



DOBIDO AIR ISLAND

DOBIDO AIR ISLAND – Master Plan for an Integrated Residential, Bio & AI Demonstration Complex Connected by Pneumatic Energy

The future of energy doesn't begin with a massive power plant – it begins with a single island.

One Air Factory. Three Demonstrations. One Integrated Energy Ecosystem.

A Pneumatic Energy-Connected Residential · Bio · AI Demonstration Platform | Concept Master Plan v1.0 | August 2026

EXSP STRATEGIC REVIEW

LAND DUE DILIGENCE & INVESTMENT REVIEW



Business Overview — Executive Summary



The global energy system stands at a turning point. Yet most "clean energy" solutions remain demonstrations of a single technology. Dobido Air Island is different — a single central Air Factory produces compressed air, distributed via EX-LINE to simultaneously power the **Air Village, EX-ALGAE**, and **Green AI Data Center** as an integrated demonstration campus. The goal is not to showcase isolated equipment, but to prove — through continuous, real-world data — that living spaces, bioproduction, and digital infrastructure can all operate 24 hours a day on a single pneumatic energy network.

\$150M

Total Project Cost
EXSP-led procurement

1MW

Air Factory
750kW continuous target

100KM²

Target Zone
Centered on existing resort district

500kW

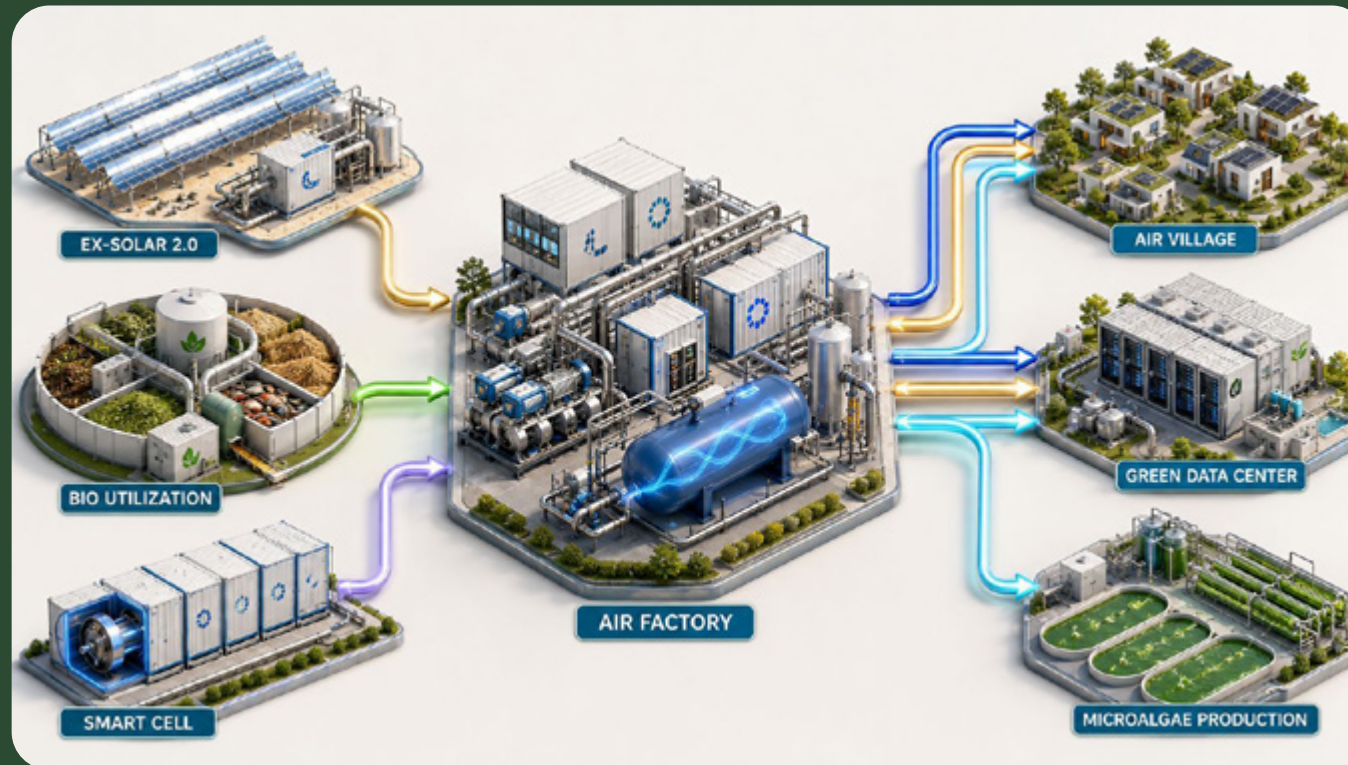
AI Data Center
IT load, 8–12 racks

EXSP is the sole project entity. The total project cost of USD 150 million will be procured under EXSP's leadership, with the possibility of strategic partners, coinvestors, and policy finance participation. All performance figures are demonstration targets.

Dobido Air Island – Integrated Pneumatic Energy Platform Architecture



The answer to a seemingly complex energy problem is simple. One Air Factory generates compressed air, and three domains transform it into real life.



The diagram above illustrates the full energy flow of Dobido Air Island. A single Air Factory produces compressed air, which is distributed simultaneously through EX-LINE piping to three domains: Air Village (residential), EX-ALGAE (microalgae production), and Green AI Data Center. This is an integrated platform structure where one energy source connects to three distinct use cases.

DOBIDO Integrated Campus — The Entire Island as One Energy Platform



A small dot on the map becomes the world's first pneumatic energy campus. This is the moment 100,000m² of space becomes proof of concept. One Island. One Platform. Three Domains.



The aerial view above shows the entire island of DOBIDO transformed into a single energy campus. Centered around the Air Factory, the three domains — Air Village (residential demonstration), EX-ALGAE (microalgae cultivation), and Green AI Data Center — are strategically positioned across the site. This 100,000m² space becomes the world's first integrated pneumatic energy demonstration site.



Project Background & Dobido Site



Islands are a microcosm of the energy crisis — dependent on external power grids, carbon-emitting, and vulnerable to disasters. Dobido is the ideal stage to confront these challenges head-on.

Following the construction of the Daeho Seawall, Dobido is now connected to the mainland, giving it **both the symbolic character of an island and the accessibility of land**. By leveraging existing resort facilities and tourism infrastructure, new civil engineering can be minimized, while visitors, government officials, and investors can directly experience the results of the demonstration.

Land Accessibility

Enables transport of heavy equipment, containers, and biomass, as well as easy visitor access

Defined Boundary

Enables precise measurement of microgrid and integrated operations data

Existing Structures

Conversion to Air Village saves resources and accelerates the demonstration timeline

Rural Resources

Agricultural and fishery by-products utilized as locally circulated energy sources

A separate marine tourism complex development plan is currently being pursued in the Dobido and Nanjido area. The feasibility of land acquisition and potential overlap with the project zone must be verified as a prerequisite before any transaction.

Vision & Objectives



If we have recognized the crisis, it is now time to present the answer. EXSP proves that answer through the world's first Pneumatic Energy Living Lab.

