IFBF 2025

June 24, 2025

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H2, Inc. | *The advanced energy storage company*

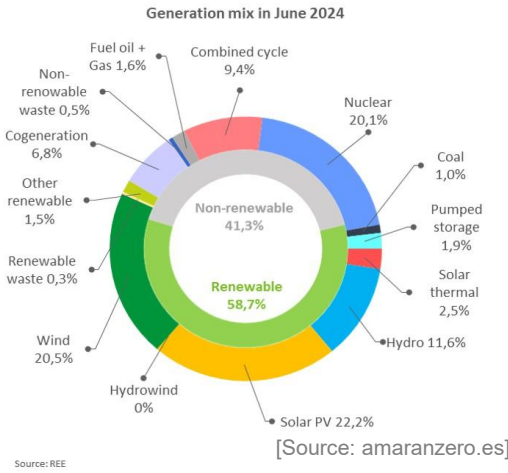
Company Introduction

H2, Inc.

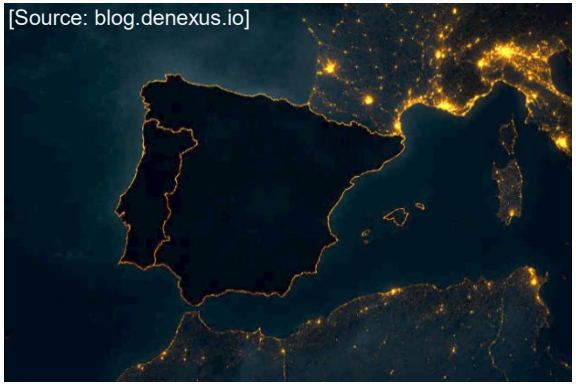
- Founded in 2010
- Located in South Korea
- VFB Production Capacity: 330 MWh/yr
- Funding Raised: $52m
- ~40 MWh VFB projects delivered or in progress across 6 countries

Why Spain?

- Renewable energy leader
  : > 50% from renewable sources
  (PV+ wind: 45.2%)
- Recent power outages across Spain highlight the need for grid resilience
- Launched €700 million program to increase storage capacity
  (2.5 – 3.5 GW by 2030)



[Source: amaranzero.es]


[Source: blog.denexus.io]

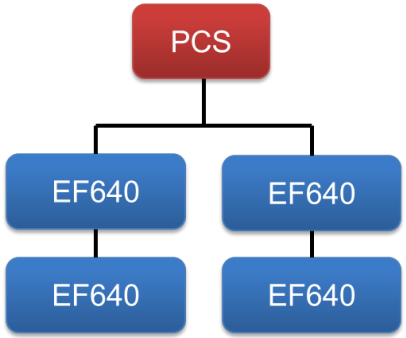
Spain’s Largest Flow Battery Project

Spain’s largest 8.8 MWh VFB Project

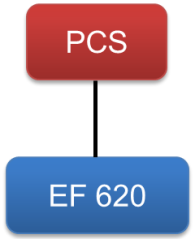
Installed capacity	**1.1 MW / 8.8 MWh (8hr)**
Site	Leon, Spain

System Configuration

- Main Module
  - 1 MW x 8h
  - Two strings
  - Each string consists of 2x EF640
  - One PCS
- Sub Module
  - 100 kW x 8h
  - Single string
  - A string consists of 1x EF620
  - One PCS



