



ENERGY VAULT®
Enabling a Renewable World



H-VAULT™

Green hydrogen & battery hybrid for multi-day resilience

Communities need the lights on. But in the face of increasingly unpredictable grid conditions, demand profiles, and weather patterns, ensuring robust fault-tolerant supply has never been more challenging. Clean, reliable, cost-effective back-up power is critical to enable islanded microgrids during transmission outages.

H-VAULT™ provides the multi-day reserve power required to ensure the reliability of critical community infrastructure, no matter how frequent the need. The H-VAULT™'s hybrid system configuration couples the fast-response functionality of lithium-ion batteries with the long-duration capability of onsite green hydrogen and fuel cell generation. Native VaultOS™ Energy Management System (EMS) software integration ensures seamless monitoring and control.



THERE WHEN YOU NEED IT

Be prepared with stable long-term energy storage, ready to be called upon at a moment's notice



MULTI-DAY DURATION

Ensure power through extended transmission outages or other contingency events



EMISSION-FREE

Operate as needed, knowing there are zero local greenhouse gas or particulate emissions



BLACK-START

Repower safely and rapidly after a loss of power with black-start and grid-forming capabilities

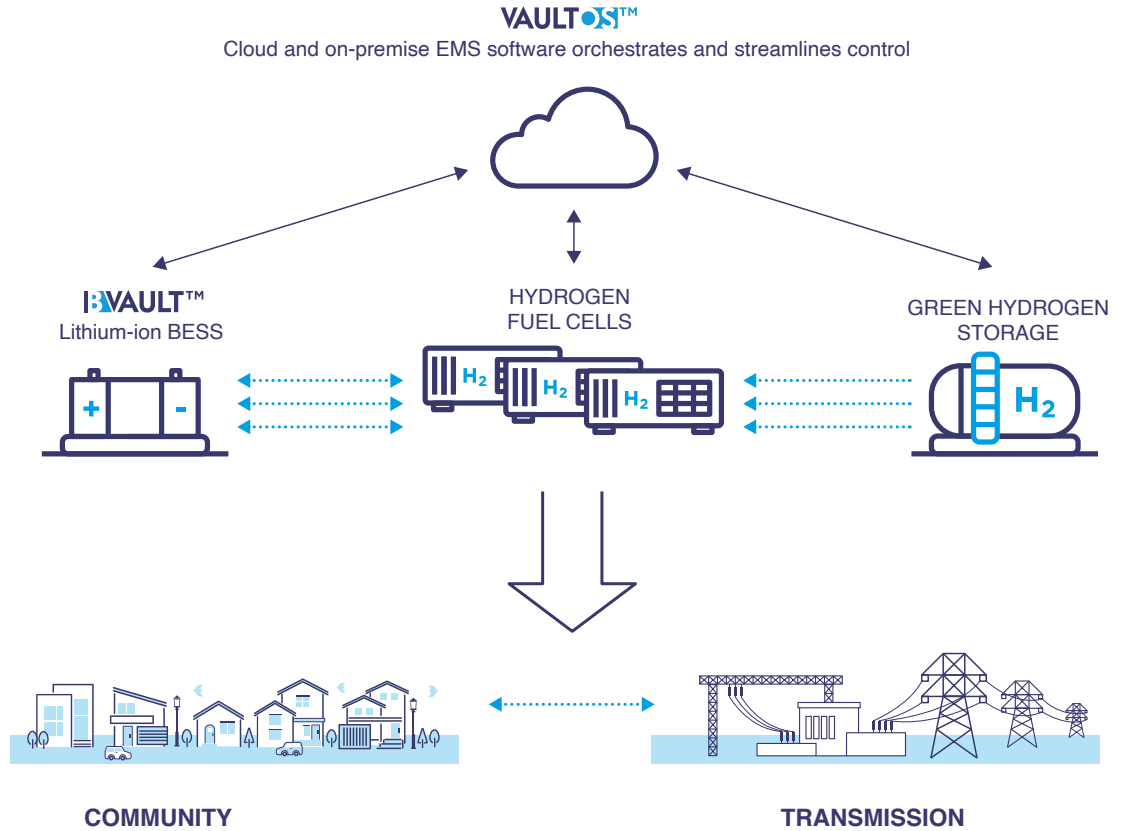


SAFETY

Leverage passive and active fire safety design along with industry-leading cybersecurity architecture

H-VAULT™

The H-VAULT™ is purpose-built as a drop-in turnkey solution providing emission-free resilient back-up power. H-VAULT™ is designed to address diverse project needs by utilizing a series of modular system components orchestrated by VaultOS™. This unique ultra-long duration energy storage architecture allows for easy scalability, site installation, and targeted maintenance throughout the asset's lifetime.



HOW H-VAULT™ COMPARES TO TYPICAL FOSSIL FUEL BACKUP

Comparison for 48-hour duration system (10 MW peak / 300 MWh)†

PARAMETER	H-VAULT™	BACKUP DIESEL GENERATOR
Technology	Green LH ₂ , fuel cells, B-VAULT™	Comparable Backup Generator
Point Source GHG Emissions	0 kg CO ₂ e/MWh	194 lb CO ₂ e/MWh (88 kg CO ₂ e/MWh)
Fuel Type	Hydrogen (green* or otherwise)	Diesel #4 (4-D)
Onsite Fuel Storage	20,000 kg	10,200 gallons
Duration between Refueling Cycles	48 hours	8-12 hours
Fuel Shelf Life	Unlimited	6 months
Extended Duration without Disruption	Yes	Code dependent
Market Participation	Yes, adaptable to use cases	Limited
Site Footprint	2/3 acre (0.27 hectare)	1/3 acre (0.13 hectare)

† Calculations based on standard 10.5-year operational lifetime.

* Green Hydrogen is produced using methods which result in low or zero direct carbon emissions, as defined by California's Renewable Portfolio Standard (RPS).