

# ENHANCING SAFETY, EFFICIENCY, AND SUSTAINABILITY IN ENERGY STORAGE AND TRANSPORTATION FOR DATA CENTERS

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White Paper



**Americase®**

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# A focused look at improving backup power systems and the storage and transportation of lithium-ion rack-level Battery Backup Units (BBUs) in data center environments.

## EXECUTIVE SUMMARY

As data centers scale to meet the relentless growth in global digital demand—driven by cloud computing, artificial intelligence, and hyperscale infrastructure—ensuring the reliability of onsite backup power has become mission-critical. Uptime is non-negotiable, and backup power systems must deliver consistent performance when it matters most.

Traditionally, data centers have relied on backup battery units (BBUs) powered by valve-regulated lead-acid (VRLA) batteries to ensure uninterrupted power during outages. These systems, along with backup generators and uninterruptible power supply (UPS) configurations, are critical for maintaining uptime when the primary power source fails. In pursuit of more efficient and sustainable solutions, many facilities are now transitioning to lithium-ion (Li-ion) batteries as their primary backup power source, valued for their higher energy density, faster charging, lower maintenance, and compact design—often utilizing chemistries such as lithium iron phosphate (LFP) and others.

However, with these benefits come potential risks. While inherently safe and reliable sources of power, if mishandled or damaged, lithium-ion batteries can present safety concerns, including thermal runaway, fire propagation, and vulnerability to mechanical or thermal stress. The [U.S. Consumer Product Safety Commission](#) has identified lithium-ion battery failures as a growing cause of fires in energy storage, transportation, and consumer electronics. In mission-critical environments like data centers, where uptime is paramount, these risks cannot be ignored.

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Equally important is the growing complexity of regulatory compliance. The transport, storage, and handling of high-energy batteries are governed by a multi-layered framework of safety and environmental regulations, including:

- [UN Manual of Tests and Criteria, Section 38.3](#), which mandates rigorous testing of lithium batteries to ensure their safety during transportation.
- The [U.S. Department of Transportation \(DOT\) Hazardous Materials Regulations \(HMR\)](#), which classify and control the shipment of lithium batteries as Class 9 dangerous goods.
- [OSHA lithium battery safety guidelines](#), which outline employer responsibilities for training, emergency preparedness, and hazard controls.
- [NFPA 855](#), which governs fire protection standards for stationary energy storage systems.

These standards reflect the increasing potential risk profile of modern battery chemistries, particularly in high-capacity configurations used in enterprise data centers. Failures in containment, transport, or handling can result in serious incidents, regulatory penalties, and reputational damage.

At the same time, sustainability is emerging as a strategic priority. Organizations are under growing pressure to align battery lifecycle management with sustainability frameworks. Improper packaging and transport of end-of-life batteries pose significant environmental and legal risks, while reuse and recycling strategies must be supported by safe and compliant logistical practices.

This white paper examines the intersection of **safety**, **efficiency**, and **sustainability** in the storage and transport of lithium-ion batteries for data centers. It explores:

- The shift from VRLA to Li-ion and other emerging battery chemistries.
- The evolving risk landscape associated with energy-dense storage systems.
- Critical safety standards and regulatory requirements.
- Best practices for secure, compliant, and sustainable logistics.

As energy storage becomes more critical to data center operations—and more tightly regulated—the need for proven, field-tested containment solutions has never been more urgent. Americase provides the infrastructure to manage potential risks safely and sustainably, helping data centers meet the technical, regulatory, and environmental demands of the future.

By the end of this paper, you should have a thorough understanding of the intersection of safety, sustainability, and innovation in data centers and how these forces have influenced and changed several key facets of how data centers operate: from the types of BBUs they depend on in the case of outage to better ways of packaging, storing, and maintaining equipment powered by lithium-ion batteries (and, increasingly, newer battery technologies such as sodium ion).

