

MITIGATING HUMAN ERRORS IN DATA CENTERS BY PICKING A BETTER UPS BATTERY

TRUE FRONT ACCESS TERMINALS MITIGATE HUMAN ERROR



A SAFER, EASIER-TO-SUPPORT SOLUTION

A recent Uptime Institute study found that UPS failures are the single biggest cause of power-related outages in data centers.¹ Isolating the cause of these outages is challenging, but a panel of stationary battery experts noted that human error often plays a significant role in these events.²

Lead acid batteries are an often misunderstood or overlooked part of a UPS system, but they play a critical role in supporting the site load when primary power is out. Failure to properly maintain these batteries can result in an unreliable battery which could lead to a loss of power in a critical moment.



“IN MY EXPERIENCE, MY OPINION IS THAT TRUE FRONT ACCESS BATTERIES ARE SAFER AND EASIER TO SUPPORT THAN TOP TERMINALS OR EVEN BATTERIES WITH TERMINAL ADAPTERS. THEY MITIGATE RISK AND HAVE AN OUTSTANDING SERVICE LIFE. IT’S SIMPLY A BETTER INVESTMENT FOR DATA CENTERS AND OTHER CUSTOMERS WITH A CRITICAL NEED FOR BACKUP POWER.”

TRACY ZAFFINO > PRESIDENT, INTRAPACK INDUSTRIES - DALLAS, TX

> BUSINESS NEED



Failures in UPS systems are a major source of data center outages. Human error is a significant cause of these issues.

> OPTIMIZED SOLUTION



True Front Access terminals mitigate human error during preventative maintenance by reducing the need for technicians to reach inside UPS enclosures.

> CUSTOMER BENEFITS



True Front Access batteries simplify access, reduce service times, and limit risks such as unintended ground faults.

THE SOLUTION

FRONT-TERMINAL DESIGN PROMOTES ERGONOMICS AND SAFETY

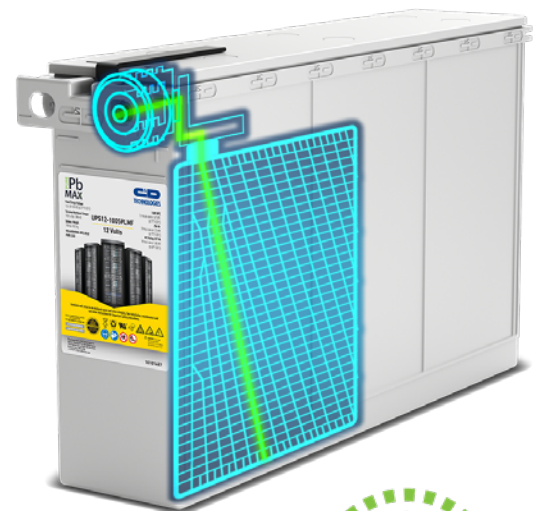
Stationary battery technicians typically perform preventative maintenance at least twice a year. This task involves checking UPS components along with the internal ohmic value of the batteries.³

Historically, top terminal batteries were the only option for UPS battery backup. This style of battery presents many challenges to maintenance technicians. First, the cabinets or racks are densely populated, forcing technicians to reach inside of these systems with voltages as high as 540VDC. Additionally, large cables between the batteries make access to the posts difficult, which prevents technicians from getting accurate Ohmic measurements. Finally, because of the terminal location, access space must be left between tiers, reducing the space efficiency of the arrangement.

In an effort to overcome these challenges, some battery manufacturers developed batteries that were called “front access” or “front terminal” that changed the footprint of the battery and moved the terminals near the front edge, making them easier to access from the front of the cabinet. The next breakthrough was the introduction of terminal adapters that brought the battery-to-battery connections to the side of the battery, giving technicians the ability to maintain the connections without reaching into the cabinet or between the shelves. However, these adapters created challenges of their own.

“Terminal adapters increase the installation and maintenance workload,” said C&D Technologies Senior Product Manager for UPS and Renewables Erick Soares. “They often have different torque values between top and front, with top bolts often being hidden. This could lead to hidden failures and will require additional work to avoid battery damage.”

