REAL TIME GAS MONITORING SYSTEM
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From complete mine wide monitoring and control via fibre or copper to machine gas monitoring systems, Gasguard 2 suits a wide range of applications.

**ROBUST DESIGN**
- IP66 stainless steel construction

**SMART DETECTOR**
- Configuration and diagnostics via local UI or web application

**AUTOMATED TESTS**
- Reduced human error and reduced maintenance times

**EQUIPMENT**
Gasguard 2 comprises of an Intrinsically Safe (Ex ia I Ma) display module which allows for the display and transmission of detector data and system information.

Housed within an IP66 rated stainless steel enclosure the display module is available in three variants: a glanded display supporting both digital and analogue, or pluggable versions supporting either digital or analogue.

The display module interfaces to a range of detectors for monitoring the atmospheric concentration of the target gas.

- **Electrochemical**
  - Carbon Monoxide (CO)
  - Oxygen (O2)
- **Catalytic**
  - Methane (CH4)

- **Non Dispersive Infra-red**
  - Methane (CH4)
  - Carbon Dioxide (CO2)
AUTOMATED TEST FEATURES

Fixed/machine mounted gas detectors are designed to provide rapid measurements of target gas concentrations. Routine checking of the response time of fixed/machine mounted detectors is needed to ensure that the instrument's performance continues to achieve the intended function.

t90 Response Time Test

t90 is a critical parameter in ensuring the intended safety function of real time monitoring of gas concentrations. Detector response times are defined as time taken to get to 90% of final value from an initial step input. Gasguard 2 has an automated feature allowing ease and accuracy of this measurement.

Telemetry Test

The telemetry test allows controlled end to end testing from detector through to the control room alarms. This also ensures communications / analogue interfaces are functioning, and does not require a test gas to be applied.

Detector Environmental Data

The following additional data is available via the local UI, RS485 and iMAC interfaces:

- Detector temperature - current temperature of the detector element (°C)
- Detector pressure – hectopascals hPa
- Detector humidity – detector relative humidity

Detector information

- NATA linearity timestamp to avoid compliance breaches
- Align trend data with maintenance activities, using the calibration cup event flag
- Fault diagnostics information
  - Detector supply voltage
  - Bypass status
GASGUARD 2 SYSTEM

The Gasguard 2 system features a built in iMAC interface which connects directly to the iMAC fieldbus. Each module reports, via a pulse width modulated signal on a single twisted pair cable to the iMAC Controller located on the surface of the mine. Information from each module includes:

- Gas value
- Gas status (warn/trip)
- Power supply status (warn/trip)
- Module resistance
- Temperature, humidity, pressure
- Calibration cup event
- Bypass feedback
- NATA calibration due
- Monthly instrument maintenance reminders
- Adjustable healthy range in relation to set-points

The surface iMAC Controller is interlocked with the underground power feeds and interfaced with the mine PLC - SCADA system for completely integrated monitoring and control.

iMAC Slave Controllers are also installed in the 11kV underground switchboard and in each 11kV section circuit breaker. These controllers are user configurable and can monitor any detector or combination of detectors connected to the network automatically, initiating a power trip at the required set points. The controllers also monitor the status of the outlet to be tripped. If the outlet does not trip, an upstream trip of the underground power feed is automatically initiated.

The surface iMAC Master Controller communicates with and monitors the additional iMAC Slave Controllers connected to the network, allowing local configurations to be confirmed and monitored.

The design of the system is fail safe and any damage to the system hardware or cabling is treated in the same fashion as a gas initiated event.

Each production panel is allocated an isolated iMAC network, ensuring any system or cable damage in a production panel only affects that panel.

GASGUARD 2 REAL TIME GAS MONITORING SYSTEM

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