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Critical Environment Technologies™

APPLICATION GUIDE

Battery Charging Stations

DCC Controller & ESH-A Remote Hydrogen Gas Sensor

Peace of mind. Guaranteed.

Continuous monitoring of hydrogen gas at lead acid battery charging stations.

Equipment powered by lead acid batteries, such as forklifts used in a warehouse, have heavy duty battery banks that are commonly lined up in an indoor charging station formation where many machines can be charged at one time. Most batteries, including lead acid batteries produce flammable hydrogen gas as part of the normal charging process. The amount of hydrogen that is produced varies depending on the size and number of batteries and can increase with overcharging, excessive heat and other factors. As the hydrogen level builds, the risk of fire and explosion increases which is a serious safety concern.

The best way to monitor hydrogen levels is with a fixed gas detection system permanently installed in the battery charging area. Gas level readings can be used to trigger alarms, turn on the ventilation system and call emergency response.

Critical Environment Technologies' DCC Dual Channel Controller with an ESH-A with a Hydrogen sensor offers the features and functionality to ensure a safe, non-explosive environment.

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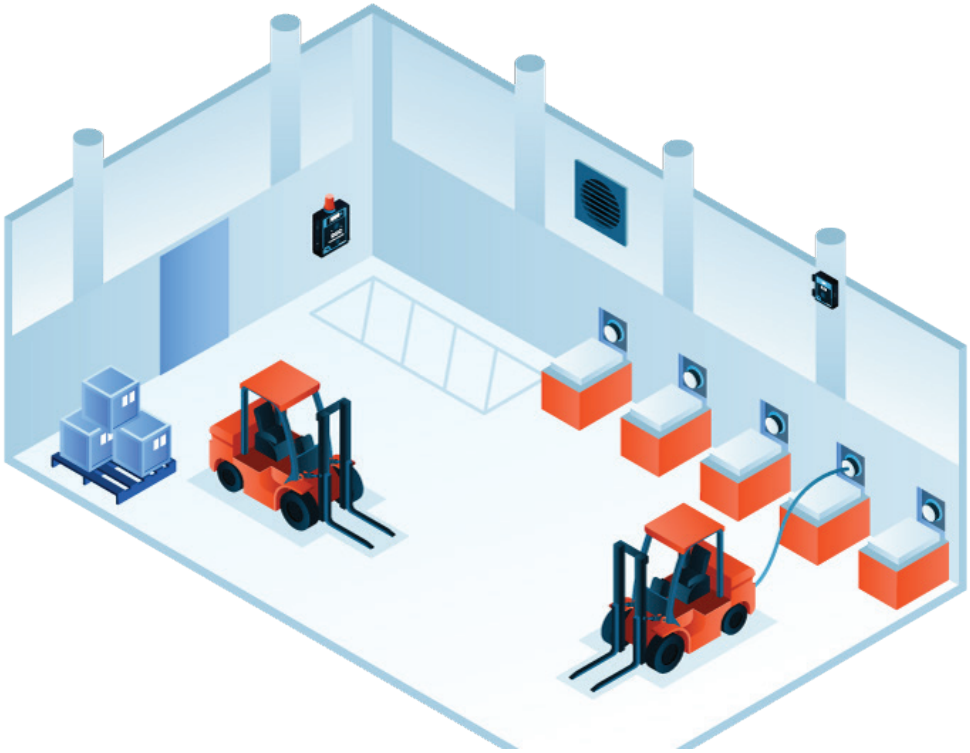
Continuous Monitoring of Hydrogen (H_2) in Lead Acid Battery Charging Stations

Battery charging stations vary in size, layout and setup. To help ensure a safe working environment a fixed gas detection system should be installed as follows. One fixed remote ESH-A-CH2-100 with a catalytic hydrogen sensor with a detectable range of 0 - 100% LEL will provide coverage of 465m^2 / 5,000ft^2, a radius of 12 m / 40 ft. The remote sensor should be mounted on or near the ceiling above the battery charging area, where hydrogen gas will concentrate. Care should be taken to make sure the sensor is away from ventilation fans and any rapidly moving air.



The ESH-A will continuously transmit a 4 - 20 mA analog signal to the DCC-B-R Controller which will show the corresponding gas level readings. The DCC should be mounted at viewing height in a suitable area so the display is easy to read. Wiring between the devices should be 3-conductor, 16 to 18 gauge, stranded, shielded and installed in conduit. System power requirements are Line Voltage 90 to 240 VAC, 47 to 63 Hz or Low Voltage 16-30 VDC or 12-28 VAC.

The DCC Controller has two gas alarm setpoints, LOW and HIGH, and two dry contact relays rated 5A @ 240 VAC. Upon detection of 10% LEL hydrogen (low alarm level), the system will go into LOW alarm, changing the channel LED to orange and triggering relay one to activate the exhaust fans to clear the area of the gas and bring the gas level down to an acceptable level. If the ventilation system is inadequate or malfunctions, upon detection of 20% LEL of hydrogen (high alarm level), the system will go into HIGH alarm, changing the channel LED to red, sounding the internal buzzer and triggering the second relay which will respond as configured and remain active for a minimum of 10 minutes. If there is a remote strobe/horn device, such as the RSH-24V-R connected to the DCC, it will be activated at the HIGH alarm.

DCC has two 4-20 mA outputs that include VFD control and may also be used to interface with a Building Automation System (BAS) which in turn can trigger alarms and other safety procedures as appropriate.

The DCC comes standard with an internal audible alarm and is available with an optional extra loud buzzer that can be ordered and installed at the time of purchase. It has a SILENCE push button that can be used to temporarily turn of the buzzer and clear the latched relays. The DCC and ESH-A come standard in a water / dust tight enclosure with copper coating to reduce RF interference. The DCC and ESH-A fixed system is fully set up, programmed, calibrated and tested prior to being shipped from the factory. It is ready to install upon arrival and operate following the warm up period.