



We store sunlight in sand,
and return it as heat.
太陽光を砂に蓄え、産業用
のクリーンな熱として還元
する。

16th Japan Regional Innovation Ecosystem Seminar

第16回日本地域イノベーション・エコシステム・セミナー（JETRO東京）・2026年6月30日





IN THE NEXT DECADE,
BATTERIES ARE NOT “WEAPONS”,
BUT THEY ARE STRATEGIC ASSETS

今後10年、蓄電池は単なる「武器」ではなく、国家・
企業の命運を握る「戦略的資産」へ。



1
unwa

OUR MISSION

私たちの使命：「砂」を活用した蓄エネルギー技術により、世界の産業を脱炭素化し、強靱でクリーンなエネルギー社会を実現する。

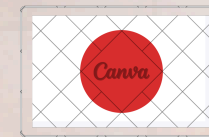


Alternō pioneers cost-effective, zero-emission energy storage powered by sand, transforming intermittent renewable energy into a dependable supply of heat and electricity for industry. **Scaling from Vietnam and expanding into Japan, Alternō leverages sand-based technology to build resilient, carbon-neutral industrial supply chains.**

Alternō、「砂」を熱媒体とする低コスト・ゼロエミッションの蓄エネルギー技術を開発。ベトナムから日本へ、産業サプライチェーンの強靱化と脱炭素化を加速。

【概要】 Alternō（オルタノ）は、再生可能エネルギーの変動性を克服し、産業界へ安定した熱と電力を供給する、革新的な**「砂」ベースの蓄エネルギーソリューション**を展開しています。

豊富に存在する砂を蓄熱媒体として活用することで、極めて低コストかつクリーンなエネルギー貯蔵を実現。現在、ベトナムでの成功実績を基盤に日本市場への進出を本格化しており、持続可能で強靱な産業サプライチェーンの構築を強力に支援してまいります。



Japan Advanced Manufacturing:

