

**Karnot** Energy Solutions Inc



# Heat for a quarter of the cost.

Heating, cooling, solar and hot water for Philippine business.

📍 KARNOTS PLANNED PHILIPPINE FACILITY

**75%**

less energy, lower bills, higher profits.



Air to Water | Heating | Cooling | Hot Water

# Who We Are?

Karnot Energy Solutions Inc. is a Philippine clean-energy engineering company, SEC-registered in 2025 and based in Mapandan, Pangasinan.

We design and install industrial heat pump systems that replace diesel boilers, LPG burners and ageing chillers. Our systems run on natural refrigerants — R290 propane and CO<sub>2</sub> — not the synthetic gases now being phased out worldwide. They deliver hot water to 75°C with R290 and 120°C with CO<sub>2</sub>, alongside cooling, refrigeration and solar power. Our aim is simple: cut the energy cost of Philippine business — safely, measurably, and with equipment built to last.



## Four operating principles. *Every decision tested against all four.*

How Karnot is run — not a values statement, a set of tests.

### 01

#### DECARBONISATION

**Moving away from fossil heat and synthetic refrigerants.**

Natural refrigerants — R290 propane and CO<sub>2</sub> — are the only thermal working fluids aligned with the long-term direction of EU and ECHA regulation. Karnot is not a transitional technology; it is the destination platform.

### 02

#### DECENTRALISATION

**Engineering and ownership distributed across the partnership.**

We reject the centralised “black-box” supplier model. Karnot equipment is sized, specified and commissioned by engineers — and the regional partners and contractors who deploy it are embedded in the long-term operating partnership through structured technical training. Knowledge transfer is structural, not optional.

### 03

#### DIGITALISATION

**Every installation instrumented. Performance verified, not asserted.**

The iSAVE platform turns raw plant data into verifiable energy performance — actual COP, actual energy saved, actual carbon avoided. Procurement teams get auditable numbers; sustainability teams get reportable evidence; engineering teams get fault visibility before failure.

### 04

#### DEMOCRATISATION

**The high-efficiency standard, made viable for Philippine industry.**

We make sure the economic benefit of the energy transition reaches Philippine industry, not only multinationals with European procurement teams. Karnot pairs high-grade thermal hardware with Philippine-side application engineering, permits handling and bank-financing partnerships.

# 75% of the heat is free. You pay to move it, not to make it.

A heat pump doesn't make heat. It moves it. Around 75% of the heat comes free — from the air, from water, from the waste heat your plant already throws away.

## The old way, and the better way

Most industrial heat is still made the old way: burn diesel, LPG or bunker fuel, and pay for every degree. A heat pump pays only for the electricity that moves the heat — roughly one peso in for every four pesos of heat out. Run it on grid power and the bill drops. Run it on your own solar and it drops again.

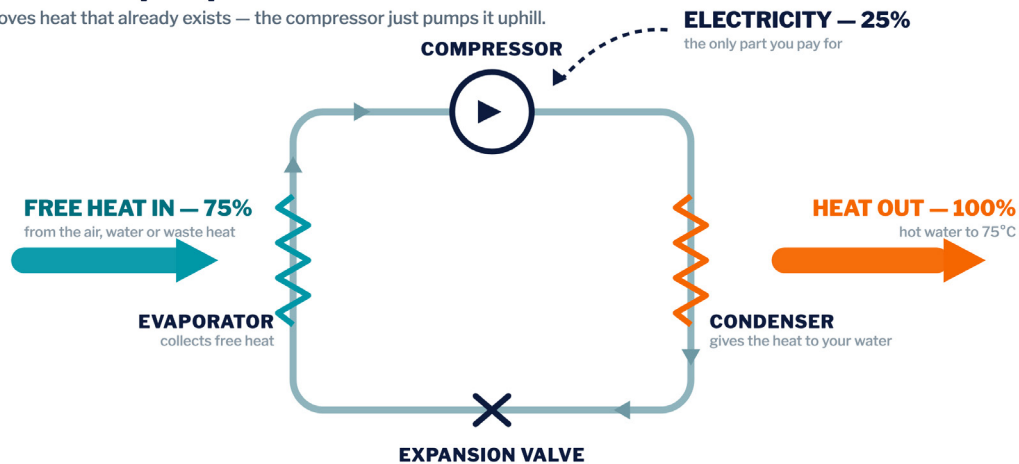
## Why it matters here

The Philippines pays some of the highest electricity prices in Southeast Asia, and the diesel and LPG that industry burns are imported — every world price shock lands on the factory floor. For hotels, food plants, laundries and cold stores, heating and cooling are the biggest lines on the bill. Most of that money is still going up a flue.