## THE EVOLVING BATTERY LANDSCAPE IN DATA CENTERS

### Growth of Data Centers and Demand for Energy Storage

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The data center sector is undergoing explosive growth. As of 2024, global data center electricity consumption is projected to exceed **1,000 terawatt-hours per year**, driven by demand from AI workloads, video streaming, and cloud services. Power continuity has become non-negotiable, and batteries are now an essential part of the infrastructure stack.

While diesel generators have traditionally been the go-to backup, battery energy storage systems (BESS) are gaining traction for both uninterruptible power supply (UPS) and grid-interactive capabilities. Batteries provide millisecond-to-minute-scale backup during outages, stabilize voltage, and increasingly participate in demand response programs. These use cases place new demands on battery performance, safety, and lifecycle.

Data centers, particularly hyperscale operators, are also under mounting pressure to decarbonize. That means not just cleaner grid energy, but more efficient and sustainable transportation and onsite storage. Batteries are critical to this transition—but the types of batteries being used are changing dramatically.

### Transition from VRLA to Li-ion Batteries

For decades, data centers relied on **valve-regulated lead-acid (VRLA)** batteries due to their low upfront cost and simple maintenance requirements. However, VRLA batteries have several limitations:

- Low energy density (requiring more space and weight).
- Shorter cycle life.
- Higher maintenance burden.
- Susceptibility to thermal issues at higher temperatures.

In contrast, **lithium-ion (Li-ion)** batteries offer:

- Up to 5x energy density compared to VRLA ([Clean Energy Institute, University of Washington](#)).
- Longer cycle life (up to 10 years or more in controlled environments).
- Faster recharge times.
- Compact form factors, saving valuable space.
- Lower total cost of ownership (TCO) over time.

## TRANSITION FROM VRLA TO LI-ION BATTERIES

### VALVE-REGULATED LEAD-ACID (VRLA)

- Low energy density (requiring more space and weight)
- Shorter cycle life
- Higher maintenance burden
- Susceptibility to thermal issues at higher temperatures

### LITHIUM-ION (LI-ION)

- Up to 5x energy density compared to VRLA ([Clean Energy Institute, University of Washington](#))
- Longer cycle life (up to 10 years or more in controlled environments)
- Faster recharge times
- Compact form factors, saving valuable space
- Lower total cost of ownership (TCO) over time

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These advantages have fueled a rapid shift. According to a 2023 report from Research and Markets, the global lithium-ion battery market is expected to reach **\$185 billion by 2030**, and a growing share of that is being deployed in critical infrastructure sectors like data centers.

### Emerging Chemistries: LFP, Solid-State, and Beyond

Within the lithium-ion category, new chemistries are evolving rapidly. **Lithium Iron Phosphate (LFP)** batteries are gaining traction due to their thermal stability, longer cycle life, and lower risk of fire or explosion. While they have a lower energy density than NMC (nickel manganese cobalt) batteries, their safety profile makes them increasingly popular for stationary applications like data centers.

Looking forward, **solid-state batteries** are generating buzz for their potential to deliver high energy density with dramatically improved safety by replacing the flammable liquid electrolyte with a solid material. However, as of 2025, these remain largely in pilot or early-stage commercialization phases.

Other experimental chemistries such as **sodium-ion** and **zinc-based batteries** offer additional long-term promise, particularly for more sustainable, abundant-material alternatives—but commercial readiness is still several years out.

### Implications for Safety and Transport

As batteries evolve, so do their associated potential risks. Modern lithium-ion batteries store significantly more energy in smaller volumes, meaning **higher energy density per container**, pallet, or room. This raises the stakes

for thermal management, fire containment, and impact protection—especially during **transport, installation, and end-of-life handling**.

The NFPA Research Foundation notes that while battery safety is improving, the risk of **thermal runaway** remains real—particularly during improper storage, overcharging, or mechanical abuse. These risks are amplified during transport, where vibration, temperature swings, and impact pose additional hazards.