1F Co-en, Tsukuba Center Building, 1-10-1 Azuma, Tsukuba City, Ibaraki 305-0031



Vietnam R&D & Manufacturing: Ho Chi Minh City and Da Nang

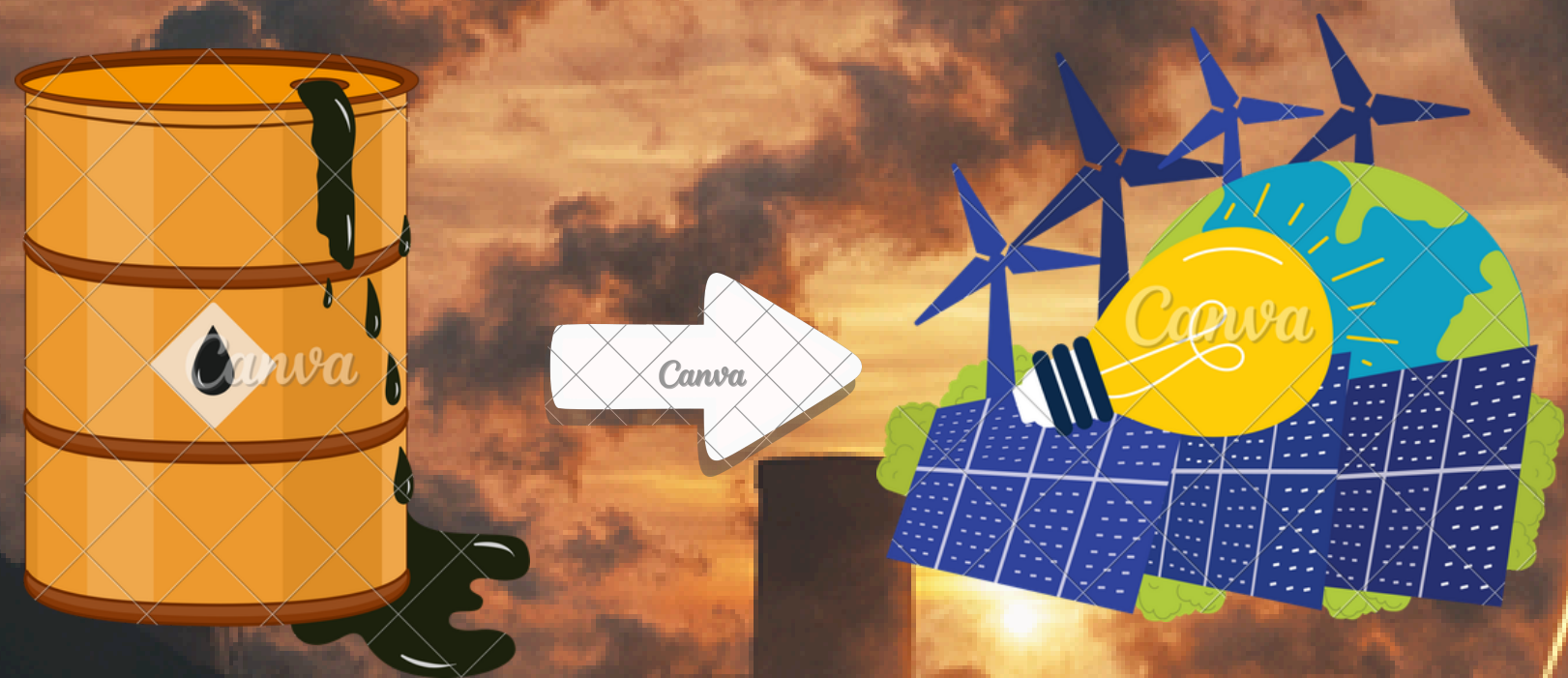


THE BOTTLENECK HOLDING BACK GREEN GROWTH

Industrial Heat

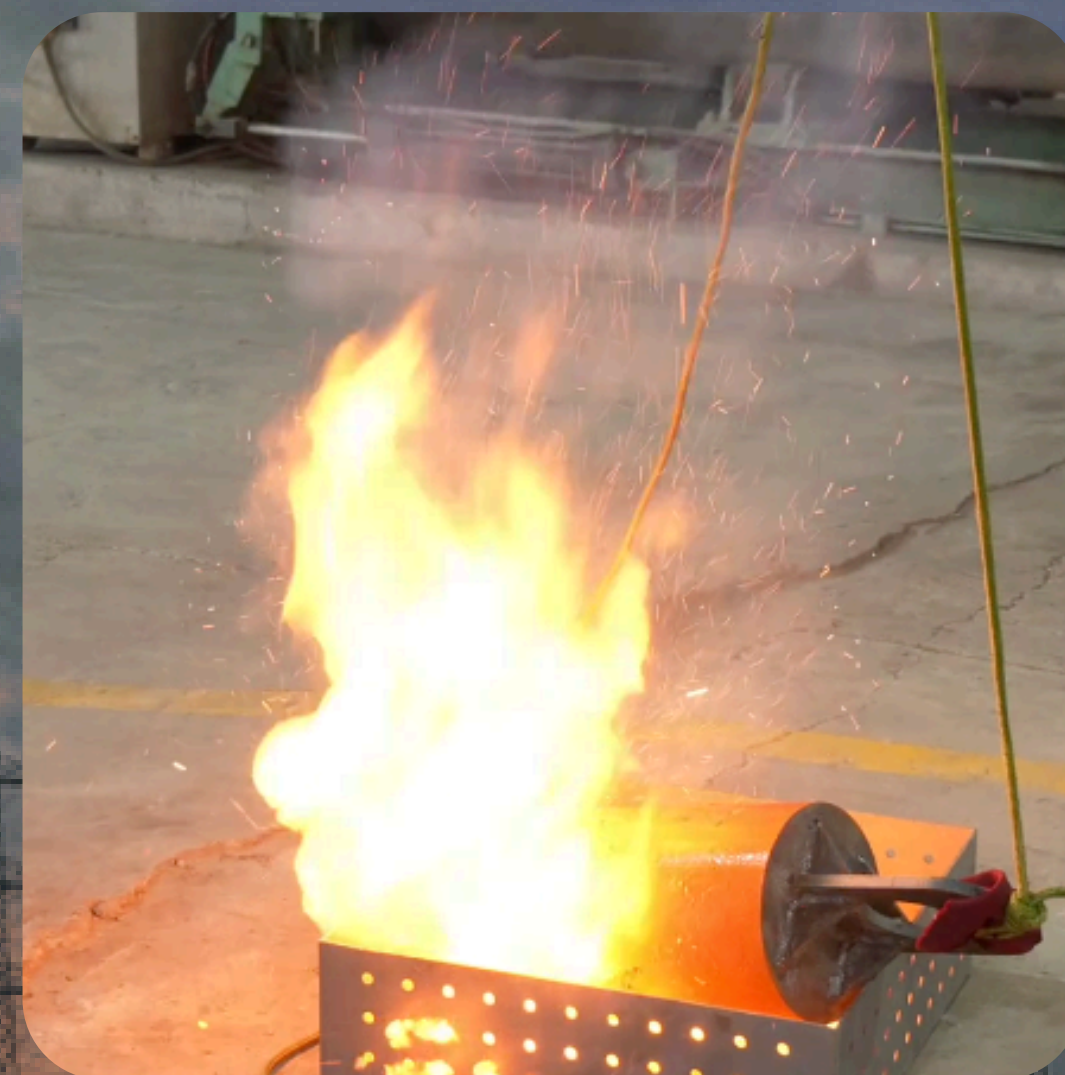
>30 %

Global CO2 Come From Fossil Heat



VS.

Electricity Storage



INDUSTRY NEEDS HEAT & AFFORDABLE ELECTRICITY 24/7



2

THE POWER OF SAND

「砂」の力で、未来を
創る。

THE PRODUCT ・ 製品の実機

Meet the sand battery

これが、砂に熱を蓄える「実機」です



A pre-assembled, plug-and-play module built on ordinary construction sand — installed in 5–7 days, certified to ISO 9001:2015.

据置型のプラグ&プレイ・モジュール。一般的な建設用の砂を用い、5～7日で設置。ISO 9001:2015 認証取得。

FOUR PRODUCTS, ONE PLATFORM ・ 4製品、1つのプラットフォーム

Standard

ENTRY ・ 標準

300 kWh

30–300°C

Pro

WORKHORSE ・ 主力

1.8 MWh

up to 600°C

Hybrid

BIOMASS ・ 併用

1 MWh

30–200°C

Alternō E

SOON ・ 開発中

Heat +
electricity

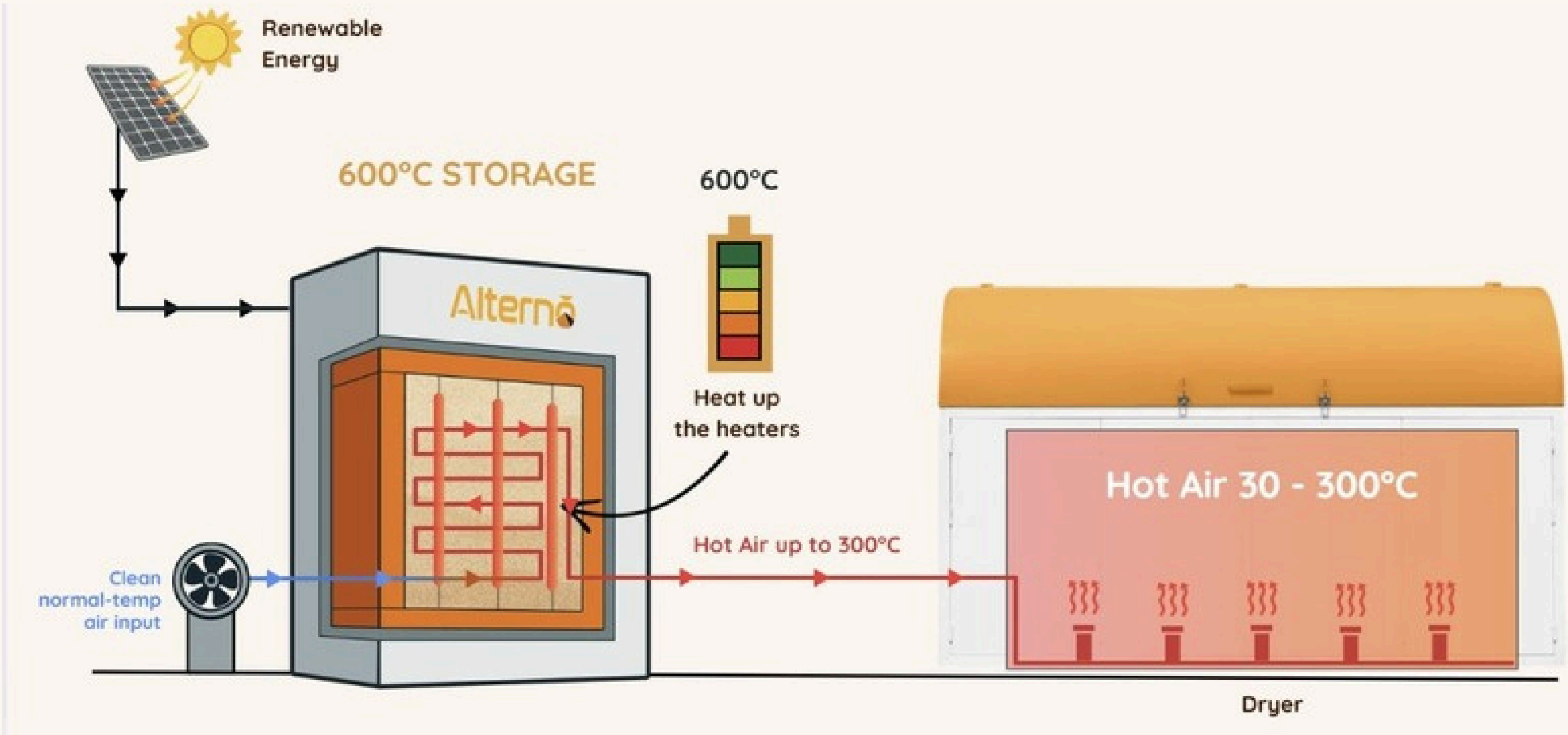
Sand battery for clean heat: how it works

クリーン熱を生む砂蓄熱バッテリーのしくみ

600°C
storage・蓄熱

~95%
efficiency・効率

25+ yrs
lifespan・寿命



Renewable energy → 600°C sand storage → clean hot air to your process / 再エネ → 砂に蓄熱 → クリーンな熱

SAFETY FIRST ・ 安全性を最優先に

A battery that cannot catch fire

発火しない、爆発しないバッテリー



100% fire-safe

完全不燃

No combustible cells, no thermal runaway. Just sand holding heat.



Non-explosive

非爆発

No volatile gases or pressurized chemistry — safe beside the factory floor.



