EastPenn ecoult energy storage solutions

Energy Storage Excellence

Deka UltraBattery

A New Dimension in Lead-Acid Battery Technology

What is the Deka® UltraBattery®?

The Deka UltraBattery is a hybrid, long-life lead-acid energy storage device. It combines the fast charging rates and longevity of an ultracapacitor technology with the energy storage potential of a lead-acid battery technology in a hybrid device with a single common electrolyte.

The Deka UltraBattery is highly efficient in a continuous partial state of charge (PSoC) operation: neither totally full, nor totally empty. Conventional valve-regulated lead-acid (VRLA) batteries, when used for renewable support, are typically operated in a top of range cycling pattern and quickly fail if operated in the PSoC range.

How Does the Deka UltraBattery Work?

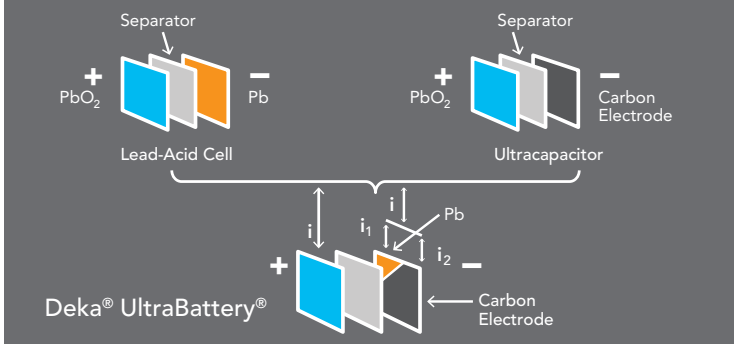
The Deka UltraBattery technology was created to exploit the performance benefits of the PSoC band, while mitigating the deteriorating effects of conventional lead-acid technology.

During normal lead-acid battery operation, lead sulfate crystals grow on the negative electrode during discharging and dissolve during charging. Over time – in a process called sulfation – some crystals can become larger and resistant to being dissolved, increasing the battery's internal resistance and decreasing its power, capacity and efficiency.

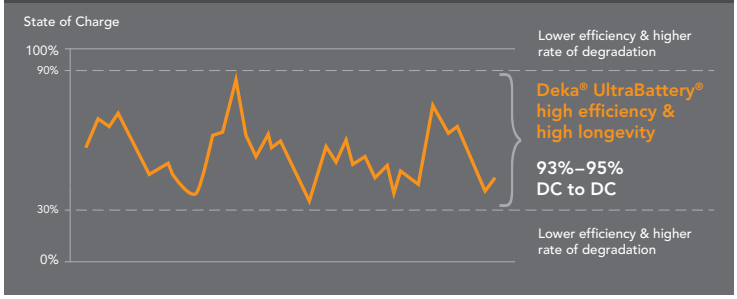
The ultracapacitor integrated in the Deka UltraBattery enhances the chemical process for storing and releasing energy, while inhibiting the sulfation process and allowing the battery to operate with high efficiency in PSoC.

These characteristics combined enable the Deka UltraBattery to outperform in its ability to process more energy in PSoC applications.

Deka® UltraBattery® Technology



High Efficiency in Partial State of Charge Use



Versatile Technology for Multiple Applications

The Deka UltraBattery's unique performance benefits in PSoC use make it the straightforward choice for a wide range of high-rate power and deep-cycle energy applications ranging from 4 kW to 10 MW, including:

+ Microgrids (including diesel efficiencies)
+ Commercial and residential energy storage
+ Grid ancillary services
+ Renewables integration
+ Multipurpose backup for data centers
+ Transport system support.

Deka UltraBattery Performance Benefits

Key Features	Benefits
High-temperature Operation The Deka UltraBattery can withstand battery temperatures up to 122° F (50° C), while still staying within warranty.	It's perfect for hot environments where temperature management or air-conditioning is not available, allowing you to operate your power system with minimal parasitic loads.
Longevity The Deka UltraBattery lasts longer and needs less frequent replacements than standard VRLA batteries in active power applications.	The Deka UltraBattery has a lower lifetime cost per kilowatt-hour.
High Efficiency The Deka UltraBattery is capable of variability management applications in PSoC: typical DC–DC efficiency is greater than 91%, even in applications that require full discharge in two hours. It's also capable of energy shifting applications in PSoC: typical DC–DC efficiency is 86–95% (rate dependent). In contrast, standard VRLA batteries have a typical efficiency of less than 70% when operating at top of charge.	The Deka UltraBattery returns more of the energy you store, and therefore more energy ends up going to where it is needed: to your load.
Peak Power The Deka UltraBattery offers continuous charge and discharge at up to 1C.	Fully PSoC high power loads, even when the grid is unavailable. Control your high power spikes to reduce demand charges.
Ultra-fast Charging The Deka UltraBattery has exceptional charge acceptance capability in PSoC operation. In the standard operating ranges used in active power applications, the Deka UltraBattery can accept charge at least three times faster than conventional lead-acid batteries. It also accepts charge faster than absorbed glass mat (AGM), gel or lithium-ion batteries.	The ultra-fast charge of the Deka UltraBattery makes it ideal for managing variability in electricity grids and absorbing the maximum amount of renewable energy. It will charge up quickly for the next loss of power on weak or unreliable grids, and reduce the runtime of diesel generators to halve fuel and maintenance costs.
Safety and Robustness The Deka UltraBattery has non-flammable electrodes and electrolytes, presenting a far lower fire hazard than combustible lithium-based chemistries. It has achieved certification as non-hazardous for transportation by the IATA and DOT. The Deka UltraBattery is manufactured by East Penn Manufacturing, whose quality and environmental management systems are certified to ISO 9001:2008, ISO/TS 16949:2009 and ISO 14001:2004. It is also designed to meet relevant UL and CE standards.	The Deka UltraBattery gives you peace of mind and confidence in the reliability of your system and safety of your personnel and facilities.
Recyclability The Deka UltraBattery is virtually 100% recyclable. Each of the three major components (lead, plastic, and acid) can be safely recycled and used in making new energy storage devices.	The closed loop recycling of the Deka UltraBattery reduces the environmental footprint of your energy storage solution.

Energy Storage Excellence – Partners
Ecoult™ is the global energy storage arm of the world's largest single-site lead battery manufacturing facility, East Penn Manufacturing (EPM), known worldwide for its quality and environmental excellence. Ecoult™ provides software, hardware, systems integration and engineering to monitor and control the energy storage systems and maximize their capabilities. EPM manufactures the Deka® UltraBattery® cells inside every system.

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