

# Flow Battery Test Equipment



*Custom flow battery test station*



*1kW flow battery test station*

Greenlight offers fully-automated test solutions for durability and R&D testing of Redox flow cells.

**Test systems include:**

- Load/power supply modules; various power levels
- Independent automated control of flow, pressure and temperature of electrolyte fluids
- Cell voltage monitoring and expandable data logging system
- Emerald™ 24/7 control software with automation programming options including scripts, tables, and flow charts
- Capacity and energy monitoring; state of health, state of charge, depth of discharge
- Options include constant state of charge mode (4-tank system), impedance spectroscopy, environmental chambers



*Flow battery test hardware*



Greenlight also offers flow battery testing hardware to those researchers who wish to experiment with their own membranes.

# Flow Battery Manufacturing Equipment

Greenlight offers turn-key redox flow battery manufacturing equipment, including jigs and fixtures, allowing users to pre-assemble the many layers of a flow battery stack before it is slid on rollers into the press, where the stack is compressed and the end-plates are bolted together. Options include robotic assembly, transfer/rotation carts, leak testing systems and automated strap welding systems.

## Assembly Press

- » Capacity: up to 600kN (70 ton)
- » Force controlled by servo-motor with load cell feedback; Accuracy:  $\pm 2\%$
- » Stroke: 3m (customized for each application)
- » Fixture Area: 800mm x 962mm (other sizes available)
- » Power: 380 to 575 VAC  $\emptyset$ 3ph 20A, 50 or 60Hz
- » Features: Variable speed operation with 2 programmable pressure setpoints
- » Stationary with optional pallets for stack transfer, or sliding press head for stack loading
- » Options for stack height recorder and light curtains



## Tilt Fixture

Allows assembled flow battery stacks to be clamped and rotated during the manufacturing process.



## Transfer Cart

Greenlight offers both manual and automated tilt / transfer carts for rotating and moving large redox flow batteries. These carts can be offered as stand-alone systems, or integrated with assembly fixtures (including robotic assembly systems), leak test systems and compression devices.



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