Non-toxic & natural

無毒・天然素材

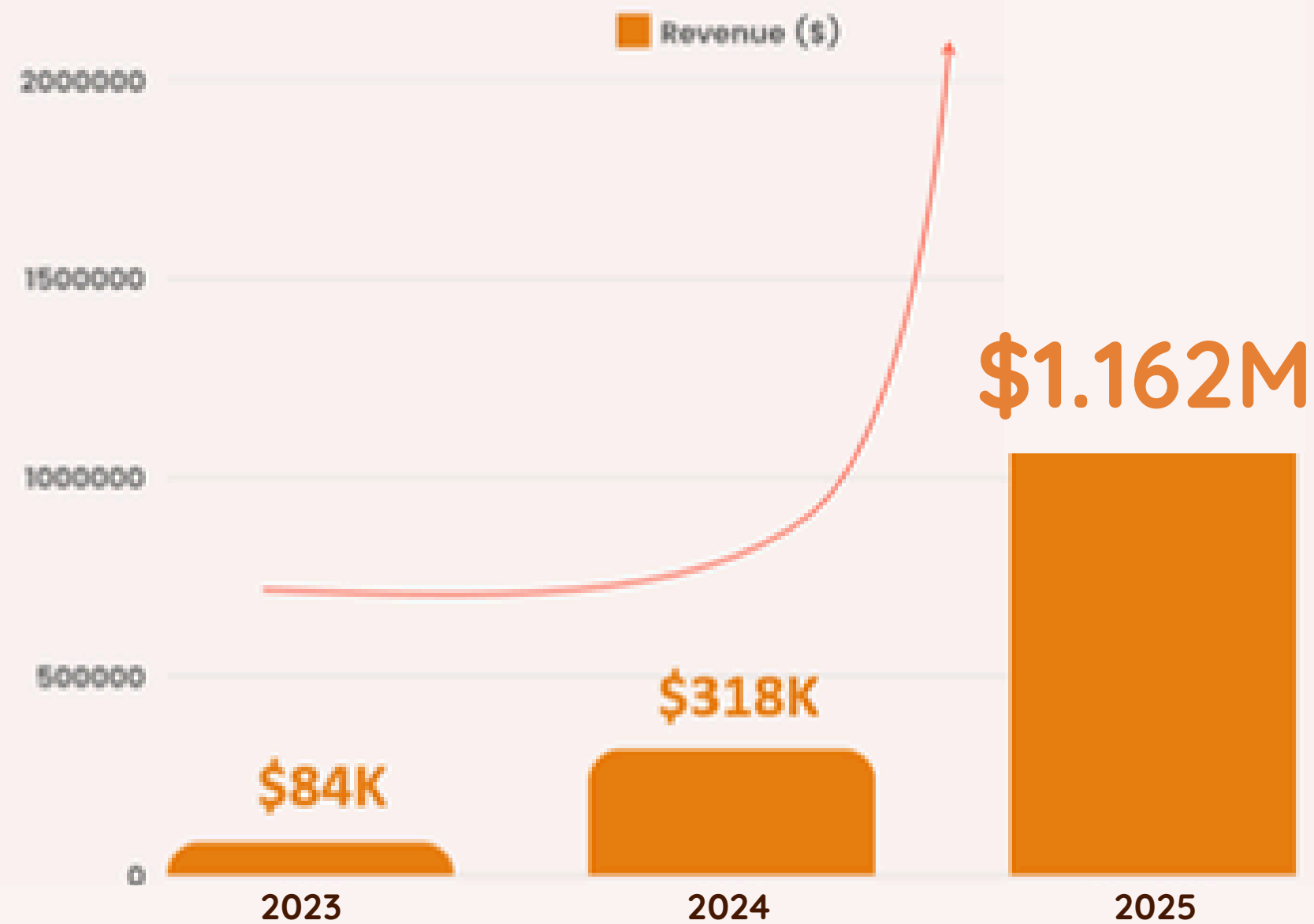
Abundant sand only — fully recyclable at end of life, zero hazardous waste.



Built for dense industrial zones where lithium-ion fire risk is unacceptable. リチウムイオン電池の火災リスクが許容されない密集産業エリアにも安心して設置。



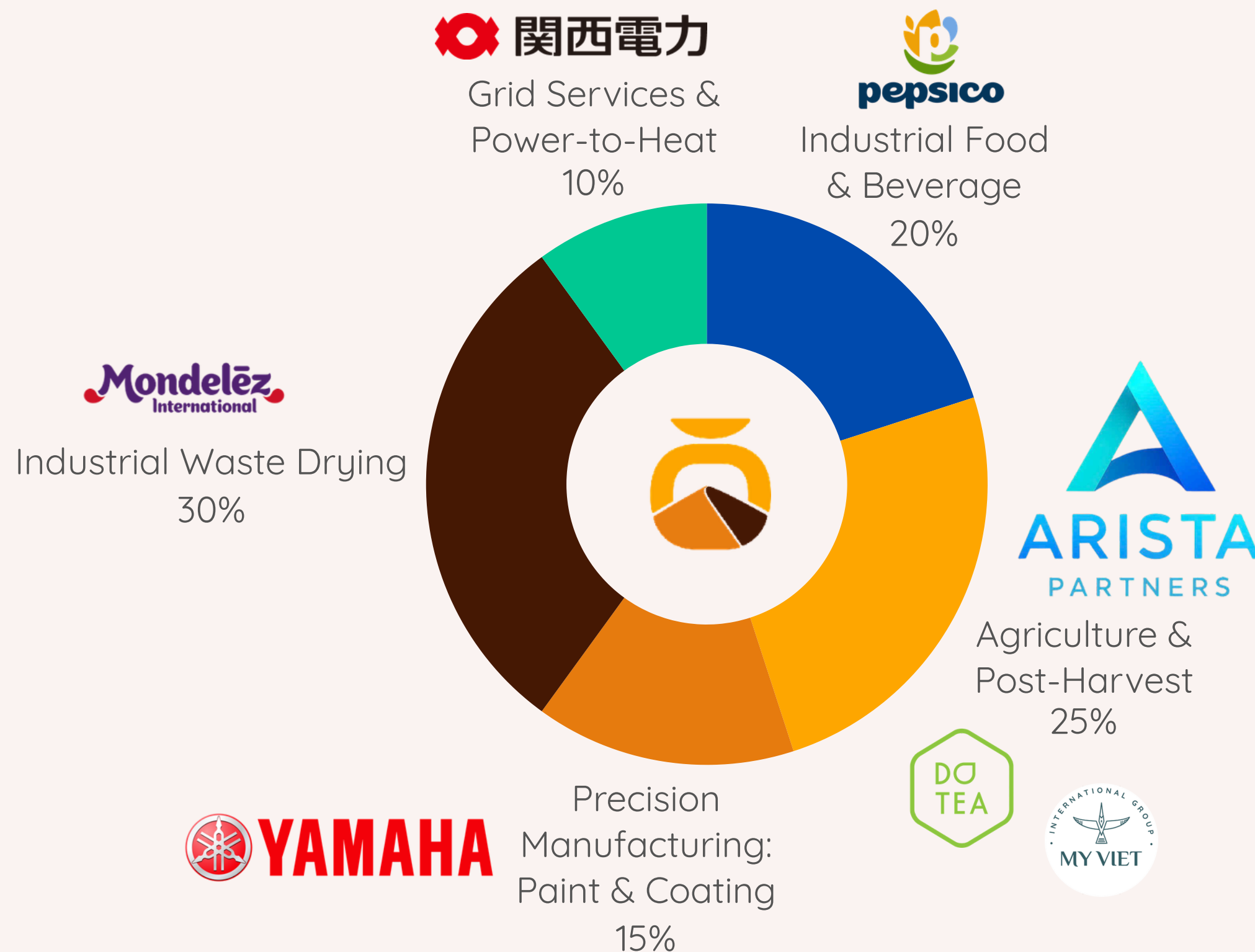
Commercialized, Deployed, and Scaling



Expanding into a new industry **every 2 months**



Alternō Across Industrial Heat Applications



-  Industrial Food & Beverage
TAM: ~\$40.5 Billion
-  Agriculture & Post-Harvest
TAM: ~\$12.6 Billion
-  Automotive & Manufacturing
TAM: ~\$6.8 Billion
-  Waste & Sludge Drying
TAM: ~\$5.2 Billion
-  Grid Services & Power-to-Heat
TAM: ~\$15.5 Billion



Turning waste into a 16.7% resale premium

廃棄物を再販価値+16.7%へ — モンデリーズの循環型モデル

Capturing curtailed solar power for 24/7 zero-carbon drying — food waste becomes premium poultry feedstock.

