World leaders in diving equipment technology

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Analox Hyper-Gas MkII™ Hydrocarbon Monitor

The Analox Hyper-Gas MkII™ is designed to detect and warn divers of, potentially fatal, anaesthetic levels of hydrocarbons in the diving bell. Where divers are working on dirty sites, there is a likelihood for contamination of the bell atmosphere from vapourisation of contaminants carried on dive suits and umbilical lines, even when divers are wearing additional safety dive suits. Vapourisation of hydrocarbons into the bell can occur within minutes and can rapidly rise to anaesthetic concentrations.

Real Dangers to Divers: in the presence of anaesthetic levels of volatiles divers can suffer the effects within a few breaths. Even before unconsciousness, the ability to react normally becomes impaired. The effects caused by sub anaesthetic levels can be compared with the pattern of behaviour caused by alcohol consumption. The following effects have been detailed by Fang et al. (1996):

- 33% of the anaesthetic level of toluene leads to hyperactivity.
- 13% of the anaesthetic level of xylene causes tremors which could impair purposeful actions.
- 44% of the anaesthetic level of benzene causes uncontrolled jerking of limbs.
- 52% of the anaesthetic level of cyclo-hexane causes convulsions.

How it Works: the Hyper-Gas MkII™ system comprises 2 units, both are equipped with audible and visual indicators to alert divers and surface engineers to changing conditions within the diving bell.

The bell monitor is mounted in the gas sample line, once installed the monitor will rapidly detect the presence of vapourised hydrocarbons, and will activate audible and visual alarms before the anaesthetic threshold is reached.

Technology: the Analox Hyper-Gas MkII™ system has been designed to operate to depths up to 60 Bar A. It uses a unique hyperbaric hydrocarbon sensor based on highly respected Analox infra red technology. The sensor is sensitive to a range of hydro-carbons, and is able to detect all those commonly given off by the vaporisation of crude oil or condensate.

Automatic correction of pressure and temperature effects ensures the analyser will offer optimum performance in this difficult environment.

Gas Alarm: the Gas Alarm level is preset to 10% of the anaesthetic dose of vapourised hydrocarbons that could be present in the diving bell. The sensor gives an additive response to the range of hydrocarbons normally present, not one individual compound. For diving in areas where contamination is known to be from 1 or 2 compounds, the alarm set point can be altered.

Response Time: the sensor needs to be mounted within the diving bell, rather than relying on an umbilical fed analyser because anaesthesia, or the effects of sub anaesthetic levels can occur within a few breaths, i.e. a few seconds. By analysing for hydrocarbons at the surface it is likely that the effects would occur before an alarm is raised. A rapid response is crucial.

The hydrocarbon sensor within the Hyper-Gas™ has been designed to offer a fast response, by installing the monitor into the gas sample line the response time is further improved by creating the action similar to a pump.

Data Logging: the Hyper-Gas MkII™ system is fitted with a factory set datalogging facility. This logs the measured level of hydrocarbons, the depth and the corresponding date and time. Once the logging capacity is exceeded the Hyper-Gas MkII™ will automatically overwrite the oldest data. Data can be downloaded via the Topside Repeater onto a PC, using the data communications cable, and the datalog retrieval programme.

Engineer checking Topside Repeater Unit

Specification

General	
Operating Range	Hydrocarbon e.g. 0-30% Propane Pressure 1-60 Bar A
Power Supply	External 8-30vDC
Temperature	Compensated 5°C to 35°C (41°F to 95°F)
Storage	-20°C to 55°C (-4°F to 131°F)
Humidity	0-95% RH non-condensing
Bell Monitor	
Width	200mm
Height	215mm
Depth	100mm
Weight	< 2.5kg / 5.5 lbs
Topside Repeater	
Width	190mm
Height	160mm
Depth	100mm
Weight	< 2.0kg / 4.4 lbs

Analox Hyper-Gas MkII™ Hydrocarbon Analyser
Order Code GA111

Topside Repeater
Order Code GA111100

Replacement Manifold
Order Code GA111300

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