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Application Brochure

Gas Detection for Battery Rooms

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International Gas Detectors **Gas Detection for Battery Rooms**

What is the Application?

Battery Backup and Energy storage rooms are specialised spaces designed for housing battery systems that store excess energy generated during offpeak times for use during peak times.

This allows for a continuous power supply in the event of a grid failure or power outage. Various applications rely on backup battery storage from electrical power plants, substations and renewable energy storage systems, to schools, universities and hospitals. Maintaining a continuous supply of electricity in such spaces is essential to prevent the failure of critical systems but battery storage rooms can present significant threats requiring the careful implementation of an accurate, reliable, fully compliant and addressable gas detection system.

What is the Government Legislation?

Providing appropriate gas detection measures in your battery backup room isn't just best practice; it's a legal requirement. The proper management of gas threats in a battery backup room is governed by the following regulations.

At IGD we've been dealing with the management of gas threats for longer than anyone else, which puts us in the best possible position to be able to provide you with a gas detection system that's fully compliant with all regulations.

COSHH

The Control of Substances Hazardous to Health (COSHH) Regulations mandate that employers evaluate the dangers associated with using hazardous substances. This evaluation must cover plans for handling accidents, incidents, or emergencies, including significant spillages. COSHH covers the management of CO, CO, and HF due to its toxicity.

DSEAR

The Dangerous Substances and Explosive Atmospheres Regulations (DSEAR) mandate the evaluation and management of the potential risk to personnel from fires or explosions caused by hazardous substances in the workplace. You are required to mitigate or minimise these risks to the extent that is feasibly possible. DSEAR covers the management of Hydrogen can contribute to a highly flammable and explosive atmosphere.

What are the Hazards?

The batteries used for battery backup and energy storage are typically either lead-acid, lithium-ion or hydrogen-based. Each battery type presents its own unique gas threats so it's important to provide the appropriate kind of gas detection for your application. While all battery storage spaces need to be fitted with ventilation, these systems won't provide you with sufficient protection from gas leaks.

Carbon Dioxide (CO₂)









The primary gas threat with lead-acid batteries is hydrogen (H2) which is produced as a by-product of storage. The hydrogen produced is usually recycled by the batteries but can start to leak if the batteries are overcharged or in the event of thermal runaway.

Lithium-ion batteries produce H2, carbon monoxide (CO) and carbon dioxide (CO2) which can guickly create a toxic atmosphere. Thermal runaway from lithium-lon batteries can also produce hydrogen fluoride (HF) another highly poisonous gas.

Carbon Monoxide (CO)



- A poisonous by-product of incomplete combustion
- Colourless, odourless and flammable
- Even low-level exposure can pose serious health risks

STEL: 100ppm Short-Term Exposure Limit - 15 minutes



Hydrogen Fluoride (HF)



- A colourless, non-flammable gas with a distinctive pungent odour
- Lighter than air
- Boiling point of 20°C
- A highly toxic and corrosive irritant

STEL: 3 ppm Short-Term Exposure Limit – 15 minutes



Battery Room Gas Detection **Gas Detector Placement**

Battery Backup Rooms are typically comprised of large rows of battery racks. Hydrogen leaks become very dangerous very quickly necessitating both low-level ppm (parts per million) detection and the ability to accurately identify the source of the leak. Rather than placing one detector in the centre of the room, detectors must be installed across the application. As H_a is lighter than air TOC-750 Safe Area detectors must be placed on the ceiling above (1) each battery rack.

Battery systems recycle the hydrogen that is produced as a by-product of energy storage, but if the batteries are overcharged, they can begin to leak at a rate at which the H₂ cannot be consumed by the setup. If this goes unchecked then it can lead to thermal runaway, at which point it quickly becomes too late to address the issue leading to a highly explosive atmosphere and disastrous results.

In Lithium-Ion battery rooms, you must deal with the additional gas hazards of CO, CO, and, in the event of thermal runaway, HF. These toxic gases typically reside around the Life Safety Zone, so TOC-750 Safe Area detectors (2) should be placed at eye level. Beacon Sounders 4 can be placed both inside and outside the application to provide immediate, audible and visual alerts.

