Decarbonized & Sustainable Industry

World Summit, November 3-5, 2026

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TRACK TECNOLOGÍAS

Aplicaciones de almacenamiento térmico en la industria

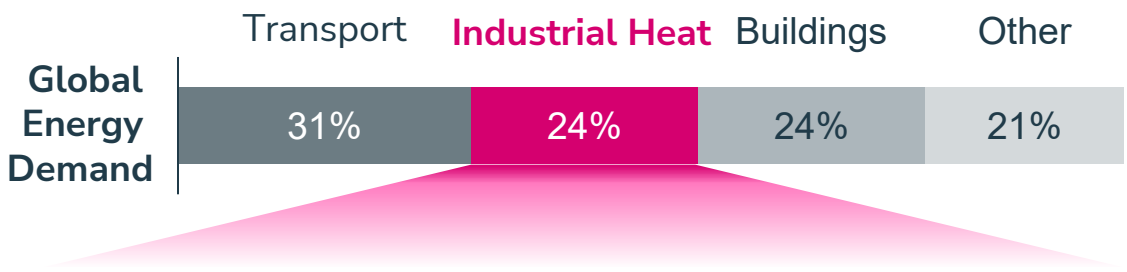
Decarbonizing Industrial Heat: Real-World Applications of Thermal Energy Storage

Alberto Toril – RONDO ENERGY

Director de Iberia

Rondo was founded to support industrial heat decarbonisation; our mission is backed by leading global investors

THE INDUSTRIAL HEAT OPPORTUNITY



- Alumina refining
- Chemicals
- Refining, Biofuels, E-fuels
- Paper
- Mining and minerals
- Steel
- Food & Beverage
- Automotive, tyres & EV batteries
- Other (CPG, Pharma, etc.)

BACKED BY LEADING INVESTORS

Energy Impact Partners
Breakthrough Energy
John Doerr Speed & Scale
RioTinto
aramco
Microsoft
sabic
SCG
TITAN Cement Group

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Rondo’s heat battery: it's a toaster + a brick

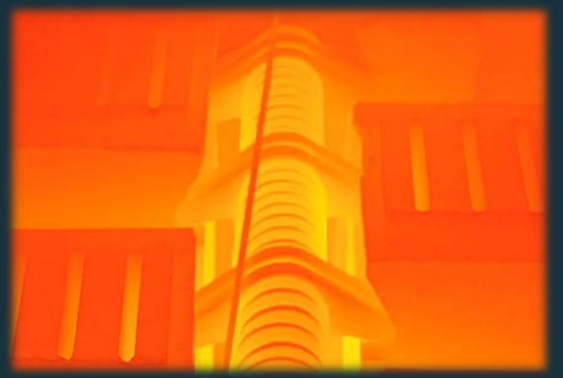
- **Electric resistive heaters** convert electricity into heat
- The heat is stored in **high-alumina refractory brick at over 1,000°C**
- Air passes through the brick and delivers **continuous high-temperature heat to the industrial process**
- **Both are well-established technologies:** resistance heating is simple and these high-Al refractory materials have been used in high-temperature industrial applications for over a century



