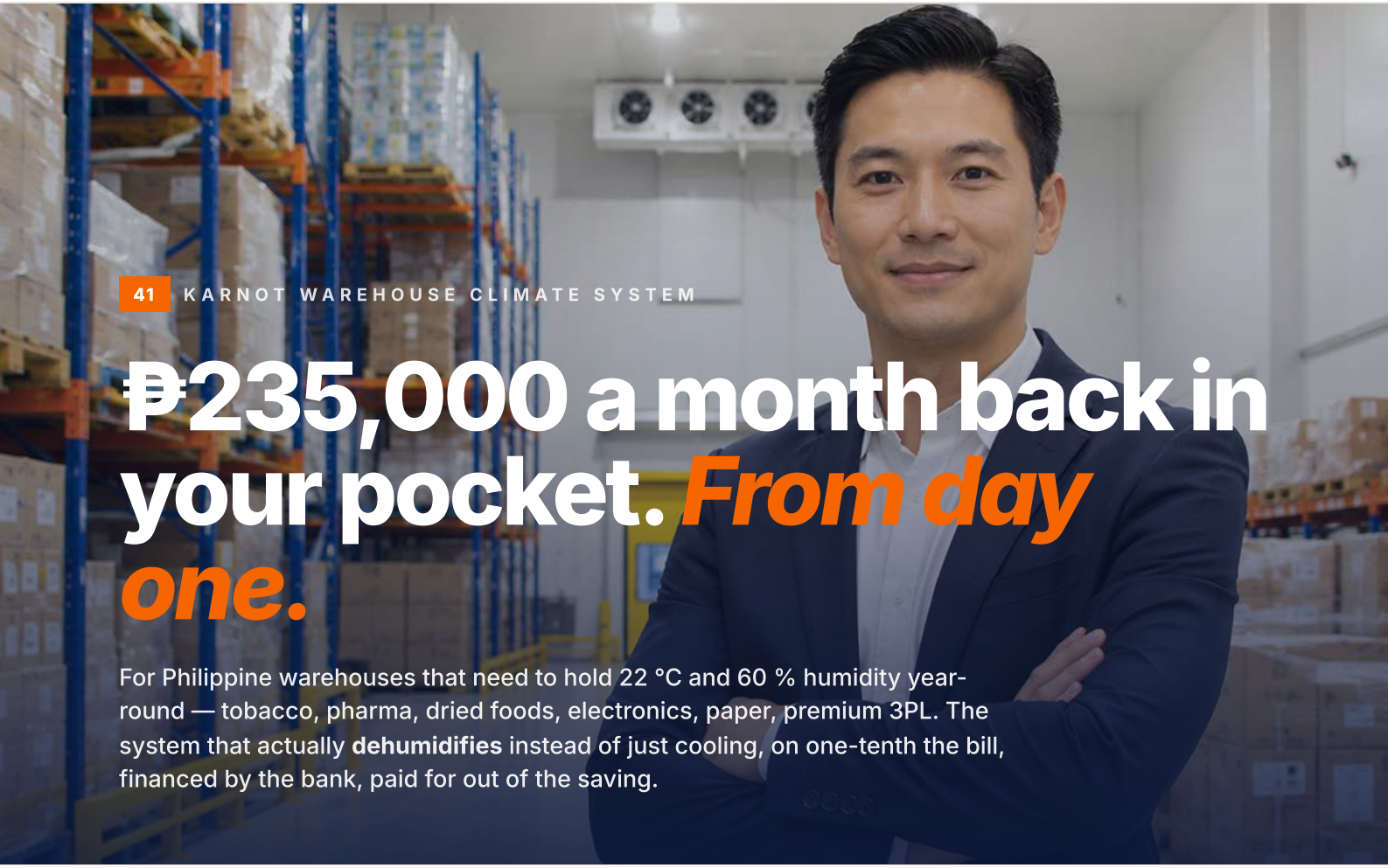

41 KARNOT WAREHOUSE CLIMATE SYSTEM

₱235,000 a month back in your pocket. *From day one.*

For Philippine warehouses that need to hold 22 °C and 60 % humidity year-round — tobacco, pharma, dried foods, electronics, paper, premium 3PL. The system that actually **dehumidifies** instead of just cooling, on one-tenth the bill, financed by the bank, paid for out of the saving.