The World's First Pneumatic Energy Living Lab — A single pneumatic energy platform that integrates sustainable living, microalgae production, and next-generation AI infrastructure into a globally recognized proof-of-concept reference site.

5 Key Objectives

1MW-Class Air Factory Continuous Operation

Continuous operation of a 1MW-class Air Factory and verification of integrated efficiency

Pneumatic Cooling & Power Generation Efficiency

Measurement of actual pneumatic cooling and power generation efficiency in a real residential environment

EX-ALGAE Full Process Verification

Full-process verification of EX-ALGAE CO₂ supply, water flow, and CAO systems

500kW AI Data Center PUE & WUE Verification

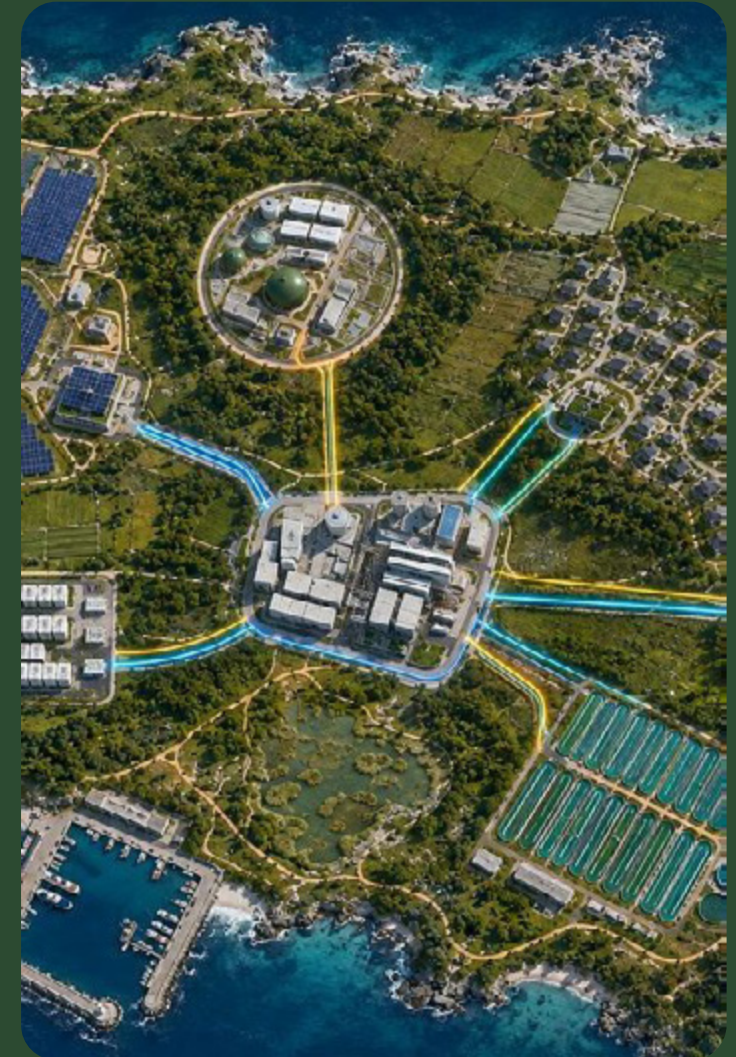
Verification of PUE, WUE, and uptime for the 500kW AI data center

Overseas Business Replication & Expansion

Replication and global expansion of the verified system for international business deployment

PUE (Power Usage Effectiveness): The ratio of total data center power consumption to IT equipment power consumption. A value closer to 1.0 indicates higher energy efficiency. The global average is approximately 1.58; our target is 1.20 or below.

WUE (Water Usage Effectiveness): The amount of water (in liters) used for cooling per 1 kWh of IT equipment power. A lower value indicates higher water efficiency. Through pneumatic cooling, the goal is to minimize WUE compared to conventional water-cooled systems.



Spatial Master Plan & Integrated Energy Architecture



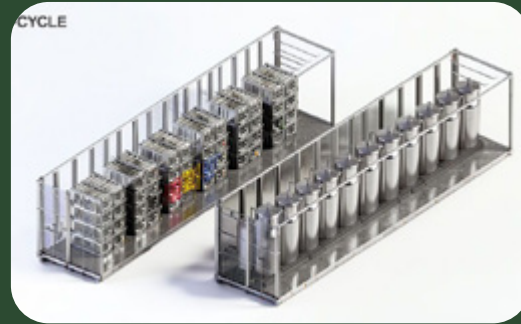
100,000m² of idle resort grounds is transformed into the world's first pneumatic energy campus. The space itself becomes the proof.

Approximately 100,000m² at the center of the existing resort complex is designated as the Phase 1 reference zone. Exact landarea and boundaries will be finalized following cadastral survey and ownership due diligence.



Air Village – 20,000m²

20–30 units of existing buildings; focused on visitor experience and daily life demonstration



Air Factory & Utility – 8,000m²

Air Factory, storage tanks, and control room. Separate circulation routes for discharge, safety, and maintenance



EX-ALGAE – 3,000m²

4 pools of 250m² each, PBR, and HTL. Optimized for solar exposure, drainage, and visitor flow



Green AI DC – 3,000m²

Modular data center and thermal management laboratory. Segregated zones for communications, fire safety, and security

The energy architecture is designed across 5 layers: pneumatic source → Air Factory conversion → storage & output → EX-LINE piping network → end loads.
EXSOLAR 2.0 generates compressed air from solar thermal energy, while the Air Factory produces it from CAO, DAC, and agri-aqua biomass.



PART 2 — Energy Source Portfolio

EX-SOLAR 2.0 · EX-SMART CELL · CAO & Biomass

What makes demonstration possible is the energy source. The DOBIDO AIR ISLAND Air Factory does not rely on a single energy source. It selects the optimal combination based on local conditions, validates hybrid operation in phases — and supplies compressed air to three core demonstration domains.

Pneumatic energy is not a new concept.

