

*DC INVERTER  
AIR TO WATER HEAT PUMP  
POLESTAR SERIES*





## About Us

Zhejiang CEN New Energy Stock Co., Ltd. was established in year 2001, in the early time, the company mainly produces solar water heater controllers and other related products. In 2009, General Manager Xia Qing decided to transform the product, especially set up the heat pump department. The company began to focus on the production and sales of heat pump water heater products, and with the establishment of the water tank production workshop in 2013, formed a research and development, production and sales system of heat pump control system, heat pump water heater and water tank.

In the solar water heater control system, our company has maintained the top three level in China for a long time. In the field of heat pump water heaters, we started to enter the field of real estate engineering in 2017 and achieved remarkable results. In this field, our household heat pump water heaters Sales ranked second in the province.

In the international market, our products have passed the CE certification of the European Union by TUV, and the sales volume of our products is growing rapidly and steadily at a rate of 20%~30% per year.

In 2017, we successfully listed on the New Third Board and began to officially move into the capital market. And moved into a new factory in the same year, with a total plant area of about 50,000 square meters.

Our GMPI-certified heat pump laboratory can test the unit's capacity from 1HP to 30HP, the minimum test ambient temperature can reach -30 degrees Celsius, and the highest test ambient temperature is 52 degrees Celsius.

Looking forward to the future, we will continue to focus on the broad heat pump field, making our own contribution to energy conservation and environmental protection, providing comfortable hot water for thousands of families.



ISO9001-2015  
Quality Management System for Quality Assurance  
Certificate No.: ARES/CN/1701019Q



OHSAS18001:2007  
Occupation Health Safety Management System  
Certificate No.: 12816S20193ROS