One technology covers  $-160^{\circ}\text{C}$  to  $+200^{\circ}\text{C}$ : freezing and cold storage, chilled water, hot water and clean steam.

## How a heat pump works

It moves heat that already exists — the compressor just pumps it uphill.



### 25%

#### Electricity in

The grid only does a quarter of the work — powering the compressor that moves the heat.

### 75%

#### Free heat, reclaimed

Three-quarters of the heat is already there — in the air, in water, in heat your plant throws away.

### COP 4

#### \$1 in, about \$4 of heat out

A burner can never beat 100% efficiency. Moving heat instead of making it delivers around 400%.



**We cannot increase our selling price, so we really look for ways to reduce our operating costs." — Customer, Metro Manila.**

## Two machines become one

A heat pump stops making heat and starts moving it — one unit of electricity in, about four units of heat out. And a Karnot system heats and cools at the same time: a hotel making hot water gets chilled water from the same compressor, on the same electricity. Where a site runs a boiler and a chiller today, one machine replaces both bills.

## Money you can take to the bank

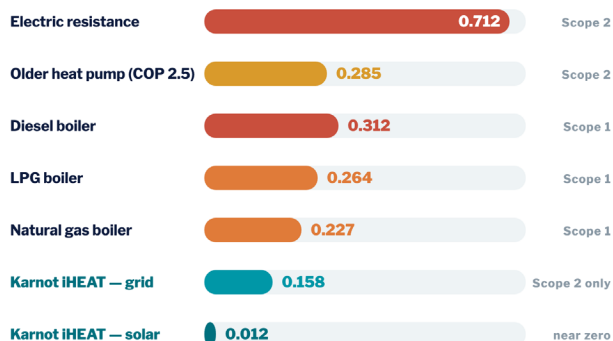
Every figure is measured, not promised. Savings are verified against your own meter — the same meter, before and after. That is a number a bank will lend against and an auditor will accept. Where Karnot finances the project, the savings are guaranteed.

### COST & CARBON PER kWh OF HEAT DELIVERED · PHILIPPINE COMMERCIAL BENCHMARK

#### Every way to make heat, priced and weighed.

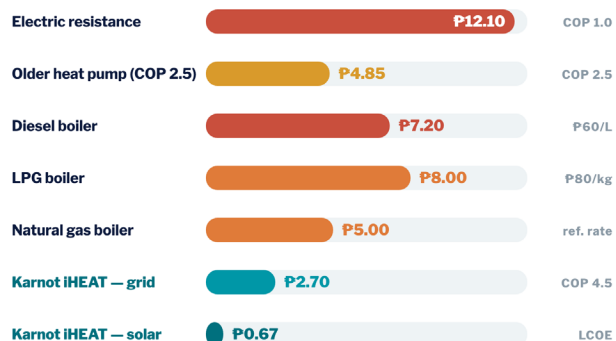
##### CO<sub>2</sub> per kWh of heat delivered

kg CO<sub>2</sub>/kWh, including efficiency losses · lower is better



##### Energy cost per kWh of heat delivered

₱/kWh heat · industrial tariff · lower is better



PH GRID INTENSITY  
**0.712 kg CO<sub>2</sub>/kWh**

INDUSTRIAL ELECTRICITY  
**P12.10 / kWh**

KARNOT iHEAT COP  
**4.5 (avg LWT 55 °C)**

SOLAR LCOE (PH C&I)  
**P3.00 / kWh**

Fuel efficiencies: diesel/LPG boilers 78–87% seasonal. Grid intensity: PH national average. Your figures are established by the two-week survey and verified on your own meter.