PER 1,000 M² WAREHOUSE · FIVE 200 M² ZONES · VS CURRENT SPLITS + DEHUMIDIFIERS

₱235K

In your pocket every month

Net of the green-loan payment · from day one · new-build basis

89%

Off your electricity bill

₱3.1M/yr split-AC fleet → ₱0.33M/yr Karnot system

2.9 yr

Cash payback

Net of the splits you would have replaced anyway · 3.7 yr on retrofit basis

You pay nothing up front. *The bank does.*

DBP, LandBank and BPI all run **green-loan programmes** built for exactly this kind of project — **~6.5–8% p.a., 5–10-year terms, 70–80% LTV**. The monthly electricity saving is larger than the monthly loan payment. Net result: **cash flow goes UP from day one**. After the loan is paid in year 5, you keep 100% of the saving for the remaining ten years of asset life. Karnot files the loan application as part of the project — you don't fight the bank alone.

THE PROBLEM YOUR SPLITS CAN'T FIX

22 °C is easy. *60% humidity is the killer.*

A split aircon takes heat OUT of your warehouse and dumps it OUTSIDE. That's cooling. But your warehouse spec isn't cooling — it's **22 °C and 60% humidity continuously**. To take water out of the air you have to **cool the air below its dew point** (about 12 °C), drop the moisture out as condensate, then **warm the dry air back up** to 22 °C before it enters the room. Splits only do half of that. They cool. They don't reheat. So they cycle off before the moisture comes out, and your warehouse sits at 22 °C and 80% humidity. That's where cardboard sags, labels peel and mould blooms on the packaging.

Splits don't actually dehumidify

Latent load (moisture) is bigger than sensible load (temperature) in a PH warehouse — **Sensible Heat Ratio 0.42**. Split AC has SHR 0.7–0.85; they remove mostly heat, not water. The room hits 22 °C and the compressor switches off long before the dew point is reached. **Result: 22 °C achieved, 60% humidity not.**

Splits cool a corner, not the building

Each split unit cools a 50–100 m² slice while the rest of the warehouse stays hot. **Stacked product traps heat near the ceiling.** Aisle temperatures vary 6–8 °C between bays. A central air handler with proper duct distribution holds the whole space uniform; six wall-mounted splits cannot.

THE SYSTEM THAT DOES BOTH · COOLING AND REHEAT

ONE HEAT PUMP · TWO THERMAL BATTERIES · COOL-AND-REHEAT AHU

COLD THERMAL BATTERY

3 × iSTOR M500-Cold @ 22 °C

Coconut-oil PCM, 22.5 kWh thermal. Charged by the iHEAT **evaporator side**. Stores cold for the AHU cooling coil.

1 × IHEAT R290

Reversible heat pump in heat-recovery mode — makes cold AND hot at the same time, from one kWh.

HOT THERMAL BATTERY

1 × iSTOR M500-Hot @ 44 °C

Lauric-acid PCM, 12 kWh thermal. Charged by the iHEAT **condenser side** — the heat that would normally be dumped to ambient is captured here as **free reheat**.

WARM HUMID AIR IN

From the warehouse · 28 °C / 80% RH typical wet-season return

AHU · COOL-THEN-REHEAT

Cool to 12 °C · drop moisture out · reheat to 15 °C supply

COOL DRY AIR BACK

22 °C / 60% RH continuously · spec held year-round

THE FOUR BOXES · ONE ZONE (200 M²)

Karnot iHEAT R290

The heart · 18.5 kW reversible

One R290 heat pump per zone. Makes the cold AND the hot at the same time via heat recovery. Outdoor, no separate enclosure, 1.4 kg charge.

iSTOR M500 × 4

The thermal batteries · 3 cold + 1 hot

Store cold and hot through the day on solar, discharge through the night with the compressor off. **Decouples WHEN it runs from WHEN you need it.**

Cool-and-reheat AHU

The dehumidifier · 2,610 m³/h

Two coils in one box. Cooling coil knocks the dew point out; reheat coil brings the dry air back to room temp. The bit splits don't have.

iVOLT Solar · load-matched

15 kWp per zone · zero-export

Sized to match the iHEAT's electrical demand — **no export to the grid**. All the PV gets stored in the thermal batteries and used at night.