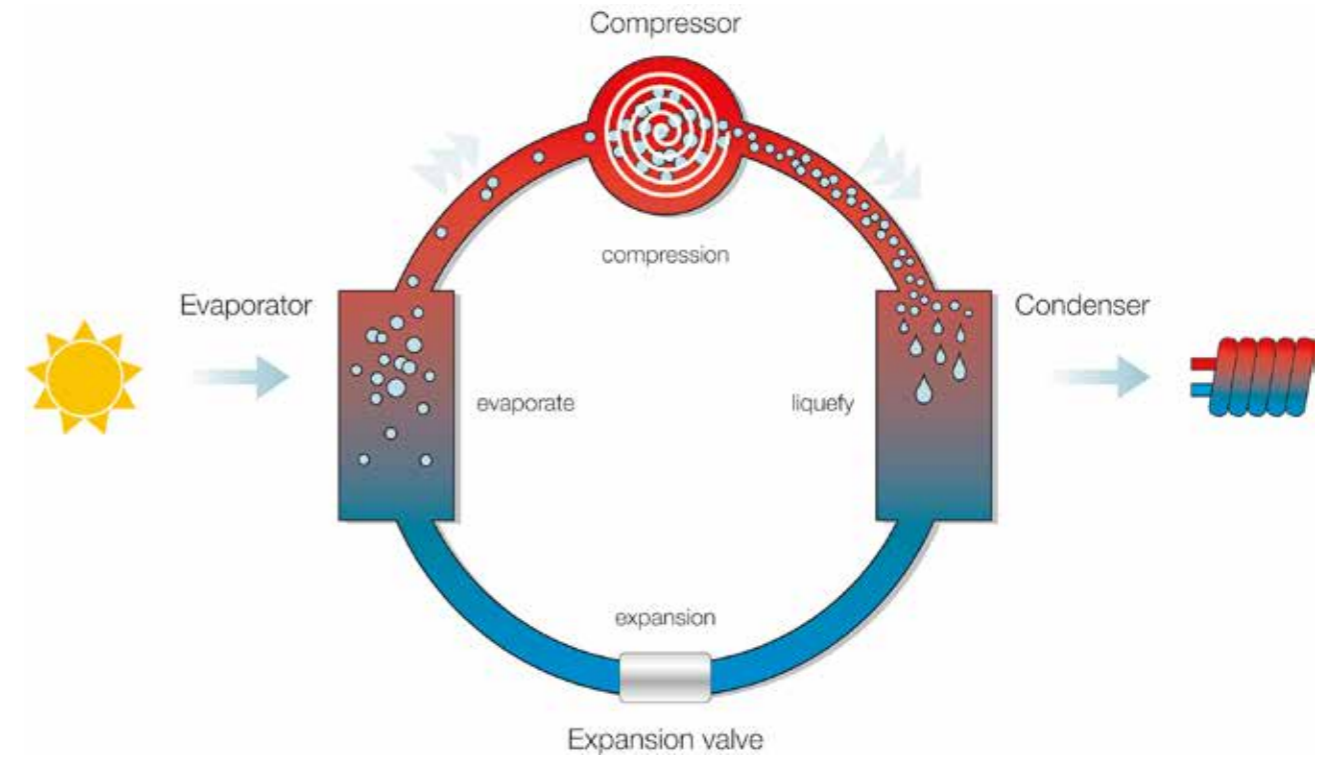


ISO14001-2015  
Environmental Management System  
Certificate No.: ARES/CN/1706042E



Laboratory issued by GMPI  
Certificate No.: RZ-ZL-2017171

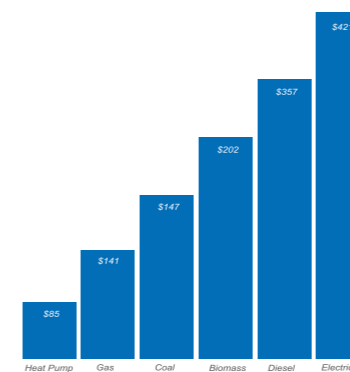
## HEAT PUMP WORKING PRINCIPLE



Heat pump water heater extracts energy from the air and uses it to heat water. It uses 1 time power to drive the compressor and brings 4.3 times heat to the water. This is what we called coefficient of performance (COP). With COP up to 4.3.

## ENERGY RESOURCE COMPARISON

The data on the following drawing are calculated on the basis of 20hrs/day in 120 days.



Items	Operating Cost Comparison					
	Heat Pump	Gas	Diesel	Electricity	Coal	Biomass
Calorific Value	860kcal/kWh	8600kcal/L	10200kcal/L	860kcal/kWh	5000kcal/Kg	4000
Unit Price	\$0.1/kWh	\$0.3/m <sup>3</sup>	\$0.9/L	\$0.10/kWh	\$0.075/Kg	0.20
Heating Load			200kW			
η	468%	85%	85%	95%	35%	85%
Consumption Per Hour	43kW/h	24m <sup>3</sup> /h	20L/h	211kW/h	98Kg/h	51
Operating Cost Per Day	\$85	\$141	\$357	\$421	\$147	\$202
Operating Cost Per Year	\$10256	\$16941	\$42851	\$50526	\$17691	\$24282
Energy-Saving	/	19.05%	68.00%	72.86%	22.48%	43.52%



# DC INVERTER AIR TO WATER HEAT PUMP POLESTAR SERIES



## ☀️ HEATING ❄️ COOLING 💧 HOT WATER

3 Functions, 5 modes:  
 \* Single Hot Water \* Single Heating \* Single Cooling  
 \* Hot Water + Cooling \* Hot Water + Heating.



Less attenuation in low temperature technology etc.. Ensure the units operating well with wide range between - 30 ~ 45 degrees condition.

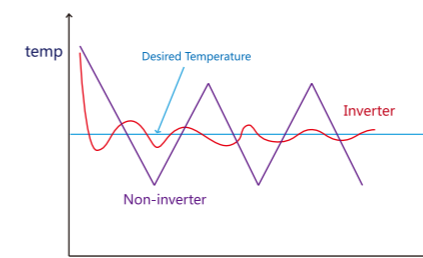


DC inverter compressor:  
 Realizing speed stepless adjustment, lower noise but higher efficiency, running more stable.



