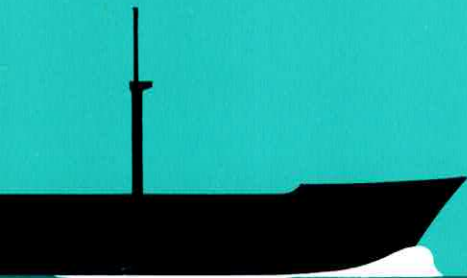


Oilcon Bilge Recorder Monitor

International Marine Radio Company

A British Company of **ITT**



Features

The *Oilcon* has DOT and USCG approval based on the IMCO Resolution A393(X)

Has 15 ppm alarm and 100 ppm recording facility on same instrument

Utilising laser and fibre optic technology significantly contributes towards safe operation in hazardous areas

Automatic flushing of sampling lines

Responds to all oils as specified by IMCO with one calibration

Instantaneous response at the cell

Designed to high reliability standards using advanced solid state technology

Capable of operating at elevated water temperatures

Comprehensive alarms and controls

Built-in test equipment allows rapid check out of system status

Automatic window flush keeps measurement cell windows clean over long period

Principle of operation

The measurement technique used in the *Oilcon* Bilge Monitor is based on scattered light. The sample of bilge water is passed through a measurement cell and, at the same time, light enters and leaves the cell. The sample flow being at right angles to the optical path.

Near infra-red monochromatic light is generated by a Gallium Aluminium Arsenide laser and transmitted along a fibre optic linkage to the measurement cell and leaves the cell via two windows and along fibre optic linkages to two silicon detectors. One detector receives the direct (or straight through) light beam and is used for automatic zero setting, and compensation for any deposits on the optical windows. The other detector receives the light which has been scattered by the small oil droplets present in the water. Both of the received light signals are used to compute an electrical output signal which is proportional to the oil concentration present in the sample passing through the cell.

The electrical signal is passed both to the read out box giving a continuous digital display of the oil content in ppm, and to a chart recorder providing a permanent record of the amount of oil in ppm which has been discharged into the sea.

Automatic sequential control of flushing at start up and shut down of the Monitor keeps sampling lines clean. This minimises system deterioration when not in use and ensures reliable start up.

System arrangement

The *Oilcon* Bilge Recorder Monitor combines all components in one unit.

The lower enclosure contains:

- the measurement cell
- pneumatically operated control valves
- electric motor driven sample pump
- ultrasonic homogeniser
- window flush valve
- solenoid valves to activate pneumatic valves

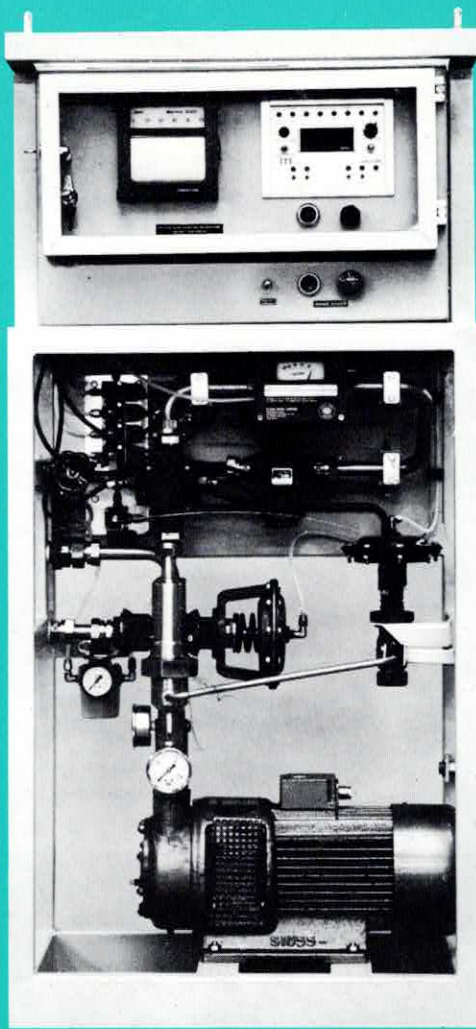
The upper cabinet houses:

