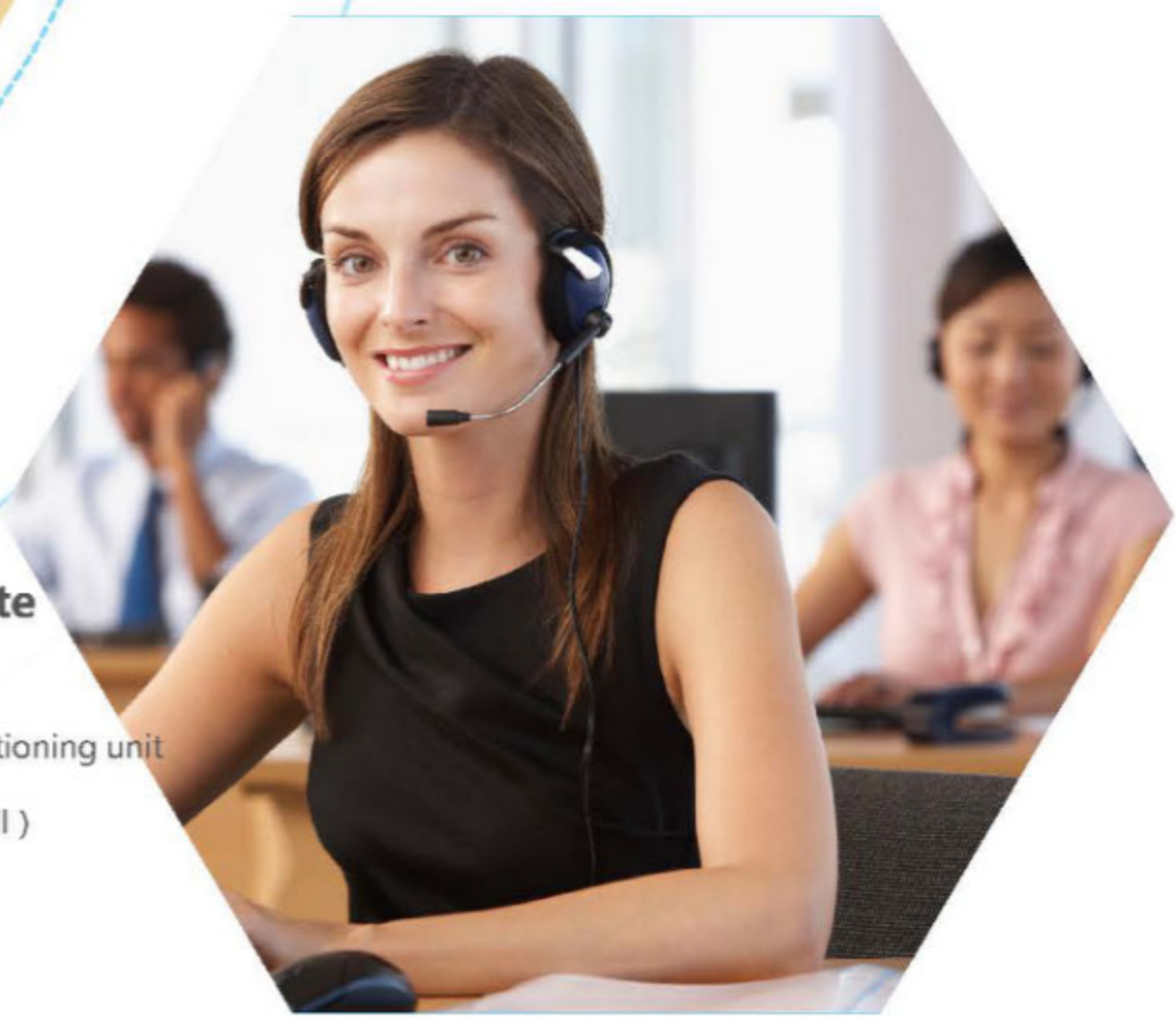
Service hotline

400-642-2468



Basic service of the air conditioning unit remote monitoring system

- Real-time supervision of air conditioning unit
- Appointed contact address (E-mail)
- Diagnosis and Proposal
- Reliable guarantee of the unit life





LiBr absorption chiller/heater
Airport/ factory/ commercial building etc.