# The gas inside every machine decides its future.

## The problem with HFCs

Every heating and cooling machine has a working gas sealed inside it. Most equipment sold today still runs on synthetic HFCs — gases with hundreds to thousands of times the warming power of CO<sub>2</sub>.

The world is phasing them down, year by year: prices rise, servicing gets harder & the machine becomes a liability long before it wears out.

**Buy an HFC machine today, and you buy that problem with it.**

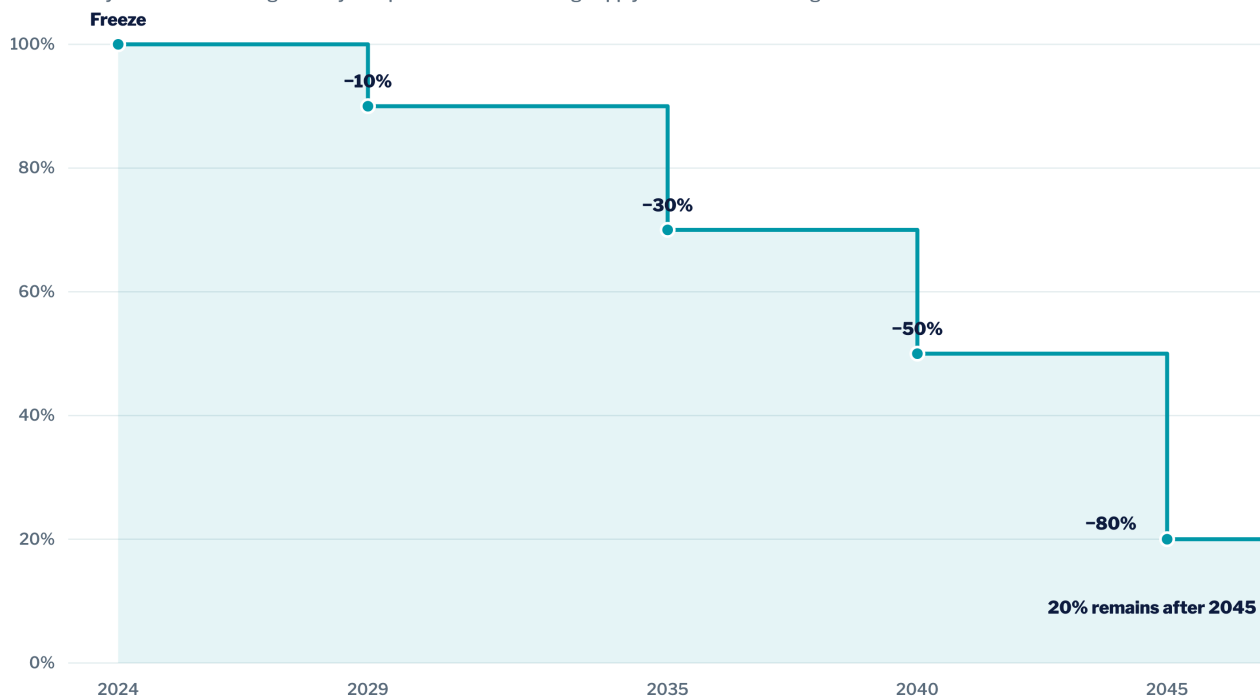
## Nature already solved it”

Karnot uses only natural refrigerants: propane (R290), CO<sub>2</sub> (R744), water and air. None of this is new — propane has cooled things since the early 1900s. Their warming potentials are 3, 1 and 0. Nothing the atmosphere hasn't always held; nothing any regulation will ever phase out. And they simply work better here: R290 makes hot water to 75 °C, CO<sub>2</sub> reaches 120 °C and deep cold — in tropical heat, all year.

## HFCs allowed in the Philippines, 2024–2045

Supply cap as % of baseline — Kigali Amendment, in force here since 2 February 2023

Every HFC machine bought today competes for this shrinking supply for its whole working life.



Source: Kigali Amendment (Montreal Protocol), Article 5 Group 1 schedule — in force for the Philippines 2 Feb 2023. DENR-EMB Philippine Ozone Desk.

# The Karnot Range

Every system runs on electricity or sunshine, not imported fuel.