- optical transmitter and receiver
- electronic modules for system control
- power supply modules
- power transformer to accommodate different supply voltages
- built-in test equipment
- control box which provides control for the complete system and also provides digital read out of oil in water level
- chart recorder which provides a read out and permanent record of oil in water measurements

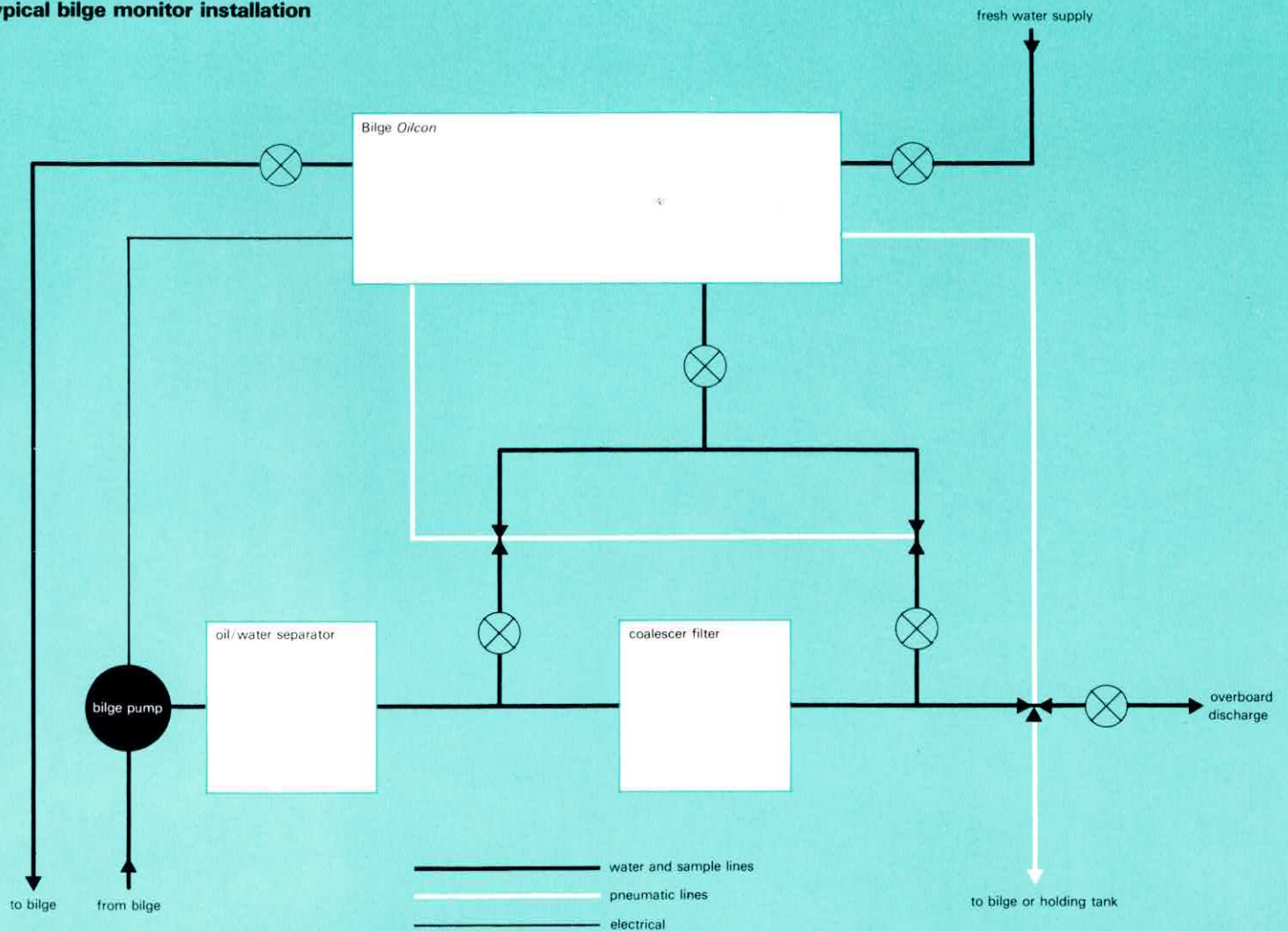
The Bilge Monitor may be installed for automatic start up coincident with start up of the bilge pump.