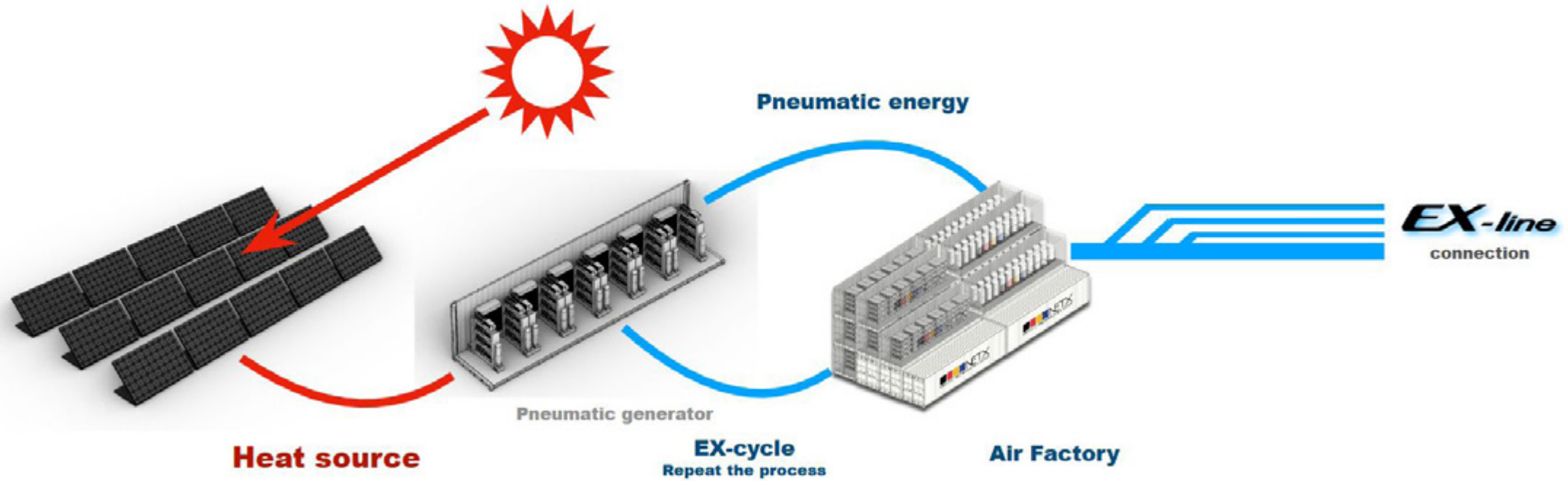
What is new is integrating solar, air, and biomass into a single Air Factory to deliver an uninterrupted, 24-hour supply.

EX-SOLAR 2.0



Solar power already exists. But a technology that directly converts heat into pneumatic energy did not. EX-SOLAR 2.0 fills that gap.

Unlike conventional systems that convert sunlight directly into electricity, EX-SOLAR 2.0 absorbs solar radiant heat to drive an air thermal expansion and compression cycle — storing and distributing the resulting pneumatic energy to deliver power and cooling services.



EX-SMART CELL | The Next-Generation Air Battery That Stores Air and Converts It to Energy on Demand



Conventional batteries degrade through chemical reactions. **EX-SMART CELL stores air** – with no corrosion, no explosion risk, and no replacement cycles.

EX-SMART CELL is a modular energy storage system that stores generated pneumatic energy in the form of compressed air and supplies it as electricity, cooling, or pneumatic power whenever needed.



It Does Not Store Electricity

Unlike lithium batteries, it does not directly store electrical energy.



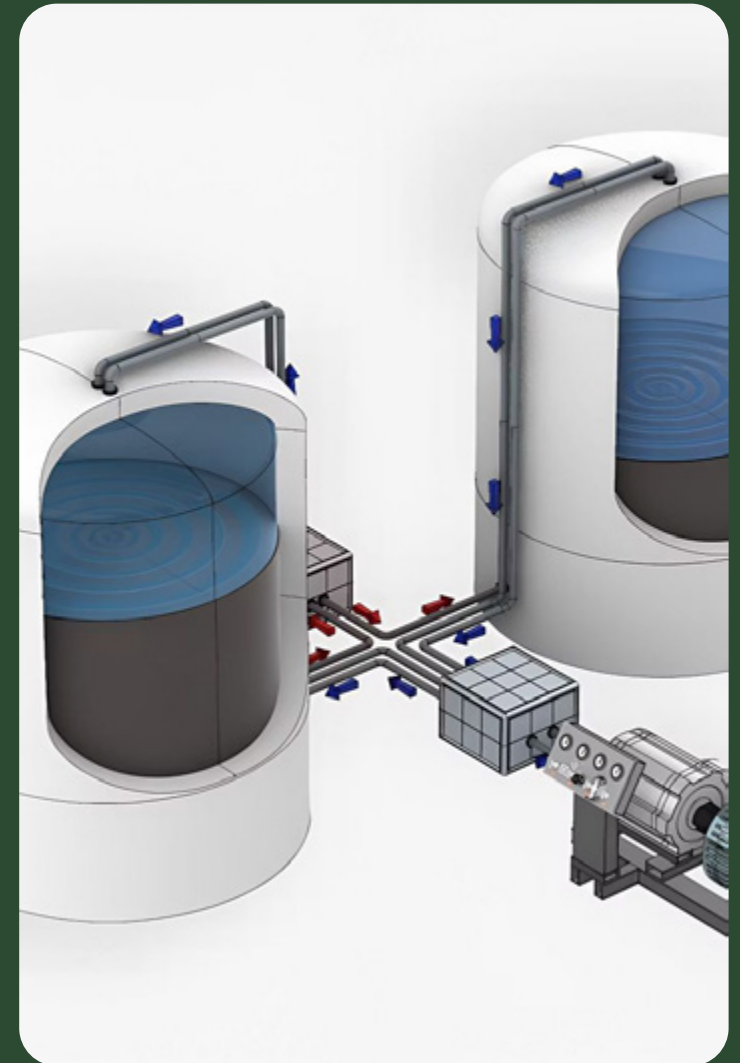
It Stores Air (Pressure)

Using a liquid-based compression method, air is stored in high-pressure tanks.



Converts to Power and Cooling on Demand

Multi-stage expansion generates electricity, while exhaust cold energy is utilized for cooling.

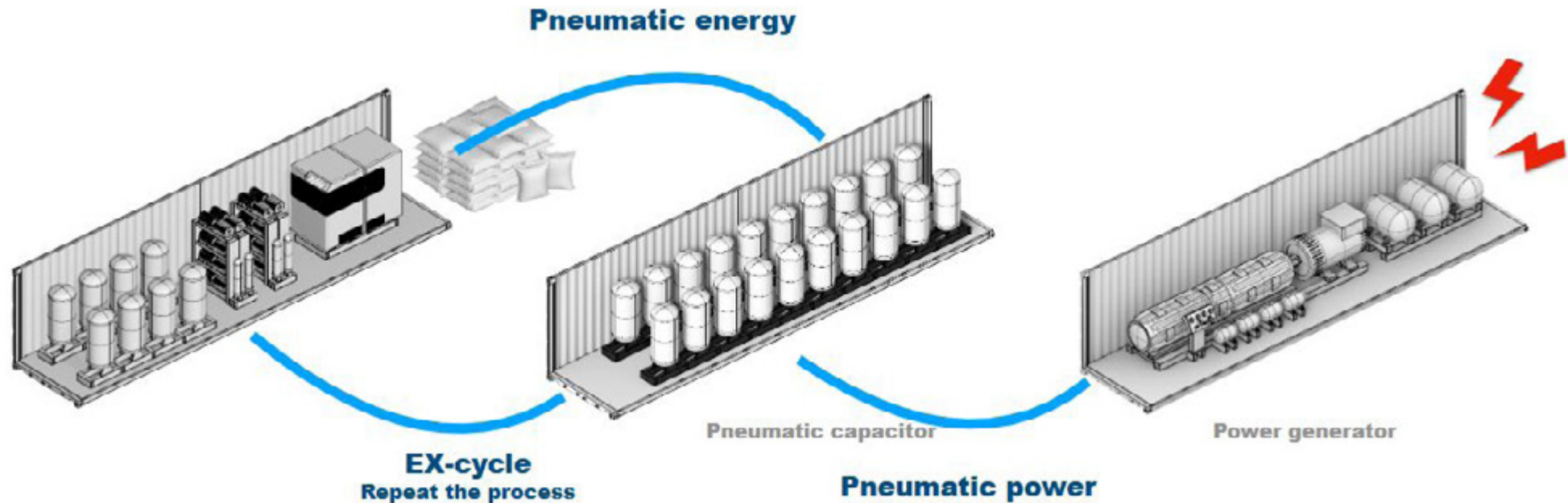


CAO & Biomass



Agricultural waste, marine by-products, atmospheric CO₂ — what already exists around DOBIDO becomes the fuel for Air Factory.
What is discarded becomes energy.

