



# When Energy Fails, Protection Doesn't

## Battery Energy Storage Systems for Clean Energy

Battery Energy Storage Systems (BESS) are critical components in the clean energy market, providing a means to store and manage electricity generated from renewable sources like wind and solar. They help stabilize the grid, ensure a consistent power supply, and enable more efficient use of clean energy by storing excess power during peak production times and releasing it during periods of high demand or low production.

**Why choose ORR Protection for BESS in Clean Energy?  
*One Call. One Contact. On Solution.***

# Top 5 Fire Protection Risks in Clean Energy BESS

**Thermal Runaway:** Batteries, especially lithium-ion types, can experience thermal runaway—a chain reaction causing rapid overheating and potentially leading to fires or explosions. Effective thermal management and fire suppression systems are essential to mitigate this risk.

**Detection and Suppression:** Early detection of fires in battery storage systems is challenging due to the often sealed and confined nature of these systems. Developing reliable fire detection and suppression technologies that can function effectively in such environments is crucial as traditional fire suppression systems today are not proven to put out a lithium-ion battery fire.

**Chemical Hazards:** The materials in batteries, such as lithium, can pose significant chemical hazards when exposed to fire. These chemicals can be highly toxic or reactive, requiring specialized containment and handling procedures during a fire.

**System Integration:** Integrating fire protection systems with the overall design of battery storage facilities can be complex. Ensuring that fire suppression systems do not interfere with the operation of the storage system while still providing adequate protection is a key challenge.

**Maintenance and Inspection:** Regular maintenance and inspection of fire protection systems and the batteries themselves are essential for safety. Ensuring that these systems are properly maintained and updated in response to evolving standards and technologies can be a logistical and financial challenge.

## SERVICE: Local | Regional | National

A comprehensive service agreement with ORR Protection helps standardize fire system inspection, testing, and maintenance across all facilities. Whether local, regional, or national, ORR's "Service System" approach provides:

### Manufacturer Experience Where and When It Counts

- The average ORR field technician has 8+ years of field experience
- Partnerships with most major manufacturers
- Manufacturer-trained, licensed, and certified technicians
- Technician training program within a ISO 9001:2015-registered quality management system

### Service Effectiveness

- Nationally positioned technicians for rapid emergency response

- Online reporting and documentation
- Fully stocked service vans
- Instant access to inspection and maintenance history
- Helps prevent future issues and unexpected costs
- Supports OPEX and CAPEX budgeting
- OSHA-trained technicians

### Flexible Options to Design What You Need

- Sprinkler systems
- Sprinkler deluge systems
- Water mist protection
- Clean agent systems
- Fire and gas detection
- Inerting systems
- Aerosol systems
- Electrolyte vapor detection
- Explosive gas detection
- Fire detection and alarms
- End-of-Life studies

## NEW INSTALLATIONS: Nationwide

Our experienced project teams and designers support a wide range of Battery Energy Storage System (BESS) projects, including:

- Microgrid installations
- Utility-scale BESS installations
- Data center battery / UPS rooms
- Battery manufacturing plants
- End-of-life recycling facilities
- Wind energy sites
- Hydroelectric / Solar PV facilities

We also help ensure code compliance and provide key engineering reports for safe battery installations, including:

- Hazard Mitigation Analysis (HMA)
- Gas modeling for explosion prevention systems
- Plume studies
- Site Emergency Response Plans (ERP)

# Energy Storage and Power Generation

Since 1971, ORR has focused on special hazards fire protection for mission-critical equipment and processes. To accomplish this, ORR has aligned itself with the industry's premier manufacturers of fire detection, alarm, and suppression systems.



## FIRE ALARM

- Conventional Systems
- Intelligent Addressable
- Emergency Voice Evacuation
- Mass Notification
- Networked & Integrated
- Sprinkler Monitoring
- Central Station Monitoring
- BDA Communications



## SUPPRESSION

- High & Low Pressure CO<sub>2</sub>
- Water Mist
- Hybrid Systems
- FM-200 / HFC-227 / FE-227
- ECARO-25 / FE-25
- NOVEC 1230 / FK-5-1-12
- Inert Gases: Inergen / Argonite / Nitrogen
- In-Cabinet Suppression
- Foam
- Dry Chemical
- Aerosol
- Sprinkler
- Water Storage