Retorquing terminal adapters also increases the chance of an adverse event, such as an uninsulated tool causing an arc fault within the UPS enclosure.



THE BENEFITS

TRUE FRONT ACCESS TERMINALS DON'T REQUIRE RETORQUING

In 2008, C&D Technologies launched the first True Front Access™ Valve Regulated Lead-Acid (VRLA) battery to better manage service risks in telecommunications and data center operations. Unlike conventional batteries, the TFA architecture featured a direct weld between the battery plates and a pair of over-sized front terminals molded into the front of the battery case.

“True Front Access batteries have lower resistance and improve discharge capability and efficiency,” Soares said. “And they don’t require adapters, which means technicians can check batteries without reaching inside the enclosure.”

C&D Technologies has continued to improve its True Front Access batteries. In 2023, it introduced the Pure Lead Max VRLA battery with an industry-leading 8-year standard warranty and 16-year design life.



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THE OUTCOME

**UPS ENCLOSURE MANUFACTURER RECOMMENDS
TRUE FRONT ACCESS BATTERIES.**

True Front Access enhances safety and sustainability while providing more options for where and how the batteries can be deployed. These advantages make them an ideal battery for UPS system manufacturers that want to provide customers with a more maintenance-friendly backup power solution.

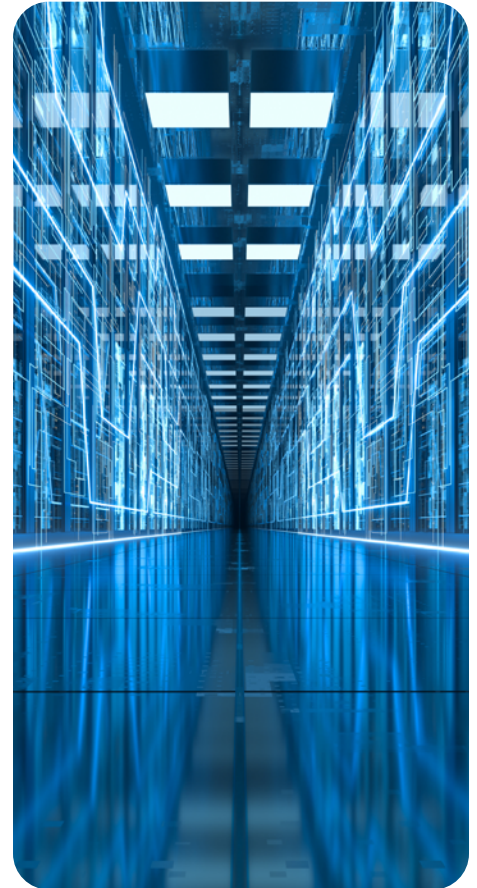
Tracy Zaffino, president of IntraPack Industries, feels True Front Access batteries offer significant lifecycle advantages. His company has been manufacturing UPS system cabinets, racks, and other infrastructure for data centers and commercial customers since 1986. These products meet the requirements of International Building Code, California Department of Health Access and Information, Network Equipment-Building System (NEBS), and Underwriter's Laboratory/Underwriter's Laboratory of Canada.

When customers request a battery recommendation, Zaffino has no reservations about suggesting C&D Technologies' TFA battery.

Zaffino notes that the True Front Access batteries from C&D Technologies provide outstanding power density and warranties while limiting the need for technicians to reach across battery terminals.



**WITH THE PURE LEAD MAX,
DATA CENTERS NOW HAVE
A SINGLE-REPLACEMENT
BATTERY OPTION FOR THE
15-YEAR UPS SYSTEMS DATA
CENTERS RELY ON.**



**“C&D TECHNOLOGIES BATTERIES ARE SIMPLY A BETTER
BUILDING BLOCK FOR CREATING AN ONSITE POWER
PLANT. IT’S A GREAT BATTERY FOR CUSTOMERS WHO
CARE ABOUT RETURN ON INVESTMENT.”**

TRACY ZAFFINO ➤ PRESIDENT, INTRAPACK INDUSTRIES - DALLAS, TX

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REV: 7/03/24

C&D batteries are available worldwide and backed by outstanding technical support provided by full-time application engineers.

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