余剰の太陽光を活用し、24時間ゼロカーボンで乾燥。食品廃棄物を高付加価値の飼料原料へ転換。



Source: Alternō CRM ・ 出典: Alternō CRM

COMMERCIAL OUTCOME

事業成果

↑ **16.7%**

Resale premium

再販価値の向上

Decarbonomics ・ 脱炭素の経済性

Wasted Solar 余剰太陽光



Deployed on-site ・ 現地に設置



of the system - the Sand Battery



USE CASE ・ 導入事例

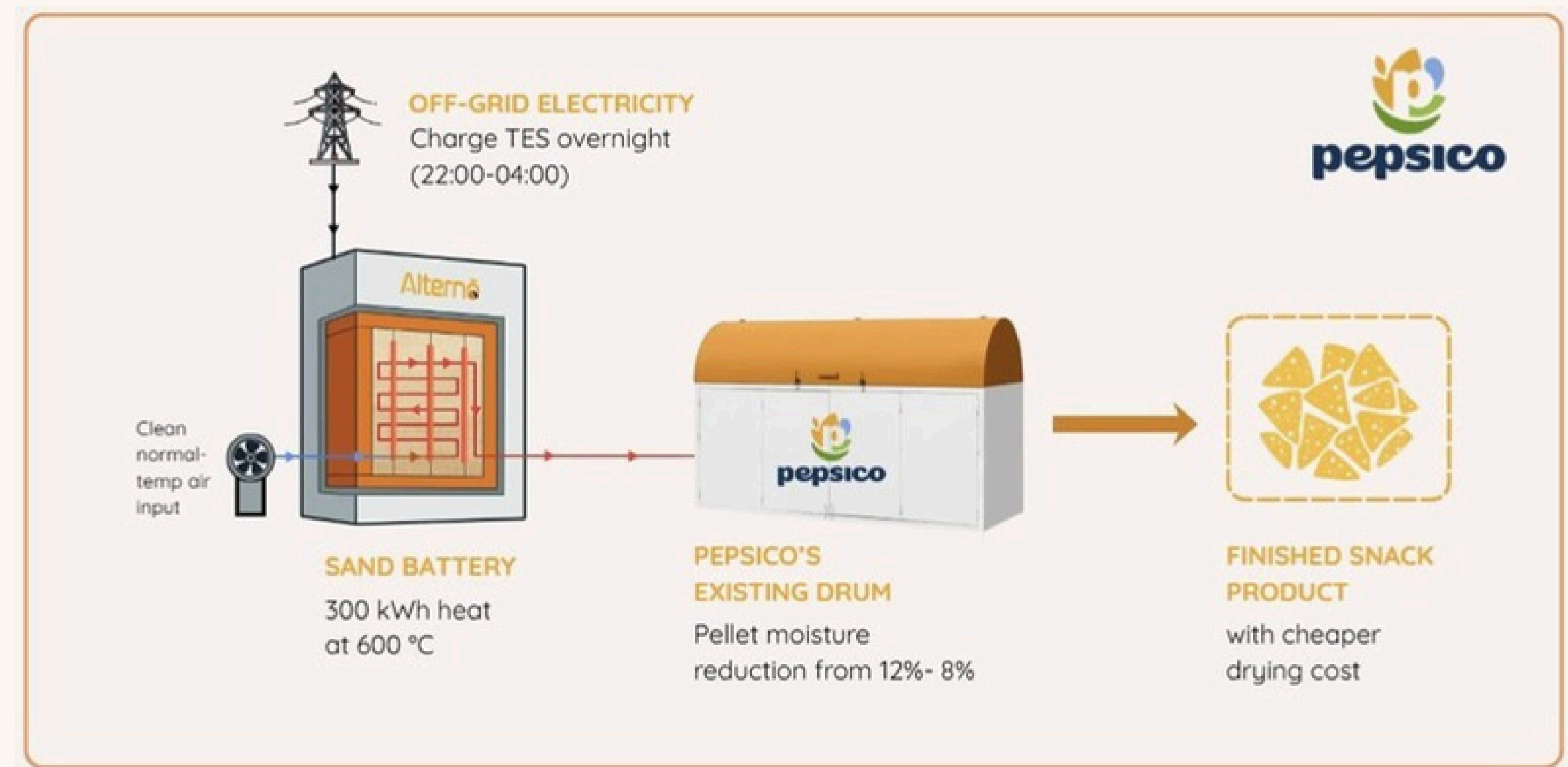
Off-peakarbitrage ・ 夜間電力の活用

Night charging, daytime drying for PepsiCo

夜間に蓄熱し、日中に乾燥 — ペプシコの低コスト産業熱

Arbitraging off-peak electricity for stable daytime drying — meeting strict moisture targets (12%→8%) while slashing OPEX.

