

₱136,000 a month back in your pocket. *From the scalding alone.*

A 2,000 birds-per-hour Philippine dressing plant, moving the scalding from a diesel boiler to a Karnot heat pump — worked example at stated assumptions, August 2026. Financed by the bank, paid out of the fuel it stops burning.

WHY THE SCALDER IS THE MOST EXPENSIVE WATER IN YOUR PLANT

The scalders burn diesel. The chillers throw the same heat away. *Every shift.*

Every NMIS-licensed dressing plant runs the same four thermal jobs: **scald, sterilise, wash down, chill**. The scalders hold 52–55 °C all shift (PAES 529 soft scald) — usually from a diesel or LPG steam boiler. Twenty metres away, the immersion chillers pull heat out of every bird and reject it to the yard. **The plant pays to throw heat away, then pays again to buy it back.**



Diesel scalders heat costs about ₱13/kWh

A litre of diesel holds ~10 kWh. A steam boiler feeding the scalders through a distribution loop puts about **65% of it into the water** — flue, blowdown, standby and pipework take the rest. At ₱85/litre that is **about ₱13 for every kilowatt-hour of heat that actually reaches the tank** — the most expensive routine heat in the plant.



Your chillers are a free heat source, wasted

Immersion chilling rejects heat continuously, all shift — at the same moment the scalders are buying it. A heat pump that sources from the chillers' rejected heat instead of ambient air **does both jobs from one compressor input**: it assists the chilling and heats the scalders. Effective heat cost: **around ₱2/kWh**.

CHILLING AND SCALDING, TIED TOGETHER

One iHEAT R290. Chiller heat in, scalding heat out. *Closed loop.*

KARNOT POULTRY SCALDER SYSTEM · ₪4 OF HEAT PER ₪1 OF ELECTRICITY

COLD SIDE · THE SOURCE

Immersion chilling · heat recovery

The heat pulled out of the birds becomes the heat pump's source instead of being dumped to the yard. **The chilling gets assistance; the scalding gets the heat.**



1 × iHEAT R290

*Outdoor monoblock. R290 sealed outside the building — **only hot water enters the plant.** Hot water to 75 °C.*



HOT SIDE · THE LOAD

Scalding tank @ 52–55 °C · washdown

Steady makeup and standing-loss heat, all shift, per **PAES 529**. Washdown hot water comes off the same loop. No steam line, no boiler watch, no fuel deliveries.

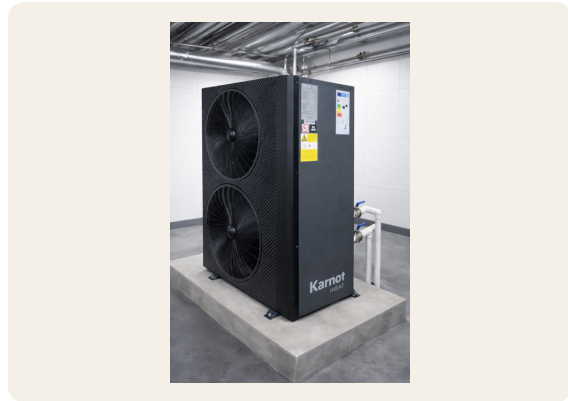
ISTOR HOT BUFFER

Between heat pump and scalding — **steady 55 °C supply through peak makeup demand**, no compressor short-cycling, the line never waits for hot water.

82 °C STERILISERS · SEPARATE CO₂ LOOP

R290 stops at 75 °C and knife sterilisers need 82. **A smaller Karnot CO₂ unit (up to 90 °C) carries that loop** — one machine does not do everything, and we say so.

Four products. *One connected system.*



Karnot iHEAT R290

The heart · scalding + washdown

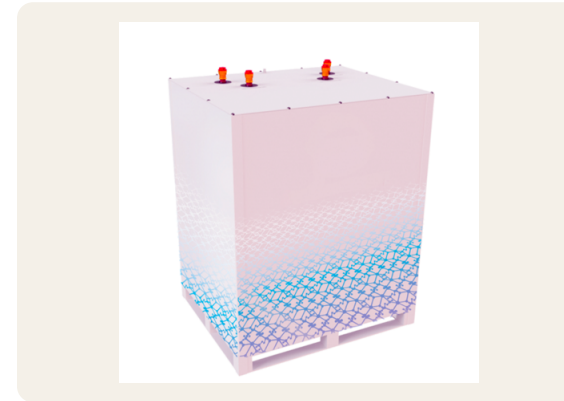
Hot water to 75 °C — the 52–55 °C scald range is its sweet spot. **₱4 of heat per ₱1 of electricity.** Natural refrigerant, GWP 3, no phasedown clock.



CO₂ high-temp unit

The steriliser loop · up to 90 °C

Carries the 82 °C knife and equipment sterilisers that R290 cannot reach. **CO₂ refrigerant, GWP 1** — no phasedown clock under the F-gas rules now in DENR DAO 2021-31.



iSTOR hot buffer

The flywheel · steady 55 °C

Sits between heat pump and scalding. **Rides through peak makeup demand** so the line never waits for hot water and the compressor never short-cycles.



iVOLT Solar · optional

Load-matched · zero-export

Dressing plants run in daylight — exactly when the roof generates. Sized to the heat-pump load: **no export, no net-metering paperwork**, the ₱12/kWh input cost falls further.

