

Karnot Energy Solutions Inc



iSPA INVERTER **R290 DC INVERTER** POOL HEAT PUMPS

R290
DC INVERTER



RoHS

CE

**UK
CA**

AIT

**SG
Ready**
Smart Heat Pumps

ErP ✓

ENGINEERED FOR PHILIPPINE POOLS



Karnot Energy Solutions Inc. — natural-refrigerant heat pumps, designed, installed and serviced from Pangasinan.

Karnot Energy Solutions Inc. is a Philippine clean-energy engineering company, SEC-registered in 2025 and based in Mapandan, Pangasinan. We design and install heat pump systems that replace electric heaters, LPG burners and ageing chillers. Our systems use natural refrigerants — R290 propane and CO₂ — not the synthetic gases now being phased out worldwide.

The iSPA Inverter is our pool range: R290, full DC inverter, 10 to 40 kW. It heats a pool to 40°C and cools it to 5°C, delivering around seven kilowatts of heat for every kilowatt of electricity at full load — and far more when cruising. Every installation is sized from the pool's own numbers and monitored after commissioning, so the saving is measured, not promised.

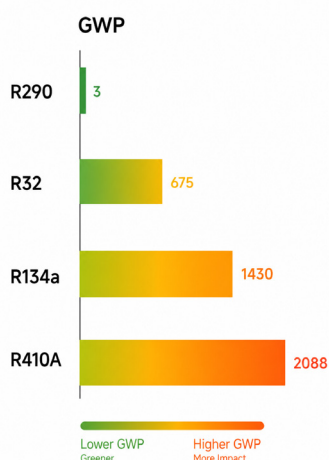
Our aim is simple: cut the energy cost of Philippine business — safely, measurably, and with equipment built to last.



Karnot's planned Philippine facility, Mapandan, Pangasinan



R290 Leak Sensor (Optional)



Ultra-low GWP, fully EU F-Gas compliant and future -ready

R290 is a natural refrigerant with a GWP of 3 — already mainstream in Europe and outside the HFC phase-down that is removing R410A and R32 from the market. Karnot engineers every installation to A3 refrigerant safety standards, with an optional factory-fitted leak sensor for complete peace of mind.

Ultra-Quiet Tech

- **Quieter than a bedroom at night**
Ideal for night operation and residential areas
- **Neighbor-Friendly**
No complaints, no restrictions
- **24/7 Comfort**
Heat anytime, day or night



PV First

When PV power is abundant or batteries are fully charged, the heat pump follows inverter signals to actively utilize excess power. It dynamically shifts the target water temperature, storing heat or cold in advance. When PV power drops and the inverter sends a stop signal, the heat pump seamlessly return to the originally set temperature.



SG Ready

Off-peak hours: Automatic pre-storage when grid signals are available.

Manual mode: Pre-storage scheduled at a set time when grid signals are not available.



Powerful Heating & Cooling

HEATING

max. outlet water temp

40 °C

COOLING

min. outlet water temp

5 °C





APP



Web Backend

IoT

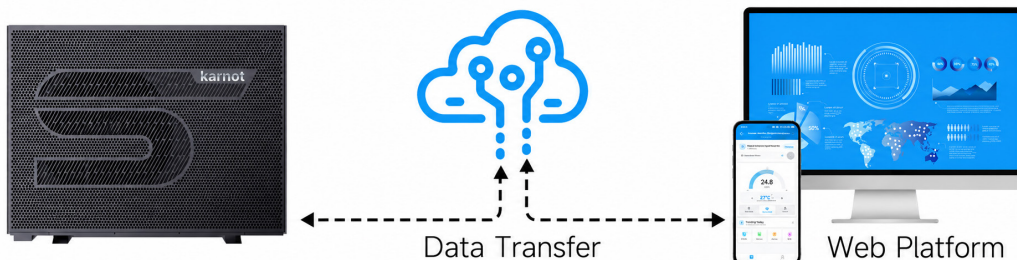
Wi-Fi & Smart IoT Platform

With the built-in Wi-Fi module, users can easily control the system and monitor its energy use anytime, anywhere.

- Real-time Monitoring & Data Collection
- Remote Control & Adjustment
- Intelligent Optimization & Scheduling
- Proactive Troubleshooting & Maintenance
- Clear, Intuitive Energy Curves



Karnot Engineer Backend



MAIN COMPONENTS



Panasonic Compressor

Panasonic Compressor offers low noise, high efficiency, and long service life



Physical Soundproofing

Add soundproof cotton (PVC + 800g cotton + aluminum foil) to the compressor and enclose it in a small 1.2mm black metal housing for ultra-low noise



Dual-Coil Titanium Heat Exchanger

Compared with single-coil heat exchanger, Karnot's innovative dual-coil titanium heat exchanger features an expanded heat transfer area for superior heat exchange efficiency



FUJIKOKI EEV

Fujikoki electronic expansion valve (EEV) offers accurate flow control, fast response, and excellent durability



SANHUA 4-Way Valve

Sanhua 4-way valve delivers reliable mode switching, low pressure drop, tight sealing and high durability for heat pump systems



DC Brushless Fan Motor

Stepless speed control matched to the compressor for quiet running and precise airflow.