Moreover, batteries today are shipped across **international supply chains**, requiring compliance with additional **transport regulations**, proper hazard classification, and certified packaging to prevent potential incidents in transit.

## Why Containment and Packaging Must Evolve, Too

As chemistries change, so must the infrastructure supporting them. Legacy containment and packaging systems built for VRLA batteries are often incompatible with the safety and compliance needs of Li-ion technologies. Key shortcomings include:

- Insufficient thermal isolation.
- Inability to contain fires or gas venting.
- Non-compliance with modern transport standards.
- Lack of modularity for changing inventory needs.
- Single-use packaging contributing to higher material waste and carbon footprint.

To mitigate risk, data centers and logistics partners must invest in packaging solutions that are **engineered specifically for modern chemistries**—capable of handling high temperatures, mitigating thermal propagation, and containing fires or leaks, all while remaining compliant with all applicable regulations and standards.

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## KEY CHALLENGES IN BATTERY STORAGE AND TRANSPORT

### Safety Risks

The increased deployment of lithium-ion batteries in data centers brings with it a new class of safety concerns. Chief among these is **thermal runaway**, a chain reaction in which battery cell temperatures rise rapidly, potentially leading to fire, explosion, and toxic gas release. Thermal runaway can be triggered by **mechanical damage, electrical abuse** (such as overcharging or short-circuiting), or **thermal stress** from high ambient temperatures.

The National Fire Protection Association (NFPA) has reported increasing incidents related to lithium-ion battery fires, particularly in storage and transit. Once thermal runaway begins, it is difficult to stop without adequate containment systems in place—making **prevention, isolation, and passive fire resistance** critical elements of any storage or transport protocol.

In addition to fire, lithium-ion batteries can emit hazardous gases such as **hydrogen fluoride, carbon monoxide, and flammable hydrocarbons** when damaged. These gases pose serious health and environmental risks, especially in confined storage areas or during transportation events where first responders may be unprepared.

## Regulatory and Compliance Requirements

The handling, packaging, and transport of lithium-ion batteries are governed by a complex web of domestic and international regulations. These rules are designed to minimize the risk of in-transit incidents, protect workers and first responders, and ensure environmentally sound end-of-life management.

Key compliance frameworks include:

- **UN 38.3:** Requires lithium batteries to pass a sequence of eight rigorous tests—including altitude simulation, thermal cycling, vibration, and external short circuit—before they are certified for air, sea, or ground transport.
- **U.S. Department of Transportation (DOT) Hazardous Materials Regulations:** Classifies lithium batteries as Class 9 hazardous materials. Shippers must adhere to strict packaging, labeling, and documentation requirements under 49 CFR Parts 100–185.
- **Occupational Safety and Health Administration (OSHA):** Sets standards for safe battery handling in the workplace, including hazard communication, employee training, PPE, and emergency response procedures.
- **NFPA 855:** Establishes fire safety requirements for the installation of stationary energy storage systems, including location-specific guidance, fire mitigation strategies, and thermal event response protocols.
- **International Civil Aviation Organization (ICAO):** Governs the air transport of lithium batteries, including restrictions based on battery type, watt-hour rating, and state of charge.
- **IMDG Code:** Regulates maritime transport of dangerous goods, including lithium-ion batteries, and is enforced globally under the International Maritime Organization.

Failure to comply with these regulations can result in fines, shipping delays, revoked permits, or—in worst-case scenarios—injuries, environmental damage, or fires.

## Environmental and Sustainability Concerns

As data centers face pressure to meet aggressive **sustainability benchmarks**, battery storage and transport have emerged as often overlooked opportunities for environmental impact management. Improper handling of end-of-life batteries or damaged cells can lead to hazardous material leaks, landfill contamination, or illegal exports in violation of **Basel Convention** regulations on transboundary waste.

