



ELECTRIC BATTERY SAFETY

As demand for electric batteries surges across diverse product sectors, companies are racing to build the test cells and facilities to conduct R&D, production, and battery abusive testing. Yet no company's test plans should race past addressing the particular safety challenges posed by electric battery testing.

ACS offers a comprehensive range of services for designing test stands, test cells, and facilities for the safe testing of a wide range of electric battery products, all backed by the expertise our multidisciplinary teams have developed across hundreds of successful electrification projects.

Working with a diverse array of clients, including automotive manufacturers, consumer good manufacturers, aerospace, and tier suppliers, we help them meet their objectives while maintaining the safety standards required for electric battery testing.

DISTINCTIVE SAFETY HAZARD OF ELECTRIC BATTERY TESTING

Fire Detection and Suppression	Chemical Leaks and Burns	Toxic Gas Accumulation	High Voltage Electric Shock
Traditional detection and suppression methods can be ineffective due to the self-oxidizing nature of battery fires.	Battery chemistry involves toxic materials, requiring stringent handling protocols.	Specialized gas sensors and ventilation design ensures toxic fumes do not accumulate. They can also be checked as a precursor to thermal runaway.	From infrastructure to PPE, proper insulation and grounding is critical to preventing fires, electric shock, and equipment damage.

WE PROVIDE TURNKEY AND INDIVIDUAL DELIVERABLES ENCOMPASSING:

- Front End Planning [FEP]
- Design and Engineering
- Specification and Acceptance Criteria
- Systems Integration including Third-Party Equipment Integration
- Pre-construction and Construction Management
- Project Management/Program Management
- Commissioning

ABUSIVE TESTING

Safeguarding both individuals and the integrity of surrounding facilities is paramount when pushing electric batteries past their limits. This necessitates meticulous consideration of various safety design aspects, such as the integration of secure containment structures and the efficient extraction of hazardous gases and fumes. Multi-disciplinary ACS teams regularly guide our clients through the additional facility and system design elements required to conduct abusive testing safely.



SCOPE OF SERVICES

With our breadth of internal knowledge and capabilities, we regularly undertake large, complex projects with ease, while also delivering small projects cost-effectively, and always with high value. Our expertise in engineering, equipment procurement, contract negotiation and management, construction, risk management, and facility integration, combined with our flexible project management approach, enables us to deliver solutions that meet our clients' schedule, cost, and functional requirements. Whether it's in the automotive industry or other fields, we work with our clients to provide optimal solutions to meet their needs.

ACS electric battery design and integration services:

- Battery abuse testing
- Battery formation and aging
- Quality production testing
- R&D testing
- Safe storage and handling

Types of applications:

- Battery cell
- Battery modules
- Battery packs

MANAGING PERSONAL SAFETY

Safeguarding personnel during battery testing involves the precise implementation of controls and mechanisms that can swiftly disable power and manage energy dissipation. Moreover, electric battery testing frequently involves high-speed motor operation. The facility's design should encompass protective measures, such as guarding and remote operation, to shield personnel from the potential hazards posed by the rapid rotational dynamics inherent in these processes.



BATTERY STORAGE

Test facilities need dedicated areas for the secure storage of electric batteries. Similar to test cells, battery storage spaces require specialized fire and gas detection systems. Additionally, they should feature robust shelving or racks to prevent physical damage and isolate the batteries, mitigating potential accidents.

MODULAR TESTING ENCLOSURES

Companies often consider modular test cells for their safety advantages. Isolated from main facilities, modular test cells can isolate the risks of electric battery testing. ACS engineers regularly guide clients through an assessment whether modular testing is the right solution for their needs, budget, and space available.

OUR EXPERIENCE RUNS THE GAMUT OF PROJECT TYPES:

- Custom software and data acquisition
- Facility infrastructure
- Facility retrofits
- Greenfield design and build
- Process automation and controls
- Test and process equipment
- Test cell renovations