Short sampling pipe lengths and absence of bulkhead penetrations can be achieved by locating the Monitor in the engine room after the separator.

Alarm settings for oil concentration are adjustable, thus providing flexibility in the system.



Typical bilge monitor installation



Specification

Range	0-100 ppm
Accuracy	± 10 ppm or ± 20% of reading whichever is greater ± 5 ppm at 15 ppm
Response time	Less than 10 seconds
Sample flow rate	Greater than 500 litres per hour
Zero noise and drift	Less than 2 ppm, and nil when changing from sea water to fresh water
Response to oils	In accordance with IMCO specification
Sensitivity to solids	Change is less than 10% for IMCO specified mixture
Fouling	Clears in less than 3 minutes after the IMCO fouling test
Water temperature range	10°C – 65°C
Alarm adjustment	Can be pre-set at any value between 0 and 100 ppm
Alarm outputs	Normally open or normally closed contacts (2A at 220V max)
Input sample pressure Range	0-2 bars

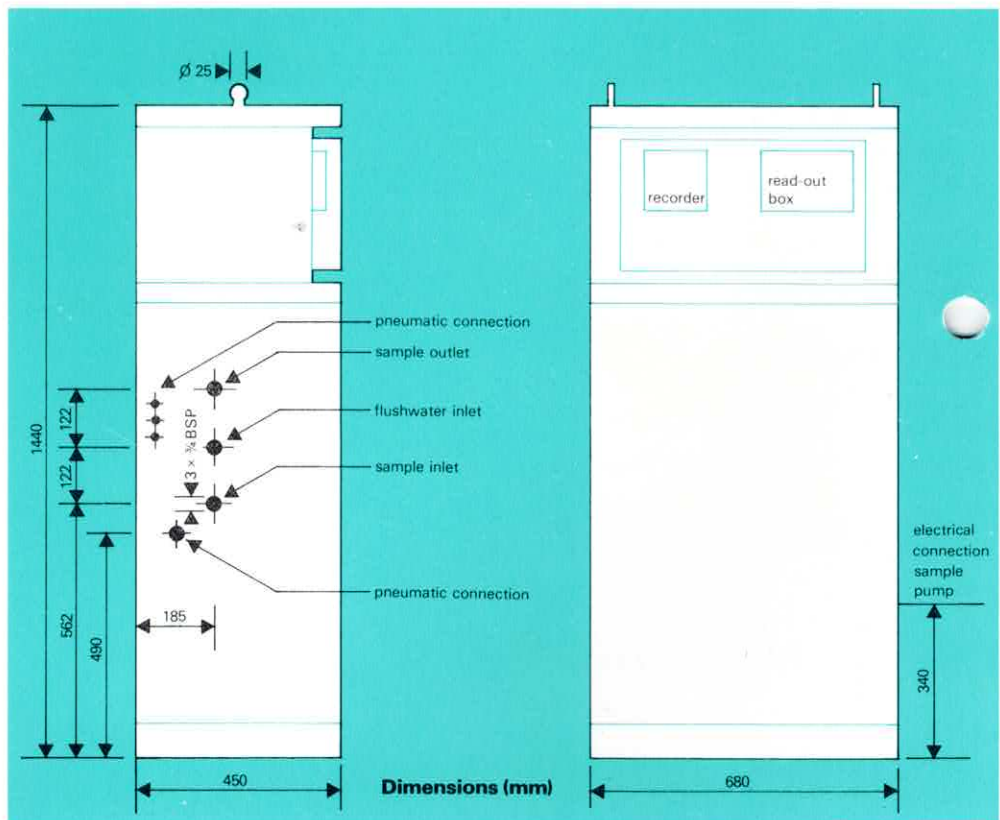
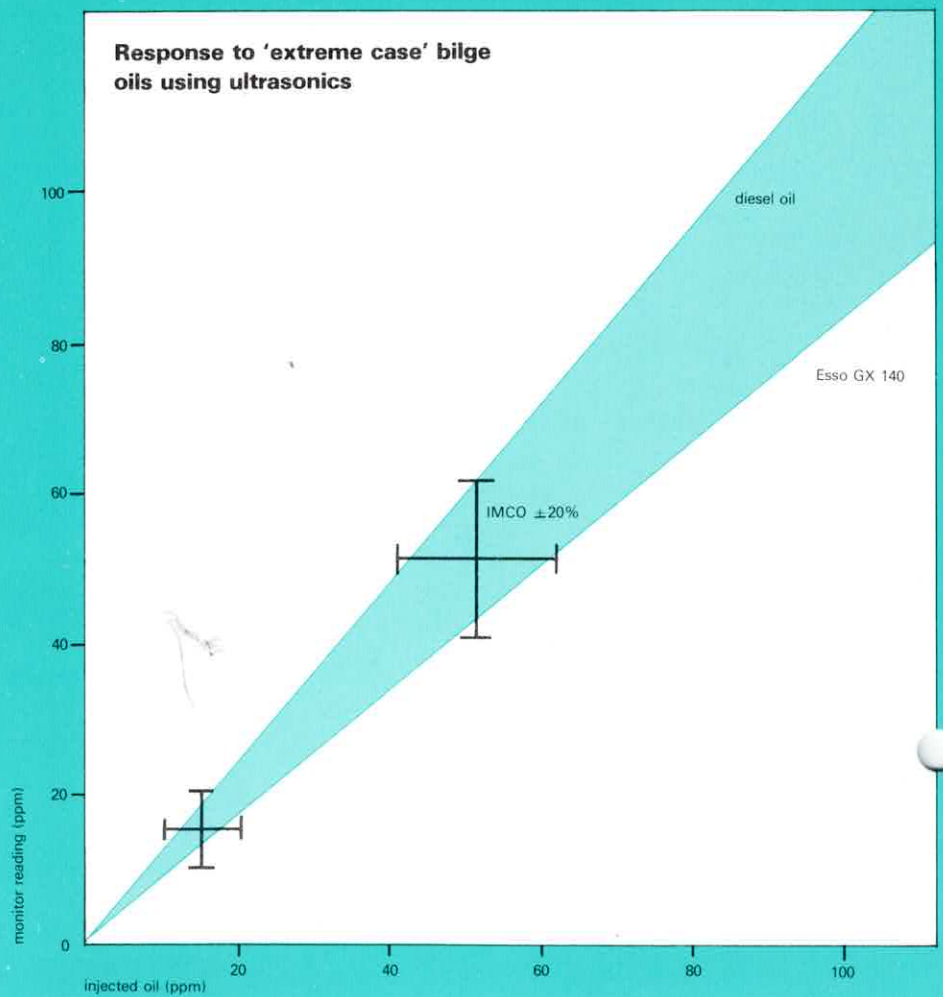
Supplies

Electronic controls	110/220V, 240/250V, 50 or 60 Hz single phase
Sample pump	380V, 415V ± 10%, 50 Hz ± 5% 440V ± 10%, 60 Hz ± 5% 3 phase
Air supply	2.5–7 bars

Control and readout

ppm meter	Digital Display
Recorder	Linear
Sample selection	2 Sample Points
Alarm signals	Manually adjustable setting; audible warning signal
High alarm set	Set at maximum pollution level permitted
Low alarm set	Normally factory pre-set at two-thirds of setting for high alarm. May be supplied set at 15% of setting for high alarm, thereby giving set levels of 15 and 100 ppm
Sample switch	Automatic sensing of sample pump operation and line filling. Initiates system flushing, automatic calibration of the measuring circuits and the sampling pump
Window wash	Automatic during sampling approximately every three minutes, with manual override
System flush	Manual override of automatic system
BITE	Built-in test equipment – may be used during sampling

Response to 'extreme case' bilge oils using ultrasonics



International Marine Radio Company

Intelco House
302 Commonsides East
Mitcham
Surrey CR4 1YT
England

A British Company of **ITT**

Telephone 01-640 3400
Telex 261440
Telegraph Intelcomar Mitcham