In addition, packaging waste generated from single-use or non-recyclable containment systems represents a growing challenge. There's a global emphasis on the need for circular supply chains and **closed-loop systems** that prioritize **reuse, recycling, and material recovery** in the energy storage lifecycle.

Many lithium-ion battery components—such as cobalt, nickel, and lithium—require energy-intensive mining and refinement processes. When batteries are improperly stored or shipped, they are more likely to be damaged, prematurely scrapped, or routed into waste streams that lack proper recycling infrastructure. This undermines sustainability goals and increases the environmental footprint of data center operations.

## The Logistics Gap

Finally, the physical movement of batteries from manufacturer to warehouse to facility introduces significant logistical complexity. Batteries may travel across multiple modes of transport—air, ground, and sea—passing through climates, regulatory zones, and risk environments. During this journey, they must remain secure, traceable, and compliant.



Yet many data centers and logistics providers rely on **legacy packaging** or **non-specialized containment systems** that are not engineered for high-energy Li-ion batteries. These may lack:

- Fire resistance or thermal containment.
- Adequate cushioning to prevent impact damage.
- Secure locking and venting systems.
- Clear labeling for compliance and emergency response.
- Ergonomic design for employee safety and overall handling efficiency.
- Reusability for circular economy goals.

This disconnect between evolving battery technologies and outdated containment practices exposes organizations to avoidable risk—legal, financial, environmental, and reputational.

## HOW AMERICASE HELPS DATA CENTERS ENSURE SAFETY, COMPLIANCE, AND SUSTAINABILITY

In a rapidly evolving energy storage landscape, data centers require not only high-performance batteries but also infrastructure that can safely and efficiently support those technologies through every stage of their lifecycle—storage, transport, deployment, and end-of-life. Americase provides a critical piece of that infrastructure: engineered containment systems designed to address the full spectrum of risks and requirements associated with modern lithium-ion batteries.

Americase protective containers are built from the ground up to meet the unique demands of high-capacity battery systems. They are rigorously tested, compliant with all applicable regulations, and configurable to different battery chemistries, form factors, and transport scenarios.

### Custom-Engineered Battery Cases

Americase designs and manufactures custom enclosures tailored to specific li-ion battery applications, logistical considerations, and compliance needs. These protective solutions incorporate critical safety features that go far beyond the capabilities of traditional or retrofitted packaging:

- **Thermal containment:** Cells or modules are separated via thermal barriers within to reduce the likelihood of thermal runaway propagation.
- **Gas venting and pressure relief:** Integrated venting systems help manage off-gassing during thermal events, preventing pressure buildup or explosion.
- **Impact and vibration protection:** Shock and impact-absorbing design protects the batteries during transport and handling to minimize the risk of damage.
- **Ingress protection (IP):** Sealed enclosures defend against environmental factors such as moisture, dust, or temperature swings, which can compromise battery safety.
- **Support circular economy:** The container being used to ship the batteries from the OEM to the data center, store the batteries at the data center facility, and at the end of life ship the batteries to the recycler or return to the OEM - all in the same container.

These features are critical for both **in-transit protection** and **stationary storage**, especially in facilities where thousands of kilowatt-hours of energy may be stored in close proximity.

## Compliance-Ready Packaging

Americase solutions are designed to meet or exceed the strictest regulatory standards. Every protective container can be engineered and tested to ensure they align with the required regulations and codes.

Beyond physical containment, Americase provides documentation, labeling systems, and integrated compliance support to simplify inspections, audits, and cross-border shipping. Their team actively participates in the writing of regulatory standards and enhances their designs accordingly—helping clients stay ahead of evolving rules.

