

# G2100 Combustible Dust Monitor

Monitoring Dust Concentration in Cargo Hulls

For Preventing Fires & Explosions



Perfecting Sensible Technology

The G2100 Combustible Dust Monitor monitors the dust concentration in cargo hull spaces and in other factory facilities, grain mills, etc. The system can be used either as a fixed or a portable instrument. Green Instruments provides you with the most cost-effective safety precaution solutions for your operation.





# Prevent Dust Explosion Hazards



G2100 monitoring unit

## Safety Issues when Handling Dry Bulk Cargo

Today's port operators are under continuous increasing pressure to comply with pollution and safety regulations when handling bulk materials. One of the issues to be addressed while loading and discharging dry bulk cargoes is the dust explosion hazard.

## Necessary Conditions for Dust Explosions

The dust that is generated while handling grain, wood, coal, ore and many other bulk materials is combustible. Dust explosions are in reality a known phenomenon often causing immense damage and in worst-case scenario fatalities.

All it takes to ignite a fire or explosion is a sufficient fuel source (dust concentration above the lower explosive limit - LEL), oxygen, and heat or just a spark.

## Monitoring Helps Prevent Dust Explosions

Dust explosions can be prevented by eliminating any of the above mentioned factors. A dust concentration 20% lower than LEL is considered safe even if all other factors are present. Therefore, an extremely important factor in preventing dust explosions is the monitoring of dust using specifically engineered equipment.

## Key Features

- Cost effective protection
- Two alarms for dust level via visual and audio alarm
- Freely configurable alarm levels
- Touch panel control with user-friendly interface
- Dust concentration displayed in  $\text{g/m}^3$  or 0-100% extinction
- History and trend display of the dust concentration
- Alarms logged for more than one year
- Dust concentrations logged for 30 days
- LAN communication with remote computer that will work as a window client
- Durable and robust design - possible to apply as portable instrument
- Easy to configure, operate and maintain

# Monitoring Dust Concentration



G2100 measuring probe mounted in cargo hull

## **Monitor Dust Concentrations with the G2100**

The G2100 Combustible Dust Monitor is designed to monitor dust concentration in cargo hull spaces. The system provides alarms when detecting the predetermined dust concentrations. This means that you will be able to react in time avoiding the occurrence of the explosion factors.

## **Cost Effective System for Port Operators & Stevedores**

The G2100 consists of a monitoring unit and a line-of-sight measuring probe. These two elements are connected by an umbilical cord. The measuring probe can be fitted into the cargo hull through a ventilation hole or a cargo hatch and fastened with a support bracket.

The system is easy to use, self-explanatory and robust for handling and weather exposure. It can be installed permanently or used as a portable instrument on board vessels when the cargo is loaded or discharged in harbors.

## **Adjustable Alarms for Different Dust Types**

The monitoring unit provides two alarm levels: high alarm level via a visual alarm and high-high alarm level via an audio alarm. The alarm levels can be adjusted to match different dust environments i.e. wood dust, grain dust or other dust types. The alarms are logged continuously. The system can interface with remote computers via LAN communication.

# Specifications - G2100 Combustible Dust Monitor

## Monitoring Unit

Power supply	115...230 VAC / 50...60 Hz / 140 VA max. — optional 24 VDC
Ambient temperature	0°C to 40°C
Visual alarm	Xenon red flash lens, as pre-alarm, activated at high dust level
Audible alarm	100 dB(A) sounder, activated at high-high dust level, on screen deactivating
Operating display	Touch screen 95.4 x 53.9 mm
Measurement range	0 to 100 % opacity / 0 to 100 g/m <sup>3</sup> or 0 / 2.303 extinction coefficient
Accuracy	Better than 2 % of full scale
Alarm delay	Default 5 s (programmable 0–300 s)
Relay function	2 relays: 230 VAC, 5A / 30 VDC, 1A
Default alarm levels	Alarm 1 at 10g/m <sup>3</sup> / 20 % opacity / 0.112 extinction Alarm 2 at 32g/m <sup>3</sup> / 30 % opacity / 0.178 extinction
Dimensions/weight	460 × 550 × 250 mm (H×W×D) / approx. 25 kg
Enclosure	AISI 304 panel, IP54
Data logging	Alarms will be stored for approx. 1 year. Trend curves of opacity/extinction/mass concentration will be stored for approx. 30 days (FIFO)
Client features on PC or mobile devices	Interactive displays, historical trending and alarm list
Data communication	Via LAN connection in panel bottom

## Probe and Cables

Optic fibers	Plastic fiber
Umbilical cord	Max. 9.0 m length, antistatic polyamide 12
Ambient temperature	-30°C to 70°C
Probe dimensions	2000 × 215/120 mm (L × OD)
Probe material	Aluminum and AISI304
Scanning distance	2 m – optional down to 1.0 m

## Optional Equipment

- WIFI communication
- Audit pen
- SMS notification - receive SMS at cell phone when an alarm is triggered



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