Gas Heat Pump
Driven by gas engineEnvironmental friendly Heating in cold area

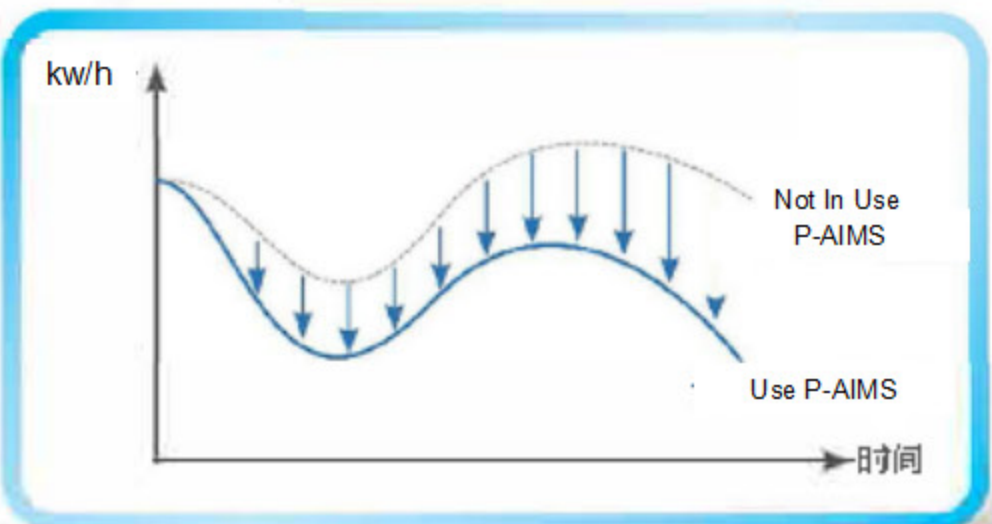


Vacuum Boiler
Negative E operation, safe and reliable, advanced energy saving



Centrifuge
Is used in the industrial field of refrigeration equipment

Energy-saving effect



GHP Product Introduction

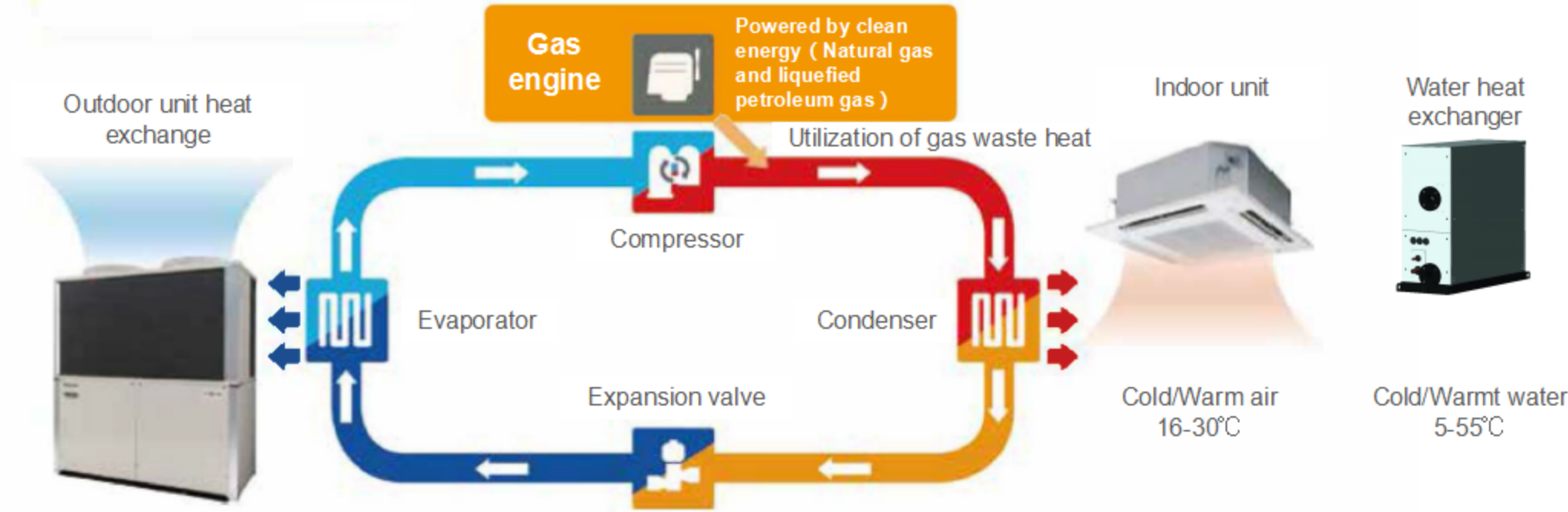


