LI-ION TAMER®
LITHIUM-ION BATTERY RACK MONITORING SYSTEM

MAKE GREEN POWER, SAFE POWER.

- DETECT LI-ION BATTERY FAILURES
- PREVENT THERMAL RUNAWAY
- PROTECT PEOPLE AND PROPERTY
- MAINTAIN BUSINESS CONTINUITY

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Lithium-ion (Li-ion) Battery Energy Storage Systems (BESSs) are critical to the ongoing transition to a low-carbon economy. They are playing a key role in the development of greener, smarter, and more reliable power grids.

But, without appropriate safety measures, Li-ion batteries can be a serious fire hazard. The main culprit is thermal runaway, an exothermic reaction that can occur in Li-ion cells and quickly escalate into a destructive fire. Luckily, Li-ion Tamer® from Xtralis can help.

The Li-ion Tamer Battery Rack Monitoring System detects the early signs of thermal runaway (venting phase), giving you time to take preventive action. This way you can minimize or even avoid the effects of thermal runaway, protecting people and property, and ensuring your business continuity is maintained.

WHY IS PREVENTING LI-ION FIRES SO CHALLENGING?

Detecting the early signs of thermal runaway is key to preventing fires in Li-ion BESSs. But traditional detection and suppression technologies are simply not designed to do this.

- Battery Management Systems cannot monitor single-cell temperatures or voltages, meaning they may not detect hot spots preceding thermal runaway.
- Traditional detection technologies do not activate until after thermal runaway has started, which is when smoke or gases like carbon monoxide and hydrogen are present in large enough concentrations.
- Fire suppression methods are, by definition, only effective after a Li-ion battery has already caught fire.

WHY IS LI-ION TAMER OFF-GAS DETECTION DIFFERENT?

What sets Li-ion Tamer apart from other detection technologies is that it alerts you to the earliest signs of impending thermal runaway. It activates as soon as a single Li-ion cell starts venting gases, a process known as ‘off-gassing’ that often precedes thermal runaway. A distributed network of strategically-placed gas sensors gives you the earliest indication of failure so that you can intervene to prevent the worst outcomes.

The Li-ion Tamer Rack Monitoring System can be tailored to the specifics of a BESS, including geometry, volume, cell type, spatial layout, and air flow patterns. The system brings you comprehensive off-gas detection coverage thanks to:

- Monitoring sensors installed at the battery racks to monitor off-gas events.
- Reference sensors installed to monitor the ambient environment and air inlets to avoid false positives (false alarms).
- Controllers for aggregating sensor signals.
THE EARLIEST WARNING OF LI-ION THERMAL RUNAWAY

Li-ion Tamer helps you detect a potential battery cell failure, way before it enters thermal runaway. A recent study by DNV12 showed that, unlike other detection technologies, Li-ion Tamer activated, on average, just 10 seconds after off-gassing started, and more than six minutes before thermal runaway occurred.

Key features and benefits

- Simple installation with multiple mounting options to suit most Li-ion battery rack designs.
- Easy commissioning and maintenance thanks to calibration-free sensors and easy bump test with liquid battery electrolyte compounds (diethyl carbonate).
- Extended lifetime, comparable to that of a Li-ion BESS.
- Compatibility with all Li-ion battery form factors and chemistries.
- Highly reliable output signal.
- Low power consumption.
- Auto diagnostic capabilities.
- Configurable communication protocols including digital outputs and Modbus serial communication.

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<th>Average time of occurrence relative to thermal runaway (seconds)</th>
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<tr>
<td>Off-Gas Release</td>
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Applications

- Power utility-scale BESSs
- Industrial BESSs
- Commercial and residential BESSs
- Data Center UPSs

OEM Board

The Li-ion Tamer OEM board monitor is a low-power compact device that monitors lithium-ion batteries for increased safety. It is installed within battery modules and provide cell level detection of electrolyte solvent vapours during the initial venting (off-gassing) stage of a failing battery.

The OEM board can be directly integrated onto a battery management system and will indicate when a single cell within a battery module has experienced an off-gassing event. It provides an entirely redundant perspective on the batteries without electrical or mechanical interrogation.
Xtralis is a leading global provider of powerful solutions for the very early & reliable detection of smoke, fire, and gas threats. Our technologies prevent disasters by giving users time to respond before life, critical infrastructure or business continuity is compromised.

We protect highly-valued and irreplaceable assets and infrastructure belonging to the world’s top governments and businesses.

To learn more, please visit us at www.xtralis.com