Simple resistive heating



Alumina refractory brick



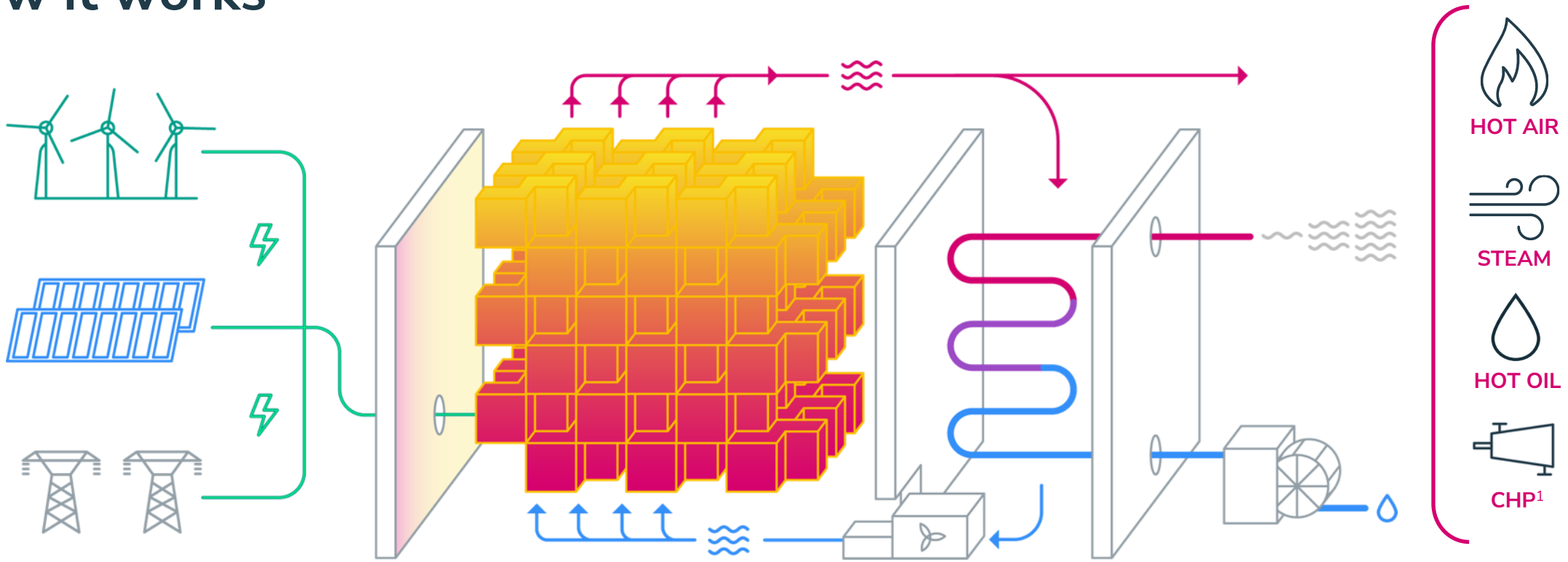
1,000°C+ inside the brick



Hot blast stove precedent, 150+ years

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How it works



1 CHARGE 6-8 hours / day

The Rondo Heat Battery charges with **intermittent electricity** from local wind & solar or from the grid

2 STORE for hours or days

Electricity powers radiant heaters with zero loss; refractory brick is rapidly and uniformly heated to **1100 - 1500°C**, and stores heat for hours or days

3 DISCHARGE 24 hours / day

The battery delivers **continuous superheated air** for use as process heat, steam, or electric power at c. 98% total efficiency

97-98% energy efficient from electricity IN to heat/steam OUT

[1] Combined Heat & Power; high pressure steam can drive a steam turbine to produce electric power and low-pressure steam, providing 95% efficient combined heat and power

