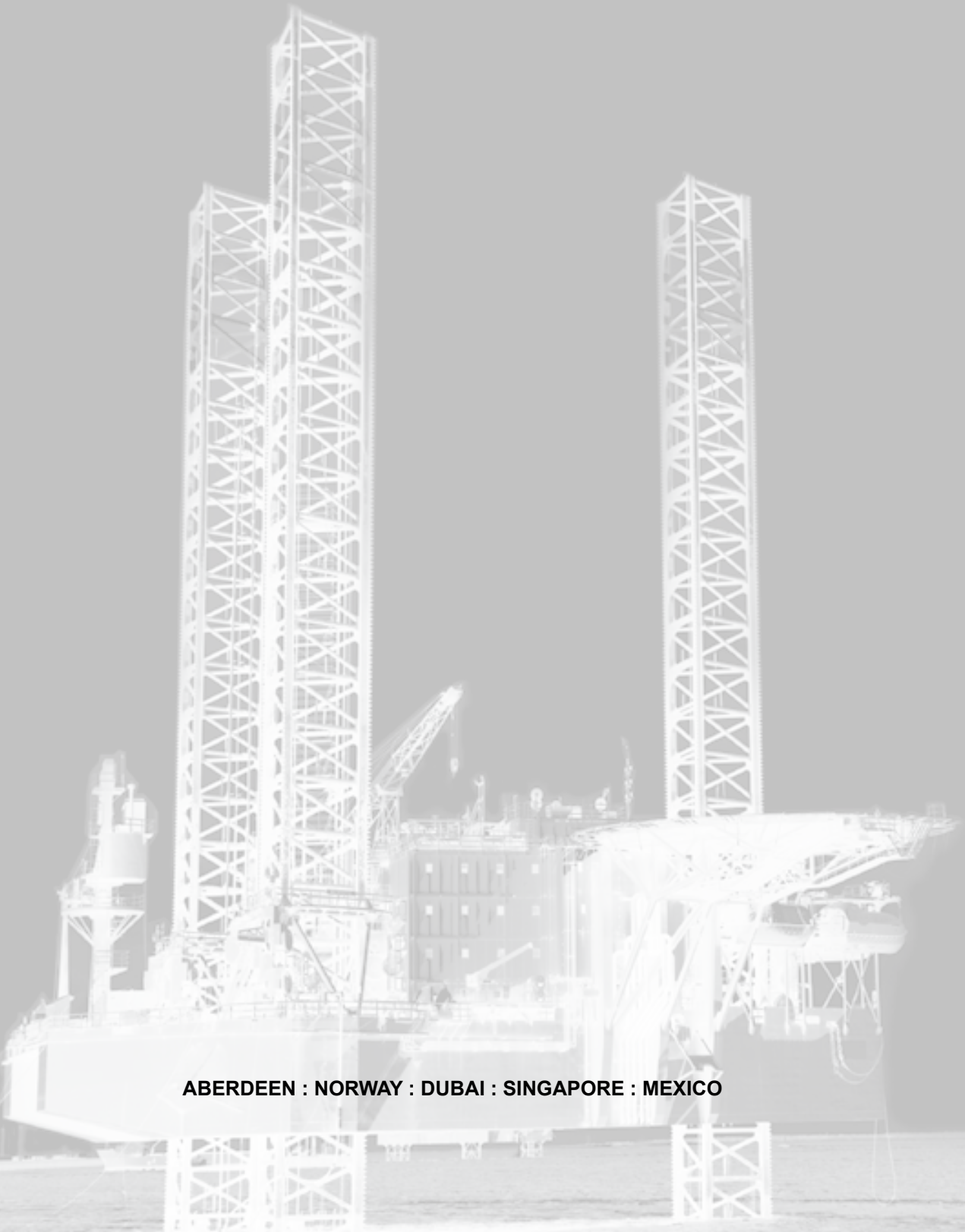




**Monitor Systems**

[www.monitor-systems-engineering.com](http://www.monitor-systems-engineering.com)



**ABERDEEN : NORWAY : DUBAI : SINGAPORE : MEXICO**



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# Introduction

**Monitor Systems Scotland Limited** was established in Aberdeen in 1997 to meet the growing demand for reliable quality bespoke safety critical instrumentation control and monitoring systems for hazardous and safe area environments on offshore drilling rigs and platforms.

Since its inauguration, Monitor Systems has established itself as a leading provider of bespoke safety critical electrical / electronic control & monitoring instrumentation solutions for small to multi-national organisations in a diverse range of industries and has successfully been awarded with its third Deloitte Technology Fast 50 Award for growth.





# Quality

**Monitor Systems** are committed to an ongoing quality programme with a continuous review of procedures. We are certified to BS EN ISO 9001 and First Point. **Monitor Systems** use a quality management system that covers the total activities and processes required to meet our customers' expectations for world class products and services. We also place the highest priority on safety and have adopted a set of safety principles that underpin all activities carried out by **Monitor Systems** employees and contractors.

The company is committed to ensuring that the quality of goods and services delivered are of the very highest standard, conforming to local and international standards and satisfying client's needs and contractual requirements. **Monitor Systems** ensures our skilled, qualified engineers and personnel are continuously monitored and supervised for effective performance in keeping with our Quality Management System.