DC inverter brushless fan motor:  
 Intelligent control, according to the ambient temperature of the motor to realize the turns with speed stepless adjustment, aluminum material of shell, improving heating dissipation and waterproof performance, long and durable service life.

### Inverter heat pump Vs. Non-Inverter heat pump:



Anti-Legionella function: With Forced electric heating function, Kill Legionella anytime, healthy water for family members.



Error Code Display: Easily find where the problem when any failure happen.



Holiday Mode: Built-in holiday timer setting, allows users to program holiday time, the heat pump will stop running during holiday to save unnecessary energy consumption. Heat pump will resume normal running after holiday finished.



Quiet Sleep Mode: Heat pump can adjust outlet water temperature to save energy as well as reducing operation noise by changing compressor frequency and reducing fan motor speed to provide optimum sleeping comfort.

Heating Curve Function: The system with pre-set heating curve logic, can adjust output water temperature automatically based on ambient temperature to ensure optimum comfort in the living space.



DC INVERTER MONOBLOCK TYPE HEAT PUMP						
Model		RF8I/bd	RF12I/bd	RF16I/bd	RF20I/bd	RF20II/bd
Power Supply V/Ph/Hz		220~240/1/50				380/3/50
Rated Condition 7 C	Heating Capacity (KW)	8.5	15	18	20	20
	Power Input (KW)	2.66	4.36	5.21	5.88	5.88
	COP	3.2	3.44	3.45	3.4	3.4
Nominal Condition -12 C	Heating Capacity (KW)	5.50	10.50	12.13	14.5	14.5
	Power Input (KW)	2.33	4.40	5.05	6.01	6.02
	COP	2.36	2.40	2.40	2.41	2.41
Low Temp. Condition -20 C	Heating Capacity (KW)	4.70	9.21	10.52	12.5	12.5
	Power Input (KW)	2.47	4.56	5.18	6.25	6.25
	COP	1.90	2.02	2.03	2	2
Low Temp. Condition -25 C /Water output temp. 41 C	Heating Capacity (KW)	3.55	6.82	7.80	10.35	10.35
	Power Input (KW)	2.20	4.21	4.81	6.02	6.02
	COP	1.61	1.62	1.62	1.72	1.72
Low Temp. Condition -25 C /Water output temp. 50 C	Heating Capacity (KW)	3.19	6.14	7.02	9.59	9.58
	Power Input (KW)	2.28	4.23	4.91	6.81	6.81
	COP	1.40	1.42	1.43	1.41	1.41
Rated Cooling Condition	Cooling capacity (KW)	7.00	11.50	12.00	15.00	15.00
	Power input (KW)	2.64	4.34	4.61	5.75	5.74
	EER	2.65	2.65	2.60	2.61	2.61
Max. power input (KW)		4.4	5.2	6.6	7.1	8.5
Max. current Without E-heater (A)		20	23.7	30	32.5	15.5
Max. Water Output Temp. Under Ambient Temp. -25 C		58	58	58	58	58
Water resistance (kPa)		35	38	43	54	50
Noise Level dB(A)		59.5	61.5	61.5	62	63
Refrigerant		R410A	R410A	R410A	R410A	R410A
Water Flow		0.95 m³/h	1.98 m³/h	2.06 m³/h	2.5m³/h	2.5m³/h
Pipe Size		DN20	DN25	DN25	DN25	DN25
Dimensions(mm)		920*365*710	940*393*1373	940*393*1373	940*393*1373	940*393*1373
Net Weight		60Kg	130kg	130kg	140kg	145kg

Testing Condition:

- Rated condition: Inlet/outlet temperature 40°C/45°C. Dry bulb/wet bulb temperature 7°C/6°C
- Nominal condition: Outlet temperature 41°C. Dry bulb/wet bulb temperature -12°C/-14°C
- Low temperature condition: Outlet temperature 41°C. Dry bulb/wet bulb temperature -20°C/-21°C
- Rated cooling: Inlet/outlet temperature 12°C/7°C. Dry bulb/wet bulb temperature 35°C/24°C