## iHEAT — R290 heat pumps

- 9.5–100 kW.
- Hot water to 75 °C.
- No boiler, no LPG.



## Clima Series — R32 heat pumps

- 6–45 kW.
- Heating and chilled water from one unit.



## AquaHERO — R290 water heaters

- 200–288 L.
- Hot showers at a quarter of the cost.



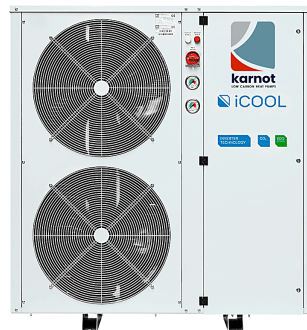
## iSTOR

- Thermal storage.
- Stores heat when power is cheap.



## iCOOL

- CO<sub>2</sub> refrigeration.
- Cold rooms on a future-proof gas.



# The Karnot Range

Every system runs on electricity or sunshine, not imported fuel.



## iCRYO

- Ultra-low temperature.
- Blast freezing and deep cold storage.



## iSPA Inverter

### — R290 pool heat pumps

- 10–40 kW.
- Warm pools without the bill shock.



## iZONE

- Hydronic fan coils.
- Quiet comfort from your heat pump loop.



## iMESH

- Adiabatic retrofit.
- Cuts chiller power on the hottest days.



## iVOLT

- Solar + battery kits.
- Your roof pays the power bill.



# Six things you get with Karnot that a boiler, an old chiller — or an imported brand with no one to call — will never give you.



## **A smaller bill, every month**

Around 75% less energy for heat, the biggest controllable cost on site.



## **One machine, two jobs**

Heats and cools at the same time; one machine instead of a boiler and a chiller.



## **Sized from measurement**

Two weeks of logging before we quote; right-sized machines pay back.



## **Proof on your own meter**

Monitoring stays on after install; financed projects: savings guaranteed.



## **Audit-ready by law**

RA 11285 requires energy audits and yearly cuts; our metering does the paperwork.



## **Engineers here, not overseas**

Designed, installed and serviced from Pangasinan. We answer the phone.

# First step — the energy survey.

A two-week power survey on your own plant — then a proposal sized to what your factory actually does, not what a nameplate says it should.



Your bill is hiding costs you can't see. A power factor below 0.85 adds a surcharge to every bill. A single uncontrolled motor start can set the whole month's demand charge. The survey makes them visible — measured, time-stamped and priced. Day 1, our engineer walks your site and maps your panels. Day 2, clamp-on loggers go on the incoming supply — no shutdown, live dashboard the same day. Days 3–16, every feeder, every phase, every second. Day 17, a plain-English report with a board-ready savings summary. Yours to act on however you choose. Many customers recover real money on the findings alone, before a single machine is ordered.

Karnot iHEAT 18.5kW R290 Heat Pump Unit, replacing boilers, and electric heaters to save 75% of the energy currently being used by them. Sized from your measured load



