VOLTA
STRUCTURAL ENERGY

Storing energy where it was never possible before

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The Problem: traditional batteries are dead weight

In aerospace every kilogram has a performance and revenue cost and batteries pay nothing

SMALLSATS

10-30%
Battery Mass

10-30%
Battery Volume

Up to 250K€/Kg lost revenue per satellite

30-90 Kg of sensors or propellant dislplaced on a 200/300Kg BUS

UAV / UGV / USV

40-55%
Battery Mass

35-50%
Battery Volume

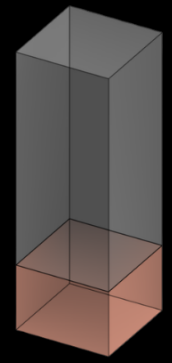
40-60% reduced range or payload capacity

The battery is the last physiscal component that still adds mass, volume and zero functions beyond energy storage

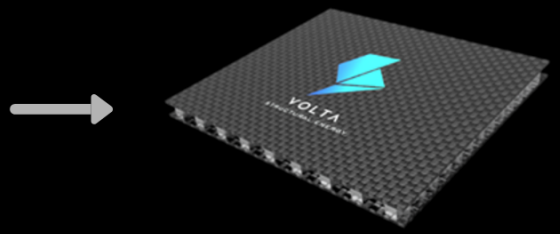
Volta's Solution: from inert mass to Multifuctional Component

Volta panel-shaped structural batteries replace the structure itself, storing energy with zero additional volume.

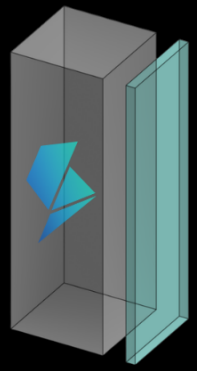
Conventional System



Battery and payload compete for the same space

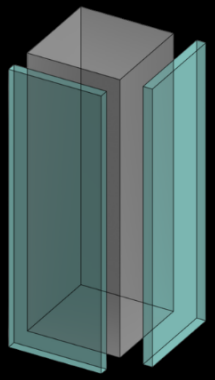


Same energy



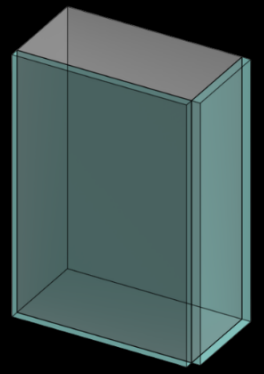
...to panel-like load bearing battery. Full internal volume availability..

energy 2x



..Modular and scalable...

energy 3x +



Configurable form factor and energy for any aerospace application

+30%

Payload capacity unlocked

2-4X

Energy & power vs standard packs

€€€

Enhancing mission profiles and revenue opportunities

The Volta Structural Battery (VSB)

A patented platform converting any ready-to-use chemistry (and beyond) into a drop-in structural battery

1 Patented Formable Strcutural Cells

Na-Ion for power-dense applications
Li-Ion for high-energy application
In house asssembled & validated

Core IP - electrodes and cells that bear load AND store energy simultaneusly

2 Modular Honeycomb Core Architechture

GEN 0 (TRL6): max simplicity, min cost
GEN 1 (TRL5): stiffest configuration
GEN 2 (TRL2): best weight to stiffness

Unlimited form factors (flat, curved, cyslindrical), safe by design

3 Composite Sandwich Panel Integration

Drop-in replacment for structural panels minimizing cost of adoption. Compatible with OEM production lines

No platform redesign required to the customer

TODAY > 200Wh/Kg ESSE* (+33% vs avg. industry)

18-MONTH TARGET > 400Wh/kg ESSE* (+165% vs avg. industry)

**ESSE = Equivalet Structural Specific Energy*

= VSB Capavity / (VSB Mass - Original Structure Mass)

Validated Gains enhancing mission economics

Zero Volume battery footprint and mass optimization enabling new performance standards

SMALLSATS

Volume recovered

+7L

volume freed for payload

-4kg mass reduction
+50% equivalent energy density

Source: Sitael feasibility study, ~100 kg platform (IAC 2024)

LARGE SAT

Mass Reduction

-40kg

mass freed for sensors, propellant or redundancy

+30 L internal volume recovered
up to +500% available power

Source: Thales Alenia Space, COSMO-SkyMed class, ~500 kg platform

UAV

Energy Density Increase

+54–200%

across validated UAV and defense platforms

130–350 Wh/kg on defence platform
up to +200% available power

Sources: Leonardo drone study | Leonardo-affiliated defense platform Na-ion study

These gains require ZERO change in active material chemistry. They come entirely from cell and electrode architectural innovation

Traction: Growing Customer Validation

Real usecases, documented KPIs and milestone driven partneships across space and defense

10 LOIs & MoUs
>€6.5M€ non-committed pipeline

Letters of intent and MoUs signed with tier-1 space and defense primes including Exotrail, Space Industries, SITAEL, 2NDSpace, Dhruva Space, Endurosat and others.