Thermal energy from CAO and biomass is supplied to the Air Factory to produce and store pneumatic energy. Through pneumatic engines, this system simultaneously generates electricity and delivers cooling services — forming a distributed energy system.



Energy Source Phased Validation Strategy



Claiming a technology works and proving it are two different things. EXSP speaks not with assertions, but with data — through phased validation gates.



01 | EX-SOLAR 2.0 — Generating Pneumatic Pressure from Solar Heat

Solar radiation is absorbed during the day to produce pneumatic pressure. We measure how reliably energy can be generated under actual sunlight conditions on Dobido Island.

02 | EX-SMART CELL — Storing and Stably Supplying Pneumatic Pressure

Produced pneumatic pressure is stored in tanks and drawn upon as needed. We validate whether energy can be supplied without interruption at night or on cloudy days, and whether it meets safety standards.

03 | CAO & Biomass — Using Local Resources as Fuel

Resources available around Dobido — agricultural waste, fishery by-products, and more — are used as fuel for the Air Factory. We verify whether stable supply is achievable and whether environmental standards are met.



PART 3 – Three Core Demonstration Domains

Air Village · EX-ALGAE · Green AI Data Center

Once the energy sources are validated, compressed air flows into three domains. A single Air Factory simultaneously powering residential living, bioproduction, and digital infrastructure – proven through continuous, real-world data.

*Not words, but data. Not demonstrations, but 24-hour operation.
We prove that all three domains run simultaneously – right here on Dobido.*



DOMAIN 1 – Air Village

Air Village – The Moment a Village Becomes a Power Plant

Residential Demonstration Based on Pneumatic Energy

Pneumatic Energy Community

A single village generates its own pneumatic energy – and multiple villages together become one power plant.

AIR VILLAGE

AIR VILLAGE VILLAGE-SCALE PNEUMATIC ENERGY INFRASTRUCTURE



The village generates its own energy

A central Air Factory produces and stores compressed air, which is then distributed to each household through EX-LINE pipelines.



Simultaneous power and cooling supply

Each household's pneumatic engine generates electricity, while the EX-PCU provides cooling. Two services delivered from a single energy source.



Multiple villages become one power plant

By integrating multiple Air Villages into a VAPP (Virtual Air Power Plant), they collectively form a virtual power plant capable of participating in the energy grid.

What is Air Village?

Air conditioners, refrigerators, lighting – what if everything we use every day ran on pneumatic power? Air Village answers that question with real data. Air Village is a village-scale distributed energy infrastructure that uses pneumatic power (compressed air) as its energy medium.

PNEUMATIC-BASED DISTRIBUTED ENERGY

PNEUMATIC DISTRIBUTED ENERGY INFRASTRUCTURE



1.43°C

Temperature rise above pre-industrial levels as of 2025 (WMO)

**Hottest 11
Years**

2015–2025 observed in
recorded history

2x+

Projected increase in cooling energy
consumption by 2050 (IEA)

Why Air Village, Why Now

In 2026, urban heat islands have become the front line of the climate crisis. Cooling demand is surging, and the power grid is reaching its limits. If we don't act now, next summer will be even hotter. In the age of climate crisis — from village-scale energy independence to large-scale VAPP.

Surging electricity demand, peak load stress, blackout risks, and limited access to cooling are escalating simultaneously.



Air Village Core Structure

No complex energy infrastructure required. A single pipe delivers both power and cooling to the entire village simultaneously.

Compressed air is generated centrally, while electricity and cooling are converted at each household.



Small Air Factory

The compressed air production hub located at the heart of the village. It generates and stores compressed air in tanks, then distributes it reliably to each household through the EX-LINE piping network.



EX-LINE Pipe Network

A compressed air pipeline laid throughout the village, much like a conventional water supply system. It delivers stable pressure to every household and measures consumption precisely through metering units.



Household Conversion Unit

A pneumatic engine generates electricity while the EX-PCU provides cooling. A single compressed air input simultaneously delivers two services — power and cooling — to each home.

Conventional power grids supply only electricity. Air Village uses a single pipe to deliver both power and cooling at once — reducing infrastructure costs, minimizing energy losses, and turning the entire village into one unified energy unit.



This is an actual residential example image of the Dobido Air Village. Each home is equipped with built-in pneumatic piping – the pneumatic engine supplies electricity while the EX-PCU provides cooling. Solar thermal absorption panels work in tandem with the pneumatic system, allowing residents to receive both power and cooling simultaneously without any connection to the conventional electricity grid.

Air Village 4-Layer System Architecture



A single household's cooling ultimately feeds into a virtual power plant. Four interconnected layers transform a village into a complete energy ecosystem. From energy generation to virtual power plant, all four layers are organically connected.



DIVERSIFIED ENERGY – Energy Sources

EX-SOLAR 2.0 · EX-SMART CELL · CAO & Biomass | Configured as standalone or hybrid depending on local conditions



AIR FACTORY – Compressed Air Production & Storage

EX-CYCLE (air compression) · AIR TANK (storage) · CONTROL (quality management) | Centrally produces compressed air and distributes via EX-LINE



AIR VILLAGE MODULES – Per-Household Conversion

Air Engine (electricity) · EX-PCU (cooling) · AMI/EMS (metering & control) | Installed in standardized modules of 10, 50, or 100 households



VAPP – Virtual Air Power Plant

Integrates multiple Air Villages into a single virtual power plant · Participates in electricity, reserve capacity, and demand response markets



The aerial view above illustrates the 4-layer structure from the previous slide in three dimensions. Starting from the bottom with energy sources (solar, compressed air storage, and biomass), the Air Factory produces compressed air, individual household conversion units generate electricity and cooling, and finally, multiple villages are integrated into a single virtual power plant (VAPP).

Air Village Pilot Plan — Living Lab Operation Model



Real people live here, real data accumulates here. The Dobido Living Lab is not a showroom — it is proof of concept operating 24 hours a day.