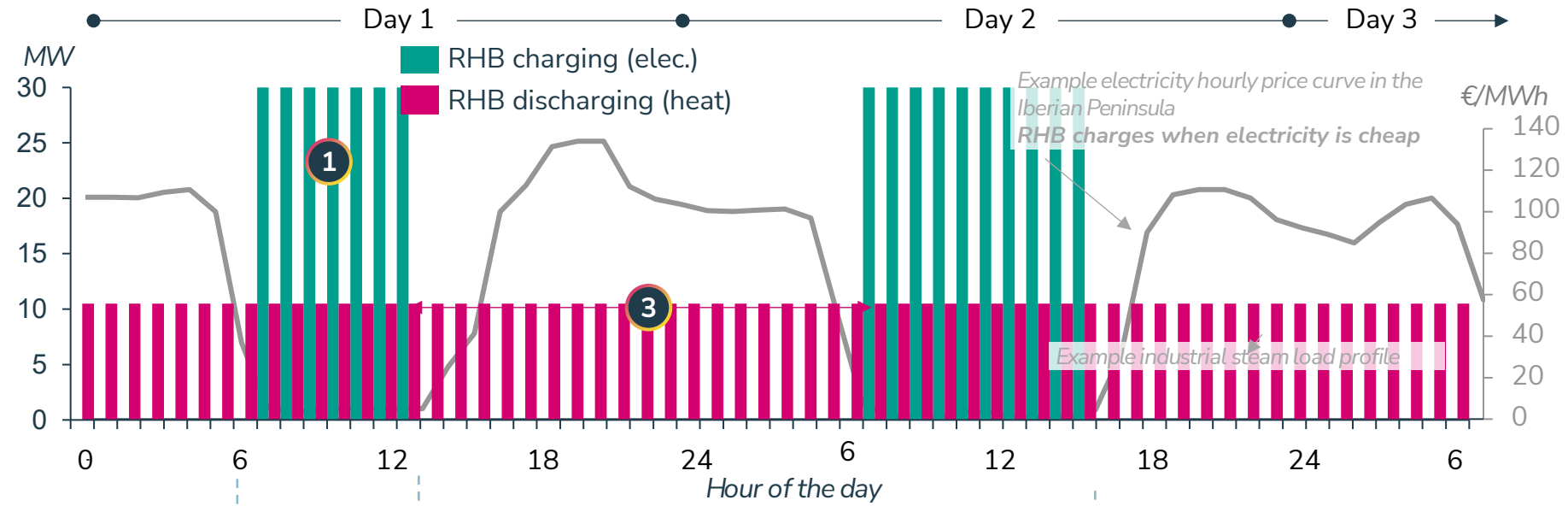
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Example pattern

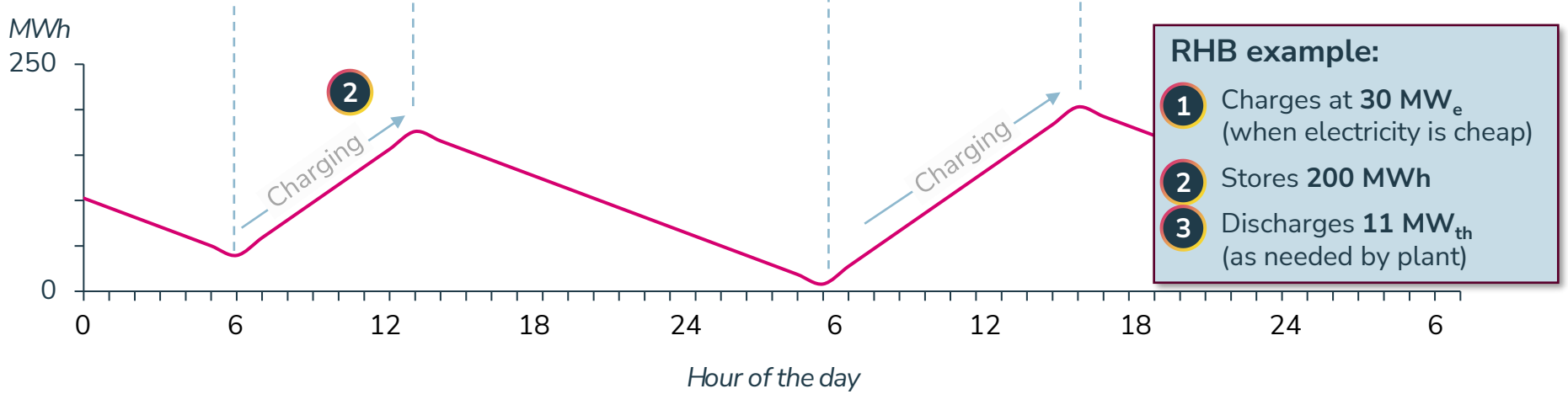
6-8 hours of cheap electricity turned into **baseload heat**