BALLAST CONTROL  
TANK GAUGING  
DIESEL OIL SYSTEM  
POTABLE WATER SYSTEM  
DRILL WATER SYSTEM  
ENGINE COOLING  
SALT WATER SERVICES  
WATERTIGHT DOOR  
CONTROL  
CONTAMINATED DRAIN  
AND BILGE SYSTEMS

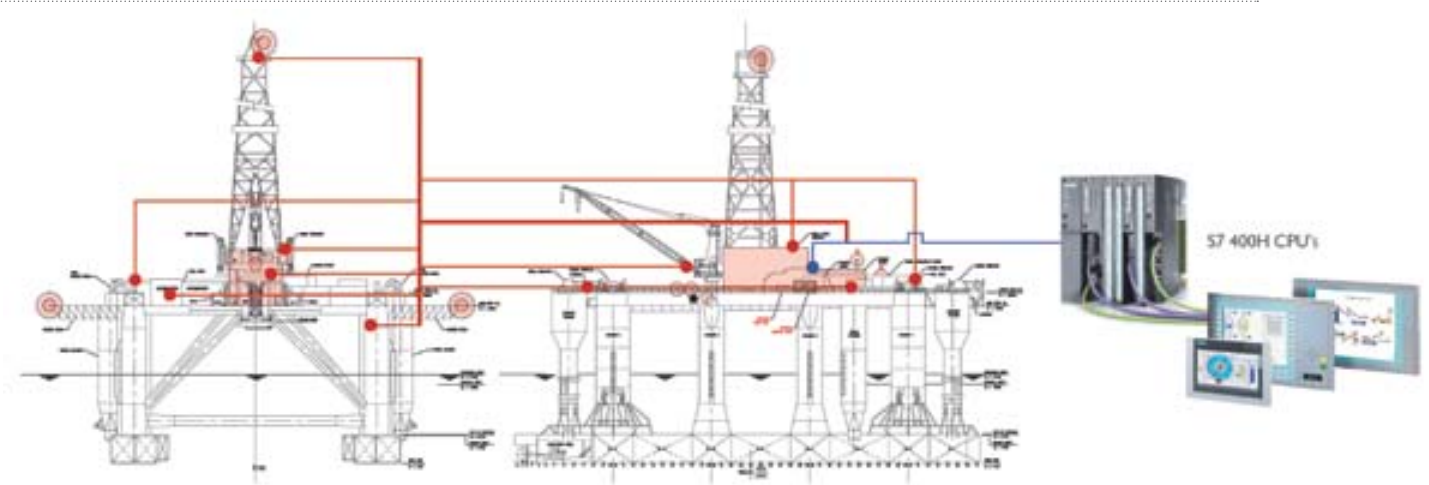


# Vessel Management System (VMS)



**Our Vessel Management System is designed to monitor and control various systems and processes throughout the vessel. Systems such as Ballast, Bulk Transfer, Bilge, Fuel Transfer, Fresh Water, Oily Water Separators, Machinery Alarm Systems and Intact & Stability Software can all be integrated into a single Control System.**

Reliability is ensured through the use of fully redundant processing hardware and software along with field proven sensors and equipment. Control Stations can be placed in various relevant locations throughout the vessel. HMI's can be integrated to give individual system control or indication at local stations. Multiple control stations can be setup with full or limited control functions. Data can be accessed real-time or stored on hard disk for exporting and external analysis.





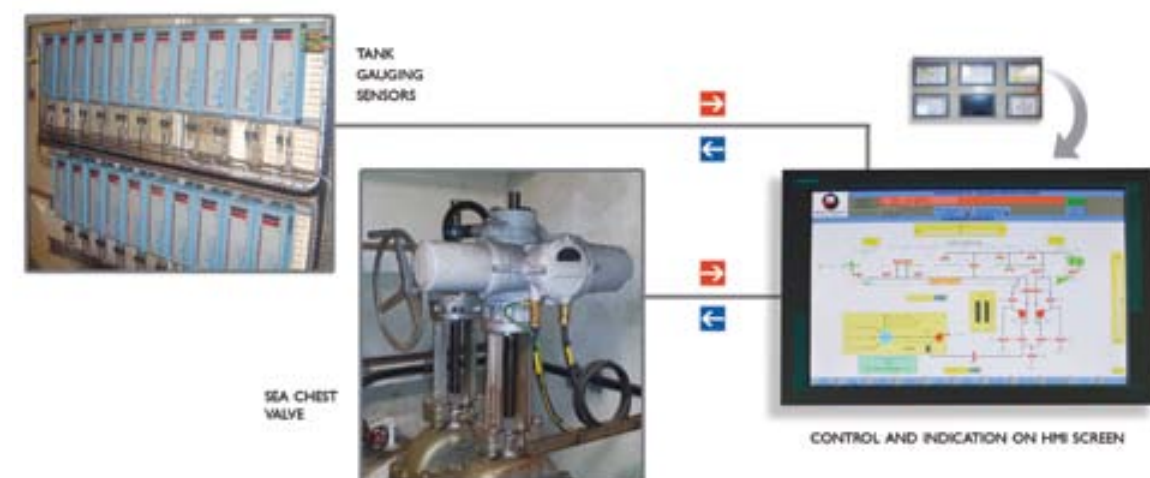


# Ballast Control & Tank Gauging



**Monitor Systems** has a proven track record in the design, project management, installation and commissioning of Ballast Control Systems for semi-submersibles and Pre-Load Tank Gauging for Jack-Up's throughout the world. Our Ballast Control System incorporates Tank Gauging giving an accurate measurement of ballast tank levels. Control of Ballast Pumps, Ballast Valves & Actuators give the operator complete control of the entire Ballast System. Flow rates and discharge pressures can be monitored to enhance operations. Automated fill and discharge routines can be added to allow the operator to fill or discharge a set volume at the touch of a button.

Our Tank Gauging System provides a reliable and simple method for monitoring and recording the volume of water in Ballast, Diesel Oil, Brine Base Oil, Mud, Drain, Potable Water and Drill Water Tanks. The continuous measurement of tank levels negates the need for labour intensive manual soundings. Tank Volumes and Weights are derived from the Tank Levels and displayed graphically on HMI screens.







