

07 FOOD COURTS & DISHWASHING · HEAT THE SINKS FROM THE COLD ROOMS

# ₱75,000 a month back in your pocket. *From day one.*

For Philippine mall food courts, canteens and restaurant chains. The dish line heats water at COP 1 with electric heaters — **the same machine that runs your walk-in chillers and freezers can make every drop of that hot water from the heat they already throw away.** One electricity bill, no flame on site, financed by the bank, paid for out of the saving. The heat your cold rooms dump IS the heat your sinks buy back all day.

MODELLED MID-SIZE PH MALL FOOD COURT · ~25 STALLS · CENTRAL DISHWASHING  
~5,000 L/DAY HOT WATER

**₱75K**

**In your pocket every month**

Saving minus the green-loan payment · from day one

**1.3 yr**

**Cash payback**

~₱1.5M install vs ~₱1.17M/yr saving · -68% energy bill

**1/4**

**The dishwater bill**

COP 1.0 electric heater → COP 4.0 heat pump · the cold rooms pay for the hot water · no flame on site

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

DBP, LandBank and BPI all run **green-loan programmes** built for exactly this CAPEX — **~6.5–8% p.a., 5–10 year terms, 70–80% LTV.** The monthly saving (~₱98K) is larger than the monthly loan payment (~₱23K). **Cash flow goes UP from day one.** Karnot files the loan application, the BOI paperwork and the building permits as part of project scope. Most commercial food-service installs qualify for **BOI Pioneer status and Income Tax Holiday under RA 11285.**

— WHY YOUR FOOD COURT PAYS FOR EVERY KILOWATT TWICE


# The dish line heats water at COP 1. The cold rooms throw their heat away. *Karnot connects them.*

A food court runs **two opposing thermal jobs at once, all day**: the dishwashing line needs a 60 °C wash and an 82 °C sanitising rinse from breakfast to last orders; meanwhile every tenant's walk-in chiller, freezer and ice machine dumps its condenser heat into the back-of-house. Today the sinks heat water with **electric instant and storage heaters running at COP 1.0 — one kilowatt-hour of Meralco power for one kilowatt-hour of heat, the most expensive way there is** — while the refrigeration pays again to throw the same heat into the corridor. **The same kilowatt-hour, paid for twice.** A heat pump moves it across instead.



**The electric water heater is your biggest controllable cost — and it runs at COP 1**

Commercial dishwashing needs a **60 °C wash plus an 82 °C sanitising rinse**, pot wash and hand-wash hot water — running every trading hour. On a 25-stall food court that is roughly **87,000 kWh a year of electric resistance heat at COP 1.0**, ~P1.22M/yr. A heat pump delivers the same hot water at **COP 4.0+** — a quarter of the electricity — and the heat it moves is the heat your cold rooms are already rejecting.



**Your walk-in cold rooms are a free boiler — pointed at the ceiling**

Tenant walk-in chillers, freezers, beverage cold rooms and ice machines run **all day on ageing R404A at COP ~2.8 with a phasedown clock on the asset register**, dumping condenser heat into the back-of-house. Karnot iCOOL CO<sub>2</sub> holds the same cold duty at **COP 4.2 (Oak Ridge validated)** — 40% less electricity for the cold side — and captures the rejected heat at the gas cooler to make the dishwashing hot water for free.

— ONE MACHINE · BOTH JOBS · ONE ELECTRICITY BILL



— THE FOUR BOXES · ONE PROJECT

**iCOOL CO<sub>2</sub>**

**Transcritical R744 · GWP 1 · TRL 9**

Walk-in chillers, freezers and ice machines. **COP 4.2 at -5 °C** (Oak Ridge validated). Gas cooler delivers **75–90 °C hot water** from the same cycle. A1 food-safe — the right refrigerant for a kitchen.

**iHEAT R290**

**9.5–100 kW · COP 4.0+**

Dishwashing and rinse duty. **60–85 °C delivery** at PH ambient. Outdoor install, 1.4 kg sealed charge, EN 378 compliant. **Drop-in replacement for the electric water heater.**

**iSTOR PCM**

**38 kWh · 8–12 hr backup**

Thermal battery on both sides: **hot buffer banks recovered heat for the lunch-rush rinse load; cold buffer carries the walk-in freezers through a brownout** with zero compressor load. The food stays cold and the dishes keep moving.

**iSAVE + iVOLT**

**M&V + zero-export solar**

iSAVE meters every duty — **IPMVP Option B M&V report monthly** to your accountant and your lender. iVOLT zero-export solar on the mall roof cuts the remaining grid draw 30–50%.

— WHAT YOU PAY TODAY · WHAT YOU PAY AFTER

# Mid-size mall food court. *A real number per cover.*

ANNUAL FIGURE · ~25-STALL MALL FOOD COURT	TODAY · ELECTRIC HEATERS + OLD FRIDGES	KARNOT INTEGRATED PLATFORM	YOU STOP PAYING
Dishwashing hot water (wash + sanitising rinse)	COP 1.0 electric · ~87,000 kWh/yr	COP 4.0 + recovered fridge heat	<b>₱915K/yr</b>
Walk-in refrigeration	COP 2.8 · R404A	COP 4.2 · CO <sub>2</sub> GWP 1	<b>₱255K/yr</b>
<b>Total energy bill (heat + cooling)</b>	~₱1.72M/yr	~₱0.55M/yr	<b>-68% / ~₱1.17M/yr</b>
<b>Scope 2 + refrigerant exposure</b>	grid load + R404A GWP 3,922	COP 4 + GWP 1 & 3	<b>~40 tCO<sub>2</sub>e/yr</b>
<b>Total investment (VAT-inc)</b>	<b>(already paid)</b>	<b>~₱1.5M</b>	<b>1.3 yr cash payback</b>