New Construction — Designed from the Ground Up for Compressed Air

Installation Specifications

- New homes designed with built-in pneumatic piping and dedicated EX-PCU space
- Parallel comparison between compressed air cooling units and conventional electric cooling baseline units
- Measured parameters: temperature, humidity, CO₂, particulate matter, noise, pressure, and power consumption

Phased Validation Procedure

- **Step 1:** Pre-operation with 10 households → gather one full season of comparative data
- **Step 2:** Expand to 50 households after performance verification
- **Step 3:** Scale to 100 households after standardization of 50-unit model; validate replicability
- **Step 4:** Independent verification body confirms KPIs and clears the Gate
- Standard construction drawings (BOM) for new builds serve as the baseline for overseas replication models

Existing Buildings — Repurposed as Research and Office Facilities

Existing resort complex buildings are excluded from residential pilot testing and instead repurposed as research labs, offices, and visitor information centers for Air Village operations. They serve as the hub for pilot data analysis, collaboration with verification agencies, and visitor education programs.

Key KPIs

Compressed air cooling COP, electricity savings rate, indoor thermal comfort (PMV), and pressure stability

Comparison Baseline

1:1 parallel measurement against electric cooling units within the same building

Validation Conditions

30 consecutive days of operational data + official test report issued by an independent verification body

Phased Validation Roadmap



The roadmap above illustrates the four-phase expansion path for the Air Village validation program: GATE 0 (design, regulatory review, and test planning) → 10 units (performance, safety, and 30-day continuous operation) → 50 units (seasonal, economic, and grid validation) → 100 units (replicability, VAPP, and emergency operation). Only data that passes each phase unlocks funding for the next.

Core Validation KPIs



Numbers don't lie. Only when all KPIs across 6 domains are met can we truly say, "It's proven."

The product of this pilot is not equipment — it's **'trustworthy performance data.'** An independent verification body participates from Gate 0.



How efficiently is energy being generated?

We measure how much energy is required to produce one unit of pneumatic pressure, and how cooling efficiency compares to conventional air conditioning.



Is pneumatic pressure delivered without interruption?

We verify that pressure is stably delivered to each household through the piping system, and that it operates continuously for 24 hours without leakage or supply disruption.



How long and reliably does the system operate?

We measure continuous uptime without failure and recovery speed in the event of a fault. The target is 30 consecutive days of uninterrupted operation.



Does it meet safety standards?

We verify that safety hazards such as overpressure, fire, and noise remain below threshold levels, and that the system shuts down immediately in emergency situations.



Are actual residents satisfied?

We track whether indoor temperature, humidity, and air quality in households using pneumatic cooling are comfortable, along with resident satisfaction scores and complaint rates.



Is it economically viable?

We compare per-household installation costs, operating costs, and cooling unit costs against conventional electric air conditioning to validate real-world economic feasibility.



DOMAIN 2 – EX-ALGAE

Pneumatic-Based Microalgae Production Demonstration

The ocean is already a vast bioenergy factory.
We connect it through pneumatics.

EX-ALGAE consumes CO₂ and produces oxygen and biofuel.

Pneumatic bubbling supplies CO₂ to enable large-scale microalgae cultivation. The potential for circular production of biofuel and high-value biomaterials will be demonstrated at DOBIDO AIR ISLAND.



EX-ALGAE Pilot Plan – End-to-End Technology Validation

We start with 1,000m² of cultivation pools. The goal is not commercial production – the data must prove whether pneumatic bubbling genuinely accelerates microalgae growth.

Total cultivation area: 1,000m² (4 pools × 250m² each). The focus is on technology validation, not mass commercial production. Comparative cultivation across strain, CO₂, flow, and irradiance conditions will be used to derive optimal operating parameters.



Facility Configuration

- Seed Culture Container – strain cultivation and storage
- Scale-up PBR – photobioreactor mass cultivation
- Harvest Unit – centrifugal separation + pneumatic drying
- Wet HTL/CAO Pilot – bio-oil extraction
- DAC drying → Air Factory fuel supply integration

Core KPI

Microalgae productivity (g/m²·day), CO₂ absorption rate

Water Reuse Rate

Cultivation water recycling rate, compliance with wastewater treatment standards

Step-by-Step Validation Procedure

- **Step 1:** Strain selection and CO₂ bubbling condition optimization
- **Step 2:** 1 pool (250m²) → 30-day continuous cultivation data acquisition
- **Step 3:** All 4 pools running simultaneously → end-to-end harvest and extraction validation
- **Step 4:** KPI confirmed by independent verification body → Gate clearance

Bio-oil Yield

CAO yield, oil extraction rate relative to dry weight

Validation Conditions

90-day continuous operation + official report issued by independent verification body



DOMAIN 3 – Green AI Data Center

Pneumatic Cooling-Based AI Data Center Demonstration

Servers are cooled using compressed air, and the energy released during expansion is recovered. Based on a 500kW IT load, PUE, WUE, and CUE are measured on-site to establish a global reference for Green AI infrastructure.

AI consumes power. That power produces carbon.

The Green AI Data Center changes that equation through pneumatic cooling – starting here, at DOBIDO.

Green AI Data Center Demonstration Plan



500kW is no small number. It is the optimal demonstration scale — large enough to measure real performance differences clearly, while keeping risk under control. What is proven here will become the global standard.

500kW

Target IT Load

1.20

Target PUE (Energy Efficiency)

1MW

Final Commercial Scale Target



IT Specifications

500kW IT load
8–12 racks, averaging 40–60kW/rack
High-density test: 1–2 racks up to 100kW class



Comparative Demonstration

Pneumatic cooling zone vs. baseline cooling zone — separated
PUE, WUE, and rack temperature compared under identical server loads
Automatic bypass cooling activated upon pneumatic system failure



Efficiency Targets

Target PUE ≤ 1.20 (annual measured average)
WUE: Minimize external cooling water usage
Availability: Equivalent to Tier II+ at initial phase