Our TOC-635 Control Panel (3) is the brains of the entire system. Placing the control panel outside built-in Wi-Fi enable remote operation and cloudof the application provides you with At-a-Glance based data acquisition putting you in complete readings, alerting personnel to any potential hazards control while minimising the potential for error. before they enter the application. Our 2-Wire Addressable system allows you to link detectors A portable gas detector (5) is an essential part and accessories in series on our 2-Core polarity of your overall safety solution. Multi or single-gas independent cable, making for easy installation, portable gas detectors will provide you and your minimal cabling requirements, and providing you personnel with personal exposure monitoring and with fast, accurate, addressable gas detection. immediate alerts.



(GD)



Our Sentinel+[™] digital communication software and

ATEX-certified solutions are also available for applications that require them, check out our product brochure (SL-071) for the full range.



A gas detector can provide up to 75m² area coverage based on a 5m radius of operation. There are many factors affecting this including the geometry of a room, equipment in the area, gas characteristics, ventilation, air flows, etc. IGD can support throughout the survey, design and installation process to ensure the best possible result on site.

Battery Room Gas Detection Fixed Gas Detection



Our Fixed Gas Detection systems provide versatile 24/7 addressable protection from any battery backup or energy storage gas threat. Simple, effective, comprehensive cover with bespoke solutions for any application and a variety of accessories. All our electronics are backed by a 10-year warranty.

TOC-750 Safe Area

TOC-635 Control Panel



Key Features

- + Can monitor for up to 700 gases and vapours
- + Plug-and-Play sensors auto-change to monitor for different gases
- + Unique Labyrinth design protects sensors from damage
- + Sentinel+[™] Addressable digital communication
- + Leading long-life sensor technology
- + Connect to additional detectors or other external devices, native or 3rd party
- + 4-20mA analogue inputs

Key Features

- + Cutting-edge 2-Wire Addressable Technology and Sentinel+[™] digital communication software
- + Cloud-based data acquisitions via the onboard Wi-Fi pages (Plus)
- + SMS and email alerts.
- + Connect up to 8 (Micro) and 32 (Plus) devices.
- + Interconnect detectors in series and repurpose existing wiring to cut installation costs by up to 70%.
- + Live digital readings via the 2×8 display
- + 1 Click-setup, assignable LED's and Jog-wheel interfacing.
- + Certified and performance tested to the internationally recognised 60079-29-1 standard
- + Integrate into an existing system via BACnet and Modbus
- + Supports 3rd party external devices





Beacon Sounder





Key Features

- + Beacon Sounders provide loud audible and visual alerts when issues arise and can be placed inside and outside the battery storage room.
- + Alarm sounds up to 106dB.
- + IP65 flame retardant polycarbonate.
- + Provided with a laser-engraved label.
- + Multiple beacon sounders can be connected together.



Battery Room Gas Detection Fixed ATEX Gas Detection

Battery Room Gas Detection Portable Gas Detection

TOC-750X

TOC-903-X5

SENKO MGT Multi Gas









Key Features

- + ATEX certified for Zones1&2 (gas) and Zones 21&22 (dust)
- + 2-Wire Addressable output
- + Non-intrusive one-man calibration
- + Accommodates plug-and-play auto-detect sensors and sensor options for over 400 gases and vapours
- + Service via webpage apps
- + Up to 70% savings on installation with our 2-core cable
- + Long-life sensor technology
- + Simple operation and easy maintenance

Key Features

- + The world's most versatile gas detector transmitter
- + Approved for use in ATEX/IECEx zone 1 & 2 and 21 & 22 dust
- + Monitor for two gasses at once with dual sensor capabilities
- + 5 Port housing with 3× relays and 2×4-20mA outputs
- + 2-Wire Addressable output
- + At-a-Glance status updates
- + Non-intrusive one-person calibration
- + Accommodates plug-and-play auto-detect sensors and sensor options for over 400 gases and vapours.
- + Up to 70% savings on installation with our 2-core cable
- + Long-life sensor technology
- + Simple operation and easy maintenance