Plug & Play (Optional) *10, 13 kW — choose EU or AU plug, just plug & play

SPECIFICATIONS

Model		iSPA 10 kW CGY025V4-A	iSPA 13 kW CGY030V4-A	iSPA 17 kW CGY035V4-A	iSPA 20 kW CGY040V4-A	iSPA 23 kW CGY050V4-A	iSPA 27 kW CGY060V4-A
Advised pool volume	m³	25–40	30–60	40–80	45–90	50–100	60–120
Heating capacity (1)	kW	10.0	13.0	17.0	20.0	23.0	27.0
COP max. / min. (1)	W/W	24.3 / 7.1	24.2 / 7.2	24.6 / 7.1	24.6 / 6.6	25.7 / 7.3	21.8 / 6.7
COP at 50% capacity (1)	W/W	16.3	16.2	16.5	16.5	17.2	14.6
Heating capacity (2)	kW	7.2	9.5	12.2	14.4	17.3	20.3
COP max. / min. (2)	W/W	12.6 / 5.1	12.6 / 5.1	12.8 / 4.9	12.8 / 4.9	13.4 / 5.1	11.3 / 4.9
Cooling capacity (3)	kW	6.0	7.8	9.5	11.4	13.8	15.1
EER max. / min. (3)	W/W	6.4 / 4.7	5.5 / 3.6	5.7 / 3.7	5.4 / 3.5	6.3 / 4.4	6.1 / 4.2
Rated power input	kW	1.41	1.80	2.39	3.03	3.17	4.03
Max. power input	kW	2.06	2.63	3.49	4.42	4.63	5.88
Rated / max. current	A	6.1 / 8.9	7.8 / 11.4	10.4 / 15.2	13.2 / 19.2	13.8 / 20.1	17.5 / 25.6
Advised water flow	m³/h	4.3	5.6	7.3	8.6	9.9	11.6
Water pressure drop	kPa	10	12	14	16	18	20
Sound pressure (1 m)	dB(A)	37–46.6	40–47.9	41–48.7	42.2–51.5	43.1–52.3	44.5–53.5
Sound pressure (10 m)	dB(A)	19.8–26.7	19.9–27.9	22–28.7	23.2–31.5	24.1–32.3	25.5–33.5
Operating air temperature	°C	–20 ~ +43					
Max. water temperature — heating / cooling	°C	40 / 5					
Compressor	—	Panasonic rotary, DC inverter					
Heat exchanger	—	Dual-coil titanium tube in PVC shell					
Water connections	mm	ø50					
Dimensions (L×D×H)	mm	1085×420×820	1085×420×820	1085×420×820	1085×420×970	1085×420×970	1085×420×970
Net weight	kg	64	88	92	105	124	135

Model		iSPA 23 kW CGY-050V4-A	iSPA 27 kW CGY-060V4-A	iSPA 32 kW CGY-070V4-A	iSPA 40 kW CGY-080V4-A
Advised pool volume	m³	50–100	60–120	70–130	80–140
Heating capacity (1)	kW	23.0	27.0	32.0	40.0
COP max. / min. (1)	W/W	21.8 / 7.4	21.8 / 6.7	24.6 / 7.0	23.7 / 6.6
COP at 50% capacity (1)	W/W	14.6	14.6	16.5	15.9
Heating capacity (2)	kW	17.3	20.3	24.0	30.0
COP max. / min. (2)	W/W	11.3 / 5.1	11.3 / 4.9	12.8 / 5.1	12.3 / 4.9
Cooling capacity (3)	kW	13.8	15.1	17.9	22.8
EER max. / min. (3)	W/W	6.3 / 4.4	6.1 / 4.2	6.3 / 4.6	6.1 / 4.3
Rated power input	kW	3.11	4.03	4.56	6.05
Max. power input	kW	4.54	5.88	7.08	9.38
Rated / max. current	A	5.9 / 8.6	7.7 / 11.2	8.7 / 12.7	11.5 / 16.8
Advised water flow	m³/h	9.9	11.6	13.8	17.2
Water pressure drop	kPa	18	20	22	24
Sound pressure (1 m)	dB(A)	43.1–52.3	44.5–53.5	45.1–54.3	46.5–55.5
Sound pressure (10 m)	dB(A)	24.1–32.3	25.5–33.5	26.1–34.3	27.5–35.5
Operating air temperature	°C	–20 ~ +43			
Max. water temperature — heating / cooling	°C	40 / 5			
Compressor	—	Panasonic rotary, DC inverter			
Heat exchanger	—	Dual-coil titanium tube in PVC shell			
Water connections	mm	ø50			
Dimensions (L×D×H)	mm	1085×420×970	1085×420×970	1260×475×1070	1260×475×1070
Net weight	kg	124	130	150	157



karnot

LOW CARBON HEAT PUMPS
AIR | WATER | STEAM | CO₂

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RoHS

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