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LI-ION TAMER®

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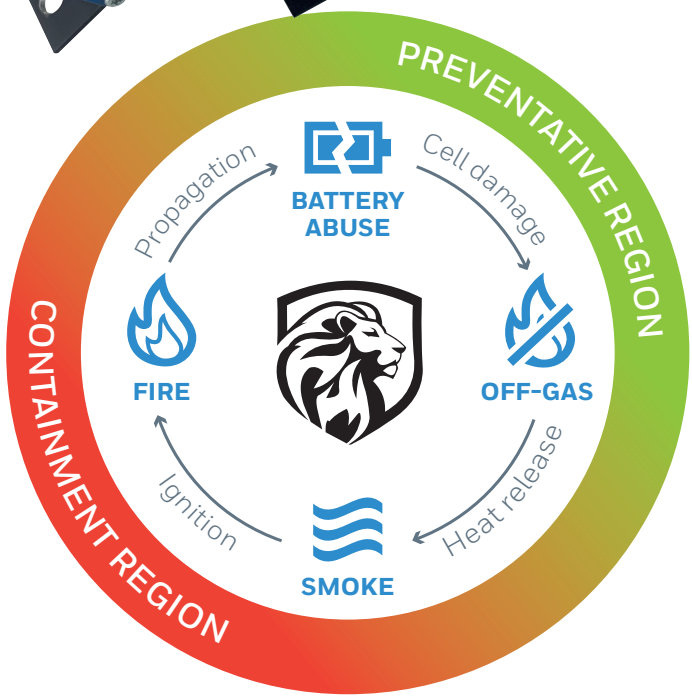
PREVENTING LI-ION BATTERY FIRES BEFORE THEY HAPPEN WITH ADVANCED DETECTION

Battery experts should understand that traditional smoke detection is not enough to prevent battery fires... But do you know which gas should be detected first to allow for effective preventative action?

LI-ION TAMER GEN 3



ADVANCED DETECTION

Testing shows that the first gas emmited by a compromised lithium-ion battery is **electrolyte solvent vapor** - not carbon monoxide, smoke, or hydrogen.

The industry's first **electrolyte vapour detector** binary sensor sends an alert to the BMS system at the first sign of battery failure.

A sensor compatible with all batteries and BMS systems for most applications.

SIGNALS 8-12 MINUTES BEFORE TRADITIONAL SMOKE DETECTORS

**An average approximation seen during testing.*

EARLIEST WARNING

Avoid costly false positives and unnecessary suppression with strategically placed reference sensors.

Secure your battery life cycle - from production, transport, and installation to everyday use and decomissioning.

Expensive insurance premiums? Negotiate lower rates with fire prevention specifically made for li-ion batteries

LI-ION TAMER® GEN 3
LITHIUM ION OFF-GAS DETECTION SYSTEM

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Product Description

The Li-ion Tamer GEN 3 is a device that detects the venting of battery electrolyte solvent vapours (off-gassing phase) that occurs early in the failure mode of lithium-ion batteries (LIB). The early detection of this event allows proper mitigation steps to be taken to avoid a catastrophic thermal runaway failure.

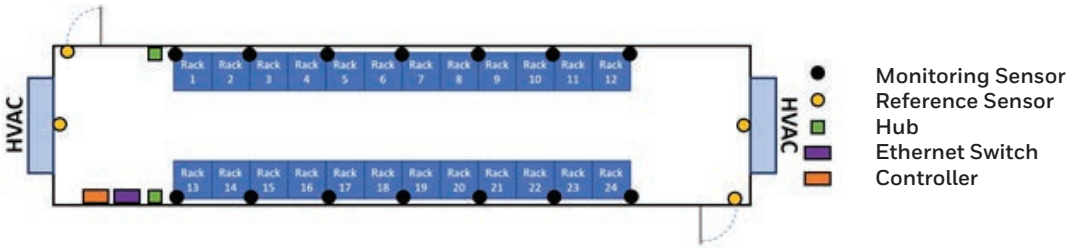
The Li-ion Tamer GEN 3 system is designed to be easy to install and configure, consisting of several components: (i) sensors, (ii) hub, (iii) power switch, (iv) network switch, (v) controller.

- Each sensing node comprises an off-gas sensor with advanced algorithms making it acutely sensitive to detecting battery electrolyte vapours (off-gassing compounds), does not require calibration, is compatible with all LIB form factors and chemistries, and has a lifetime comparable to a typical LIB system. The sensing node also includes temperature and humidity sensors for environmental monitoring.
- Sensing nodes are networked by the hubs and switches to the controller, which is the central point for managing and monitoring the entire system. The controller has relays and Modbus TCP/IP outputs that connect to the BMS or other control systems.

System Configuration

The Li-ion Tamer GEN 3 system is a versatile solution that accommodates the vast range of lithium-ion battery systems. In a typical setup, system configuration will consist of the following

- Monitoring sensors installed at the battery racks – downstream convective airstreams – to monitor off-gas events
- Reference sensors installed to monitor the ambient environment and air inlets to prevent false positive signals
- Hubs installed local to their respective zone of sensors
- Controller and Ethernet switch for aggregating sensor signals (optional PoE switches for distributing power to the system)



The Li-ion Tamer GEN 3 system requires minimal operation and maintenance procedures as the sensors are calibration-free and have comparable lifetime to that of the ESS battery system. The gas sensors response can be easily verified with a simple test. To confirm operation, sensors can be activated with a bottle of battery off-gassing compounds (Diethyl Carbonate, DEC) which is supplied by Xtralis.

Important Note: This device detects the venting of electrolyte vapours from lithium-ion batteries. It does not prevent fires or thermal runaway. This device is not a standalone safety device and should be incorporated into a proper safety system. If device responds, there is a risk of battery fault which could lead to thermal runaway. To avoid injury, leave area immediately.

Hardware Details

Controller

Sensor and Hub

Key Features

- Early warning of lithium-ion battery failures - enable thermal runaway prevention with proper mitigating actions
- Single cell failure detection without mechanical or electrical contact to the cells
- Scalable deployment for cost effective protection of a wide range of battery storage systems
- Temperature and humidity monitoring at each sensing node
- Extended product lifetime
- Calibration-free product with highly reliable output signal
- Compatible with all lithium-ion battery form factors and chemistries
- Easy installation
- Independent and redundant perspective on battery health
- Auto diagnostic capabilities
- Reduction/removal of false positive signals
- Communication protocols including relays and Modbus serial