# Bilge Monitoring & Control

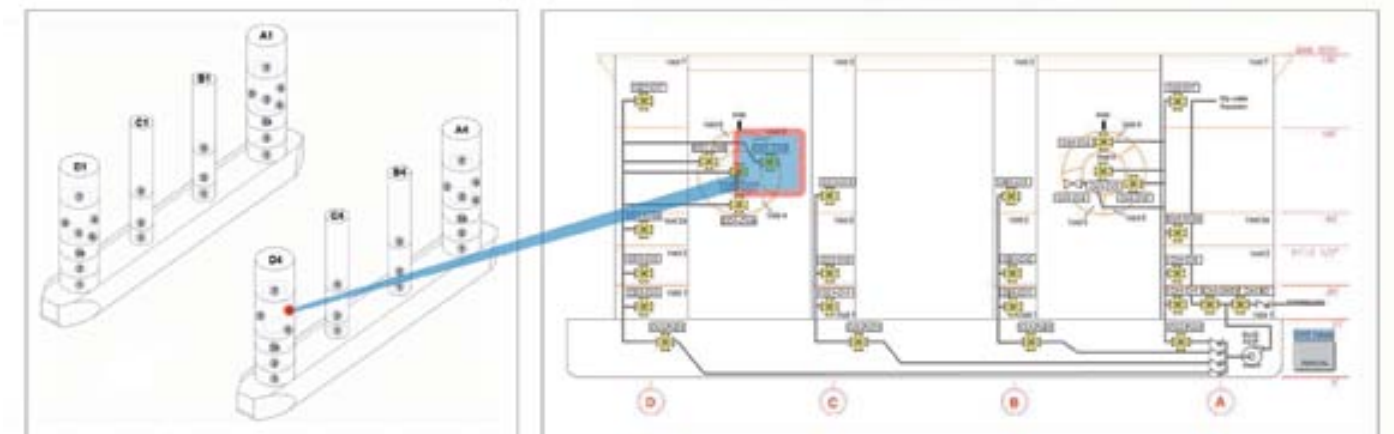


**The Bilge Monitoring System offers a simple and effective remote monitoring of bilge water. HMI's located in manned areas clearly display the status of all bilge tanks as well as generating audible alarms to warn of an influx of water.**

Bilge Control can be easily integrated into the Bilge Monitoring System to control bilge pumps and valves to safely transfer excess water overboard.

Full system redundancy is provided. Bilge sensors offer both continuous fault monitoring and a remote test facility to produce an extremely effective detection system, negating the need to enter remote inaccessible areas for maintenance and testing.

Bilge Control Systems can easily interface to existing bilge valves or new actuated valves can be supplied.





# Rack Phase Differential Monitoring (RPD)

**M**onitoring of Rack Phase Difference during jacking operations can give an early indication of possible leg overstresses. Taking continual manual Rack Phase Measurements during jacking operations is both difficult and open to error. The Rack Phase Differential Monitoring System provides an accurate electronic / mechanical system for measuring and recording the Rack Phase Difference of each leg.

Monitor Systems M1000 Rack Phase Differential Monitoring System provides automated real time monitoring of leg deployments greatly reducing deployment times by replacing the need for regular manual measurements. The R.P.D. Monitoring System detects R.P.D. errors and directs corrective measures necessary to arrest errors. The R.P.D. Monitoring System also tracks and reports leg position information providing such parameters as Reserve Leg, Leg Below Hull, Distance to Tag Bottom and Leg Penetration.





**On Site Survey,  
Repair, Design & Build  
of Safety Critical  
Control & Monitoring  
Instrumentation Systems for  
Offshore Jack-up Rigs,  
Semi-submersibles,  
FPSOs and Platforms**

... everything we do is inspired  
by our mission, values and vision.

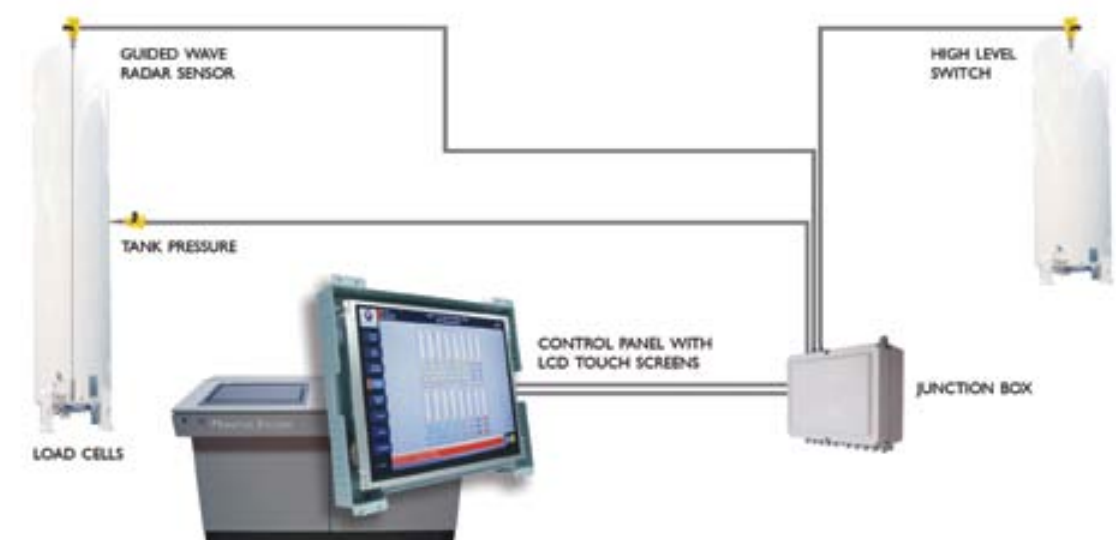




# Bulk Tank Control & Monitoring

**Our Bulk Tank Monitoring System** measures the amount of Bulk Material (Barite, Bentonite, Cement, etc.) for Drilling Fluid and Cement Mixing Operations. Various sensors can be utilised to best match the particular Tank. Guided Wave Radar is the most common method of measurement although Hydraulic Load Cells, Strain Gauge Load Cells, Capacitive Sensors, etc. can be utilised if required.