FRIGOESPACIOS®

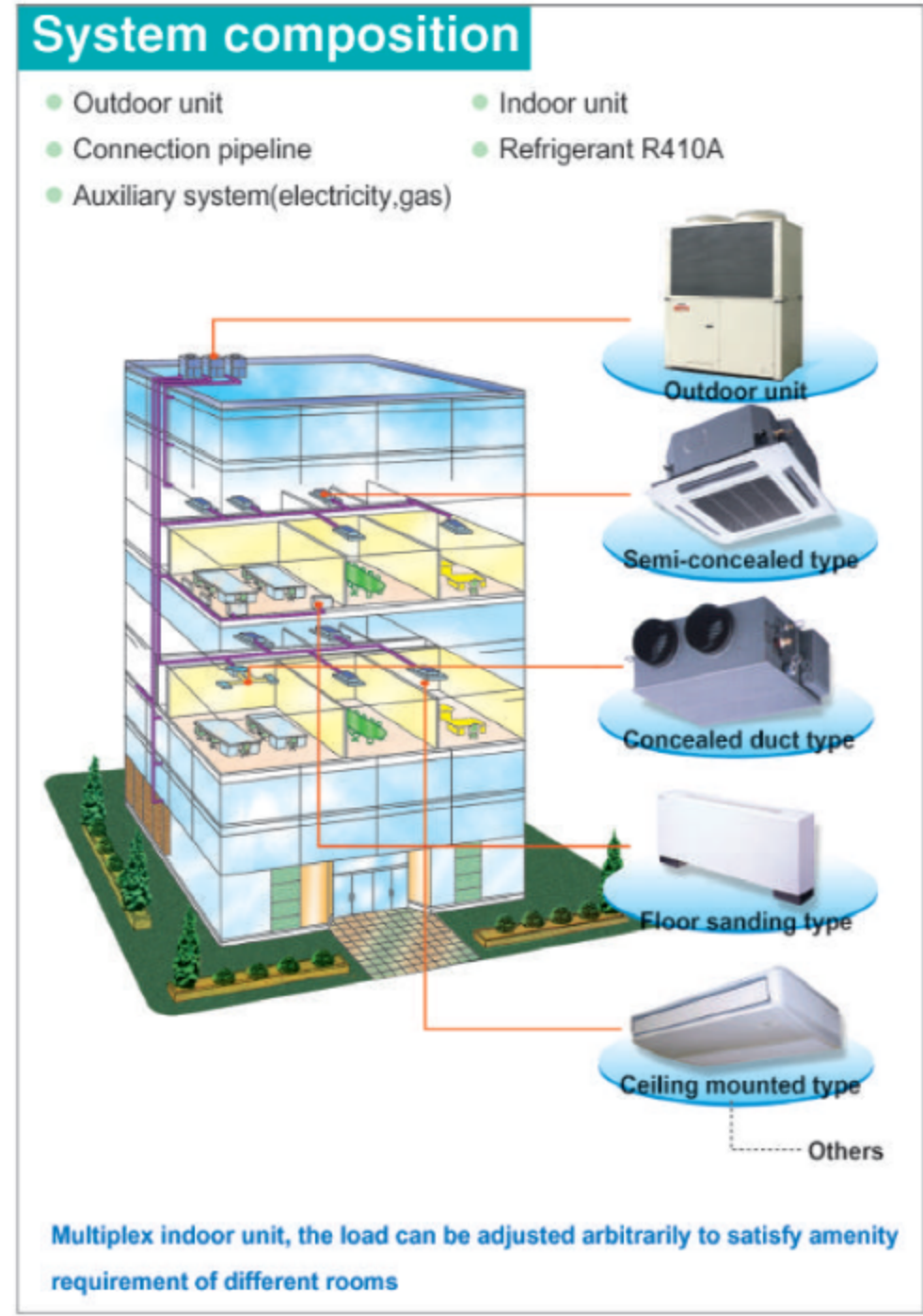
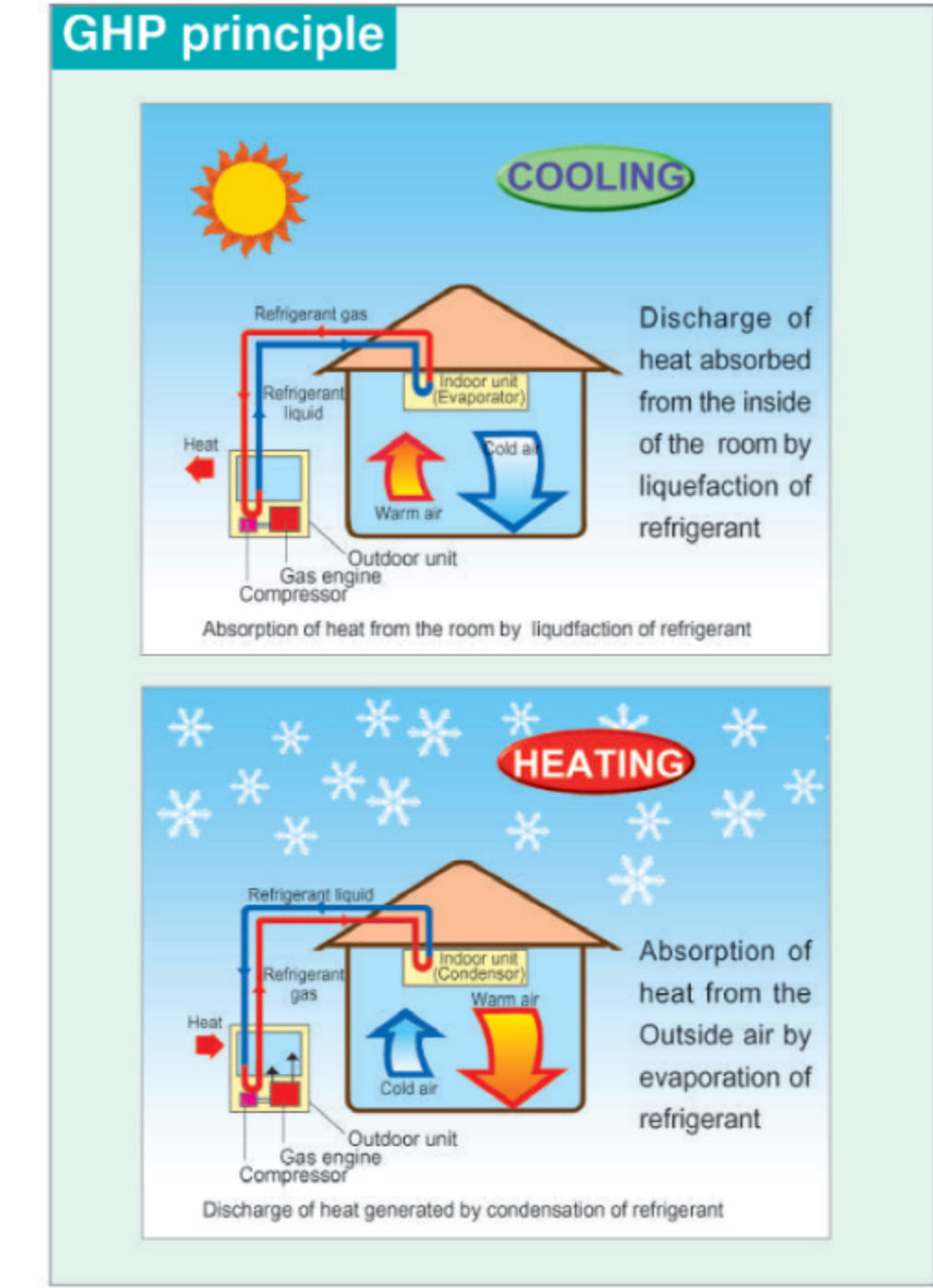
What is GHP? The Gas Heat Pump (GHP)

Gas Heat Pump is a direct expansion system with compressor as same as VRF system. Gas engine is used as driving source of compressor instead of electric motor. This gas engine compressor drive has 2 advantages:

