

CasePower Protected: Grid-Scale BESS

ORR delivers integrated, code-compliant fire protection for a mission-critical BESS facility on the California–Mexico border.

Project Location: California–Mexico Border

Application Type: Backup power generation for local energy providers, supporting the grid during outages and peak usage.

Choosing the Right Partner for Mission-Critical Systems

As renewable energy continues to expand across the national power mix, Battery Energy Storage Systems (BESS) play a critical role in grid stabilization. However, lithium-ion technology introduces inherent risks, including fire hazards and off-gassing events.

Fire protection in these environments must be engineered with the same precision as the energy systems themselves.



For this BESS facility on the California–Mexico border, the customer required a partner capable of managing the complexity, compliance requirements, and mission-critical nature of protecting 137 BESS containers. The energy stored at this site supports local providers that supply power back to the primary grid, meaning any disruption could have far-reaching impact.

The Challenge

BESS installations present unique integration challenges. While each container arrives pre-fitted with specialized fire protection systems, a facility-wide solution is required to unify all containers into a coordinated detection and response network.

This project required:

- Integration across 137 BESS containers
- Operation in a harsh environmental climate
- Compliance with strict California fire codes

Compounding the challenge, the end-user had previously deployed fire protection systems from another vendor that underperformed. ORR was brought in to troubleshoot, correct deficiencies, and restore confidence in system performance.



Scope of Work

- 137 BESS containers across a large geographic area
- Smoke detection and gas monitoring for hydrogen and carbon monoxide
- ONYX Series NOTIFIER panels integrated with pre-installed detection systems
- Automated shutdown triggers to prevent thermal runaway or fire spread
- Prefabricated interface enclosures with integrated surge protection
- Water storage tank integration for enhanced response readiness

The Outcome

ORR's leadership across design, commissioning, and prefabrication ensured successful delivery. The system achieved full compliance with California Chapter 12 fire codes, NFPA 72 standards, and local requirements.

ORR also resolved legacy issues from the previous vendor, improving system performance and restoring customer confidence.

The site is now operational, protected, and scalable. ORR is supporting Phase 2 and future system augmentations.

The collaboration between ORR Protection and Space Age Electronics has advanced prefabricated fire alarm solutions that improve safety and efficiency in BESS installations, supporting broader renewable energy adoption.

The Solution

ORR Protection assumed full responsibility for system design, commissioning, prefabrication, and project oversight. The scope included:

- Commissioning and integration tracking across all system points
- Oversight of third-party installers and wiring verification
- Installation of fire alarm systems, off-gas detection (H₂ and CO), and shutdown controls
- Coordination of specialty union contractors under a PLA agreement
- Preparation of documentation for fire marshal inspections

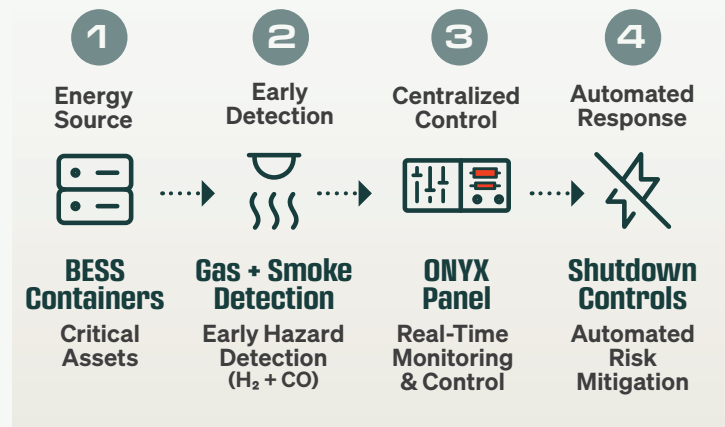
Prefabrication was central to execution. In collaboration with Space Age Electronics, ORR deployed prefabricated interface enclosures that eliminated point-to-point field wiring.

Each enclosure was pre-assembled and tested off-site, reducing labor and improving installation accuracy. The enclosures house system monitors and control modules, with Eclips series surge protection devices integrated directly into the build—eliminating separate installations, improving reliability, and simplifying maintenance.

The result is a system designed for faster installation, streamlined commissioning, and safer operation.

Faster installs. Cleaner commissioning. Safer systems. That's the ORR difference.

Integrated Fire Protection System



Why Industry Leaders Trust ORR Protection

System reliability and safety are non-negotiable in mission-critical energy environments. ORR Protection combines technical expertise, prefabrication efficiency, and disciplined field execution to deliver fire protection systems that perform from day one—and over time.



Reduce risk. Ensure compliance. Protect critical operations. Partner with ORR Protection.

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