## DETECTION

- Air Sampling Smoke
- Spot Smoke
- Linear Heat
- Gas
- Flame
- Beam
- Video Smoke & Flame
- Battery Off-Gas



## EXPLOSION SUPPRESSION

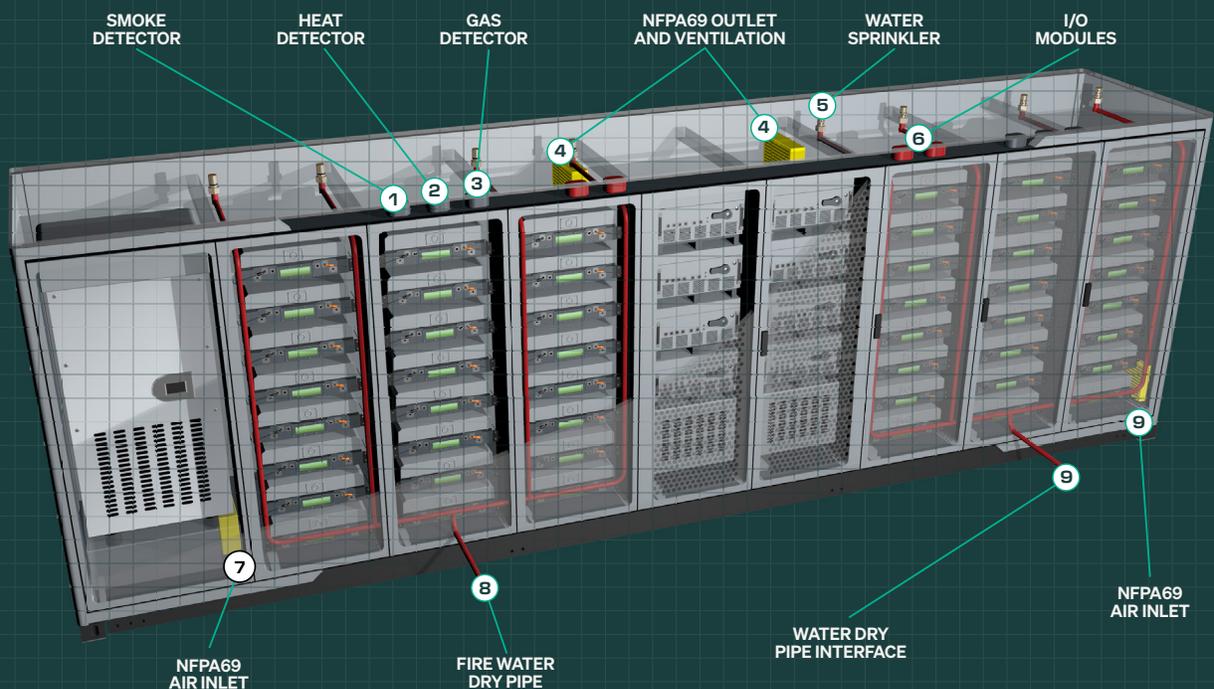
- Prevention Systems
- Gas Detector Controllers
- Exhaust Systems
- Blast Relief Panels



## MONITORING

- 2-Ring Commitment
- 24/7 Monitoring
- Mobile App
- Redundant Sites
- Customer Service
- Geo-Diverse Locations
- UL & FM Approved
- After-Hours Tech Support

## ORR 3D POWER-RACK



## PREMIER ENERGY PARTNERS

- DET-TRONICS
- FIKE
- INFRASENSING
- MARIOFF
- VID FIREKILL
- IEP TECHNOLOGIES
- LI-ION TAMER
- FIRETRACE INTERNATIONAL
- NOTIFIER
- PROTECTOWIRE FIRESYSTEMS
- KIDDE FIRE SYSTEMS
- RKI INSTRUMENTS
- SIEMENS
- HONEYWELL
- SPECTREX INC.
- STAT-X FIRE SUPPRESSION
- VESDA (XTRALIS)

## PROFESSIONAL MEMBERSHIPS

- FIRE SUPPRESSION SYSTEMS ASSOCIATION (FSSA)
- SOCIETY OF FIRE PROTECTION ENGINEERS (SFPE)
- NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)
- INTERNATIONAL CODE COUNCIL (ICC)



Connect with ORR Protection today for a no-obligation consultation.

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