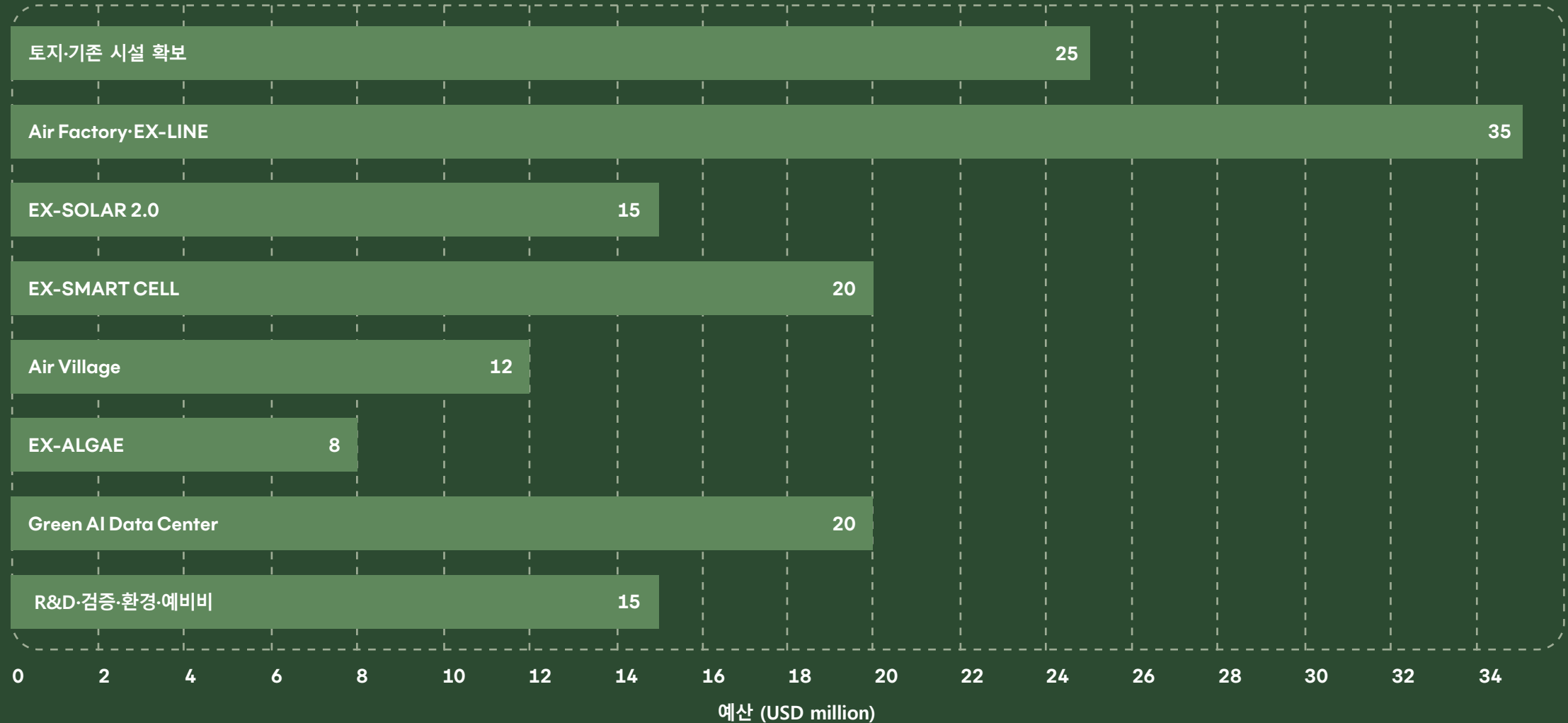
Expansion Pathway

200kW Validation Module
→ 500kW Demonstration Center
→ 1MW Commercial Reference Center



Total Budget USD 150M – Deployed in Phases

구분





Risks and Value Pathways — Full Transparency

We don't hide risks. Recognizing each risk, preparing a response, and turning it into results — that is EXSP's strategy.

Key Risks and Mitigations

Can we secure the land?

Acquiring the DOBIDO AIR ISLAND site and obtaining development permits is the first gateway to the project. Legal rights and development feasibility will be verified before any contracts are signed. If issues arise, we pivot to co-development or an alternative zone.

Does the technology actually work?

Pneumatic energy systems have yet to be proven at large scale. That is why we start small (200kW) to gather real data first, with independent expert institutions involved in validation from day one.

Is energy available at night and on cloudy days?

Energy supply cannot be interrupted when sunlight is absent or equipment stops. Three backups are always on standby: grid connection, pneumatic storage tanks, and an emergency cooling system.

Can we prove the "green" claim?

Claiming to be eco-friendly and proving it are two different things. Every stage from energy generation to end-of-life is measured, and only results independently verified with hard numbers are made public.

Revenue and Value Pathways

The world comes to see it firsthand

DOBIDO AIR ISLAND is not just a factory — it is an experiential energy campus. Global corporations and governments visit the site, verify the technology in person, and pay for the experience.

Sell energy while demonstrating it

Supplying electricity and cooling to Air Village residents generates real revenue. Proof-of-concept and profitability happen simultaneously.

Lease servers, generate revenue

Server capacity at the Green AI Data Center is leased to enterprises, or AI compute services are offered directly. Pneumatic cooling keeps operating costs low, enabling competitive pricing.

Export the DOBIDO AIR ISLAND model to the world

The blueprints and operational know-how validated at DOBIDO AIR ISLAND are licensed to overseas partners, or direct construction and operations contracts are secured. This is the long-term revenue stream with the highest expected profit margins.



AI-Operated Air Energy Island – Strategic Overview

Generating energy alone is not enough. Dobido will become the world’s first island where AI manages the entire island as a single intelligent organism.

“Measure everything. Control intelligently. Report transparently. Operate safely with human accountability.”

Dobido is designed so that AI can manage the entire island autonomously — without requiring human oversight around the clock. From energy production to cooling and data center operations, AI continuously measures, optimizes, and immediately alerts operators when anomalies arise.

Core Operating Principles

Repetitive tasks are handled by AI

Routine operations such as energy monitoring, optimization, and reporting are handled automatically by AI, 24 hours a day.

Critical decisions are made by people

Any significant action affecting safety, the environment, or finances must receive final approval from a designated human responsible.

Only what is proven by data is stated

All claims regarding sustainability, energy independence, and efficiency are disclosed only through actual measured data and third-party verification results.

The island stays safe even if AI goes offline

In the event of a network failure or AI error, on-site safety systems operate independently and without interruption.

AI Operations Scope

Operations Domain	What AI Does	Systems Managed
Energy Input	Forecasts weather and feedstock conditions to regulate energy input levels	Solar · Biomass · CAO
Pneumatic Production	Optimizes pressure and flow in real time	Air Factory · Compressors · Tanks
Storage & Output	Monitors storage levels and adjusts output timing based on demand	Smart Cell · Output Devices
Supply & Demand	Prioritizes where and how much power, cooling, and compressed air to deliver	Air Village · Data Center · EX-ALGAE
Environment & Safety	Immediately detects anomalies in emissions, noise, and fire risk	Ventilation · Shutoff · Alarm Systems
Management Reporting	Automatically summarizes performance, costs, and exceptions for reporting	Operators · Management · Investors · Auditors

AI Agent Organization

AI Agent	Assigned Role
EX-Orchestrator	Oversees all AI Agents and coordinates overall goals and priorities as the lead controller
EX-Energy Agent	Forecasts and optimizes energy production, storage, and distribution
EX-Safe Agent	Monitors hazardous conditions and recommends emergency procedures
EX-Maint Agent	Detects equipment anomalies early and automatically generates maintenance schedules
EX-Compute Agent	Optimizes data center server load and cooling performance
EX-Report Agent	Automatically generates daily, monthly, and investor-ready reports

How We Validate — A 4-Stage Verification Process



It starts with individual component testing and ends with third-party certification. Only data that passes each stage unlocks funding for the next.

01

Test Each Component Individually First

Engines, heat exchangers, compressors, and storage tanks are tested separately to confirm safety standards and rated performance.

02

Connect the Full System and Run It for 72 Hours Straight

Once all components are integrated on-site, the system must operate continuously for 72 hours without interruption.

03

Test Across Summer, Winter, and Overcast Conditions

Energy system performance varies by season. Performance data is collected across a range of climate conditions to ensure consistency.

04

An Independent Authority Officially Confirms the Results

Independent testing institutions and universities — not EXSP — verify the results and issue official certification reports accessible to the public.

What Happens and When — Phase-by-Phase Execution Plan



DOBIDO is not built overnight. Each phase spans six months, and 43 months from now, we go global.