WORKED EXAMPLE · 2,000 BIRDS/HR LINE · STATED ASSUMPTIONS · AUGUST 2026

The scalders, *line by line.*

SCALDER HEATING · 65 KW LOAD	TODAY · DIESEL BOILER	KARNOT HEAT PUMP	YOU STOP PAYING
Cost per kWh of heat in the water	₱13.08	₱3.00	₱10 of every ₱13
Heat per month (65 kW × 8 h × 26 d)	13,520 kWh	13,520 kWh	same heat, same water
Monthly scalders heating cost	₱176,800	₱40,560	₱136,240 / month
CO ₂ per year	66.9 t	28.8 t	38.1 t less
Annual scalders heating cost	₱2.12 M	₱0.49 M	₱1.63 M/yr

Stated assumptions, checkable against your own bills: diesel ₱85/L at 10.0 kWh/L net CV · steam-system efficiency 65% (a direct-fired boiler does better; the comparison still holds) · electricity ₱12/kWh · iHEAT R290 at COP 4 at 52–55 °C delivery · 65 kW scalders load (~32.5 Wh per bird). **Excludes the sterilisers, washdown, chiller heat recovery (₱2/kWh case) and solar** — each moves the number further in your favour. Estimates, not a quotation. Run your own numbers: karnot.com/engineering-hub/scalders-energy.

THE CASH · CUMULATIVE SCALDER SAVING, BEFORE EQUIPMENT COST

Fuel you stop buying. *Month after month.*

MONTH 1

₱136K

The first month's diesel you didn't buy.
Scalder alone — at the stated assumptions.

YEAR 1

₱1.63M

A year of scalder fuel, kept. Green-loan payments come out of this — **and are sized to fit inside it.**

YEAR 5

₱8.2M

Typical loan fully paid off within this window. From here **every peso of the saving is yours.**

YEAR 10

₱16.3M

Cumulative scalder fuel not bought over ten years — on a machine with a **15-year asset life.**

HOW YOU PAY FOR IT · YOU DON'T

Three Philippine banks *already lend for exactly this.*

DBP

Sustainable Energy Finance Programme (SEFP)

Agri-industrial priority · 70–80% LTV · 5–10 year terms · designed for energy-efficiency CAPEX — and poultry is agri-industrial.

~6.5–8% p.a.

LandBank

Sustainable Energy Investment Loan (SEILP)

Path of least resistance if you already bank with LandBank — which most Philippine agri-processors do.

~7% p.a.

BPI

Sustainable Development Finance (SDF)

Fastest decisions for established SMEs with a BPI relationship. Sized for renewable + efficiency CAPEX.

~1–1.5% below standard SME

These are **loans**, not grants — we don't pretend otherwise. They are real green-discounted commercial loans, with payment schedules sized to fit inside the monthly fuel saving. **Karnot files the application as part of the project scope.** You sign at the bank window, not before.

THE 82 °C QUESTION · ANSWERED STRAIGHT

One machine does not do your whole plant.

We say so up front.

THE BROCHURE CLAIM

~~One unit~~

"One machine does everything" — the line you will hear at every equipment booth. Physics disagrees: **no R290 heat pump reaches 82 °C**. Ask what else they are rounding up.

R290 · TO 75 °C

Scalder

iHEAT R290 carries the **big loads** — the 52–55 °C scalder and the washdown water. That is most of the plant's heat, at ₱3/kWh instead of ₱13.

CO₂ · TO 90 °C

Sterilisers

A smaller Karnot CO₂ unit carries the **82 °C knife and equipment sterilisers**. Both refrigerants are natural — GWP 3 and GWP 1 — with no phasedown clock.

A supplier who tells you one machine covers everything *is not telling you the whole story.*

THE SOLAR BOLT-ON · WHY ZERO-EXPORT WINS FOR A DAYTIME PLANT

Three ways to spend a midday solar kWh. *Only one keeps the value.*

EXPORT IT

₱6

/ kWh · net-metering buyback

Your utility pays you the generation rate — about half of what you pay to buy electricity back. **You lose roughly half the value** on every kWh you export.

CURTAIL IT

₱0

/ kWh · wasted

No export permission, no storage, no midday demand. The inverter clips the surplus and it's gone. **Zero value recovered.**

RUN THE HEAT PUMP WITH IT

₱12

/ kWh · full retail avoided

A dressing plant kills in daylight — **the scalding is drawing power exactly when the roof generates.** Solar runs the iHEAT and banks heat in the iSTOR buffer. Full retail value kept, no export paperwork.

A dressing plant is the rare site where the load curve *already matches the sun.*

THE NEXT STEP

Three things from you. *The rest is on us.*

01 Your line speed + shift schedule

Birds per hour, scalding hours per day, kill days per month. That sets the scalding duty — the whole calculation hangs off it.

02 One month of fuel receipts + an electricity bill

Diesel or LPG receipts and the front page of your power bill. We compute today's real cost per kilowatt-hour of heat — usually worse than the owner thinks.

03 Your bank relationship

DBP, LandBank or BPI — tell us which you already work with. That's the fastest route to the green loan.

WHAT YOU GET BACK

A one-page savings estimate on your numbers within two working days — then a sized system, a fixed price and the bank application *ready to sign.*

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