## FREE HEAT

Share of its heat a heat pump collects from air, water and waste heat

**75%**

## UP THE STACK

Fuel a boiler loses through the flue before water gets warm

**25%**

## THE PENALTY LINE

Below this power factor, utilities add a surcharge to every bill

**0.85**

## HEATING & COOLING

Share of the energy bill in hotels, food plants and cold stores

**50%+**

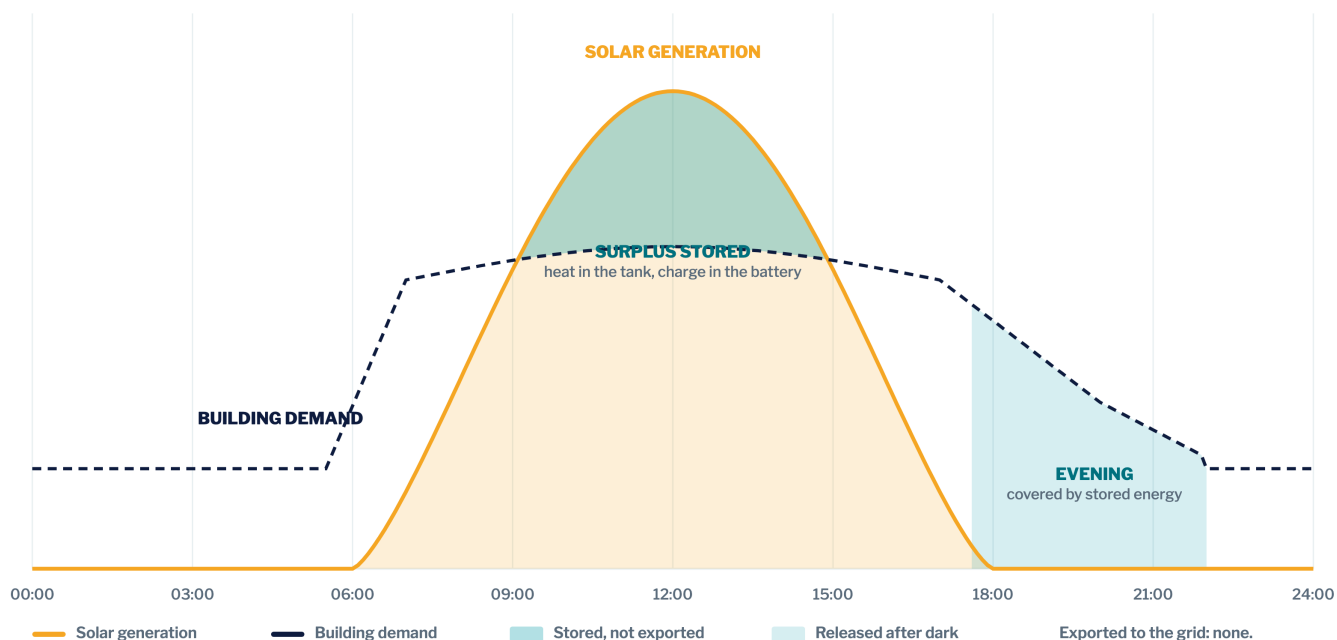
**Start with the survey** | Send us one month's power bill.  
[www.karnot.com](http://www.karnot.com)

# Your roof pays the power bill.

iVOLT is Karnot's solar line: N-type panels, hybrid inverters and LiFePO<sub>4</sub> batteries, sized from your own electricity bill and installed to the Philippine Electrical Code. Every iVOLT system is zero-export — nothing is pushed to the grid, so there is no net-metering paperwork and no waiting. Solar serves your loads first, the battery stores the excess for the evening and for brownouts, and the grid tops up only what is left.

## One day on your roof

Solar sized to what the building uses. Surplus is stored as heat and charge — never exported at a loss.



Add solar to any Karnot heat pump and the daytime share of the remaining electricity comes off your own roof.

# Where Karnot works.

Savings calculators for every application: [karnot.com](https://karnot.com)



## Hotels & Resorts

Hot water for rooms, kitchens, pool and laundry — about ₱25K per room per year back in your pocket.

iHEAT

iSPA

AquaHERO



## Chicken Dressing Plants

The scalding pays about ₱13 per kWh of diesel heat while the chillers throw heat away. A Karnot heat pump delivers it for ₱3.

iHEAT

iSTOR



## Bakeries

You heat the proofer and cool the bread at the same time — and pay twice. One Karnot loop does both: about 70% off the thermal bill.

iHEAT

iCOOL



## Cold Storage & Supermarkets

Run every cold room, freezer and display case on CO<sub>2</sub> (GWP 1) — no PFAS, no phase-down clock.

iHEAT

iMESH



## Commercial Laundries

Wash water at 60–80°C without the LPG boiler — energy cost down 60–75%.

iHEAT



## Data Centres

Edge AI cooling that turns waste heat into revenue — over 95% less water.

iCRYO

iSAVE



## Food Processing

Washing, blanching and cleaning heat plus cold storage — one system, one electricity bill.

iHEAT

iCOOL



## Advanced Manufacturing

Cool the laser, bank the heat, shave the demand peak: ₱50K/month back.

iSTOR

iSAVE

Savings calculators for every application: [karnot.com](https://karnot.com)



# karnot

LOW CARBON HEAT PUMPS  
AIR | WATER | STEAM | CO<sub>2</sub>

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**RoHS**



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