Phase 0 (Months 0–6)

Secure the land and begin design — site acquisition, permitting, and preliminary engineering

Phase 1A (Months 7–18)

Build core infrastructure and achieve first operation — install Air Factory, EX-LINE, and 200kW data center; complete 72-hour and 30-day continuous operation runs

Phase 1B (Months 19–30)

Begin residential and microalgae pilot — construct 10 new homes, establish 1,000m² microalgae cultivation, and confirm seasonal performance data

Phase 2 (Months 31–42)

Scale up and obtain third-party validation — expand to 20–30 homes, upgrade data center to 500kW, complete 90-day continuous operation, and receive official third-party certification

Phase 3 (Month 43 onward)

Go global — launch international education programs, technology licensing, and overseas construction contracts



PART 4 – Expansion Vision

VAPP · EX-ALGAE Expansion · Archipelago · Global

What is proven on Dobido does not stay on Dobido.

One island becomes a standard, the standard becomes an archipelago, and the archipelago becomes the world.

Once validation is complete, Dobido will be replicated. Built on verified data, the pneumatic energy platform will expand across domestic islands and into global markets. One island becomes a node, and the archipelago becomes a single platform.



VAPP: Multiple Air Villages as a Single Energy Resource

Virtual Air Power Plant — Distributed Pneumatic Energy, Unified

One Air Village is an experiment. Ten Air Villages are a power plant. VAPP integrates distributed pneumatic energy into a single, reliable source of power. We don't promise theoretical maximum capacity — we promise only what's available right now. By aggregating multiple Air Villages, we create one **trustworthy power plant**.



VAPP AGGREGATOR

Real-time available capacity · Demand forecasting · Settlement & control · Emergency prioritization

GRID INTEGRATION

Power supply · Reserve capacity · Demand response

INTEGRATED REVENUE MODEL

Power & cooling energy services · Availability & resilience · VAPP demand response & ancillary services · Equipment, O&M & platform revenue



Why Microalgae — Korea's Geographic Advantage

Technology validated on 1,000m² at DOBIDO AIR ISLAND now scales to the entire West Sea coast. Fishermen's cages become bio-energy platforms, and abandoned salt flats become microalgae farms.

Korea already possesses world-class conditions for microalgae production. Three seas, 3,300 islands — we simply haven't harnessed them as energy yet.

Feed on CO₂, generate energy, and restore the ocean



Microalgae grow by consuming carbon from the air

- They grow rapidly with only sunlight and CO₂ — 10 to 50 times faster than land plants.
- They absorb carbon naturally without any additional energy input.
- Supplying CO₂ through pneumatic bubbling accelerates growth even further.



Korea's coastline is a natural microalgae farm

- Over 15,000 km of coastline across the West, South, and East Seas, with more than 3,300 islands
- Existing fishery infrastructure (cages, ports, cold storage) can be utilized as-is.
- Production happens at sea — no need to purchase new land.



A single microalgae crop yields multiple revenue streams

- Bio-oil → Eco-friendly marine fuel (meeting international environmental regulations)
- Biomass → Recycled as fuel for Air Factory
- High-value materials → Ingredients for pharmaceuticals, cosmetics, and food
- Carbon credits → Monetized on international carbon markets



4 Site Types — Islands · Offshore Cages · Coastlines · Abandoned Salt Flats & Reclaimed Land

Start anywhere — islands, sea, coastlines, and vacant land all become microalgae farms

Islands — Operate independently, like DOBIDO AIR ISLAND

- **Target:** Small islands (similar in scale to Dobido)
- **Approach:** Co-locate Air Factory with microalgae cultivation facilities
- **Strengths:** Direct on-site energy use; easily replicated across other islands
- **Products:** Bio-oil, high-value biomaterials
- **Primary Targets:** West Sea islands in South Chungcheong & South Jeolla provinces

Offshore — Fishing cages become bioenergy farms

- **Target:** Existing aquaculture cage zones
- **Approach:** Floating cultivation systems on the water + pneumatic CO₂ supply
- **Strengths:** Leverages existing fishery infrastructure; large surface area available
- **Products:** Biomass, feed & fertilizer feedstocks
- **Fishermen Income Transition:** Shift from fishing to bioenergy partnership

Ports — Fuel delivered directly to vessels

- **Target:** Vacant land near ports and breakwaters
- **Approach:** Clustered modular cultivation units in container format
- **Strengths:** Convenient logistics; bio-oil supplied directly to ships on-site
- **Products:** Eco-friendly marine fuel, carbon credits

Vacant Land — Abandoned salt flats become energy farms

- **Target:** Disused salt flats, reclaimed land, and idle coastal farmland along the West Sea
- **Approach:** Land-based cultivation facilities + containerized modular units
- **Strengths:** Abundant sunlight, streamlined permitting, easy coastal logistics access
- **Products:** Bio-oil, biomass, carbon credits
- **Community Participation:** Land leased by residents with revenue sharing (30% resident equity)
- **Primary Targets:** Abandoned salt flat clusters in Seosan, Taean & Boryeong, South Chungcheong (approx. 3,000 ha nationwide)



Microalgae Value Chain — From CO₂ to Revenue

One biomass source generates four distinct revenue streams.

Capture carbon from the air and feed it to microalgae

- Directly absorb CO₂ from the atmosphere or connect to industrial emission sources
- Distribute CO₂ evenly into cultivation tanks using Air Factory pneumatic pressure
- Carbon is not wasted — it becomes a raw material

Rapid growth powered by sunlight and CO₂ alone

- Operate photobioreactors (PBR) and open cultivation tanks in tandem
- Circulate water and regulate temperature using pneumatic energy
- Harvestable every 7–14 days — over 20 times faster than rice

Harvested microalgae are separated by intended use

- Remove moisture via centrifugation and pneumatic drying
- Separate into oil, protein, and residual biomass fractions
- Refine each component for its specific application

One microalgae crop sold in four different forms

- Bio-oil → Eco-friendly marine fuel (meets international environmental regulations)
- Biomass → Recycled as fuel for Air Factory
- High-value materials → Pharmaceutical, cosmetic, and food ingredients
- Carbon credits → Monetized on international carbon markets

50x

CO₂ Absorption

Absorbs up to 50 times more carbon than terrestrial plants

20–50%

Bio-oil Yield

Up to half of the dry weight of microalgae can be converted to oil

\$12B+

Marine Fuel Market

Projected size of the eco-friendly marine fuel market by 2030

300K+

Farmer Income Transition

Over 300,000 farming and fishing households can participate



EX-ALGAE Expansion Roadmap – From Dobido to the Entire West Coast

Pilot → Standardize → Coastal Scale-Up → Global Export (Offshore + Abandoned Salt Flats & Reclaimed Land)

Phase 0 (2026–2027): Dobido Pilot

- Validate pneumatic bubbling PBR cultivation at 10 tons/month
- Measure actual bio-oil extraction yields
- Carbon absorption certification by independent verification body

