

Ktech Corp

Flow Battery Solution for Smart Grid Renewable Energy Applications

Project Description

Ktech and EnerVault, will integrate EnerVault's Vault-20 battery energy storage system (250 kW, 1 MWh) with a Helios dual-axis tracker 180 kW photovoltaic (PV) system. The system will be deployed at an agricultural site in California's Central Valley. It will store the energy generated and dispatch power to run an irrigation pump and inject energy back into the utility grid during peak times to help offset demand from a section that comprises 4 percent of California's electricity demand. The modularity of the system provides scalability for multi-megawatt deployments. The Vault-20 is based on 20-foot container building blocks. Two electrolyte tanks (one anolyte, one catholyte) form the bottom level for two power containers that hold the stacks, pumps, control system, and power conditioning system. Technology development will progress from 15x15 cm lab-scale cells and 20 layer stacks, to a 2-5 kW prototype system, to a 40 kW alpha system, and conclude with a 250 kW beta system. EnerVault plans to begin manufacturing flow battery stacks in its Northern California plant within 12 months of project completion.

Goals/Objectives

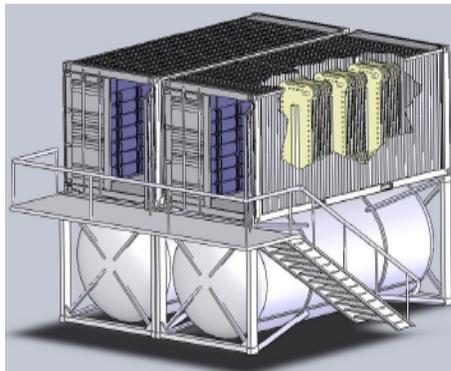
- Develop a modular system rated at 250 kW and 1 MWh that fits inside a standard 20 foot shipping container to minimize onsite deployment time and maximize cost
- Integrate a battery energy storage system with a variable renewable energy resource
- Reduce cost and environmental impacts

Key Milestones

- 2-5 kW prototype system demonstration (March 2011)
- 40 kW alpha stack demonstration (October 2011)
- 250 kW Vault-20 beta unit installed at demonstration site (June 2012)
- 250 kW Vault-20 beta unit demonstration (December 2012)

Benefits

- 50-150 direct and 175-525 indirect jobs created
- Energy cost lowered
- Greenhouse gas emissions reduced
- Global competitive edge gained by the U.S



CONTACTS

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PARTNERS

EnerVault Corporation
JKB Energy
Montpelier Nut Company

PROJECT DURATION

8/06/2010-8/05/2013

BUDGET

Total Project Value

\$9,528,568

DOE/Non-DOE Share

\$4,764,284/\$4,764,284

EQUIPMENT

Inverter
Impedance Analyzer
Electric Load/Supply 20kW, 60kW

DEMONSTRATION STATES

California
CID: OE0000225

Managed by the National Energy Technology Laboratory for the Office of Electricity Delivery and Energy Reliability