夜間の安価な電力を活用し、安定した日中の乾燥を実現。水分量12%→8%を達成しつつ運用コストを大幅に削減。



Source: Alternō CRM ・ 出典: Alternō CRM

COMMERCIAL OUTCOME

事業成果

↓ **46%**

Heat cost

熱コスト削減

Pellet moisture ・ 水分量

12% → 8%



Live on-site ・ 現地稼働の様子



Alterno

Alterno



ENGINEERED FOR EFFICIENCY
DESIGNED FOR PLANET

Alterno



3

From Heat
To Electricity

「熱」から「電力」へ。



Alternō E - Scalable, Safe Solution for Global Energy Independence



EXPLOSION PROOF

100%

CHEAPER THAN LITHIUM

50%

LIFESPAN

30 years

ZERO EMISSION. ZERO WASTE

100%

LOCAL SAND

100%

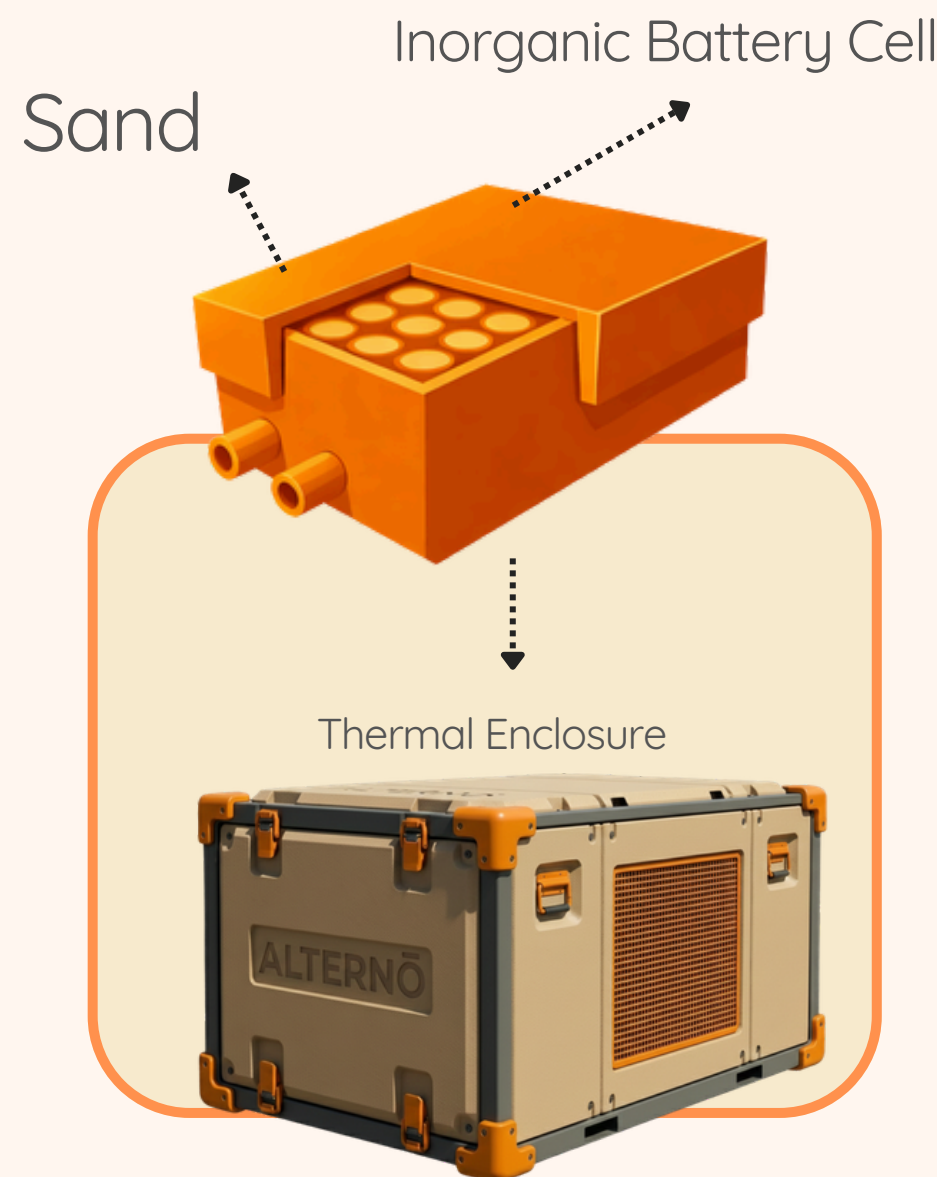




What is Alternō E and why it's safer by design ?



Non-volatile, non-flammable cells



Earth-abundant minerals (sand, salts, ceramics & insulation)



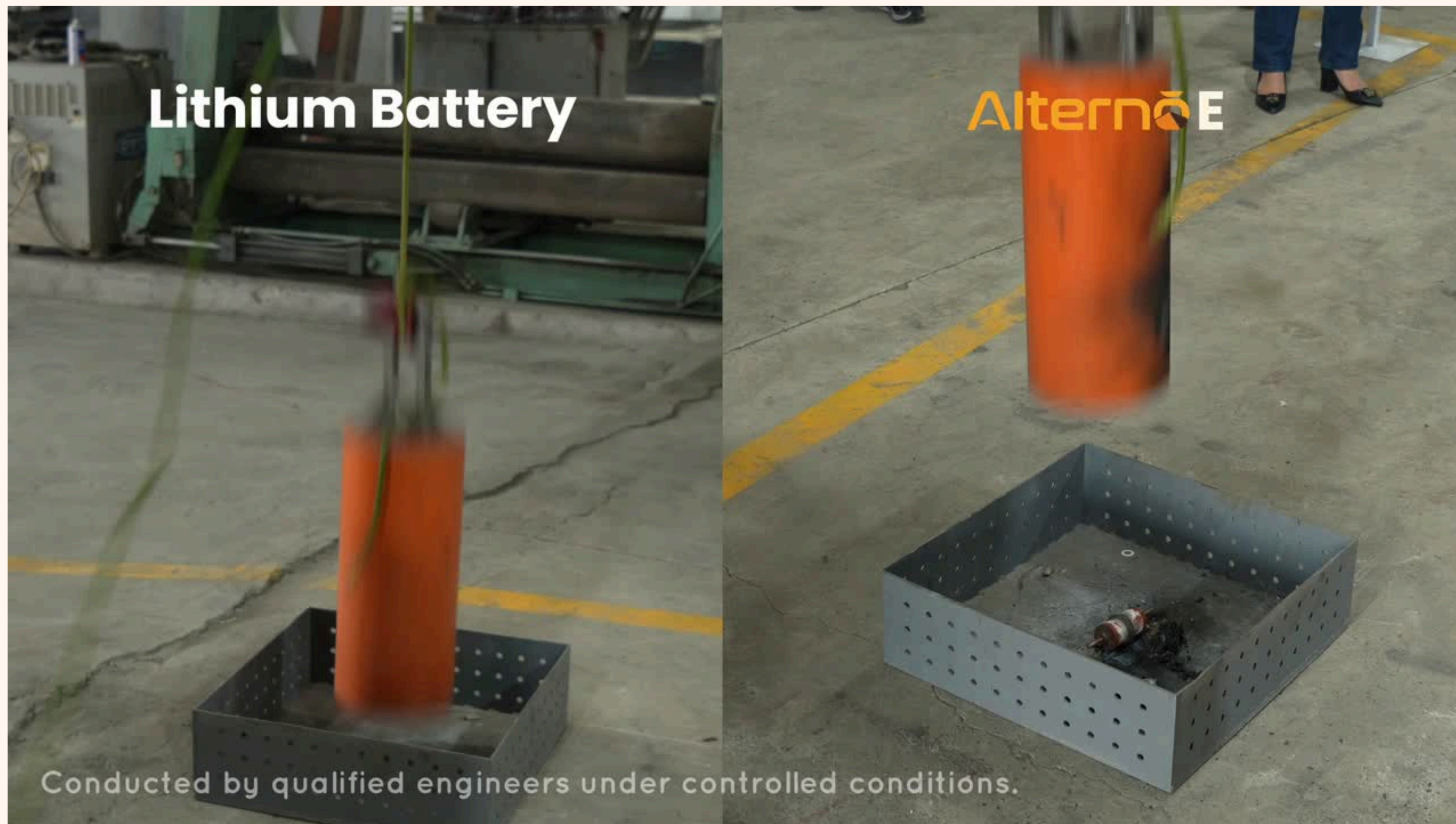
US\$100/kWh - US\$150/kWh

Standardized 20-ft container platform

We eliminate the battery's main internal fuel source by using non-volatile, non-flammable salt-and-ceramic ion pathways, packaged within a sand-based thermal structure - delivering ultra-safe, long-lifespan, low-cost stationary storage by design.



Why Today's Options Don't Fit



Safety at scale

Supply chain and permitting risk

Cost over lifetime

Conducted by qualified engineers under controlled conditions.