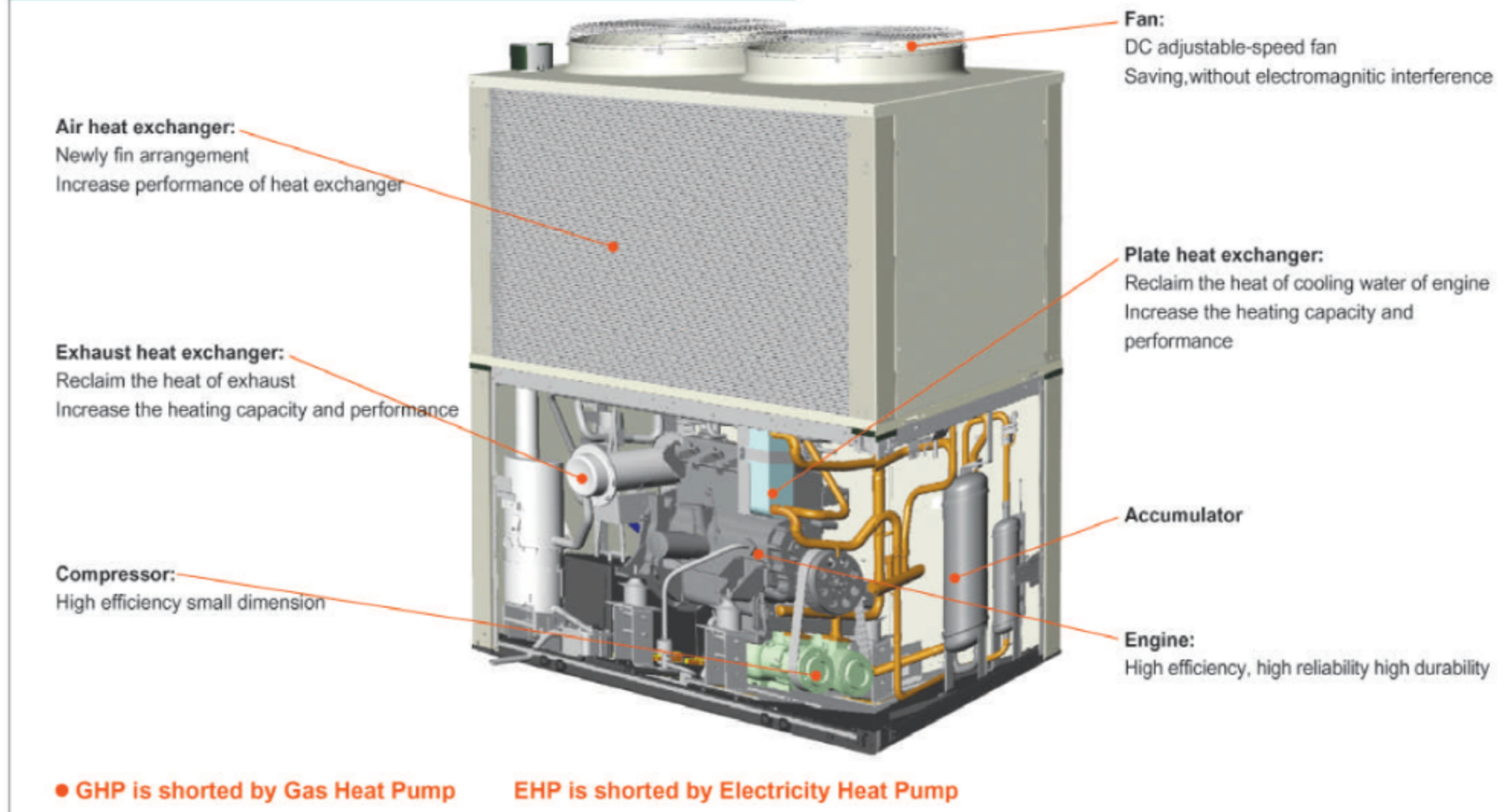
1. Waste heat from the gas engine available
2. No need for motor power consumption thanks to gas engine GHP is the natural choice for commercial projects, especially for those projects where power restrictions apply.



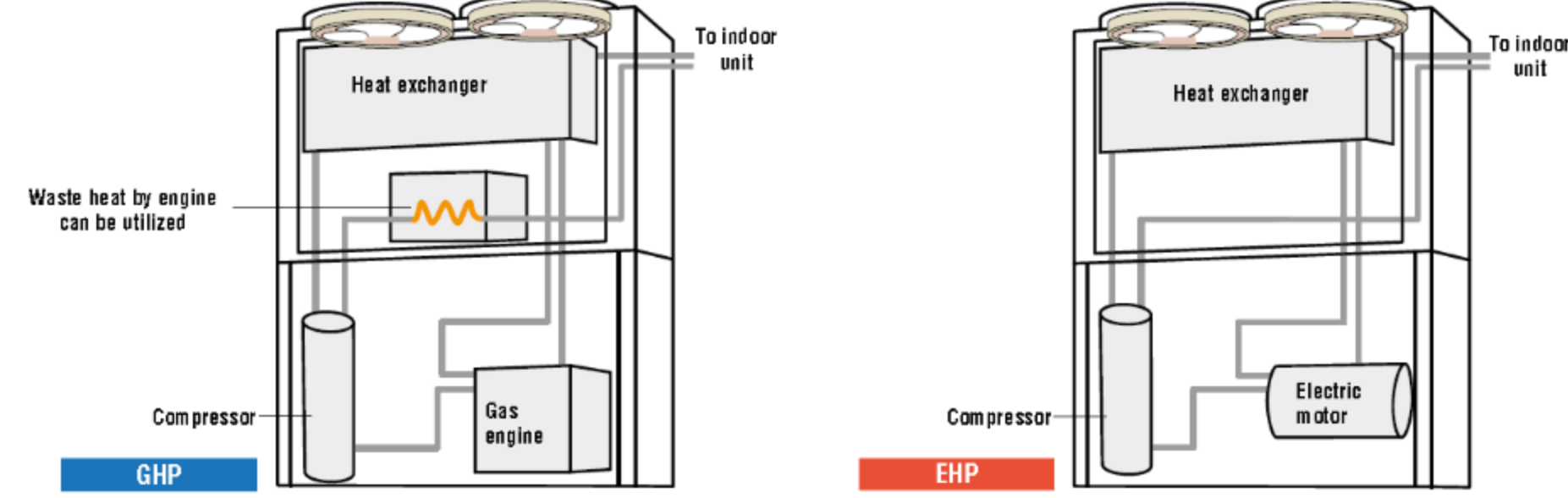
GHP principle and system composition



Inner structure diagram of outdoor unit



Difference between GHP and EHP



Gas Heat Pump (GHP) sytem powerfully and efficiently realizes high quality air whilst balancing energy conservation by reducing power consumption and energy saving by suppressing peak-time electricity consumption.