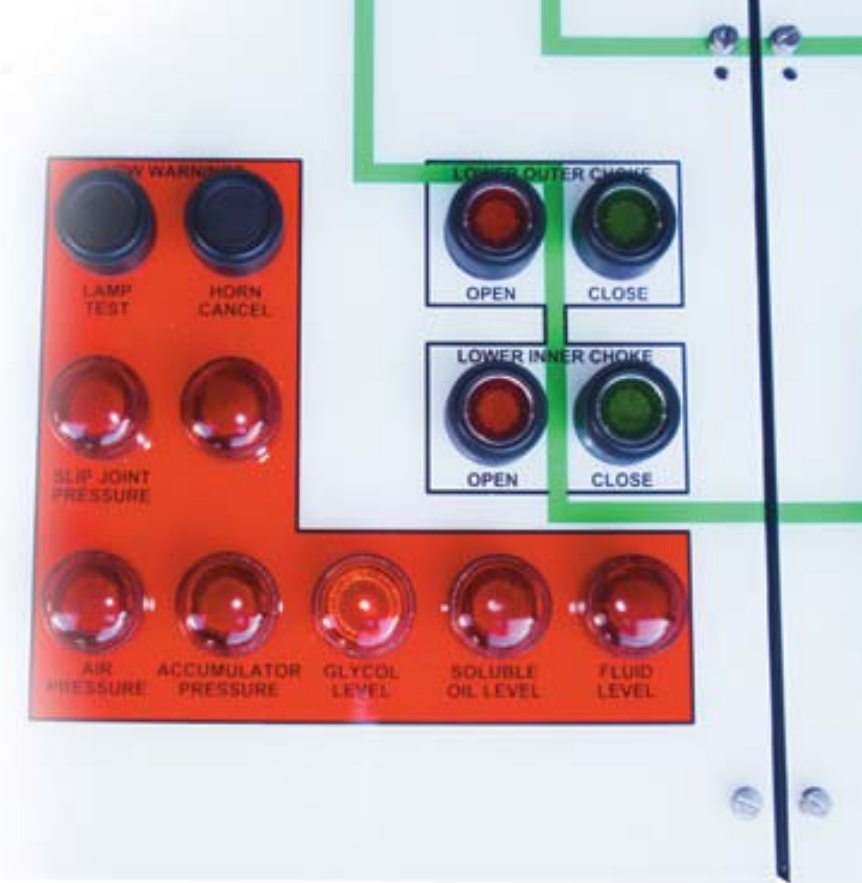
Bulk Tank Control can be integrated into Bulk Tank Monitoring Systems to control the various process Valves. Surge Tank Weights can be derived from existing Hydraulic Load Cells. Bulk Transfer rates can be controlled through the use of proportional throttle valves.







# Blow Out Preventer Control (BOP)



**Monitor Systems BOP Control System** provides clients with a reliable bespoke interface to well control, either via our unique slim-line push button panel design through to fully redundant PLC control for operating in hazardous areas.

Hazardous area Drillers Control Panels and Diverter Panels are supplied with push button control and LED indication of all stack functions. System Pressures are displayed on Intrinsically Safe Gauges. Flow rates and alarms are also provided.

Toolpusher Mimic panels can be supplied with full or limited functions. Emergency Control Panels are also supplied for critical functions at Abandonment and Lifeboat Stations. Bespoke Pressure Switch, Pressure Sensor and Solenoid Panels can be supplied for direct interface to the Koomey unit to suit all individual requirements.

