LOCKHEED MARTIN

GridStar® Flow

Long-Duration, Large-Capacity Energy Storage
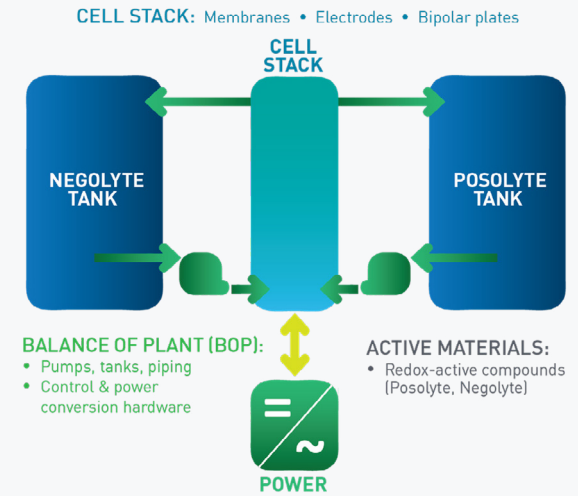
GridStar Flow

FLEXIBLE, LONG-DURATION, ENERGY STORAGE TO ENABLE LOW-CARBON, RELIABLE,RESILIENT ELECTRICITY

GridStar Flow is an innovative redox flow battery designed for long-duration, large-capacity energy storage applications, to address the new, disruptive challenges faced by the electric sector and enable clean, reliable, and secure energy.

Flow batteries differ from sealed batteries (e.g., lead acid, lithium-ion) in that they separate the power and energy portions of a battery system and allow each to be independently sized. Energy is stored in a liquid electrolyte which is flowed through a stack of electrodes.

Developed in the US, GridStar Flow is based on a novel and protected redox flow battery chemistry that consists of water-based, non-flammable engineered electrolytes made from commonly available materials that enable durability, flexibility, safety and a competitive total cost of ownership.

CELL STACK: Membranes • Electrodes • Bipolar plates

CELL STACK

NEGOLYTE TANK

POSOLYTE TANK

BALANCE OF PLANT (BOP):
• Pumps, tanks, piping
• Control & power conversion hardware

ACTIVE MATERIALS:
• Redox-active compounds (Posolyte, Negolyte)
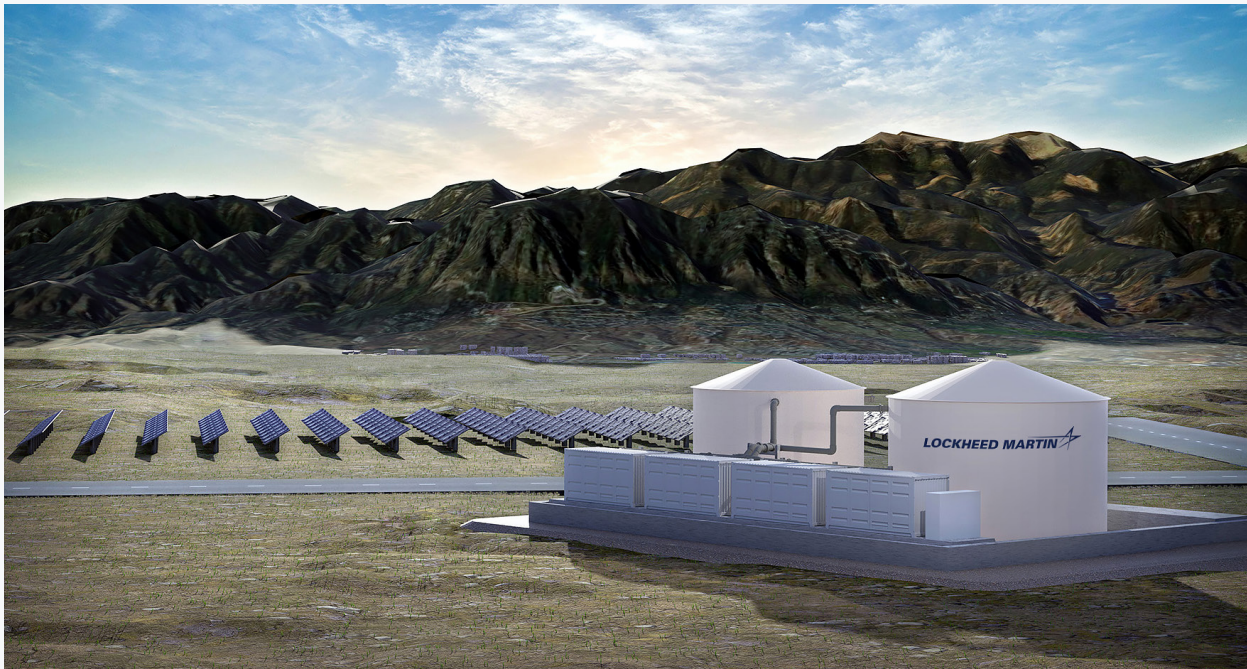
POWER

APPLICATIONS

- Renewable generation bulk shifting (large amounts of energy for many hours)
- Large-scale transmission & distribution deferral
- Peaking unit replacement
- Day-ahead, real-time and ancillary market optimization
- Resiliency, particularly in microgrids, islands, and military installations

ADVANTAGES

- Designed for daily-cycling and optimized for 6+ hours of flexible discharge
- Flexibility to switch between applications to maximize revenue
- 100 percent depth-of-discharge with minimal degradation
- Design life of 20 years
- Ability to size energy and power independently
- Non-flammable, water-based electrolytes
- Competitive total cost of ownership