Alternō E cell

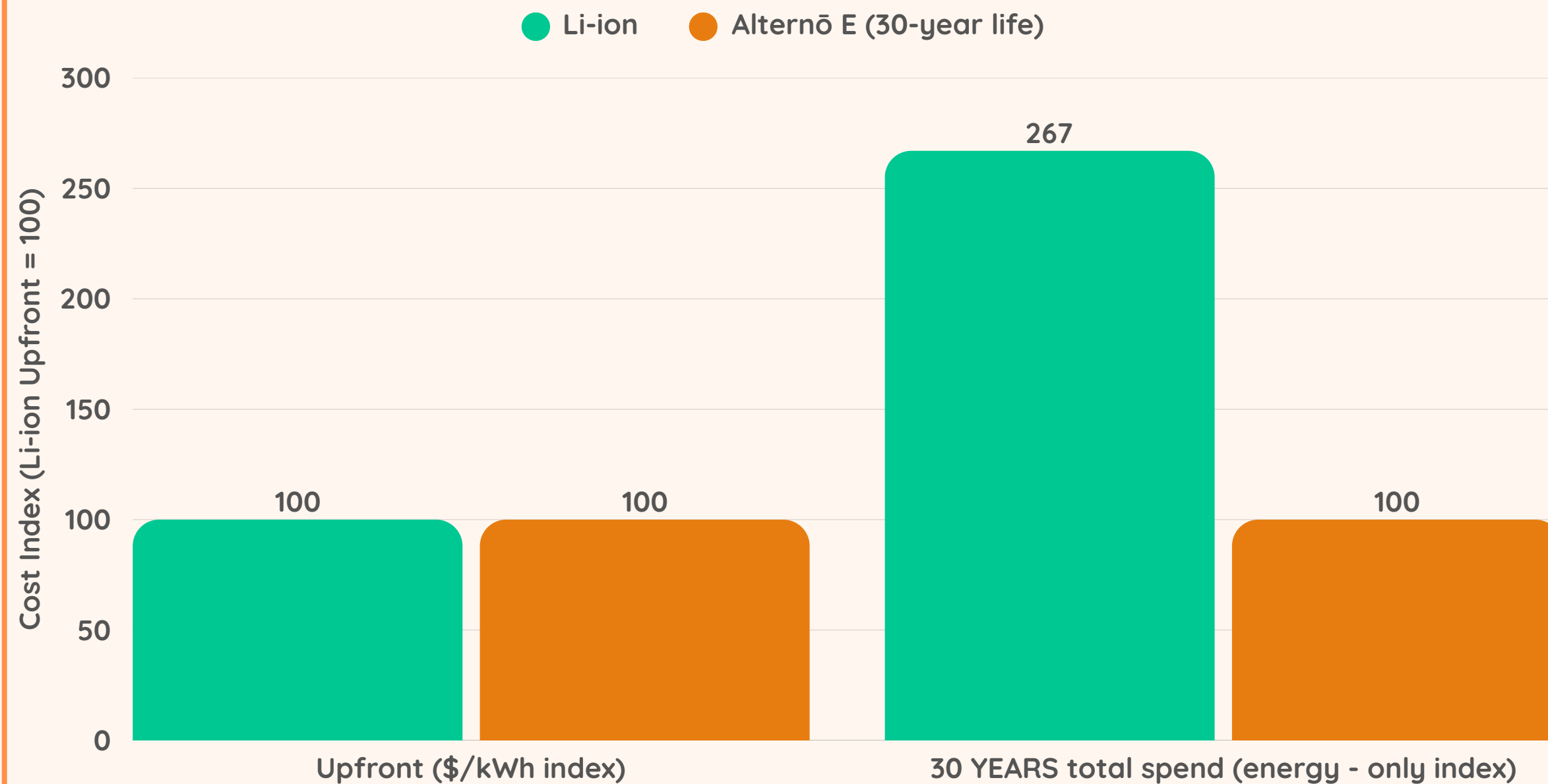
we are testing inside the same fire chamber

Why Alternō E Wins Where Others Cannot?

Same upfront price

→ ~62.5% lower 30-year energy spend vs Li-ion

Energy-only cost: Alternō E vs Li-ion (30-year horizon)



EXPLOSION PROOF

 100%

LONG-TERM COSTS
LOWER THAN LITHIUM

 62.5%

LIFESPAN

30 years

ZERO EMISSION. ZERO WASTE

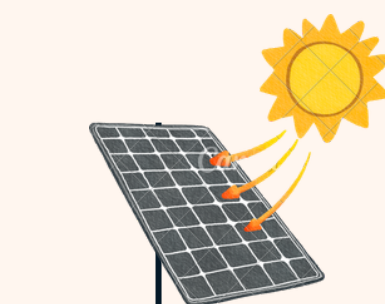
 100%



Why This Technology Never Scaled Before

1. Input Delivery

Input electricity from renewables (solar/wind) or the grid is routed into the system for storage and stabilization.



300°C ENVIRONMENT

Altern

Molten-Salt cells

Electricity ⚡

High keep-warm energy losses

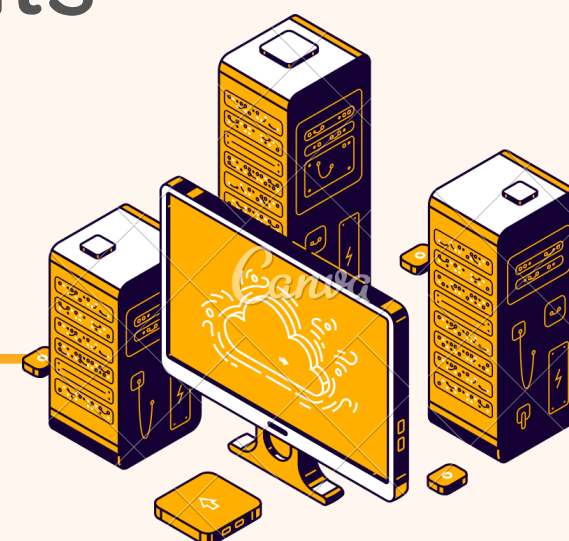
Insulation complexity at system scale

Poor economics beyond small deployments

2. Charging Process

As energy heats the thermal reservoir, molten-salt cells charge within the regulated temperature environment, optimizing ion conduction and efficiency.

3. Output Delivery to critical infrastructure



we begin with respect for materials for process



4

PROOF AND PROGRESS

実績と進展





Key Achievements (2024 - 2025)

\$2.8M

in funding and grant secured from impact investors, venture capital funds, and grant donors

WINNER

PepsiCo Greenhouse Accelerator APAC Program

TOP 2 GLOBAL

Startup World Cup 2024

600%

YoY revenue growth, with major contracts in the coffee sector and global MNCs (Pepsi Foods, Mondelez)

ISO 9001:2015

Achieved the certification for Sand Battery manufacturing

100 % COMPLIANCE RECORD

0 safety, labor, or environmental violations

ESG GOVERNANCE

Established Board-led ESG governance, with full materiality mapping & stakeholder engagement

LCA

Completed full LCA confirming low environmental impact from production to disposal.





Why This Is Hard to Copy?

Manufacturing

Not Just Chemistry



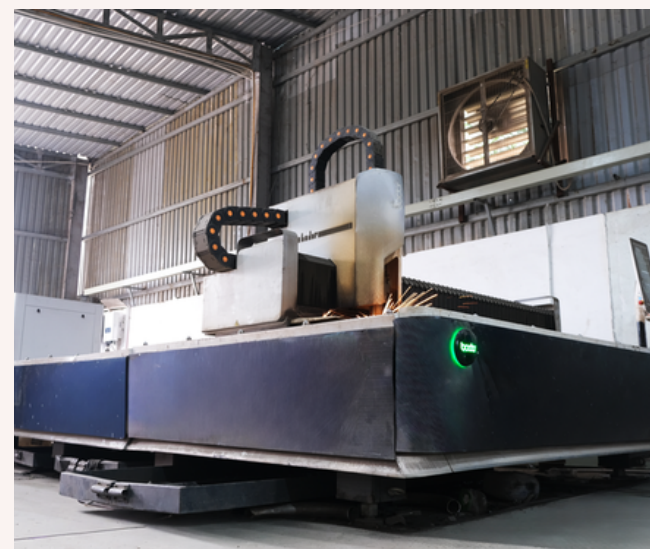
Integrated thermal +
electrochemical system design



Years of sand-based thermal IP
and field learning



Designed from day one for
repeatability, quality, and
scalable production



We scale science into real-world solutions faster
and more efficiently than anyone else

In the spirit of Monozukuri

Alternō



Arista Partners , Buon Me Thuot, Vietnam



From **Vietnam** to the World

Expanding into a new
industry **every 2 months**





Backed By



UntroD
Capital



IMPACT
SQUARE.