Toolpushers Panel



Drillers Panel







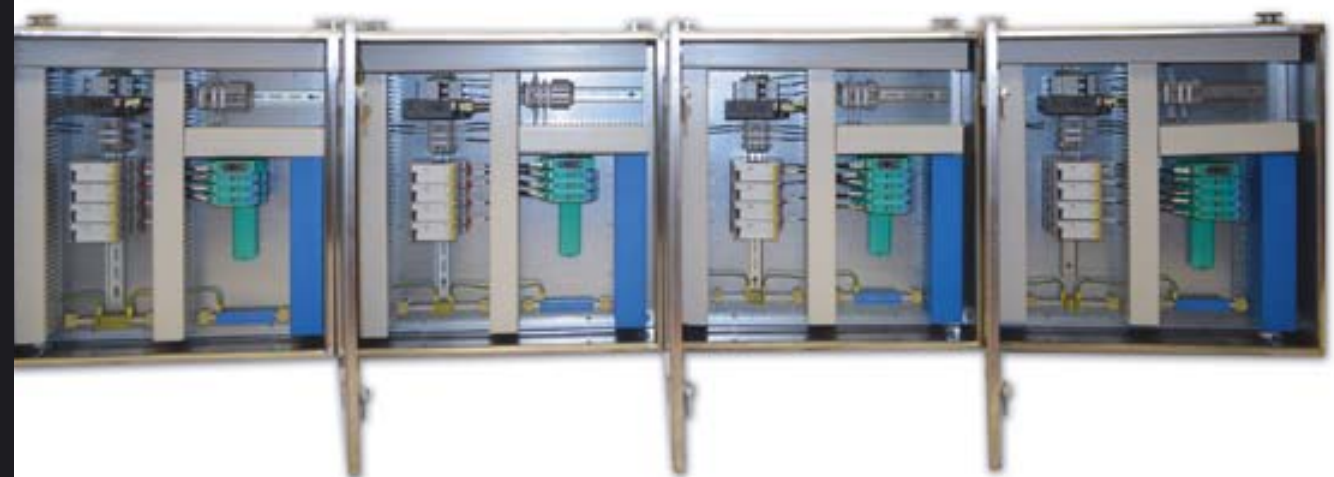
# Water Tight Door Monitoring & Control



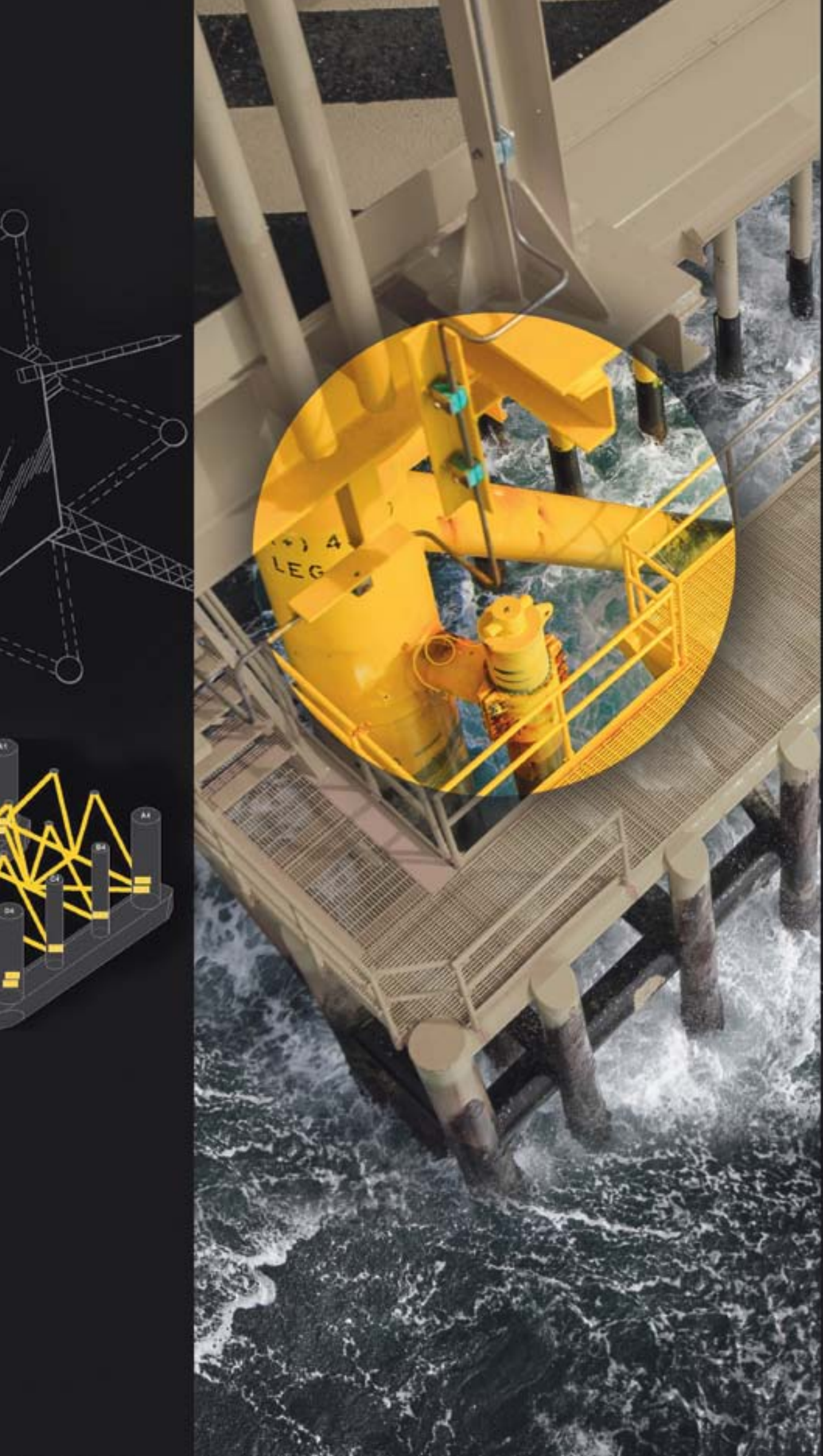
**Management of Water / Weather tight Doors and Hatches is critical to maintain vessel integrity and stability. The System provides continuous monitoring and recording of all doors and hatches.**

Screens show the status and location of each door & hatch, making it very simple for the operator to quickly establish which are open or closed. Alarms can be raised if any door remains open after a set time.

The System can be stand-alone or integrated to the Vessel Management System. Local indication and local audible alarms can also be installed at individual doors if required.







# Brace & Void Leak Detection

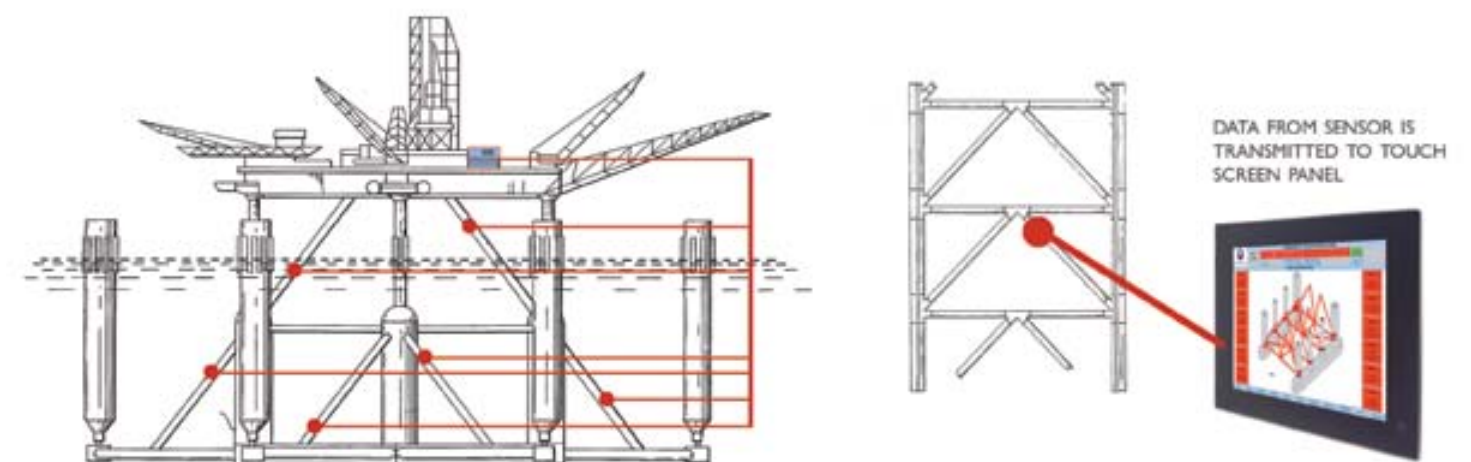


**Our Brace & Void Leak Detection System offers a continuous automatic monitoring of a vessel's watertight integrity.**

High level redundancy along with SIL approved sensors combine to ensure a highly effective and reliable system. Leak Detection Sensors can be easily retro fitted into Braces, Bilge Pots or Void Spaces to monitor for complete vessel watertight integrity.