## Enhancing Operational Efficiency

Operational continuity is paramount in data centers, and Americase's packaging solutions are built to streamline logistics and facility workflows. Key features include:

- **Modular design:** Stackable and space-efficient configurations allow for optimized warehouse or space utilization.
- **Ease of use:** Designed to be liftable by forklift or pallet jack to reduce handling time and support rapid battery swaps.
- **Open Compute Project (OCP) Open Rack Version (ORV) compatibility:** Designed and tested to comply with the ORV standards. As active OCP working group members, Americase helps community members as we all work together to ensure interoperability, efficiency, and scalability for truly seamless, plug-and-play hardware solutions.
- **Pre-configured labeling and documentation pockets:** Simplify regulatory compliance and internal tracking.
- **Compatibility with smart monitoring systems:** Integration options for condition monitoring, RFID, or barcode-based inventory control.

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These capabilities reduce the burden on logistics teams and minimize disruption during routine maintenance, scaling, or equipment upgrades.

## Supporting Sustainable Battery Management

Americase products are also engineered with circular economy principles in mind. Their approach emphasizes **durability, reusability, and recyclability**, making them an asset for data centers pursuing environmental responsibility goals and sustainable supply chain practices.

### SUPPORTING SUSTAINABLE BATTERY MANAGEMENT



- **Reusable containers:** Reduce packaging waste by enabling unlimited transport cycles and over 10 years of field life without performance degradation.
- **Recyclable materials:** Constructed of recyclable materials such as aluminum and stainless steel.

- **Safe end-of-life transport:** Specialized containment options for damaged or end-of-life batteries reduce the risk of thermal events propagation or regulatory violations.
- **Closed-loop packaging systems:** Americase supports reverse logistics strategies by designing packaging that can safely return spent batteries to recyclers or OEMs, closing the materials loop.

This commitment to sustainability aligns with initiatives like the [EPA's Sustainable Materials Management Program](#) and industry-wide goals to reduce the environmental impact of battery systems throughout their lifecycle.

Americase's role in the data center ecosystem is not just as a packaging provider, but as a risk mitigation partner—engineering solutions that bridge the gap between advanced battery technology and real-world safety, compliance, and sustainability needs. Their offerings help data centers future-proof their energy storage operations and meet the rising demands of a high-risk, high-regulation environment.

## BEST PRACTICES AND RECOMMENDATIONS

As battery technologies become more advanced—and regulatory scrutiny more intense—data centers must take a proactive, systems-level approach to battery management. Safe and sustainable storage and transport of lithium-ion batteries is no longer a logistics detail; it's a mission-critical function that affects compliance, safety, uptime, and environmental performance.



Based on industry standards, regulatory requirements, and Americase's field experience, the following best practices are recommended for any data center working with lithium-ion or emerging battery chemistries.

## 1. Conduct Comprehensive Risk Assessments

Begin with a full **risk and vulnerability assessment** of all battery-related systems, covering:

- Battery chemistry and capacity.
- Quantity and location of storage.
- Transport routes and handling protocols.
- Emergency response readiness.
- Regulatory compliance considerations.

Risk profiles vary significantly between VRLA and lithium-ion systems. Chemistries such as NMC (nickel manganese cobalt) and LFP (lithium iron phosphate) carry different thermal and transport risks. Ensure assessments are chemistry-specific and include both normal operations and emergency scenarios.

## 2. Align Packaging and Storage with Regulatory Standards

Use only **certified, regulation-compliant enclosures** for storing and transporting lithium-ion batteries. Packaging should meet or exceed all applicable standards.

Engaging with vendors like Americase—whose containers are purpose-built for battery safety and compliance—streamlines regulatory alignment and reduces the risk of noncompliance penalties.

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## 3. Implement Safe Handling Protocols and Staff Training

All personnel handling batteries—whether in IT, facilities, logistics, or security—must be trained on:

- Proper lifting and placement techniques to prevent impact damage.
- Recognizing signs of battery damage or thermal instability.
- Use of PPE and containment equipment.
- Emergency response procedures for fires or leaks.

Training should be ongoing, documented, and aligned with applicable regulatory requirements.