Phase 2 (2028–2030): Coastal Cluster Development

- Build 3 port-linked Coastal Hubs
- Expand to 10 clusters across West Coast abandoned salt flats and reclaimed land (500 ha total)
- Launch marine fuel supply pilot (pursuing IMO certification)
- First carbon credit sales on international markets

Phase 4 (2032+): Global Export

- Technology export to Southeast Asia, Pacific island nations, and coastal countries with idle land
- EX-ALGAE platform licensing business
- Build a global carbon credit portfolio

Phase 1 (2027–2028): West Sea Offshore + Abandoned Salt Flats – Simultaneous Expansion

- Establish Island Nodes on 5 West Sea islands (fishermen partnership model)
- Launch land-based PBR pilot at 2 abandoned salt flat sites in Seosan & Taean, South Chungcheong (land lease model)
- Sign and verify first revenue-sharing contracts with local residents

Phase 3 (2030–2032): Full West Coast Network

- Operate 30 domestic island & coastal nodes + 20 abandoned salt flat sites
- Target annual bio-oil production of 100,000 tons
- Reach 10,000 participating local households (fishermen + coastal residents)

Starting from Dobido, Expanding Across All of Korea's Islands

One island proves the model — and 3,300 islands follow.

| *We replicate exactly what has been validated on Dobido. Each island generates its own energy, and when those islands connect, they become one vast data center.*

Dobido is the starting point. Once the validated module is replicated, Korea's 3,300 islands become a single distributed energy network. The archipelago is the data center.

Islands were once defined by energy scarcity. Going forward, they will be defined as places that generate energy and run AI.

Each island generates energy — together, they form a single power plant.

The pneumatic energy from each island is aggregated and fed into the grid. Even if a single island is small, many islands combined function as a large-scale power plant.

Each island hosts servers — operated as one unified data center.

Servers on each island are connected via the internet and integrated into a single pool of computing resources. Regardless of which island processes the task, the result is the same.

Energy and computing are unified on a single platform.

Energy management and server operations are optimized simultaneously. Islands with surplus energy receive more AI workloads; islands with shortfalls receive fewer.



Where the DOBIDO Model Is Needed – 4 Global Markets

Not for profit. The world already has places facing the same challenges as DOBIDO. One validated model becomes the answer for all of them..



Southeast Asian Island Nations – The More Islands, the Greater the Energy Problem

Indonesia's 17,000 islands, the Philippines' 7,600 islands, Vietnam's coastal islands – they all share one thing in common. Central power grids don't reach them, so they rely on diesel generators, fuel costs are high, and power is frequently cut by typhoons and earthquakes. The DOBIDO model is the first validated answer to generating energy from local resources without external fuel.



Pacific & Indian Ocean Island Nations – Survival Depends on Fuel Shipped by Sea

Fiji, Palau, the Maldives, and Sri Lanka's coastal islands depend entirely on imported fuel for all their energy. If the fuel ship is delayed, power generation stops. In a region where rising sea levels threaten survival itself, energy independence is not a choice – it is a condition for survival.



Conflict Zones – Where Power Grids Are Destroyed, Central Infrastructure Cannot Be Rebuilt

In conflict zones across Ukraine, the Middle East, and Africa, central power plants and transmission networks become targets of attack. Pneumatic energy modules that can be installed in container units and operate independently offer a distributed energy solution that enables immediate deployment – not reconstruction.



European Island Regions – Caught Between Dependence on Imported Fuel and Carbon Regulations

Islands in the Mediterranean and North Sea depend on expensive imported fuel while simultaneously having to meet EU carbon regulations. The DOBIDO model – generating energy from local resources while reducing carbon emissions – solves both problems at once.

DOBIDO Is Open to the World — Anyone Can Come, Observe, Measure, and Learn



The climate crisis and energy poverty are not problems confined to any single nation. DOBIDO is an open space for everyone seeking answers. Data is not hidden. The site can be visited in person. Technology is validated together.

Governments & Nations — Seeking a New Model for Energy Policy

Governments pursuing energy independence, nations working to meet carbon reduction targets, and policymakers tackling electricity challenges in islands and remote regions come to DOBIDO to see a working model firsthand. We persuade with data, not claims.

Corporations & Investors — Proposing Partnerships Around Proven Technology

Global companies driving green energy transitions, institutions looking to invest in distributed energy infrastructure, and partners evaluating the commercial potential of pneumatic technology come to DOBIDO to operate the technology themselves and make informed decisions.

Research & Academic Institutions — Co-Developing the Next Generation of Energy

Universities, research institutes, and international organizations utilize DOBIDO's real-world measurement data for joint research. At the world's only living lab integrating pneumatic energy, microalgae, and AI operations, the standards for next-generation energy technology are being established.

"What is proven at DOBIDO does not stay at DOBIDO. The data goes out to the world, and the world comes to DOBIDO."



See It, Feel It, and Verify It for Yourself — at DOBIDO AIR ISLAND

This is not a presentation about energy transition. At DOBIDO, pneumatic energy actually cools homes, microalgae actually grows, and AI actually operates the island. It is a living energy laboratory unlike anything else in the world.

Pneumatic Energy Center — Witness the Moment Air Becomes Energy

Watch the Air Factory generate compressed air in real time and see it flow through pipes to the village. Efficiency metrics are displayed live on a public dashboard.

Air Village — Spend a Night in a Home Cooled by Pneumatic Energy

Experience pneumatic air conditioning in a real residential home. Side-by-side performance data comparing it to conventional air conditioners is available for direct review.

Microalgae Lab — Watch CO₂ Transform into Energy

Observe the full cycle — from microalgae growing in cultivation tanks, to harvesting, to conversion into bio-oil. Carbon absorption is measured and displayed in real time.

Green AI Data Center — See Servers Cooled by Compressed Air

Compare energy efficiency between a conventional data center and a pneumatically cooled one, side by side. PUE and WUE figures are shown in real time.

Global Replication Center — Simulate What It Would Look Like in Your Country

Enter the island and coastal conditions of your home country, and instantly receive projected figures for energy self-sufficiency and carbon reduction under the DOBIDO model.

All data is shared openly and in real time. DOBIDO has nothing to hide. That transparency is where trust begins.



DOBIDO AIR ISLAND – One Island Becomes the World's Standard

In Act 1, we saw the crisis. In Act 2, we presented the solution. In Act 3, we proved it with data. In Act 4, we scale it to the world. Dobido is where every part of that journey begins.

The energy crisis is a global problem. But the answer doesn't have to come from a massive power plant — it can start from a single island. The pneumatic energy platform proven on Dobido will be replicated across Korea's 3,300 islands, and beyond — to Indonesia, the Philippines, and Pacific island nations. Islands once starved of power will become platforms that generate energy, run AI, and create income for local communities.

G0 Land

Secure the land on Dobido and finalize the development plan

G1 Technology

Begin operations at 200kW scale and validate safety and performance over 30 days

G2 Integration

Operate residential, microalgae, and data center systems simultaneously to gather integrated data

G3 Scale

Expand the data center to 500kW and housing capacity — officially verified by an external body after 90 consecutive days of operation

G4 Commercial

Replicate overseas using proven designs and operational know-how

Let's start the Conversation

Contact us



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