Leak detection sensors provide both continuous fault monitoring and a remote test facility to produce an extremely effective detection system, eliminating the need to enter remote inaccessible void spaces for maintenance and testing.

Monitor Systems Brace & Void Leak Detection System can be easily integrated with our Bilge Control System to offer increased functionality.







# Ethos

**Central to our culture is a determination to become the pre eminent specialist marine instrumentation engineering company.**

**“Our goals are to be recognised by our customers for:**

- engineering excellence
- quality of our service
- expertise of our people
- innovation and excellence in best practice
- market leading performance in engineering
- ROI project management
- commitment to integrated supply chains
- competitiveness of our offer
- safety of people & assets

**.... and year on year improvements driven through performance measurement.”**







# Anchor Windlass Monitoring

**Our Anchor Winch Monitoring Systems can be utilised to monitor most winch types. The Systems are primarily used to monitor anchor chain Tension, Length and Speed, although control of brakes and emergency release functions can be added if required.**

Local HMI stations at each winch house allows the operator to view data from any winch increasing safety awareness. All winch data can also be passed to a centralised HMI in the control room with dedicated alarms to alert users. Data is logged and can be exported for external analysis.

The Anchor Winch Monitoring System can interface with existing or new sensors such as Load Cells, Load Pins, Encoders or Proximity Sensors. We can also provide a full calibration service for our Anchor Winch Monitoring Systems.







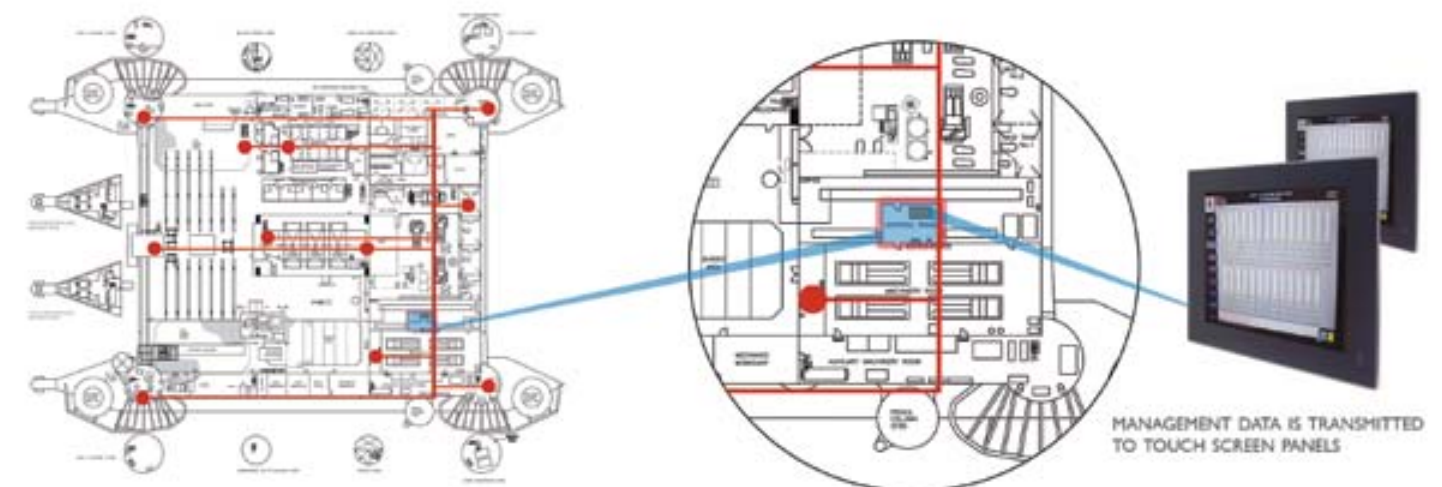
# Machinery Alarm Monitoring



**Our Machinery Alarm Monitoring System provides a visual and audible management tool covering the operating status of motors, pumps, fans, generators and other electro-mechanical utilities.**

Measuring such key functions as speed, temperature, oil pressure, vibration, exhaust gas, water coolant, bearing temperatures etc. across the full range of rig equipment and machinery.

Management data is transmitted to touch screen HMI panels in Control Rooms, Engine Rooms, Workshops etc. as required. All alarms and key parameters are recorded and can be exported for external analysis. Software routines ensure all relevant alarms are raised in any particular location.







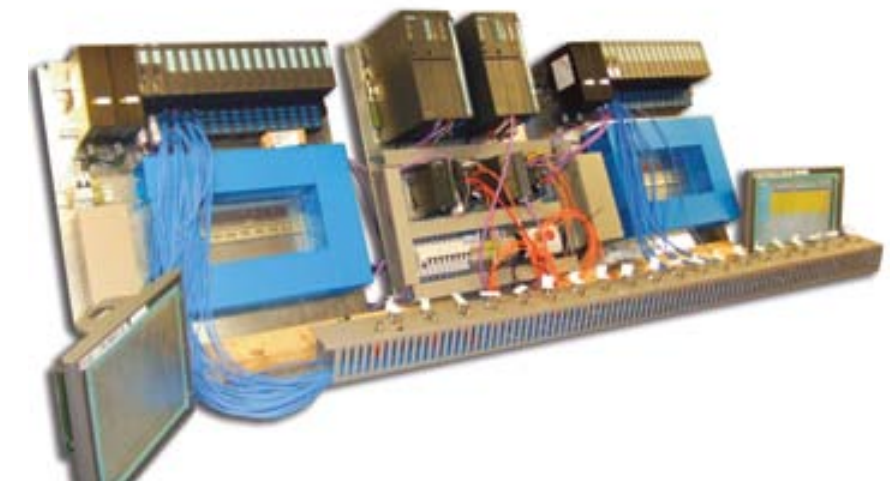
# Fire Damper Monitoring Systems



**The monitoring of Fire Damper Status is essential for operators in preventing fires and gases from spreading and is particularly important in the protection of safe refuge areas during emergencies. The status of fire dampers can prove critical in the planning of emergency escape routes.**

Our Fire Damper Monitoring System provides accurate, continuous real time monitoring of the status of all critical fire dampers.