## 4. Plan for End-of-Life Logistics and Recycling

End-of-life batteries are often the most hazardous to transport and store, especially if damaged or swollen. Best practices include:

- Using certified packaging for damaged or recalled lithium batteries.
- Partnering with certified recyclers to ensure traceability and lawful disposal.
- Avoiding informal, ad-hoc packaging that may violate transport laws or risk thermal events.

Enclosures designed for reuse and reverse logistics also support sustainability goals by minimizing waste and enabling circular battery supply chains.

## 5. Choose Containment Solutions that Scale with Technology

As battery chemistries evolve and data centers scale, infrastructure must keep pace. Select storage and transport systems that offer:

- **Modular configurations** for rack, cabinet, or pallet-level storage.
- Compatibility with various form factors and technologies.
- Built-in fire suppression, containment or thermal isolation materials.
- Smart tracking capabilities (e.g., RFID, barcode).
- Active temperature monitoring and alarm capabilities.

Americase's customizable enclosures are built with this flexibility in mind—designed to support current-generation lithium-ion battery technologies and positioned for emerging chemistries like solid-state or sodium-ion as they enter the market.

## 6. Maintain Documentation and Audit Readiness

Ensure that all battery-related packaging, labeling, shipping, and disposal processes are:

- **Documented and traceable.**
- In compliance with applicable international and domestic regulations.
- Ready for inspection by agencies such as DOT, EPA, OSHA, and local fire marshals.

"Incorporating these best practices ensures that data center operators aren't just reacting to battery risks—they're actively mitigating them. By partnering with solution providers like Americase and implementing structured safety and compliance protocols, organizations can position their infrastructure for the future and build resilience into every layer of battery operations," says Robby Kinsala, Americase President and CEO.

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## FUTURE OUTLOOK

The future of battery storage and transport in data center environments is being shaped by rapid advances in chemistry, tightening regulatory frameworks, and growing pressure to align with sustainability mandates. As energy systems evolve, containment and packaging solutions will play an increasingly central role—not just in compliance, but in enabling next-generation infrastructure to operate safely, efficiently, and responsibly.

## EMERGING BATTERY CHEMISTRIES AND THEIR POSSIBLE IMPLICATIONS

### Solid-state batteries

- Higher energy density
- Faster charging
- Improved safety

### Sodium-ion batteries

- Lower-cost alternative
- Safer chemistries
- Lower energy density

### Zinc-based & flow batteries

- Long-duration storage
- Inherent fire safety
- Adoption in hybrid systems

## Emerging Battery Chemistries and Their Implications

While lithium-ion remains the dominant chemistry for data center energy storage, the next decade will bring diversification. Chemistries currently in development or entering early commercialization include:

- **Solid-state batteries:** Promise higher energy density, faster charging, and improved safety by replacing flammable liquid electrolytes with solid materials. However, manufacturing scalability remains a major barrier, as noted by the MIT Energy Initiative project and others.
- **Sodium-ion batteries:** A lower-cost alternative to lithium-ion, sodium-ion chemistries avoid critical minerals like cobalt and nickel. Though they have lower energy density, they are gaining traction for stationary storage due to material abundance and safety.
- **Zinc-based and flow batteries:** Offer long-duration storage and inherent fire safety, particularly in grid-connected applications. These chemistries could see adoption in hybrid systems where runtime exceeds what Li-ion can provide cost-effectively.

Each of these technologies introduces new packaging, fire mitigation, and transport considerations—underscoring the need for flexible, adaptive containment systems that can evolve with the chemistries they support.

## Regulatory Harmonization and Expansion

Global regulators are moving toward stricter, more harmonized battery handling standards. This is being driven by:

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- The **increased energy density** of battery systems.
- A rising number of **transport-related lithium battery fires**.
- Growth in **cross-border supply chains**.