TEMASEK
FOUNDATION





5

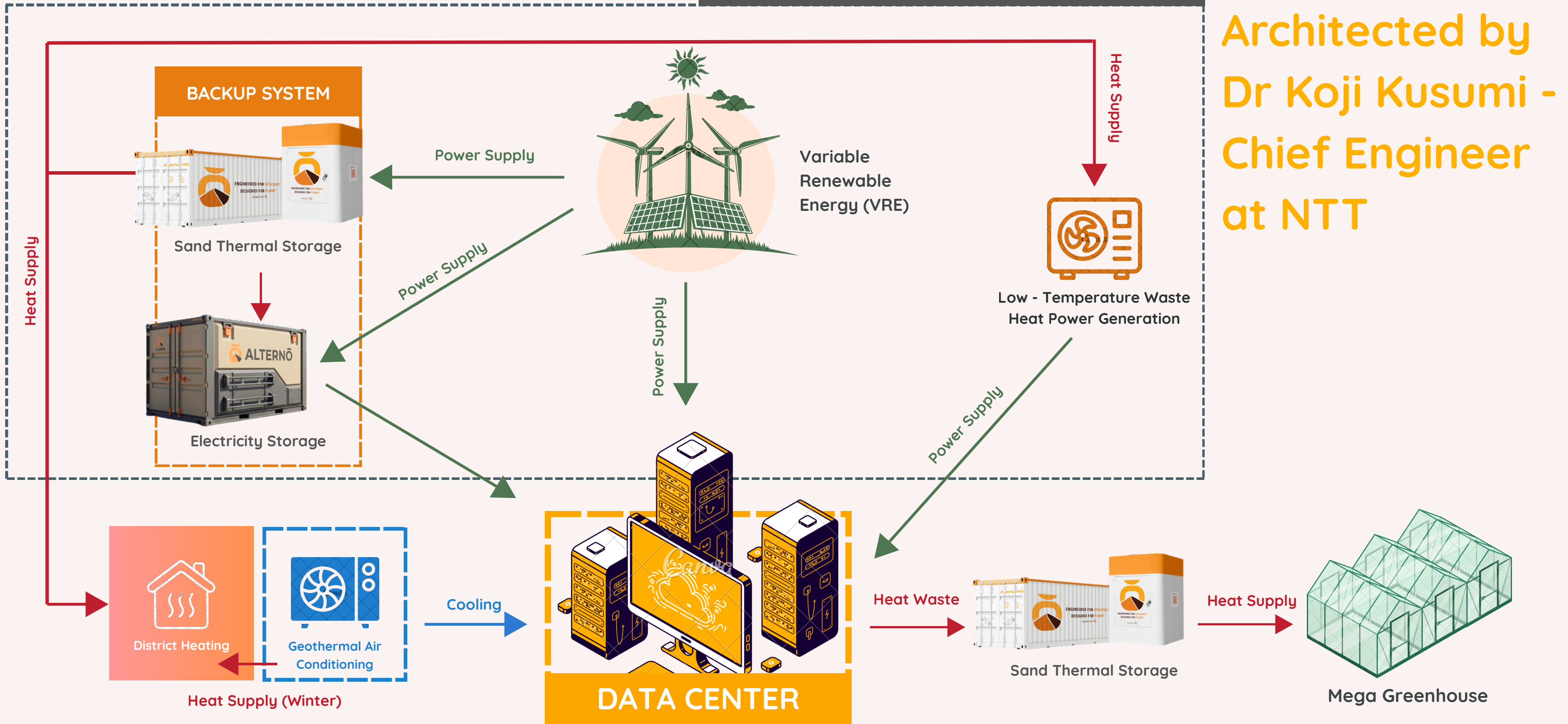
Our Vision

私たちのビジョン



Empowering Data Centers & Autonomous Greenhouses

DC POWER SYSTEM FOR VRE INTEGRATION





Empowering Data Centers & Autonomous Greenhouses



埼玉県におけるデータセンター事業



群馬県におけるネットゼロ温室プロジェクト



Pipeline in Japan



関西電力

This Confidentiality Agreement (this “**Agreement**”) is entered into as of **December 23rd, 2025** (“**Effective Date**”) by and between **The Kansai Electric Power Co., Inc.**, a company incorporated and existing under the laws of Japan with its registered office at 3-6-16, Nakanoshima, Kita-ku, Osaka 530-8270, Japan, (“**Kansai**”) and **Alternō Pte. Ltd.**, a company incorporated and existing under the laws of Singapore with its registered office at 109 North Bridge Road, #07-22 Funan (179097), Singapore, (“**Alternō**”). Kansai and **Alternō** may be referred to herein individually as a “**Party**” and collectively as the “**Parties.**”



NTT 東日本

This NON-DISCLOSURE AGREEMENT (this “**Agreement**”), effective as of May 30, 2025 (the “**Effective Date**”), is entered into by and between NIPPON TELEGRAPH AND TELEPHONE EAST CORPORATION (“**NTT EAST**”), duly organized and existing under laws of Japan, having its principal place of business at 19-2 Nishi-shinjuku 3-chome Shinjuku-ku, Tokyo 163-8019 Japan and Alternō Pte. Ltd., duly organized and existing under laws of Singapore, having its principal place of business at 109 North Bridge Road, #07-22 Funan, Singapore (together, the “**Parties**”, and each, a “**Party**”).



Second Manufacturing Hub

- Site area:

1.5 hectare

- Main production workshop:

3,000 m²

- Workforce:

~30 skilled operators
& engineers

- Designed capacity:

500,000 cells per year



Commercial Launch Within the Next **11 Months**

Alternō E becomes the resilient energy backbone for next-generation manufacturing, supporting AI-powered Industry 4.0 ecosystems in



Vietnam and Japan.



PATENT SUBMISSION

OFFICIAL LAUNCHING
EVENT @ INNOEX

2025

2026

2027

Nov

April

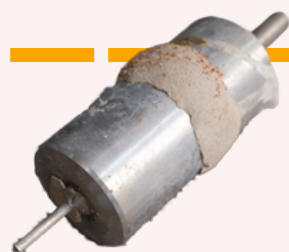
May

Dec

March

Aug

December



version 0.1



Version 0.2

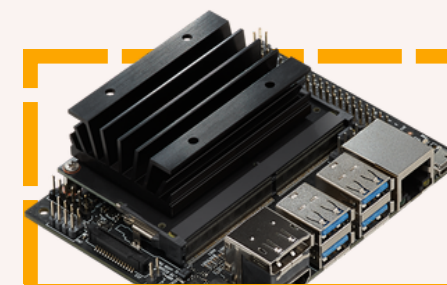


PoC



IPHONE
CHARGING

Alternō E battery can charge iPhone/handheld device.
Outcome: Confirmed that the entire technology works (cell → control → power conversion → safe).



