

2.5kW/10kWh Redox Flow Battery (RFB) with Low-cost Electrolyte Membrane Technologies

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Technology Summary

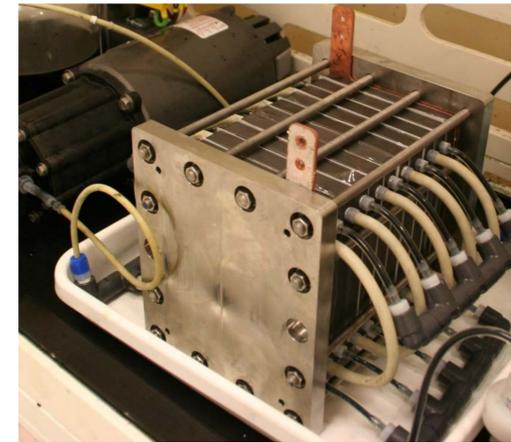
- Low-cost membranes with improved H- conduction and chemical durability
- Superior Mn-V electrolytes as low-cost alternate to V-V system
- RFB combining low-cost membrane, electrolyte, and high performance cell design
- Deliver higher performance, lower cost RFB than state-of-art VRB

Program Details

- Goal: 2.5kW/10kWh RFB with integrated BoS; Cost target ~\$1200/unit; ~1.2m² footprint
- Deliverable: 250W/1kWh Mn-V RFB with integrated BoS: Active area >150cm²; >100 cycles
- Cost model for 2.5kW/10kWh Mn-V RFB with BoS based on 250W/1kWh system

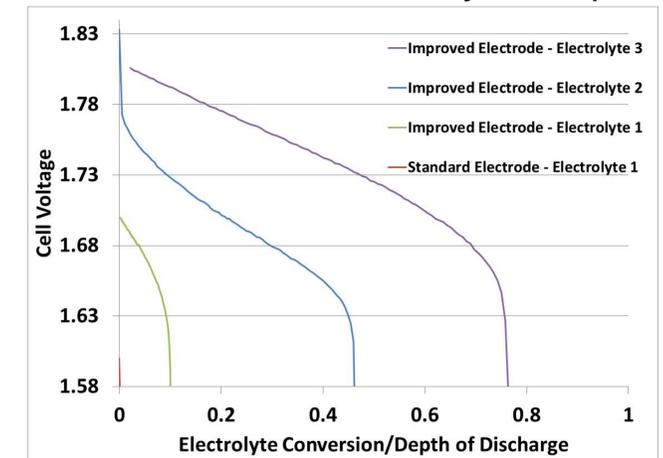
Summary of Progress

- Improved cycling of Mn-V RFB and capacity utilization of Mn electrolyte
- Novel approaches enabled low-cost membranes with improved chemical durability
- Demonstrated performance of large area cells and stacks

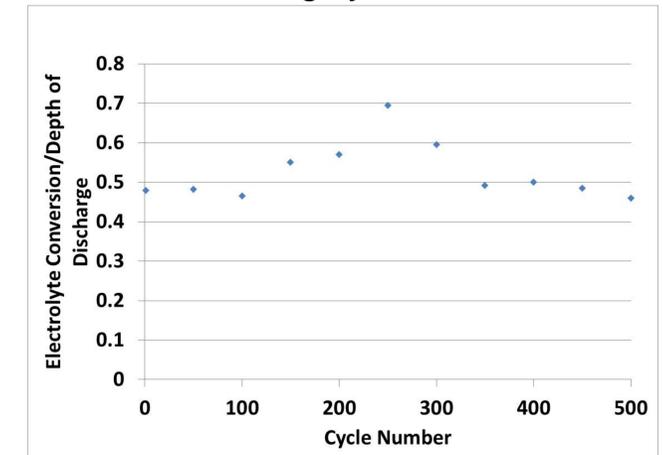


High performance 150cm²
250W/1kWh stack

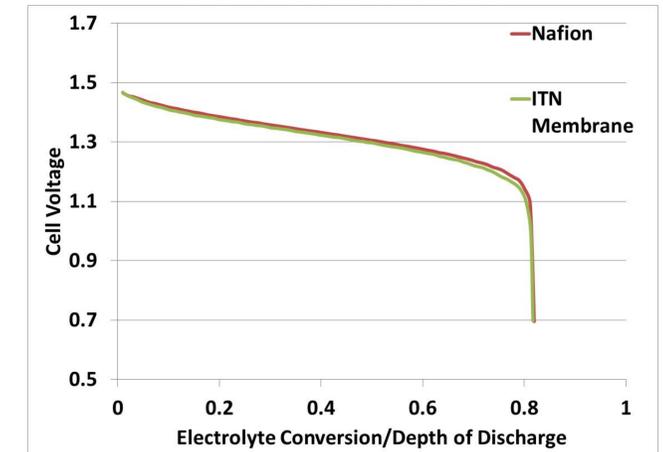
Improvements to initial discharge capacity through improved electrodes and electrolyte composition



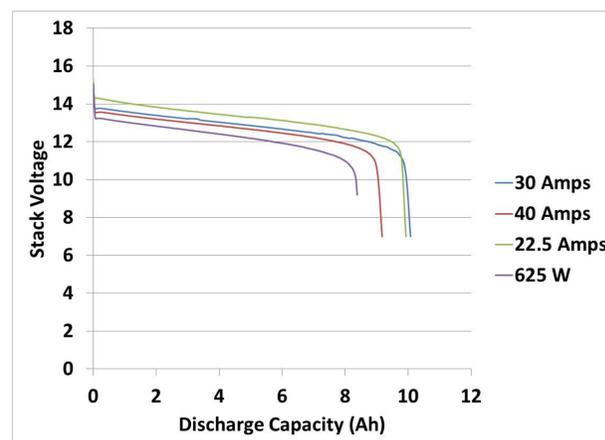
Demonstrated long cycle life of Mn-V cell



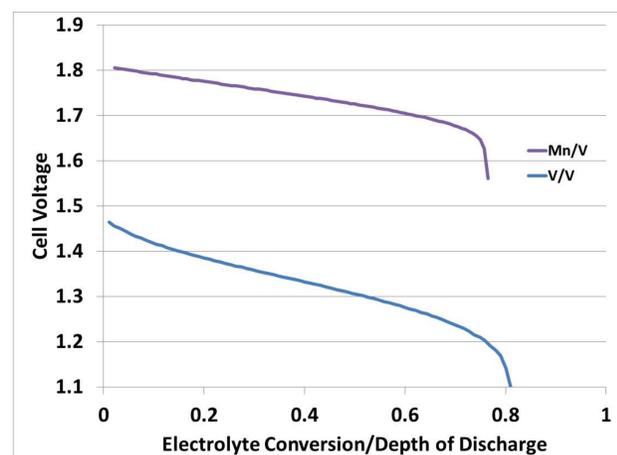
Demonstrated initial performance of low-cost membrane



Performance of 150cm², 10 cell stack



Demonstrated Mn capacity utilization similar to V electrolyte with 0.4V higher discharge voltage



Program Managers: Dr. John Lemmon & Dr. Reid Heffner

High-Performance, Low-cost RFB through Electrolyte & Membrane Innovations