DC INVERTER SPLIT TYPE HEAT PUMP						
Model		RF8I/bdm	RF12I/bdm	RF13I/bdm	RF20I/bdm	HF20I/bdm
Rated Heating	Heating capacity	kW	9.00	15.00	18.00	20.00
	Power input	kW	2.59	4.31	5.14	5.81
	COP	W/W	3.47	3.48	3.50	3.44
Nominal Heating	Heating capacity	kW	5.53	10.50	12.10	14.50
	Power input	kW	2.34	4.43	5.13	6.01
	COP	W/W	2.36	2.37	2.36	2.41
Low Temp. Heating	IPLV(H)	W/W	2.80	2.85	2.85	2.86
	Heating capacity	kW	4.50	8.90	10.10	12.50
	Power input	kW	2.34	4.56	5.10	5.95
Rated Cooling	COP	W/W	1.92	1.95	1.98	2.10
	Cooling capacity	kW	8.00	11.50	12.00	/
	Power input	kW	3.20	4.60	4.80	/
EER	W/W	2.50	2.50	2.50	/	
Power Supply		V/Ph/Hz	220/1/50			
Max. Power Input (With E-Heater)		kW	4.4(+3)	5.2(+3)	6.6(+3)	7.1(+3)
Max. Current Input (With E-Heater)		A	20(+13.6)	23.7(+13.6)	30(+13.6)	32.5(+13.6A)
Max. Water Temp. (Without E-Heater)		C	58			
Working Range (Ambient temp.)		C	-30 to 43			-35 to 43
Refrigeration Circulation	Refrigerant	Type	R410A			
		Qty./Kg	1.7	3.15	3.15	3.15
	Compressor	Qty.	1			
		Type	DC INVERTER DOUBLE ROTOR			
	Evaporator	Type	High efficiency hydrophilic aluminum foil fin heat exchanger			
	EEV	Type	Electronic Expansion Valve			
		Qty.	1	2		
	Fan Motor	Power Input(W)	140	2*150		
		Fan Blades Size	mm	Φ560*139	Φ525*135	
	Liquid valve size	inch(mm)	3/8"(9.52)			
Gas valve size	inch(mm)	5/8"(15.88)				
Water System	Condenser	Type	Tube in tube heat exchanger			
	Water Pump	Type	Shielded pump			
	Water Flow	m³/h	1.38	1.98	2.06	2.5
	Water Drop	kpa	35	35	38	48
	Air Vent Valve	Type	Standard			
	Pressure Release Valve	Type	Standard			
		Pressure value	3kgs			
	E-Heater	kW	3			
	Buffer Tank	L	5			
	Water Inlet/Outlet Pipe Size	inch(mm)	5/4" male			
Net Dimensions	Indoor Unit (L*W*H)	mm	760x510x330			
	Outdoor Unit (L*W*H)	mm	947x403x813	940x393x1373		
Package Size	Indoor Unit (L*W*H)	mm	795x562x373			
	Outdoor Unit (L*W*H)	mm	1050x468x847	1060x490x1395		
N.W.	Indoor Unit	kg	43			
	Outdoor Unit	kg	63	110	115	
G.W.	Indoor Unit	kg	48			
	Outdoor Unit	kg	70	125	130	
Noise Level	Indoor Unit	dB(A)	≤35			
	Outdoor Unit	dB(A)	≤59.5	≤61.5	≤62	

Testing Condition:

- Rated heating: Inlet/outlet temperature 40°C/45°C. Dry bulb/wet bulb temperature 7°C/6°C
- Nominal heating: Outlet temperature 41°C. Dry bulb/wet bulb temperature -12°C/-14°C
- Low temperature heating: Outlet temperature 41°C. Dry bulb/wet bulb temperature -20°C/-21°C
- Rated cooling: Inlet/outlet temperature 12°C/7°C. Dry bulb/wet bulb temperature 35°C/24°C
- Internal and external machine connection copper pipe are 5m. If need for exceeds 7.5m, you need to contact the manufacturer to change the amount of refrigerant.