Key information is clearly displayed on our HMIs located in Control Rooms and Safe Refuge Areas. Fire Damper information can be recorded for analysis or training purposes.







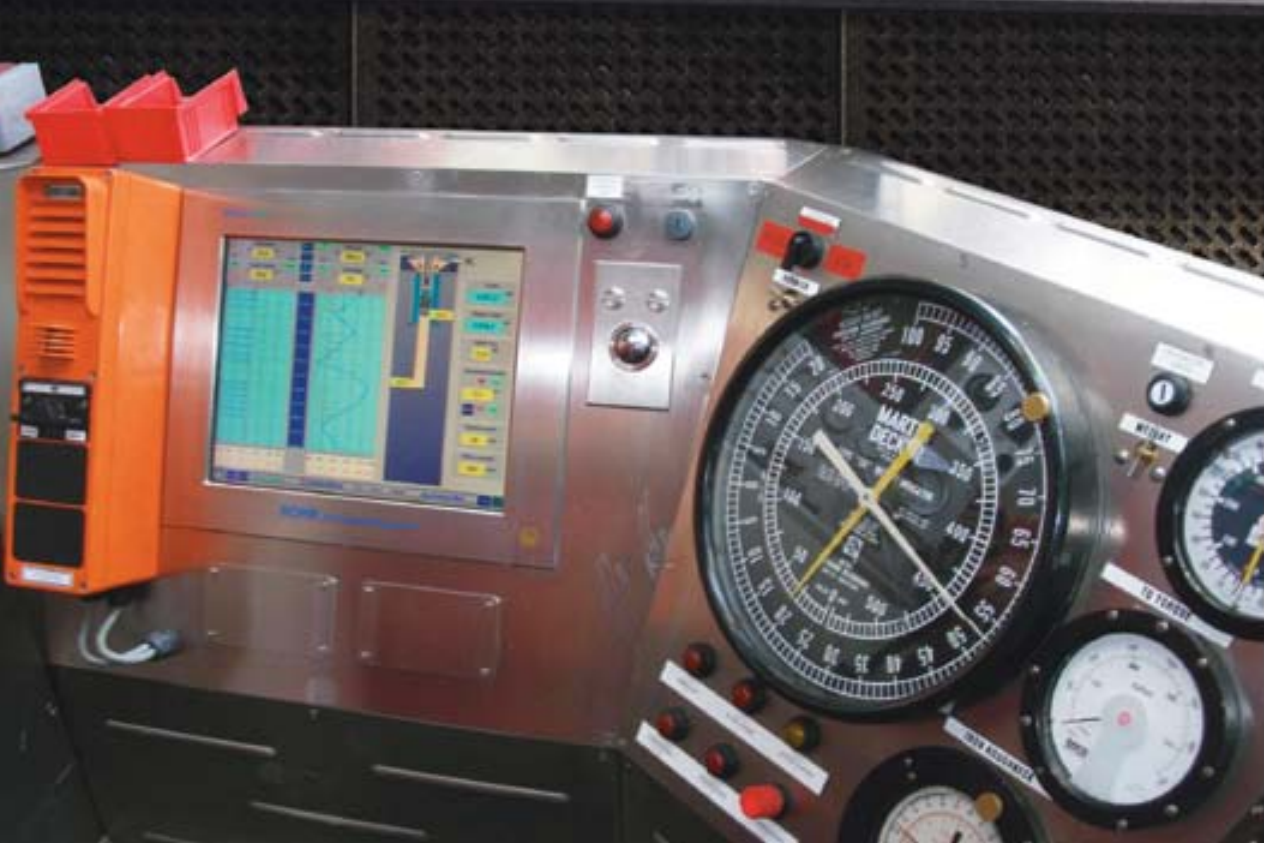
# Drilling Data Acquisition



**Monitor Systems** in association with **BOHR Instrument Systems BV**, supply, install and commission the **Drill-Pro Total Drilling Information System (TDIS)**. **Monitor Systems** has been a distribution partner for **BOHR** since 1998 providing system sales, installation and support, factory trained technicians, including spares and consumables.

Drill-Pro (Drilling Data Acquisition Systems) provides accurate up to the minute information on critical drilling parameters during drilling operations, tripping and other mud sensitive activities. Drill-Pro supplies drilling personnel with important drilling data in a compact 19" TFT monitor unit.

Capital Sale or Rental of Systems is offered.





