

Arnowa Battery Risk Intelligence System

Act on battery risk conditions before they escalate

The Arnowa Battery Risk Intelligence System combines precision sensors, thermal imaging, and video analytics to deliver continuous, evidence-based monitoring across battery and EV infrastructure. It enables early detection, validated event confirmation, and predictive insights to support timely and confident intervention.

Detect. Verify. Act

Battery risk conditions develop through measurable environmental changes and thermal anomalies. Isolated signals can be missed or misinterpreted.

Arnowa integrates sensor data with thermal and visual intelligence to provide a complete, validated view of evolving risk conditions, reducing uncertainty and enabling accurate decision-making and timely action.

Detect

Continuous multi-layer monitoring captures early-stage indicators, including environmental signals, thermal anomalies, and visual changes before conditions escalate.

1

Act

Automated alerts supported by thermal and visual validation enable fast, informed decision-making and timely intervention.

3

Verify

Cross-source correlation of sensor, thermal, and video data provides validated confirmation of events, significantly reducing false positives and uncertainty.

2

The system correlates data from sensors, thermal imaging, and video analytics to validate events in real time. This fusion of intelligence ensures high-confidence detection, eliminates ambiguity, and significantly reduces false positives delivering certainty that no single detection method can achieve alone.



Multi-Layered Detection Capability

The system brings together three complementary layers of monitoring:

Sensor Layer Environmental Intelligence

Continuous monitoring of gases, particulates, temperature, and humidity to detect early-stage battery instability. Captures invisible pre-failure signals before they become visible events

Video Analytics Layer Visual Intelligence

Advanced visual monitoring with AI-driven anomaly detection. Provides real-world context and verifiable evidence of events as they develop enabling human-verifiable visual confirmation of events

Thermal Layer Heat Signature Intelligence

Identification of abnormal heat signatures and temperature variations. Provides spatial insight into how and where heat is developing across battery systems

Signal to Decision



Sense

Multi-parameter sensors detect early-stage environmental anomalies.



Image

Thermal cameras map heat signatures and spatial anomalies in real time.



Monitor

Video AI provides visual context and intelligent anomaly detection.



Correlate

AI fuses all streams, confirming or clearing events with multi-source evidence.



Act

Validated alerts enable fast, confident operational response before escalation.

Unified data streams: correlated, analysed, and delivered as actionable intelligence to support confident and timely intervention.



Unified, real-time visibility across sites and assets



Multi-source correlation of sensor, thermal, and video data for higher accuracy



Predictive insights to identify emerging battery failure conditions



AI-driven analysis to identify patterns and anomalies



Automated alerts with visual and thermal validation



Significant reduction in false positives

Operational Benefits - The Arnova Advantage

Evidence-based intelligence that transforms battery risk management from reactive response to proactive, validated, and confident intervention.

