

## Electricity Resilience

### Vulcan Localized Battery Storage and Backup Systems

**Vulcan** is a system of modular and scalable battery energy storage and 120V/240VAC power products that support continuous uninterruptible power supply (UPS) and emergency backup power functions. Vulcan can be placed in line with IT systems and other critical equipment without the use of tools or electrical wiring installation and is suitable for temporary or permanent placement. Vulcan is designed to store battery energy from various sources, such as utility, generator or solar, to power 120/240VAC loads.

**Clean, Quiet and Filtered Backup Power:** Vulcan provides a continuous supply of clean power to critical IT and other electrical equipment and produces no fumes, toxic emissions, or loud noise. Vulcan's built-in AC voltage filters clean the 120VAC/240VAC output and allow operation of sensitive electronics under any power conditions.

**Energy Efficiency:** Vulcan incorporates multiple parallel charging options, which include solar for remote installations, unlimited battery expansion and high efficiency energy conversion circuitry that provides a total round trip operating efficiency of 92% of the stored energy for longer running durations of critical equipment in minutes or hours.

**Safety:** Vulcan uses the safest lithium iron phosphate (LiFePo4 or LFP) battery chemistry, high-reliability inverter and charger circuits and thermal management for a wide operating temperature range.

- Vulcan batteries are hot swappable for decreased system downtime and incorporate short circuit, and overvoltage protections.
- Vulcan batteries are low-voltage DC, avoiding the dangers that come with high-voltage DC power.
- Clients can design, install, operate, and maintain electrical power backup systems that provide a safe and hazard-free environment and keep critical equipment operational without disruption due to the fast automatic transfer switching time of 10ms.
- Vulcan features automatic restart after overload, over temperature or battery depletion conditions.

**Voltage Sag Protection:** Vulcan provides battery power within 10ms (less than one voltage cycle) of a utility line voltage sag<sup>1</sup> and can be programmed to automatically switch to battery power with voltage sag between 90VAC to 110VAC. This protects sensitive electronic and IT equipment to decrease equipment failure rates and service calls.

**Long Term Cost-Effectiveness:** Life cycle costs are lowered and the overall ROI can be realized sooner. Meantime between failures (MTBF) and meantime to failure (MTTF) is increased and maintenance costs are lowered due to the use of higher quality components and a modular subsystem design approach. Units are field maintainable and the batteries have a 5000+ operating lifecycle over 10 years, which reduces replacement and disposal costs.

**Unlimited Battery Storage:** Vulcan's modular design allows clients to meet their unique battery sizing needs from 4KWh/5KWh onward with the addition of expansion batteries. The system's modularity also ensures fast and consistent charge times when needed.

**Modular and Compact in Size:** Due to the compact size of each module, 17"H x 23"D x 9.5"W, units can be placed directly in proximity of the equipment in need of electrical backup.

**Enhanced System Security:** Vulcan has several features that protect against electromagnetic interference (EMI), electric line degradation and cyber attacks. Vulcan contains three levels of grounding protections for EMP resilience and enhanced user safety.

**Sol Donum™** ([www.soldonum.com](http://www.soldonum.com)) is a U.S. domiciled technology company founded in 2019 that develops and manufactures portable, safe, efficient and non-toxic LiFePo4 (LFP) lithium battery energy storage systems, 120V/240VAC power technology and monitoring, command and control software. Our products provide continuous backup power and augment existing backup systems during short term and long duration power outages. Offered are a range of commercial, healthcare, mobile and residential solutions.

<sup>1</sup> Voltage sag is a short duration (typically 0.5 to 30 cycles) reduction in RMS voltage caused by faults on the power system and by the starting of large loads, such as motors.