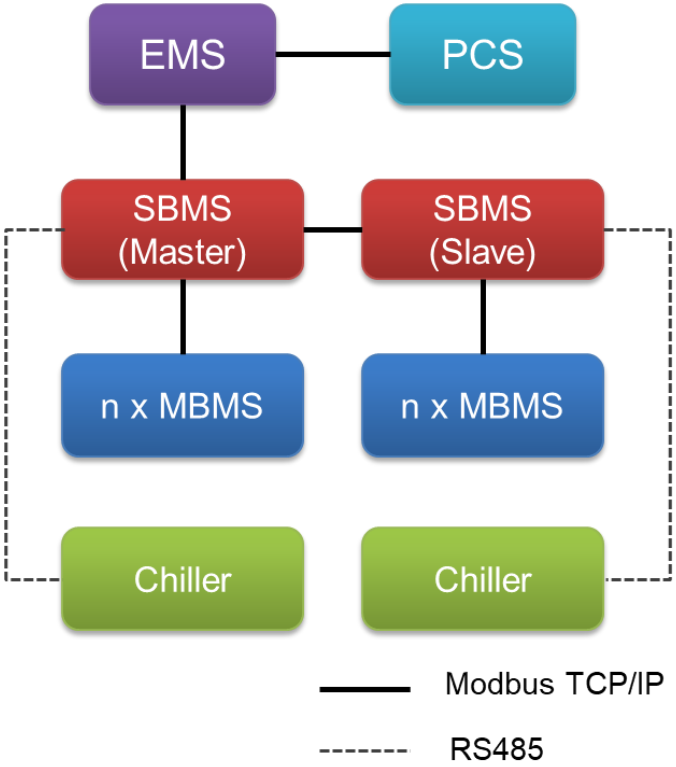
Main module



Sub module

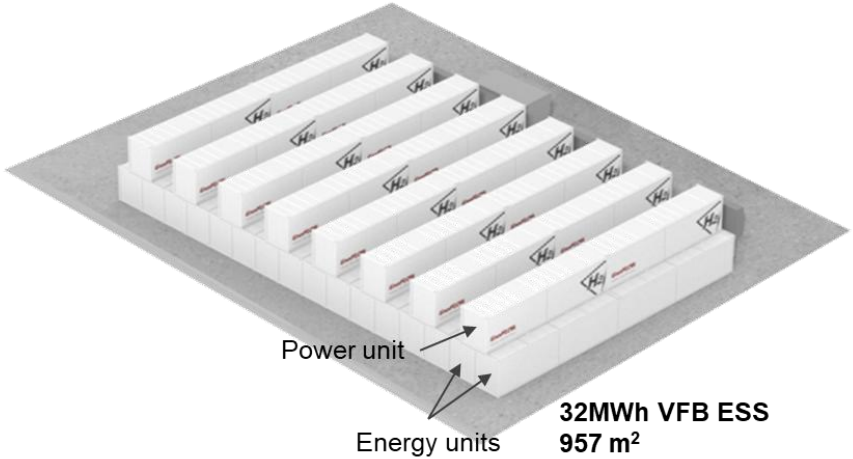
Control System Architecture

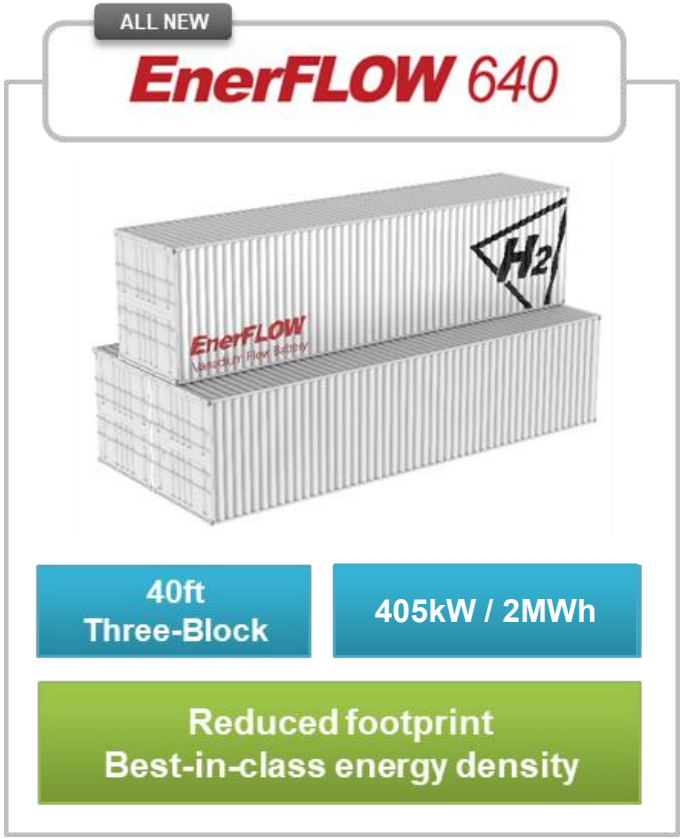
- Unit Level: MBMS (Module BMS)
  - Monitoring
  - Pump control
  - SOC calculation
  - Safety
- String Level: SBMS (String BMS)
  - String balancing
  - Chiller control
  - Master and slave SBMS
- EMS
  - PCS control
  - Communication w/ master SBMS



EnerFLOW 640

- Modular design
- Each unit consists of three 40-foot containers
- Stackable ➔ reduced footprint
- Best-in-class energy density
- No additional space required for service