GHP satisfies special requirement for your application and environmentally friendly solution by Bingshan professional technology.

If you are short of electric power, our GHP is a perfect solution.

- Runs on natural gas or LPG and just needs single phase supply
- Enables the building' s electrical power supply to be used for other critical electrical demands
- Reduces capital cost to upgrade power substations to run heating and cooling systems
- Reduces power loadings within a building especially during peak periods
- Electricity supply freed up for other uses such as IT servers, commercial refrigeration, manufacturing, lighting, etc...

Advantage 1

Super power saving

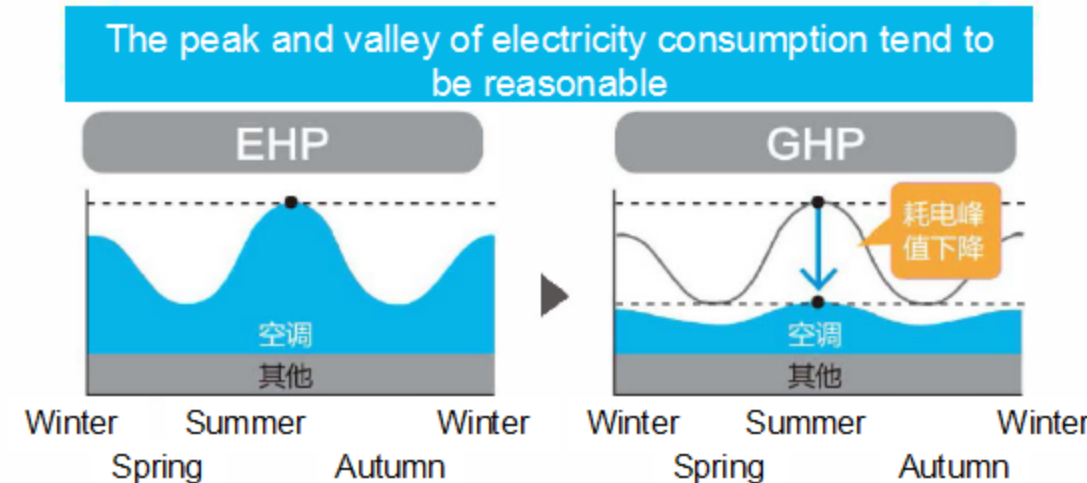
The outdoor unit of the air conditioning system is changed from electric drive to gas drive, saving power consumption, and the effect is remarkable.



Advantage 2

Adjust the peak and valley value of power consumption

The problem of unreasonable energy consumption and low utilization rate is relatively serious. Air conditioning power in urban buildings accounts for about 40% of peak power supply. In the peak season of air conditioning in summer, the use of electric refrigeration air conditioning has a great impact on the power grid load.



Advantage 3

Reduce power distribution equipment investment

It is difficult to increase the power capacity of old buildings and there is not enough electricity support the operation of new electric air conditioners, and gas multi-line power consumption. Very rarely, it is possible to add air conditioning systems without transforming the power grid. A good solution to the actual needs of customers.

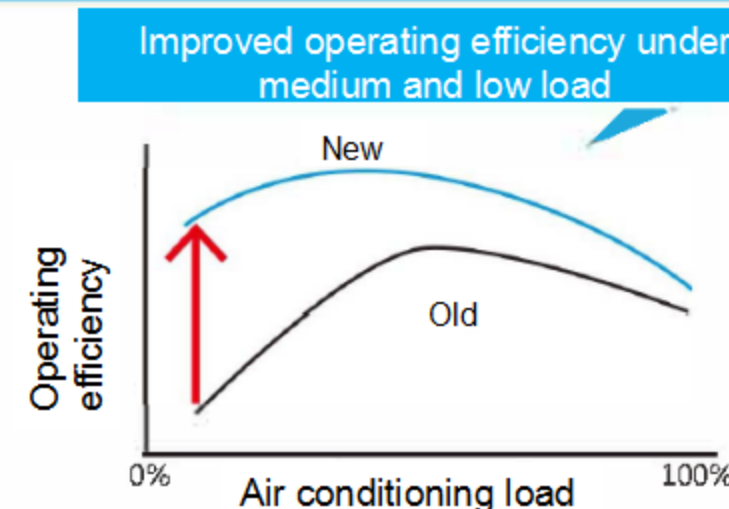


Advantage 4

Higher efficiency at partial load

EHP products are operated at low and medium load most of the time, and the unit load rate is less than 50%. Therefore, the evaluation of multi-line energy saving should consider that the efficiency improvement is conducive to the energy saving of the unit at partial load.

High transmission ratio is adopted to optimize engine control and match efficient thermal exchange, and the efficiency of some loads is greatly improved.

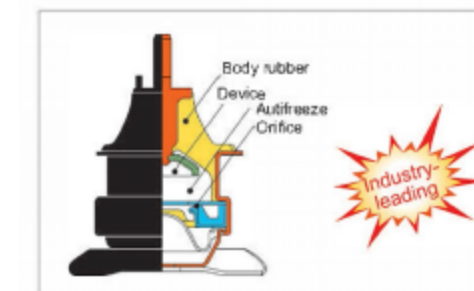


Advantage 5

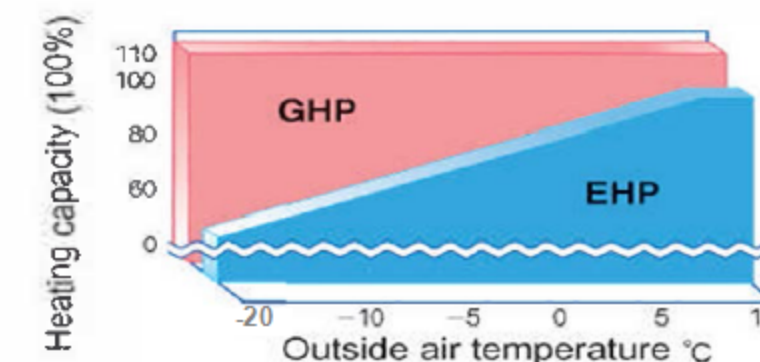
Better comfort at low temperatures

- Recovery exhaust heat of engine
- High heating capacity
- Comfortable heating is possible ever
- Even though outside air temperature is lower than -20°C
- Require no defrosting operation
- Heating with Quick start