In the coming years, expect:

- Updates to **UN 38.3** and **IATA DGR** to reflect new chemistries and form factors.
- Expanded **NFPA codes** to include hybrid storage systems and integrated fire detection.
- More frequent audits and enforcement actions from **DOT, EPA, and state-level agencies**.
- Development of new **industry-wide best practices**, potentially coordinated by UN, NEMA, SAE, or ISO technical committees.

Organizations that standardize on compliant packaging systems early will be best positioned to avoid disruption as these changes take effect.

## The Role of Packaging in Circular Energy Systems

Battery containment is no longer just about protection—it's a critical enabler of **circular economy principles**. As sustainability standards tighten, data centers will be expected to demonstrate:

- **Safe return and reuse** of batteries.
- **Minimization of packaging waste**.
- **Recovery of valuable materials** from end-of-life systems.

Reusable, recyclable enclosures will be essential to meeting these expectations. Closed-loop logistics systems, in which packaging travels with the battery from commissioning to retirement, are already being piloted by manufacturers and recyclers. This trend is expected to accelerate.

Organizations like the **Global Battery Alliance** are also pushing for transparency and traceability across the battery value chain, making safe packaging a foundational component of compliance and sustainability reporting.

## Integration with Smart Infrastructure

Finally, the convergence of energy and data will continue. As battery systems become smarter—equipped with sensors, diagnostics, and remote monitoring capabilities—packaging will need to support:

- Thermal and gas sensors.
- Wireless tracking (RFID, GPS).
- Condition-based alerts.
- Integration with building management systems (BMS).

Containment will no longer be passive. It will be a **smart, active layer** of protection—detecting early warning signs of failure, enabling predictive maintenance, and improving emergency response.

"As energy storage technology transforms, so too must the systems that secure it," says Chris Egloff, Americase Vice President of Strategic Business Opportunities. "By investing in forward-compatible, regulation-ready modular packaging solutions now, data centers can reduce risk, improve resilience, and position themselves for success in an electrified, data-driven, and sustainability-focused world."

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## A MEANINGFUL SHIFT

As data centers scale to meet the exploding demands of the digital economy, their reliance on advanced battery storage will only deepen. But with that dependence comes heightened exposure to safety, regulatory, and environmental risks—particularly as facilities transition from legacy VRLA systems to high-energy lithium-ion and emerging battery chemistries.

The shift in battery technology brings undeniable advantages in efficiency, performance, and sustainability. Yet it also introduces complex challenges that cannot be solved by battery design alone. Thermal runaway, impact damage, hazardous material exposure, and compliance failures remain serious threats to uptime, personnel safety, and operational integrity.

At the same time, the regulatory landscape is expanding. Agencies at every level—from the United Nations to DOT, OSHA, NFPA, and ICAO—are tightening standards for battery transport and storage. Failure to align with these evolving requirements can result in operational shutdowns, environmental violations, and reputational harm.

## Containment Matters

Americase provides the engineered infrastructure that allows data centers to move confidently into this new era of energy storage. Their custom-built containers offer:

- Proven **thermal runaway containment**.
- Proven **impact resistance**.
- Full **compliance** with all applicable packaging regulations and standards.
- Support for **reverse logistics, recycling, and sustainability alignment**.
- Configurability for today's lithium-ion systems and tomorrow's chemistries.

For data center operators, the message is clear: investment in energy storage must be matched by investment in safe, compliant, and forward-compatible containment solutions. By doing so, organizations not only protect people and assets—they enable operational excellence, long-term resilience, and leadership in a fast-changing energy landscape.

Americase is here to make that possible. Get in touch with us when we can help, and we'll be there for you.

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## About Americase

Americase is a leading provider of custom-engineered protective packaging solutions for hazmat and high-value goods. With a focus on safety, compliance, and sustainability, Americase helps organizations protect their most valuable assets throughout the supply chain lifecycle.

For inquiries about custom packaging solutions or to learn more about our capabilities, contact us at [www.americase.com](http://www.americase.com).

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