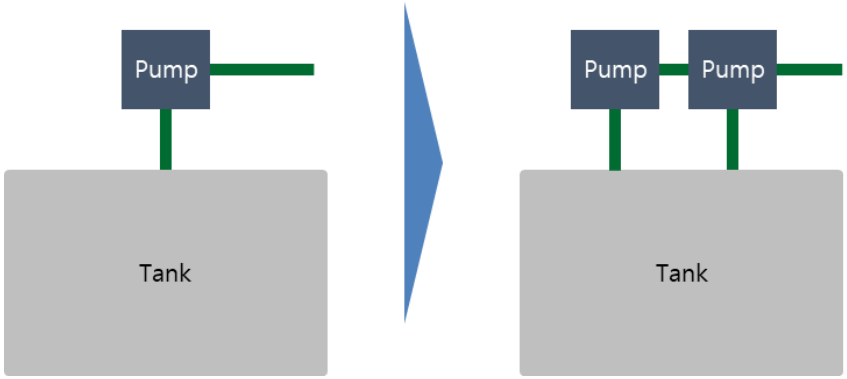


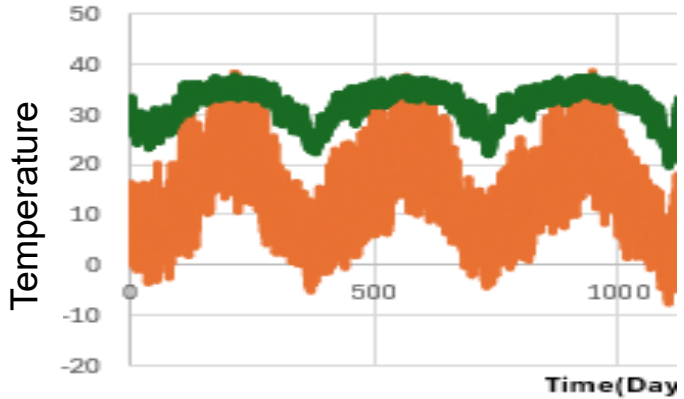


EnerFLOW 640

- Dual-pump design
  - Wider flow range
  - Higher efficiency
  - Pump failure tolerance
    → Increased availability

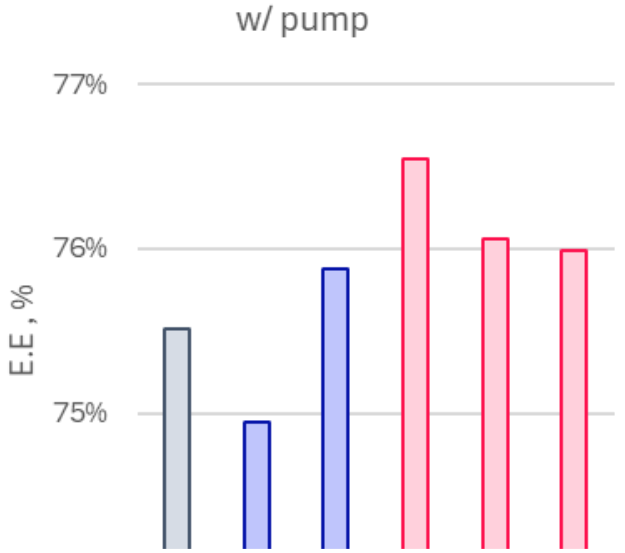
- Optimized thermal control
  - Thermal control optimized using thermal analysis
  - Balanced passive-to-active cooling ratio
  - Chiller power consumption reduced by 50%





Factory Test

- Power and energy capacity tests passed
- Safety and leakage tests passed
- Pre-deployment validation completed
- > 75% round-trip efficiency achieved
- Flow control optimization increased efficiency by over 4%



Test under various flow control scheme

Project Status

Hardware installation complete, electrical connection on going

CIUDEN, León, Spain, **2025.05.07**

CIUDEN, León, Spain, **2025.05.09**

Lessons learned

- External risks in overseas shipping
  - Geopolitical instability
    (e.g., Middle East conflict)
    → Plan ahead and allocate time buffers
- Chemical transportation
  - Spain requires dedicated vehicles for transporting special chemicals
    → Verify local regulations in advance
- Regulatory compliance
  - Certifications and environmental standards must be met
- Onsite workload
  - Pre-assembled, transport-ready modular design minimizes onsite tasks
  - Allocate buffer time for unforeseen delays

Conclusions

- **Proven Technology, Delivered at Scale**
  - 1.1 MW / 8.8 MWh Vanadium Flow Battery successfully deployed in León, Spain
  - Modular, stackable design enabled efficient installation and reduced footprint
- **Grid-Ready Performance**
  - 75%+ round-trip efficiency achieved
  - Advanced thermal and flow optimization technologies implemented
- **International Viability Demonstrated**
  - Regulatory compliance, chemical transport, and logistics managed across borders
  - Pre-tested, pre-assembled system minimized onsite challenges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