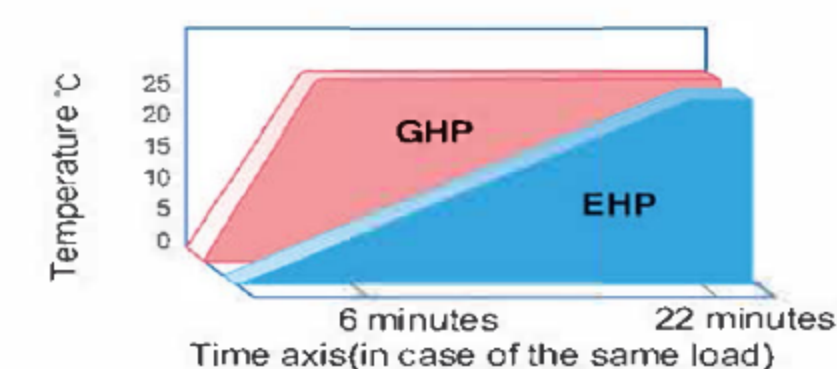
low running noise, low vibration, can choose location arbitrary



Comparison of the heating capacity



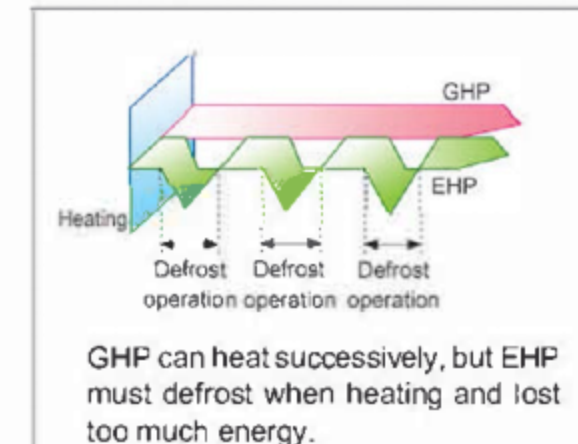
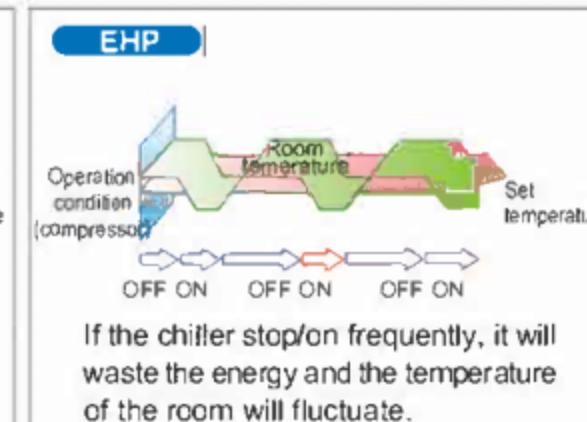
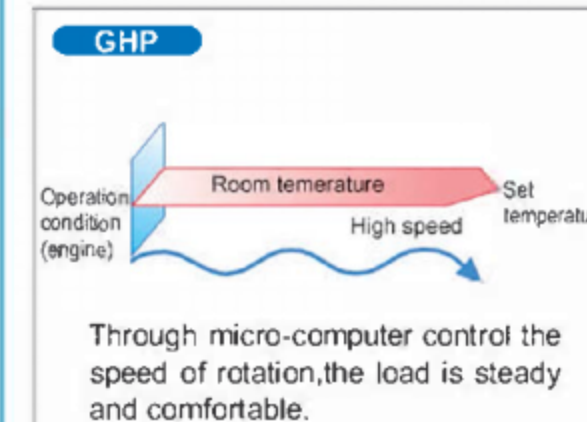
Comparison of the start



Advantage 6

Multiple load control, frost free operation more energy efficient

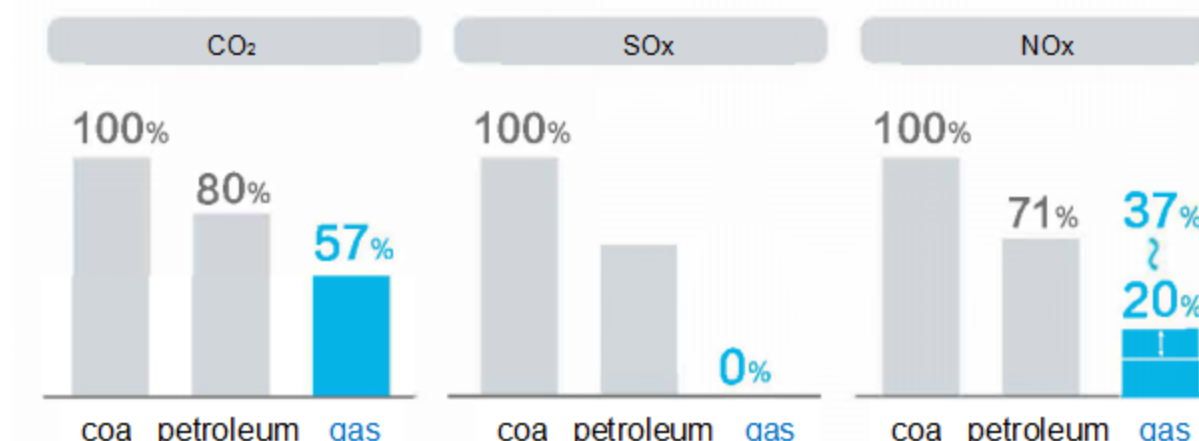
- GHP can be continuously heated, no downtime defrosting, to ensure comfort while saving defrosting energy.
- Microcomputer board control stepless variable speed adjustment engine speed, compressor speed and outdoor fan DC frequency conversion adjustment, cooling water flow, load control stability
- Using electronic expansion valves, precise control of the chamber temperature load.