NVIDIA Jetson
CHARGING

Continuous power supply to Jetson (small AI computer).
Outcome: Prove the system runs stably with AI load.



SERVER CABINET
CHARGING

Operate for server cabinet.
Outcome: Practical application in small data center scale.

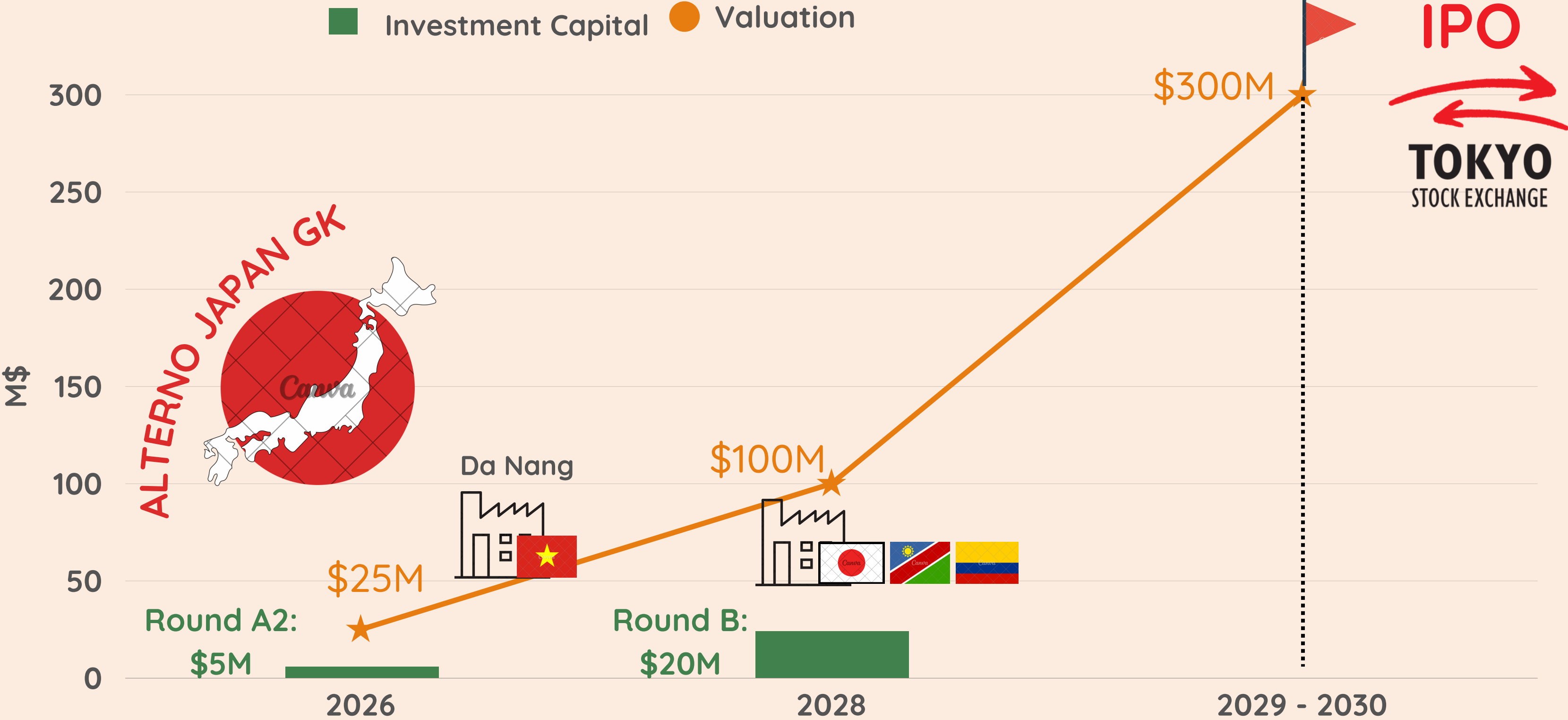


DATA CENTER

Installation and testing in the data center.
Outcome: A breakthrough, affirming that Alternō E can replace UPS and support clean energy for AI infrastructure.

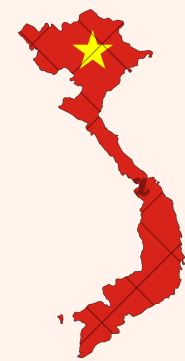


Capital Roadmap to IPO





BUILD NETWORK OF DECENTRALIZE BATTERY MANUFACTURING



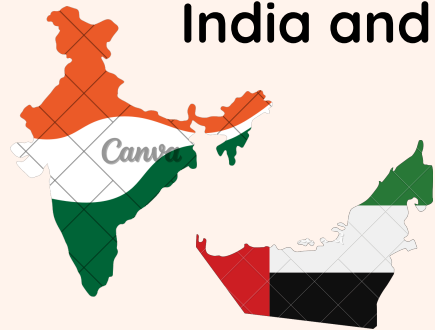
VIETNAM

Techcoop
V-Dream
Duc Hoa 3
Industrial Zone



PHILIPPINES

Superfab
Leave A Nest



ASIA & MENA

India and UAE



LATIN AMERICAN

Colombia, Mexico
and Chile



EUROPE

Benelux (Netherlands, Belgium
and Luxemburg), Germany and
Nordics markets (Denmark,
Norway and Sweden)



2025/10/29 20:02 現在の情報です。
茨城県つくば市吾妻一丁目10-1つくばセンタービル1階
Alterno Japan合同会社

会社法人等番号	0500-03-009724
商号	Alterno Japan合同会社
本店	茨城県つくば市吾妻一丁目10-1つくばセンタービル1階
公告をする方法	官報に掲載する方法により行う。
会社成立の年月日	令和7年10月20日
目的	1. 砂を利用した蓄熱装置（サンドバッテリー）の製造及び販売 2. サンドバッテリーの開発、設置及び運用 3. クリーン熱技術に関する事業開発、研究及び実証試験の実施 4. 上記各号に附帯関連する一切の事業
資本金の額	金500万円
社員に関する事項	業務執行社員 ALTERNO PTE. L. TD シンガポール共和国、フナン、#07-22、 ノースブリッジ・ロード109 代表社員 ALTERNO PTE. L. TD ベトナム社会主義共和国ホーチミン市フーニャ ン区第9市郡ホンハー通り128番地OG-1 110号室 職務執行者 ホー・ヴィエット・ハイ シンガポール共和国、フナン、#07-22、 ノースブリッジ・ロード109 代表社員 ALTERNO PTE. L. TD ベトナム社会主義共和国ハノイ市バクトゥリエ ム区フックディエン13番地 職務執行者 グエン・クオック・ナム
登記記録に関する事項	設立 令和7年10月20日登記

*下線のあるものは抹消事項であることを示す。



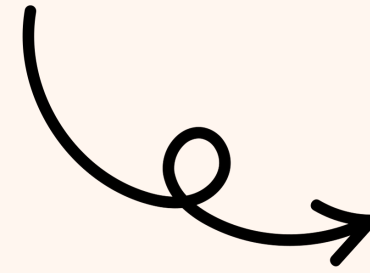
**What if the answer to clean
energy was right under our feet?**

**クリーンエネルギーの答えが、私たち
の足元にあるとしたら。**



Follow Our Journey !!!

Let's turn yesterday's sun
into today's industrial heat together



 **SCAN ME!**



📍  IF Co-en, Tsukuba Center Building, 1-10-1 Azuma, Tsukuba City,
Ibaraki 305-0031

📍  109 North Bridge Road, #07-22 Funan Singapore (179097)

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🌐 www.alterno.net