Rondo Heat Battery (RHB)
CHARGE & DISCHARGE



Rondo Heat Battery (RHB)
STORAGE

Energy stored in RHB



RHB example:

1. Charges at **30 MW_e** (when electricity is cheap)
2. Stores **200 MWh**
3. Discharges **11 MW_{th}** (as needed by plant)

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Contractual model options, to match any client preference

CAPEX Direct Sale

Developer



Renewables Developer sells electricity to Heat User under a PPA

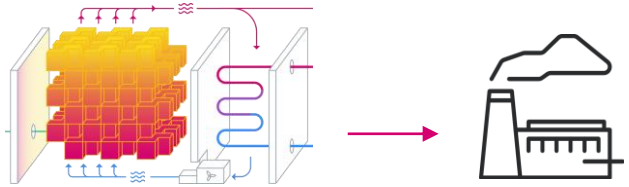
or

Heat User



Heat User develops its own off-grid wind / solar

Heat User



Heat User owns RHB, charges it with renewable electricity, and uses it to generate heat for its industrial processes

SaaS *(Storage as a Service)*

Developer



Renewables Developer sells PPA or turnkey CAPEX to Heat User

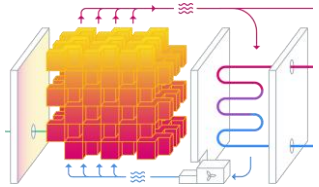
or

Grid



Utility or Retailer / Trader sells electricity to Heat User

SaaS SPV



SaaS SPV owns RHB and sells service to the Heat User

Heat User



Heat User purchases the RHB service & purchases electricity separately

HaaS *(Heat as a Service)*

Developer



Renewables Developer sells PPA or turnkey CAPEX to HaaS SPV

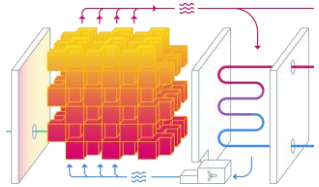
or

Grid



Utility or Retailer / Trader sells electricity to HaaS SPV

HaaS SPV



HaaS SPV owns RHB & charges it with renewable electricity

Heat User



Heat User purchases the heat / power from HaaS SPV

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From first deployments to large-scale industrial projects

Three operating projects and four announced across six industrial applications

OPERATING PROJECTS

PUBLICALLY ANNOUNCED PROJECTS



2 MWh_{th}

Biofuels

California, USA (CA-0)

Pilot scale

Pressurized Hot water, 3 bar / 105°C

March 2023



100 MWh_{th}

Petrochemicals

California, USA (CA-1)

Saturated Steam, 60 bar / 274°C

August 2025



33 MWh_{th}

Cement (Cogeneration)

Thailand (TH-1)

Superheated Steam, 12 bar / 327°C

November 2025



100 MWh_{th}

Chemicals

Germany

Storage-as-a-Service

Superheated Steam, 40 bar / 380°C

Under construction



100 MWh_{th}

Food & Beverage

Portugal

Heat-as-a-Service with EDP

Saturated Steam, 10 bar / 180°C

In development



100 MWh_{th}

Industrial Park

Denmark

Storage-as-a-Service

High Pressure Steam, Under design

In development



360 MWh_{th}

Alumina Refining

Australia

Superheated Steam, 100 bar / 325°C

In FEED

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Evolutions of the Rondo Heat Battery



California – 100 MWh

First commercial project

Design focused on delivering discrete product offering with 100 MWh and 300 MWh sizes



Thailand – 33 MWh

The move to modular

Designed as factory-built modules that can be configured around a site's heat requirement



RHB – 100 MWh - >1,000 MWh

The productized version

More configurable, easier to manufacture and deploy at scale

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Where the stars align

- **Built for big heat loads** – tens to hundreds of MW_{th}
- **High energy density** – large storage capacity in a compact footprint
- **Designed for brownfield sites –** locate the battery alongside existing heat loads