- **Earliest-Stage Detection**

Identify battery risk conditions before visible signs emerge

- **Validated Decision-Making**

Act on events confirmed through thermal and visual evidence, not raw data alone

- **Reduced False Alarms**

Minimise unnecessary interventions through multi-source validation

- **Faster, Confident Response**

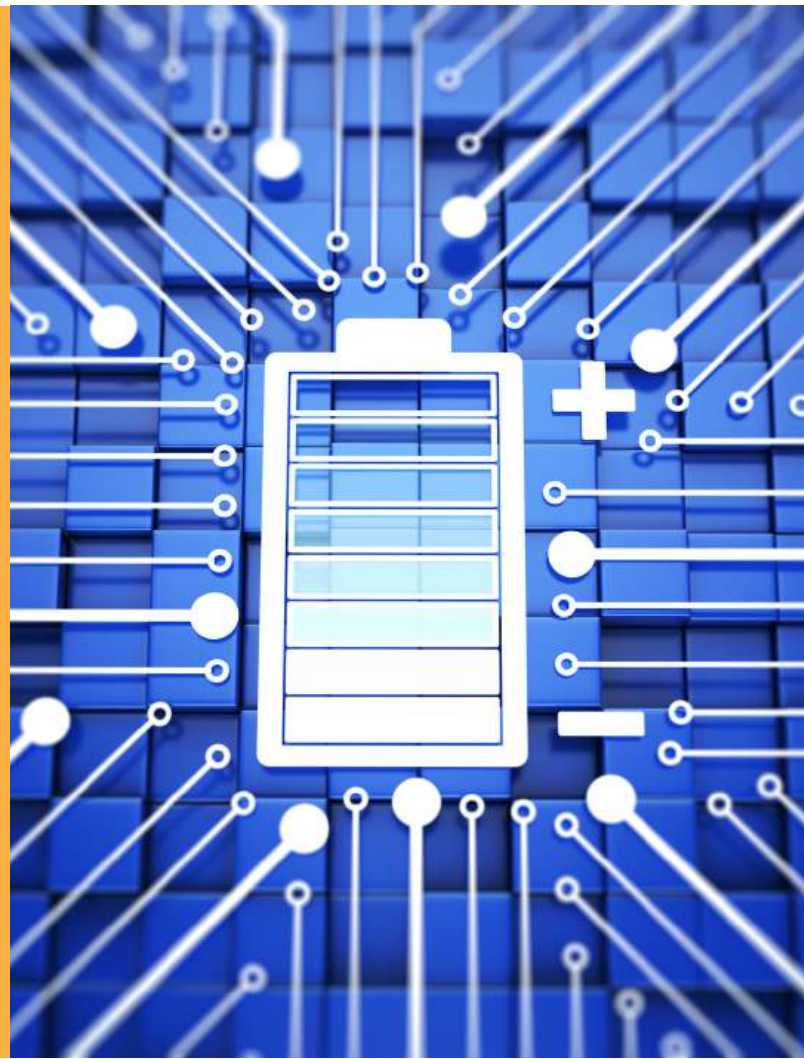
Enable rapid decision-making with clear, validated alerts

- **Asset and Infrastructure Protection**

Safeguard battery systems and surrounding environments through early intervention

- **Minimised Operational Disruption**

Avoid downtime and unnecessary shutdowns by acting early and accurately



Designed for Deployment

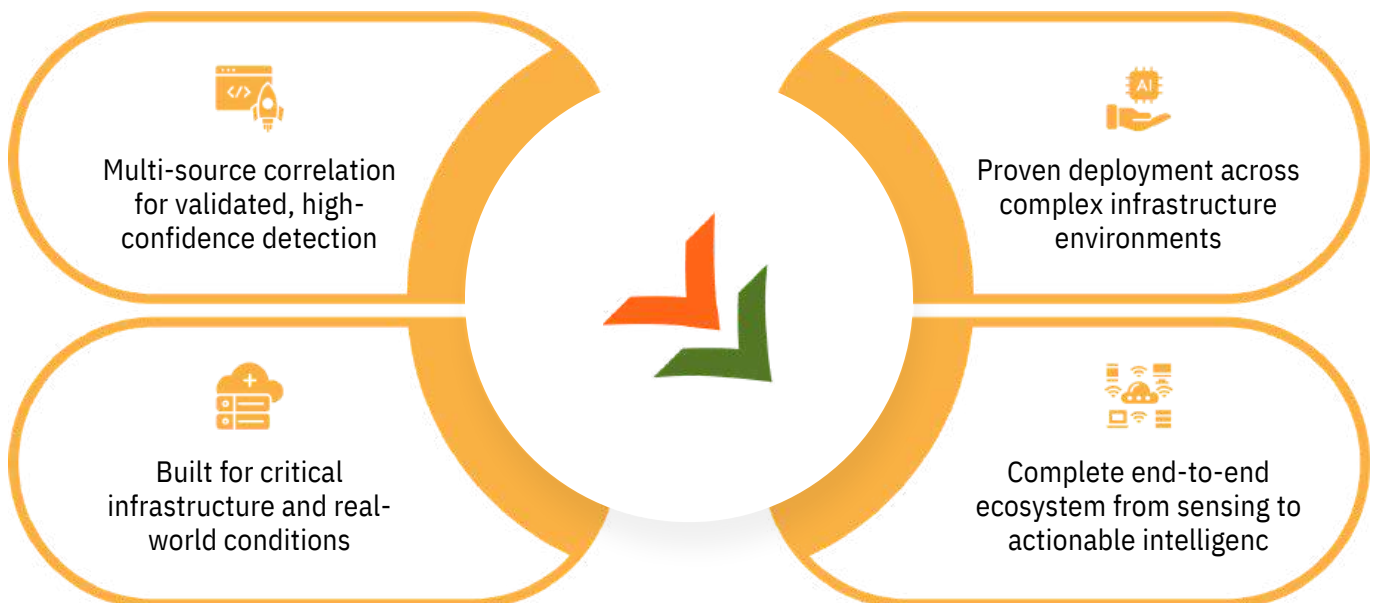
The system is designed for reliable performance across real-world environments, including EV infrastructure and battery systems. It supports scalable deployment across multiple sites while maintaining consistent data quality and operational stability under varying conditions.

