



WORLD  
LEADING

ZOE

## ZOE SMS

### Safety Management System

An intelligent, multi-tiered safety architecture integrating cell-level monitoring, AI-driven diagnostics, and automated fire suppression. From early thermal runaway detection to station-level physical and cyber protection, ZOE SMS ensures full lifecycle risk mitigation, operational resilience, and uncompromised asset integrity across all system layers.

# Cell-to-System Layered Safety Architecture

## Cell Level

Integrates BMS telemetry with ambient parameters (temp/humidity, gas, mechanics). Combines sensing, edge computing, and cloud analytics for full-lifecycle SOH management, predictive diagnostics, and early risk mitigation.



## Module Level

AI multi-dimensional sensors enable anomaly detection with a 15-year design life. Upon early thermal runaway (T1) detection, the system triggers millisecond-level output isolation and activates fire suppression.



## Cluster Level

Gen-4 S-type aerosol for cabinet-level suppression upon smoke or high-temperature detection. Battery cabinet includes a 20mm fire-resistant insulation layer for robust thermal stability across environments.



## System & Station Level

| Category          | Technical Specifications & Protocols                                                                                                              |
|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| Physical Security | Strategic deployment of firewalls and perimeter fencing. Optional integration of CCTV, IR sensors, and intrusion alarms for 24/7 site monitoring. |
| Fire Protection   | The SMS incorporates automated, locally-deployed fire suppression systems for external equipment protection.                                      |
| Asset Integrity   | Scheduled on-site diagnostics—monitoring SOC, power quality, and thermal profiles—to execute data-driven preventative maintenance.                |
| Cybersecurity     | EMS & EaaS platforms utilize industrial-grade encryption and firewalls to harden data integrity and communication against external threats.       |
| Risk Mitigation   | Comprehensive property insurance covers all residual asset and facility risk exposures.                                                           |



# ZOE SMS

## Fire Safety Strategy

ZOE ESS leverages an integrated design combining multi-dimensional monitoring, tiered linkage and closed-loop fire suppression to deliver early warning, rapid response and full control over ESS fire risks, reducing thermal runaway propagation risks at the root.

# Multi-Layer Fire Safety Architecture