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Thailand

More flexible, still compact

- **Configurable:** number of modules can be selected to match optimal storage duration; heat-recovery steam generator sized for site-specific thermal load
- **Faster deployment:** more off-site assembly reduces on-site construction
- **Compact:** designed to minimize footprint
- **Repeatable:** learnings from manufacturing modules off-site, not per project



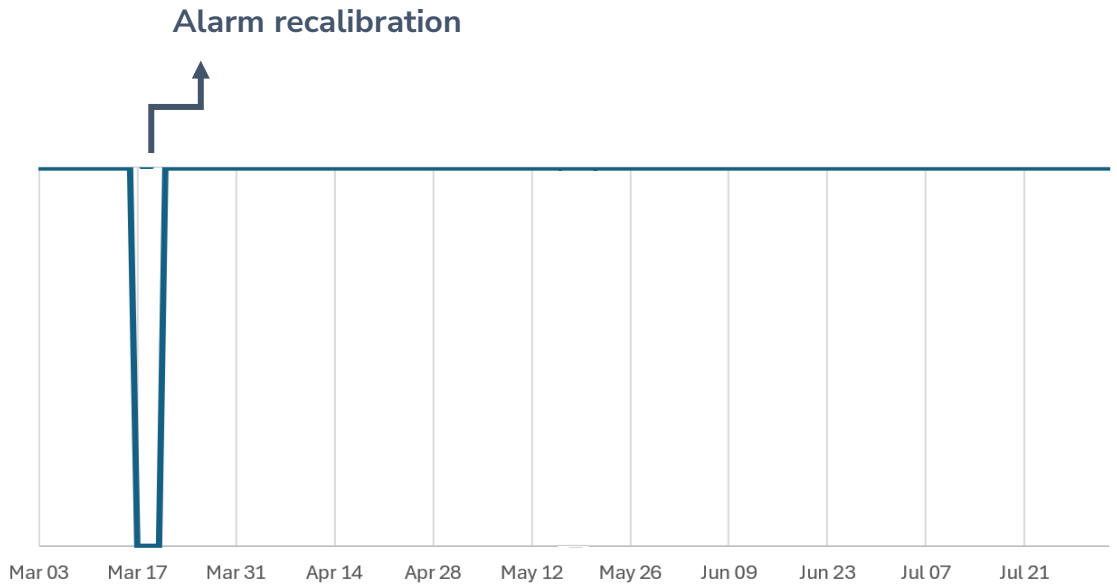
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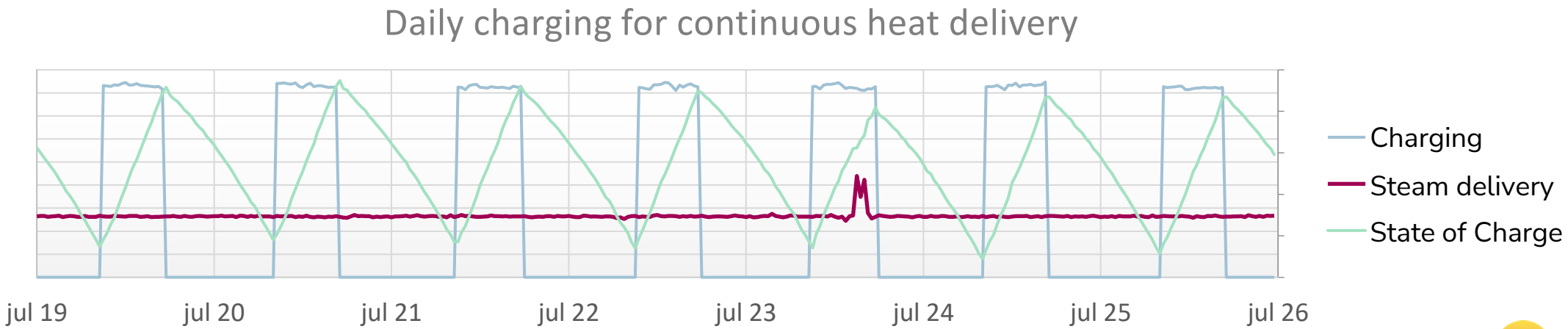
Case study: Thailand-1

97%

Commercial availability - trailing 6 months

Modular unit, running commercially since early 2026.