Key Features

Rating:	IP66, ATEX/IECEx, Intrinsically Safe,	Rating:	IP65, ATEX & Intrinsically Safe
Battery:	CSA, UL and InMetro approved Rechargeable, 2-month (infrared) Rechargeable, 18 hours (pellistor)	Battery: Warranty: Alarm:	Rechargeable, 16-hour lithium-ion 2-Year 95dB@30cm Audible, 360° light,
Warranty:	2-Year		vibration
Alarm:	95dB@10cm Audible, 360° light	Datalog:	6-Month
Datalog:	30 Most recent events	Outer:	Durable double shot case
Outer:	Rubberised PC case	Sensor:	Up to 5 gases on one detector
Sensors:	Carbon monoxide, flammable gases, hydrogen sulphide and oxygen		Sensors available for over 35 for gases and vapours
	depletion or enrichment	Operation:	2-Button
Operation:	1-Button	Optional:	Pumped or diffusion

Portable gas detectors are your first line of personal defence against gas hazards. Portable gas detectors allow for time-sensitive personal exposure monitoring and all products come bump-tested. IGD can provide both single and multi-gas portables from our two trusted partners.



All of our Portable Gas Detectors come with Online Training & Support

mPower POLI Multi Gas





Key Features

Battery Room Gas Detection Industry-Leading Technology

2-Wire Addressable

We are committed to constant improvement. We were the first Gas Detection company to offer addressable gas detection technology. Our systems harness Sentinel+[™] digital communication software to offer the most advanced gas detection on the market.

- + Immunity from Electromagnetic Compatibility
- + Repurpose existing cabling and connect devices in series to cut installation costs by up to 70%
- + Intuitive calibration, bump-testing and maintenance and system backup
- + Internet of Things (IoT) capability with remote monitoring and cloud-based data acquisition via onboard Wi-Fi pages
- + The fastest communication in the industry
- + Versatile and compatible with 3rd party systems
- + BACnet and Modbus outputs accommodate existing BMS and Fire systems.

Sensor Technology

We've been developing our gas detection sensor technology for over 100 years. Our in-house team of experts design and manufacture our products to provide you with the highest quality safety equipment and total peace of mind. We've developed a huge range of sensor technologies to guarantee the perfect gas detection solution for any application.

MK8 Pellistor (H, flammable detection)

Using catalytic pellistor technology and specific to only flammable gases. Poison resistance from inhibiting materials and gases, for greater accuracy and safety and provides minimal zero drift for continuous accuracy.



Infrared (CO, detection)

Provides ppm and %VOL readings on the same sensors, allowing for both log and highlevel alarms without the lost of accuracy or resolution. Immunity to poisoning, a built-in fail-safe and a 5-ear lifetime accommodate high accuracy, performance and reliability.

Electrochemical (CO, HF and H_a)

Our electrochemical sensor is best suited to battery backup and energy storage gas detection providing parts per million (PPM) monitoring. Electrochemical sensors detect gas leaks guickly and accurately.



Battery Room Gas Detection IGD Aftercare+ & Training

Why Choose IGD?

Our story begins in 1917 when Henry Ringrose founded the world's first gas detection company.

Over 100 years later our goal remains the same: to keep you safe by continuously improving our pioneering technology. From our first flammable gas detector to our groundbreaking 2-Wire Addressable gas detection technology, more than a century of innovation has positioned us as the Detectably Better choice for gas detection.

Today we manufacture detectors for over 700 gases and vapours at our purpose-built facility in Stockport. Total control of the manufacturing process means total control of the delivered product, so you can relax in the knowledge that we have you covered. From our control panels to our detectors to our PCB components, everything is manufactured in-house so that we can guarantee you the level of quality that our customers have come to expect of us.





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IGD Aftercare+ & Training

At IGD our work doesn't end with the installation of your system. We provide support to our clients through versatile training packages because we believe the best way to limit the threat of gas hazards is through education. That's why our team provide training, not only on the installation and maintenance of your system, but also on the fundamentals of gas safety. The IGD Online Training Academy is completely free and externally approved by the training body CPD UK, and our Aftercare+ Team will always be on hand if you need further support.



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