



41 APPLICATION BRIEF

Warehouse Climate Control

For owners of tropical warehouses storing tobacco, dried foods, grains, paper or any hygroscopic product

The humidity excursion you didn't see. *The product you can no longer ship.*

Standard split air conditioning **physically cannot hold a tropical warehouse at 22 °C / 60% RH**. The Sensible Heat Ratio is wrong: split AC is sized to remove heat, but a tropical warehouse load is dominated by moisture. Compressor short-cycles, RH spikes above 65%, mould forms in 3–6 days. The Karnot architecture — a fully inverter-controlled AHU with hot & cold coils, a reversible R290 heat pump, two iSTOR thermal batteries with patented PCM, and an iVOLT solar + Li-ION roof package — holds the warehouse at spec continuously, year-round, while taking **89% off the electricity bill**.

-89%

Electricity reduction

Karnot vs split AC + diesel baseline · 200 m² warehouse zone case study

BOI

Registration support

RA 11285 framework · case-by-case approval

~2.9 yr

Per-zone payback

New-build basis · net of avoided split-AC capex

WHAT WE INSTALL

A single platform replaces three machines.

iHEAT R290

9.5 → 105 kW reversible · COP 4.14–5.59 · ambient –25 to +45 °C

Charges either iSTOR tank on demand · drives the AHU loops

iSTOR PCM (× 2)

Hot tank 44 °C + Cold tank 22 °C · patented PCM · PH-sourced

Buffer the AHU through HP reversal · zero interruption

Karnot AHU

Fully inverter-controlled · hot coil + cold coil · ECM fan · ductwork distribution

Conditions the warehouse air directly · runs on humidistat

iVOLT solar + Li-ION

Roof PV + Karnot inverter + LiFePO4 battery · sized to thermal load

Powers the entire system · eliminates diesel generator OPEX

HOW IT WORKS

Audit. Install. Pay-per-kWh.

01

Site survey

One-day audit. We meter your existing AC loads and map them against ASHRAE Heat Balance Method on a block-load basis. Indicative report and AHU + iSTOR sizing inside 14 days. No procurement triggered.

02

Design & install

Full mechanical & electrical package, BOI registration paperwork, EN 378 charge-limit verification, IPMVP Option B M&V plan. **All-new install** — no retrofit dependency. Phased commissioning warehouse-by-warehouse.

03

Service & warranty

3-year warranty on the heat-pump core. Quarterly service contract, refrigerant-leak inspection, performance audit. **PH-based parts depot** — no 8-week air-freight wait for spares.

WHAT YOU SAVE

Modelled on real Philippine properties.

CONFIGURATION · 200 M ² ZONE	ANNUAL ELECTRICITY	AFTER KARNOT	ANNUAL SAVING
Existing 5 × 3 HP + 1 × 2 HP splits · 24/7	₱629K	—	—
+ Karnot iHEAT + iSTOR + AHU (grid-only)	—	₱309K	₱320K (–51%)
+ 15 kWp iVOLT solar (recommended)	—	₱65K	₱564K (–89%)
+ 16 kWh Li-ION battery (optional Phase 2)	—	₱17K	₱612K (–97%)

Indicative scenario — not an actual installation. Modelled by ASHRAE Heat Balance Method on a 200 m² tobacco-product warehouse zone at 22 °C / 60% RH. Tariff: ₱14/kWh including 3-phase service premium. Real figures from a free site audit.

“ Modelled scenario · 200 m² tobacco-product warehouse zone. Replacing 5 × 3 HP + 1 × 2 HP split AC running 24/7 with the Karnot iHEAT + iSTOR + AHU + 15 kWp iVOLT package delivers a roughly ₱564,000 annual saving (89% reduction) — anchored to first-principles ASHRAE Heat Balance calculation. ”

Indicative case · not an actual installation

Real figures available from a free site audit · book at karnot.com/applications/warehouse-climate-control