Few Application Areas

- Battery energy storage systems (BESS) and grid-scale storage
- Solar and renewable energy storage installations
- EV charging infrastructure and parking facilities
- Fleet depots and transport hubs
- Data centres and UPS battery systems
- Industrial and electrified equipment environments

Why Arnowa

A complete end-to-end ecosystem combining sensing, thermal imaging, video analytics, AI correlation, and decision intelligence





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INDUSTRIAL BATTERY FIRE RISK DETECTION SYSTEM



Sensor Specifications

Parameter	Measurement resolution	Range of measurement	Accuracy
CO2	1ppm	400ppm~5000ppm	±3%+50ppm or ±10%
CH2O	1 µg/m ³	0µg~2000µg/m ³	±10%
TVOC	1 µg/m ³	0µg~5000µg/m ³	±25%
PM2.5	1 µg/m ³	0µg/m ³ ~999µg/m ³	±10%or±10
PM10	1 µg/m ³	0µg/m ³ ~1000µg/m ³	±10%or±10
Temperature	0.1°C	-40°C~100°C	±1°C
Humidity	0.4%	0~100%	±3%RH
Source Voltage	5.0±0.2VDC		
Current	≤500mA		
Warm-up time	2 minutes (TVOC needs to be warmed up)		
Operating Temperature	0°C~50°C		
Operating Humidity (Non- Condensing)	≤95%RH		



INDUSTRIAL THERMAL CAMERA

Thermal Camera Specifications



Thermal Module	
Sensor Type	VOx
Original Resolution	256*192
Video Resolution	720P(1280*720), Max 30fps
Optical Module	
Sensor	1/1.8", 4.0 megapixel, progressive scan, CMOS
Lens	4mm@F1.6
Iris	Fixed aperture
Video Resolution	4MP(2688*1520), Max 30fps
Min. Illumination	Colour:0.001lux (F1.6, AGC ON) , B/W: 0.0005lux(F1.6,AGC ON), 0 lux with IR
Day/Night	IR-cut filter with auto switch (ICR)
Features	
Fire Detection	Support the detection of fire point in the environment and up to 10 fire points can be detected
Smoking Detection	Support the detection of smoking in the environment and link to alarm
Temperature Detection	Support area detection, and link to alarm, the temperature value can be added to the alarm picture Support cold&hot point tracking, timely and clearly shows the abnormal point Temperature range: -20°C ~+150°C Temperature accuracy: Max (±8°C/±8%)
Smart Intrusion Prevention	Support false alarm filtering: Line crossing detection, Intrusion detection, Enter Area, Leave Area