- Exotrail
- Space Industries
- SITAEL
- 2NDSpace
- Dhruva Space
- LMA
- Endurosat
- Space Locker

5 PoC Contracts
>180K€ contracted revenues

Paid proof-of-concept programs with milestone-based deliverables across space, defense, drones and land mobility. +1 expanding into a 2yr program focused of commercialization for TIER 1 defense customer (800K-1.2M€).

- TASI
- TIER 1 Defense
- Halo Technologies
- Marcolin

1+ Joint Dev. Program
Financed

Vinnovate-financed co-development program with 2NDSpace for a commercial structural battery cubesat bus. Ground qualification campaign starting June 2026.

- 2NDSpace
- RHP Technology

Technology Progress: TRL3 to TRL6 in 24 months

From first structural cells to full-scale cubesat demonstrator – tested in simulated operational environment

Q1 2024

TRL3

First Structural Battery Concepts

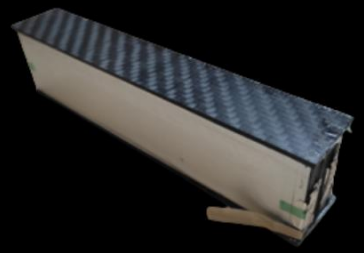
Na-Ion cells in-house manufacturing.

Q3 2024

TRL4

Cubesat Structural Battery Proof of concept

1U component validation in laboratory environemnt, Li-ion



Q4 2024

TRL4

Beyond cubesat structural Battery Proof of concept

Consolidation of structural assembly and size scale-up

Q1 2025

TRL5

Module Validation

Multilayer linear cell modules validation in simulated relevant environment

Q3 2025

TRL5

Full-size 3U battery for cubesats validation

Cubesat plug-and-play module validation in simulated relevant environment.

Q3 2026

TRL6

Module demostration in relevant environment

3U Structural Panel GENO Tested in Thermal-vacuum fully integrating mechanical and electrical MVP features.

The Team: 30 yrs of combined experience in deeptech

Scaling from single mission to fleets and constellations

Tommaso Randolfi

CEO & Cofounder — Aeronautical Eng. (MSc)

VP Global Infrastructure & VP Strategy at Leaf Space (4× assets). Research Scholar at George Mason University for NASA's ACP composite failure prediction program

Leaf Space - George Mason University - Polimi

Gabriele Consiglio

CTO & Cofounder — Space Eng. (MSc)

Multidisciplinary engineer combining space structures and electrochemistry expertise, the rare intersection that led to Volta's core invention. Co-developed one of the world's first edible batteries.

BlueThink - Politecnico di Milano

Chiara Mirani

COO & Cofounder — Aeronautical Eng. (MSc)

Research fellow at Politecnico di Milano. Expert in advanced composite structures. Developed solutions for Brembo and Leonardo. Led EU-funded research programs.

Politecnico di Milano

Gianluca Longoni

Head of Product Dev. — PhD Electrochemistry + MBA

Postdoc at Stanford, KAIST and IIT on Na-Ion batteries. 7 years at STM developing 5 patents in semiconductor & energy applications.

Stanfort - KAIST - IIT - STMicroelectronics

€5.7M Seed Round: qualification & commercial launch

24 months runway - product qualification, first demo iterations/supply

Product & Technology

- Design freeze: BMS + thermal management
- GEN 0→1 cell development & Na-ion optimisation
- Assembly optimisation: electrodes, cells, panels
- Qualify 2–4 electrode/cell suppliers
- Reach TRL 8 across primary product line

Qualification

- Space qualification package (ECSS-E-ST-20C)
- CE Marking + UN 38.3 (Li-Ion & Na-Ion)
- In-Orbit Demonstration — launch & operation
- Pilot production line operational (batch mode)
- 50+ units delivered across customer programs

Go to market

- 4–6 paid pilot deliveries (space + defense)
- 2–3 OEM framework supply agreements
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- Series A fundraise launch: €15–20M

Revenues at Seed exit	Binding pipeline	Pilot production	Team
€600-1.2M€	**€8-12M**	**100 kWh/yr**	**16 FTEs**

VOLTA
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