Advantage 7

The power source of GHP gas is natural gas. Compared with coal and petroleum energy, the amount of CO₂ produced during combustion is less, which is conducive to the inhibition of global warming. Moreover, SO_x (sulfide) and NO_x (nitrogen oxides) atmospheric pollutants are produced in smaller quantities and are more environmentally friendly.

Comparison of pollutants produced during combustion



Fluorine System Indoor Unit

Powerful indoor air conditioning lineup to meet individual needs.

- With a wide range of models to meet the diverse needs of different Spaces, widely used in office buildings, hotels, factories, schools and other places.
- With S-Link communication technology, centralized management of up to 1024 indoor units can be achieved.



Ceiling recessed (4-directional type)

Normal form

CS-ME 7/8/9/12/14/15/16/17/18/23/27/28/32/35/36/38/45/54/60BD3



Capacity: 2.2/2.8/3.6/4.0/4.3/4.5/5.0/5.6/6.3/7.3/8.0/9.0/10/10.6/11.0/11.2/12.5/14.0/16.0Kw




ECONAVI
Ceiling recessed (Nanoe type)

Advanced type

CS-ME7/9/12/14/16/17/18/23/27/28/32/35/38/45/54/60BD8B




Capacity: 2.2/2.8/3.6/4.0/4.3/4.5/5.0/5.6/6.3/7.3/8.0/9.0/10/10.6/11.0/11.2/12.5/14.0/16.0Kw




Hidden pipeline type

Normal form

CS-ME 7/8/9/12/14/15/16/17/18/23/27/28/32/35/36/38/45/54/60D1ED3




Capacity: 2.2/2.8/3.6/4.0/4.3/4.5/5.0/5.6/6.3/7.3/8.0/9.0/10/10.6/11.0/11.2/12.5/14.0/16.0Kw




ECONAVI
Hidden pipeline type (ultrathin)

Normal form

CS-ME7/8/9/12/14/15/16/17/18/23/27D0AD6




Capacity: 2.2/2.8/3.6/4.0/4.3/4.5/5.0/5.6/6.3/7.3Kw



ECONAVI
Hidden pipeline type (Nanoe)

Advanced type

CS-ME6/7/8/9/10/12/14/15/16/17/18/23/27D0AD11B



Capacity: 2.2/2.8/3.6/4.0/4.3/4.5/5.0/5.6/6.3/7.3Kw



Hidden pipeline type (High)

Normal form

CS-ME 27/28/29/32/35/36/38/45/54/72/90D3ED



Capacity: 2.2/2.8/3.6/4.0/4.3/4.5/5.0/5.6/6.3/7.3Kw



Wired controller

CZ-RD539DW



Wired controller (nanoe)

CZ-RD503DX1



Centralized controller

CZ-64ESMC3C



Remote control unit

CZ-RL519D



Remote control unit (nanoe)

CZ-RL503DXA



Communication adapter

CZ-TA60X

Water System Air Conditioning Unit

GHP water system central air conditioning

- Pattern : Split, Integrated
- Energy : Gas, LPG
- Apply : Widely applied in places needing air conditioning equipments, such as small and middle scale department store, hotel, building entertainment place, hospital, factory, dormitory, residence, schools etc.
- Characteristic :
 - GHP water system central air conditioning. The end can be connected to a variety of forms such as:
 - The maximum allowable length between the outdoor unit and the water heat exchanger is 170 meters.
 - The outdoor unit and the water heat exchanger can be separated to reduce the construction cost and the power consumption of the circulating pump.
 - Easy to switch between heating and cooling with a touch of a button.
 - The engine can be used to exhaust heat, heating capacity is large, no defrost is required, especially suitable for use in cold areas.
 - Economical operation, greatly reducing gas consumption.
 - The outdoor unit runs quietly and makes low noise.

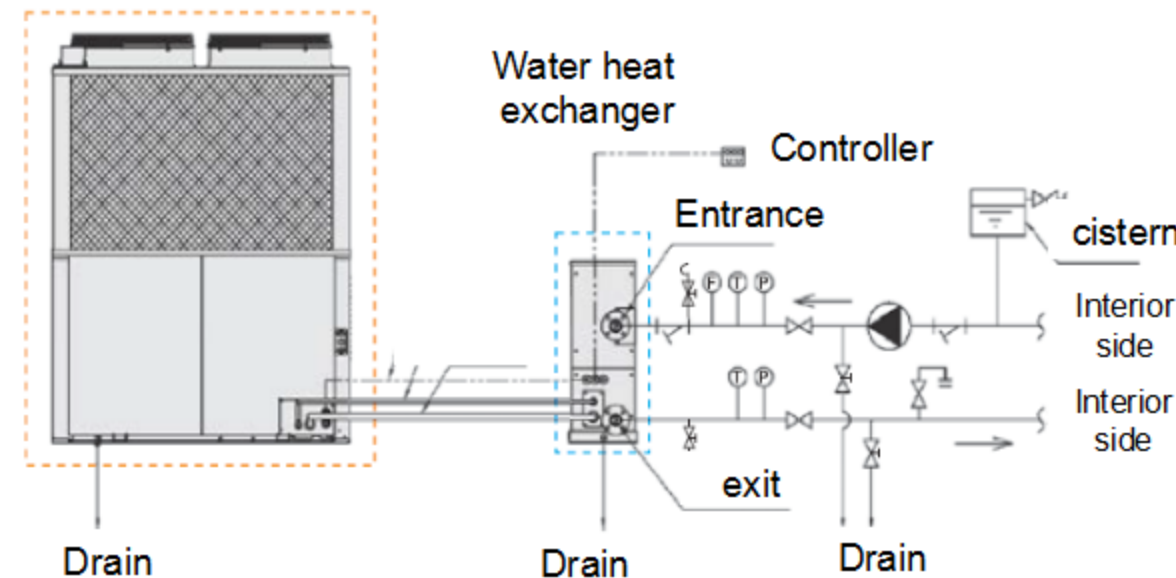


Operating range

		Refrigeration	Heating
Outdoor unit	Outside air temperature	-10°CDB ~ 43°CDB	-21°CWB ~ 15.5°CWB
Water heat exchanger	Water temperature	5°C ~ 15°C (Salt water -15°C ~ 5°C)	35°C ~ 55°C