Basis: mid-size mall food court · ~5,000 L/day dishwashing hot water heated 25→75 °C plus an 82 °C sanitising rinse, today heated by COP 1.0 electric instant/storage heaters (PH food courts use electricity, not LPG); walk-in cold rooms + ice machines on the cold side. Meralco GP ₱14/kWh. CAPEX includes iCOOL CO<sub>2</sub>, iHEAT R290 heat-pump water heater, hot buffer, controls, commissioning and Permits-Managed Service LOW tier. **Scale by number of stalls / covers — a 12-stall canteen halves it, a 50-stall regional centre doubles it. The per-cover economics hold.** Excludes iVOLT solar, which cuts the remaining ₱0.55M a further 30–50%.

— THE CASH FLOW · PLAIN AND DULL

<p><b>MONTH 1</b></p> <p><b>₱75K</b></p> <p>~₱98K monthly saving minus the green-loan payment (~₱23K). Net cash in pocket. Every month. From day one.</p>	<p><b>YEAR 1</b></p> <p><b>₱0.9M</b></p> <p>In your pocket while the loan is being repaid. <b>The kit has paid for itself in cash terms by month 16.</b></p>	<p><b>YEAR 5</b></p> <p><b>₱4.5M</b></p> <p>Loan paid off in year 7. Until then you bank ~₱0.9M a year after the loan payment.</p>	<p><b>YEAR 15</b></p> <p><b>₱16M</b></p> <p>Total cash retained over the 15-year asset life vs keeping the electric heaters and the old cold rooms.</p>
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THE ENGINEERING BEHIND THE NUMBER · PINCH ANALYSIS

**We don't guess the saving. We calculate your food court's thermodynamic minimum.**

Pinch analysis maps every hot stream (the condenser heat your cold rooms must reject) against every cold stream (the dishwashing and rinse water that must heat) and computes **Q<sub>Hmin</sub>** and **Q<sub>Cmin</sub>** — **the absolute minimum heating and cooling your food court needs** after maximum heat recovery. Everything above that minimum is waste. The pinch point in a food court sits around 30 °C — between the cold-room reject heat and the dishwater demand — and **a heat pump is the only utility that moves surplus heat from below the pinch to the deficit above it.** That is why the saving is 68%, not 15%. Read the plain-English guide: [karnot.com/blog/idiots-guide-utility-pinch-analysis](http://karnot.com/blog/idiots-guide-utility-pinch-analysis) — or commission a Level 1 Energy Survey (₱90K, refunded on install) and we run the pinch study on your actual dish-line and refrigeration logs.

— HOW YOU PAY FOR IT · YOU DON'T, THE BANK DOES

## Three banks. One BOI Income Tax Holiday. *Karnot files everything.*

### Philippine green-loan programmes *built for food-service CAPEX*

#### DBP · SEFP

##### Sustainable Energy Finance Programme

Commercial energy-efficiency priority. 70–80% LTV · 5–10 yr · ~6.5–8% p.a.

#### LANDBANK · SEILP

##### Sustainable Energy Investment Loan

Strong fit for malls and canteen operators already banking with LandBank · ~7% p.a.

#### BPI · SDF

##### Sustainable Development Finance

Fastest decisions for established operators · ~1–1.5% below standard SME rate

These are **loans**, not grants. The monthly saving covers the payment 4x over. Plus **BOI Pioneer Income Tax Holiday under RA 11285** — energy-efficient commercial systems qualify. Karnot files **the loan, the BOI registration, the building permits and the monthly IPMVP M&V report your lender wants to see** as part of project scope.

### WHY NATURAL REFRIGERANTS · CHILLING THE COLD ROOMS

#### CO<sub>2</sub> and propane. *No ammonia zone. No F-gas clock.*

Legacy food-court refrigeration is either R404A / R134a (GWP up to 3,922, F-gas phasedown, rising service prices) or industrial ammonia (toxic, exclusion zones, specialist compliance). Karnot iCOOL runs the walk-in chillers and freezers on CO<sub>2</sub> — GWP 1, A1 safety class, food-safe, the right refrigerant for a kitchen. iHEAT runs on R290 outdoors with a sealed 1.4 kg charge under EN 378. Nothing on the asset register has a phasedown date, an exclusion zone, or an insurance loading. SEC PFRS S2 climate disclosure: ~40 tCO<sub>2</sub>e/yr avoided, audit-grade data from iSAVE.

**“ A food court is the textbook case for simultaneous heating and cooling — the pinch analysis writes itself. The dish line pays COP 1 to heat water all day, while the cold rooms pay to throw the very same heat into the corridor all day. Today Philippine food courts run electric heaters at one-for-one and fridges that dump their waste into the ceiling. One Karnot platform does both jobs from one electricity bill: chill the cold rooms, capture the heat, retire the electric water heater. ₱1.5M installed, ₱1.17M back every year, and the bank finances it against the saving. The maths is not subtle. ”**

Stuart Cox · Founder & CEO · Karnot Energy Solutions Inc.