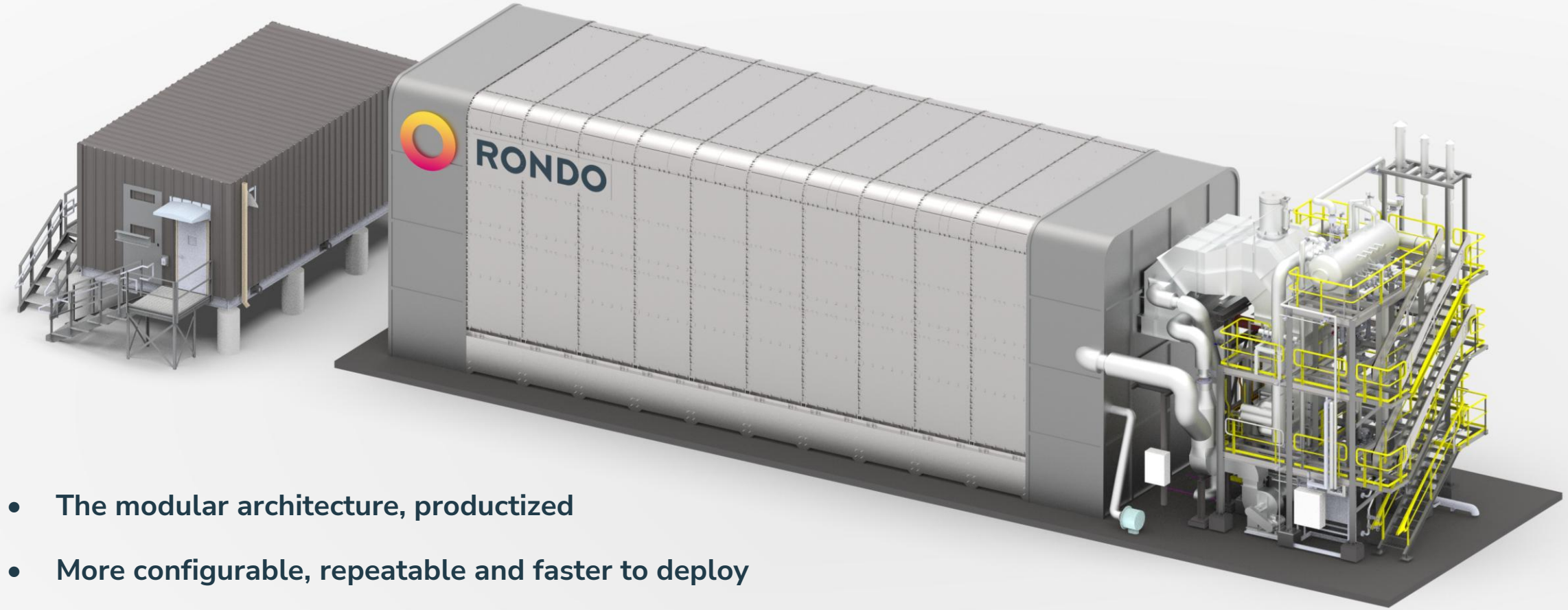




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Next projects: Rondo Heat Battery



- **The modular architecture, productized**
- **More configurable, repeatable and faster to deploy**
- **Now moving into deployment**, including projects under development in Australia

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- Do you have an industrial site that is looking at heat electrification?
- EU Heat Auction is opening soon!
- Rondo is ready to serve you.

Thank you.

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