System diagram

GHP Outdoor unit



Wired controller CZ-RD539DW



Centralized controller CZ-64ESMC3C



- Peculiarity :
- 64 water machines can be connected
 - Run, stop, alarm output
 - Temperature setting
 - Operation mode (warm and cold) switch

Equipment Parameter



GHP Fluorine System Parameter

Model number				U-D(W)H560U1S	U-D(W)H710U1S	U-D(W)H850U1S
Power source				Single-phase 220V 50Hz		
property	Cooling power		kW	56.0	71.0	85.0
	Heating capacity	Nominal	kW	63.0	80.0	95.0
		Hypothermy	kW	67.0	84.0	95.0
Overall dimension		Height	mm	2,228		
		Width	mm	1,650		2,026
		Length	mm	800(+80)		
Weight			kg	705	730	810
Electrical character	Cooling	Operating current	A	6.30	8.60	9.90
		Power consumption	kW	1.20	1.50	1.80
	Heating	Operating current	A	4.10	4.10	9.90
		Power consumption	kW	0.74	0.78	1.40
	Starting current		A	30		
Gas consumption		Cooling	kW	35.2	54.4	59.6
		Heating	kW	38.3	47.9	56.1
Compressor		Freezing machine oil volume	ℓ	4.4(HP-9)		5.5(HP-9)
Engine	Lube oil volume		ℓ	40		46
	Starting mode			DC		
Engine cooling water		Volume	ℓ	21.0	25.0	27.0
		Freezing temp		50V/V% · -35℃		
Refrigerant(R410a) volume			kg	11.5		
Air intake inlet				Front, back, side		
Air outlet				Top		
Pipe	Refrigerant gas pipe			ø28.58 (brazing)		ø31.75 (brazing)
	Refrigerant liquid pipe			ø15.88 (brazing)		ø19.05 (brazing)
	Gas pipe			R3/4 (external thread)		
	Drain pipe			ø20 (External diameter 25)		
Operating noise			dB(A)	59.0	63.0	64.0
Supply fan	Supply fan type			helical fanX2		
Outer color			ℓ	half smooth (1Y 8.5/0.5)		

Note:

- Cooling:Indoor air intake temperature is 27℃DB · 19℃WB.
outdoor air intake temperature is 35℃DB.
Heating:Indoor air intake temperature is 20℃DB.
air intake temperature is 7℃DB · 6℃WB
- Gas type includes natural gas and LPG. Gas pressure is depression.
Gas pressure supply should measure up following table parameter.
Please offer related gas parameter, such as component, calorificity,
pressure, specific gravity to insure the using safety when ordering.
- Actual gas consumption(Nm³/h)= $\frac{\text{Gas consumption specified in the table} \times 860(\text{kcal/h} \cdot \text{kW})}{\text{Actual gas heat value}(\text{kcal/Nm}^3)}$
Actual gas heat value is low calorific value
- The values in above table may be noded without notice.

■ Gas pressure scope				Unit:kPa
Gas type	Max.	Normal	Min.	
LPG	3.3	2.8	2.0	
Natural gas	2.5	2.0	1.0	

GHP Water System Parameter

Model number				Split type(U-DH850U1S/S-DC710WHS1)		Integratetype		U-DCH710U1S		
Power source						Single-phase		单相220V 50Hz		
property	Cooling power			kW		71.0				
	Heating capacity	Nominal		kW		80.0				
		Hypothermy		kW		80.0				
Overall dimension			Height		mm		2,228 (Split 1,000)			
			Width		mm		2,026 (Split 395)			
			Length		mm		800(+80) (Split 965)			
Weight				kg		910 (Split 150)				
Electrical character	Cooling	Operating current		A		9.9				
		Power consumption		kW		1.80				
	Heating	Operating current		A		9.9				
		Power consumption		kW		1.74				
	Starting current			A		30				
	Gas consumption		Cooling		kW		59.1			
Heating			kW		53.3					
Compressor		Freezing machine oil volume		ℓ		2.5(HP-9)				
Engine	Lube oil volume			ℓ		46				
	Starting mode					DC				
Engine cooling water			Volume		ℓ		27.0			
			Freezing temp				50V/V% · -35℃			
Refrigerant(R410a) volume				kg		21				
Air intake inlet						Front, back, side				
Air outlet						Top				
Pipe	Warm and cold water inlet and outlet					Francois PL50 (A) -1.6 FF 16Mn II				
	Gas pipe					R3/4 (external thread)				
	Drain pipe					ø20 (External diameter 25)				
Operating noise				dB(A)		64.0				
Supply fan	Supply fan type					helical fanX2				
Outer color				ℓ		half smooth ;(1Y 8.5/0.5)				

Note:

- Cooling: outdoor air intake temperature is 35℃DB, temperature of chilled water outlet is7℃
Heating: outdoor air intake temperature is 7℃DB/6℃WB,temperature of hot water outlet is 50℃
- The temperature of hot (chilled) water inlet of water heat exchanger is different, please calculate. :
- The data subject to modified without notice

■ Gas pressure scope				Unit:kPa
Gas type	Max.	Normal	Min.	
LPG	3.3	2.8	2.0	
Natural gas	2.5	2.0	1.0	