

SafeCell Pro

ASTRI's proprietary energy storage management system combines MSCU edge decision-making, in-pack gas/pressure/temperature monitoring and cell thermal reconfiguration to provide ultra-early thermal runaway warning. Once abnormal conditions are detected, multi-level active protection rapidly isolates the faulty battery pack, enabling uninterrupted system operation and turning uncontrollable risks into manageable maintenance.

Industry Challenges

- Delayed thermal-runaway monitoring and warnings leaves insufficient response time
- Lack of micro-sensing and in-pack state awareness prevents early detection of thermal runaway risks
- Traditional "one-size-fits-all" shutdown or fire-suppression measures often cause false-trip outages, equipment losses and high maintenance costs

Major Benefits

- Earlier warning integrated sensing of in-pack pressure, gas and temperature enables early thermal runaway risk identification
- **Higher reliability:** faulty packs are rapidly isolated while voltage-stabilising DC/DC converters maintains uninterrupted power
- **Smarter management:** SOC balancing and cell thermal reconfiguration improves system efficiency and extends battery life
- **Enhanced maintainability:** transforms sudden failures into predictable, manageable scheduled maintenance, reducing labour costs

Application Areas

- **Industrial and commercial ESS:** enhances safety and availability
- **Utility-scale storage stations:** reduces thermal runaway propagation and equipment loss risks
- **AI data centres:** assures continuous power for critical loads
- **Green low-carbon buildings:** improves storage safety, reduced personnel and asset risks
- **Supercharging car parks:** supports safe operation in high-power scenarios

Collaborator(s)

New energy manufacturer, trader and service provider

Award(s)

International Exhibition of Inventions Geneva,
Asia Exhibition of Innovations and Inventions



Powered by third-generation semiconductor sensors, it provides reliable energy storage protection for AI data centres and low-carbon buildings, deployed in Shenzhen demonstration project