WHAT YOU STOP PAYING

A 1,000 m² PH warehouse — *five 200 m² zones at 22 °C / 60% RH.*

ANNUAL FIGURE · FULL WAREHOUSE	TODAY · SPLIT-AC FLEET	KARNOT WAREHOUSE CLIMATE SYSTEM	YOU STOP PAYING
Electricity to hold 22 °C / 60% RH	₱3,145,000	₱325,000	**₱2,820,000**
Saving per month (over 12 months)	—	—	**₱235,000 / month**
Reduction	baseline	−89%	**10× less / kWh delivered**
Refrigerant footprint (GWP)	~25 kg R-32 / R-410A · GWP 675–2,088	**7 kg R-290 (sealed)** · GWP 3	**~700× less climate impact**
Annual electricity cost	**₱3.14 M**	**₱0.33 M**	**₱2.82 M/yr**

Source: Karnot Warehouse Climate System worked-up case (May 2026), based on the JTI 200 m² zone reference unit scaled × 5. Per zone: 5×3 HP + 1×2 HP splits replaced by 1 iHEAT R290 18.5 kW + 3 iSTOR M500-Cold + 1 iSTOR M500-Hot + AHU with cool-and-reheat + 15 kWp rooftop solar (load-matched, zero-export). Meralco GP commercial tariff April 2026 (~₱14/kWh including 3-phase premium). Real numbers come from a site audit; we don't quote from a brochure. Your warehouse might be 500 m² (2 zones, divide everything by 2.5) or 5,000 m² (25 zones, multiply by 5) — the architecture is modular per 200 m² zone.

THE CASH FLOW · PLAIN AND DULL

MONTH 1
₱73K
Saving on the bill **minus** the green-loan payment. Net cash in pocket. Every month. New-build basis.

YEAR 1
₱0.88M
In your pocket while the loan is still being repaid. The kit has paid for itself in cash terms before year three.

YEAR 5
₱4.4M
Loan paid off. From now on you keep **every peso** of the ₱2.82M annual saving.

YEAR 15
₱32.6M
Total cash retained over the 15-year asset life vs running the existing splits. The hidden bill you stopped paying.

HOW YOU PAY FOR IT · YOU DON'T

Three banks already lend for this. *Karnot files the paperwork.*

Philippine green-loan programmes *built for exactly this project*

DBP · SEFP
Sustainable Energy Finance Programme
Agri-industrial priority · 70–80% LTV · 5–10 year terms · **~6.5–8% p.a.**

LANDBANK · SEILP
Sustainable Energy Investment Loan
Path of least resistance if you already bank with LandBank · **~7% p.a.**

BPI · SDF
Sustainable Development Finance
Fastest decisions for established SMEs with BPI relationships · **~1–1.5% below standard SME rate**

These are **loans**, not grants. We don't pretend otherwise — if you call the bank expecting a grant the conversation ends fast. They are real green-discounted commercial loans, with payment schedules sized to fit on top of the monthly savings. **Karnot files the application as part of the project scope.** You sign at the bank window, not before.

WHY WE SIZE THE SOLAR TO *NOT* EXPORT

ZERO-EXPORT · SIZED TO LOAD-MATCH

Meralco buys back at ₱6. They sell to you at ₱14. *Exporting kills the maths.*

If you put 30 kWp on the roof of a 1,000 m² warehouse, you generate way more than the heat pump can use at midday. The surplus exports to the grid at the Bilateral Generation Contract rate (~₱6/kWh). At night you buy it back at retail (~₱14/kWh). You lose 60% on every kWh you sold. The **thermal batteries fix this**: at midday, the solar surplus runs the iHEAT and gets stored as cold and hot in the iSTOR tanks. At night, the AHU pulls from those tanks instead of buying from the grid. We size the PV at **~117% of system demand** (15 kWp per zone) so the kit consumes essentially all of it — **no Meralco net-metering paperwork, no export losses, no surprise bill from the wrong tariff classification**.

> **"We don't sell heat pumps. We don't sell solar. We don't sell batteries. We sell the integrated Philippine system that lets all three actually work together — behind your meter, sized to your real load, with thermal storage matched to what your warehouse actually consumes. Split AC physically cannot hold 60% RH in Manila ambient. That's not opinion — it's psychrometry. A cool-and-reheat AHU with two thermal batteries is the only correct answer for tobacco, pharma, dried foods, electronics and any premium 3PL. Every month you wait is ₱235,000 you didn't need to pay."**
>
> **Stuart Cox · Founder & CEO · Karnot Energy Solutions Inc.**