

UPS Battery With True Front Access Helps Data Centers Compete by Lowering TCO Costs

Emerging technologies such as 5G, artificial intelligence, and edge computing are fueling the growth of new data centers. As these facilities enter the market, they are putting pressure on asking prices and formerly healthy profit margins.¹

Operators of existing data centers are responding by looking for new ways to make their facilities more cost-competitive, such as by improving the efficiency of their uninterruptible power supply (UPS) systems.

Most UPS systems use valve regulated lead-acid (VRLA) batteries with top connectors and secondary welds to store power and protect against utility anomalies and outages. But even when well-managed, these batteries have a relatively short service life.

Data center uses a better VRLA battery to meet a critical need

An existing Tier 5 Platinum data center specializing in exascale technology was working with a third-party electrical services contractor to improve its UPS infrastructure. While the data center operator expected the project would involve installing conventional lead-acid batteries, the electrical contractor instead proposed the Pure Lead Plus (PLP) VRLA battery from C&D Technologies.

“The PLP VRLA battery enables UPS designers to create more compact, energy-dense, and heat-tolerant UPS racks,” C&D Technologies national account manager Kevin Thorpe says. “Data centers can use all those advantages to drive down lifecycle costs.”

The PLP VRLA battery has a proprietary paste-and-grid technology with a patented Extrusion Fusion Weld. This special weld allows a direct weld from the battery plates to the terminal on each monobloc. This architecture lowers resistance and improves discharge capability and efficiency.

Because of these advantages, C&D Technologies is able to warranty its PLP batteries for a full five years. Standard VRLA UPS batteries, on the other hand, are usually only warrantied for two or three year.

Pure lead makes batteries more resilient

The PLP VRLA battery is up to 28% more energy dense than regular lead-acid batteries.

“Higher energy density means you can design a smaller battery enclosure and still have enough power to ensure safe transfers,” Thorpe explains. Unlike standard batteries, the

¹ Data Centers, US Market Outlook 2022, CBRE Group, Inc., www.cbre.com/insights/books/us-real-estate-market-outlook-2022/data-centers.

PLP VRLA battery also tolerates higher ambient temperatures without the grid corrosion that is a primary cause of battery failure.

Because battery enclosures and rooms can run hotter, data centers can meet cooling requirements by setting thermostats higher or running smaller HVAC systems. Savings on environmental costs can be as much as 25%, and less water consumption also is a plus for operators in drought prone areas.

True front access speeds deployment and maintenance

Along with lower energy costs, the data center also expects significant savings on battery maintenance. Unlike the batteries it is replacing, the new PLP VRLA battery uses a patented True Front Access container.

“True Front Access means the front terminals are welded directly to the battery grid,” C&D Technologies senior product manager Erick Soares says. “Competing batteries often use terminal adapters, but these parts are subject to thermal expansion and often become loose over time.”

Loose terminals in a tightly packed enclosure are hard to service and increase the risk of arcing. Other manufacturers sometimes claim to have front terminals, but their batteries are using adapters to reposition the connection points. True Front Access eliminates a design compromise and makes Pure Lead Plus batteries more reliable and easier to service.

More reliable batteries allow data center operators to deploy UPS resources with reserve time that aligns more closely with actual requirements. More realistic reserve times mean smaller battery installs and lower costs for capital, utilities, and maintenance.

“Pure Lead Plus is simply a superior battery for data center UPS systems,” C&D Technologies client success manager Steve Micallef adds. “Those savings add up for our customers.”

Business need

Emerging technologies are fueling the growth of new data centers, which are depressing asking prices and margins. Operators of existing data centers must lower operating costs without compromising reliability.

Optimized solution

C&D Technologies developed a Pure Lead Plus battery with a True Front Terminal container. This battery lasts longer, is easier to install and maintain, and tolerates higher ambient temperatures.

Customer benefits

Customers can reduce costs without reducing reliability. Pure Lead Plus batteries are more energy dense and robust in typical conditions. These advantages mean UPS systems can be smaller and maintained with small HVAC loads. The front terminals simplify access, reduce service times, and limit risks such as unintended ground faults.