HPHT MONITORING

MANIFOLD PRESSURE MONITORING

MANIFOLD TEMPERATURE MONITORING

LIQUID SEAL MONITORING

OVERBOARD VALVE CONTROL

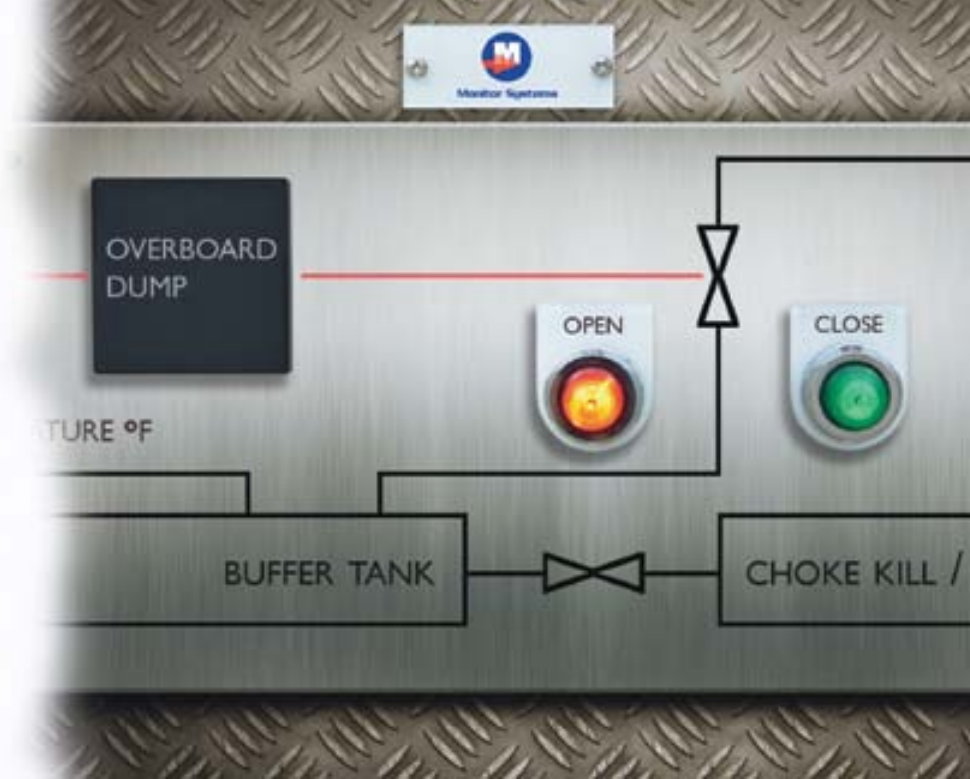
BOP PROBE

PUMP STROKE COUNTER

CHOKER CONTROL



## Well Control (HPHT)



**Our Well Control Instrumentation panels and consoles have a proven track record demonstrating reliable design and high quality manufacture.**

Monitor Systems offers flexible design, providing integrated solutions to suit client requirements. All panels can be designed and constructed to operate in both Zone 1 or 2 hazardous areas as well as Safe Area operation. We undertake HPHT Monitoring, Glycol Injector, Manifold Pressure and Temperature Monitoring, Liquid Seal Monitoring, Overboard Valve Control, BOP Probe, Pump Stroke Counter and Choke Control.





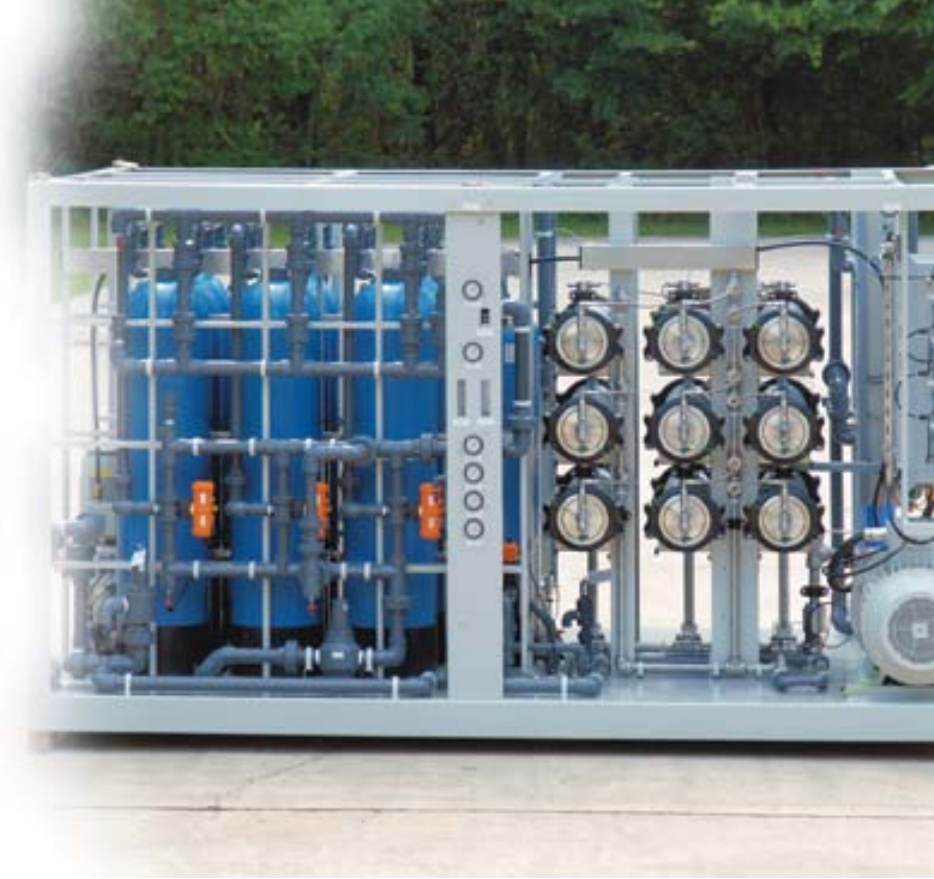
Vessel Management Systems  
Ballast Control & Tank Gauging  
Bilge Monitoring & Control  
Rack Phase Differential Monitoring  
Bulk Tank Control & Monitoring  
BOP Control  
Water Tight Door Monitoring & Control  
Brace & Void Leak Detection  
Anchor Windlass Monitoring  
Machinery Alarm Monitoring  
Fire Damper Monitoring Systems  
Drilling Data Acquisition  
Well Control HPHT  
Reverse Osmosis Watermakers  
Heli Deck & Environmental Monitoring  
Crane & Barge Load Monitoring  
Anti-Piracy & Security  
Project Management  
Source and Supply



## Innovative Engineering

... specialists in bespoke safety critical control and monitoring instrumentation systems for the oil & gas and marine industry.





# Reverse Osmosis Watermakers

**We are proud to be the exclusive European distribution partner for C'Treat Watermakers. Established in 1980, C'Treat provide innovative design and evolutionary development through field testing and combining the latest proven technology and advances in reverse osmosis.**

Monitor Systems can supply the most simple, reliable and economical low cost of ownership reverse osmosis watermakers for the offshore oil and gas industry.

As a combined strength, Monitor Systems have factory trained engineers that install, service and commission reverse osmosis desalination watermakers 24/7/365.





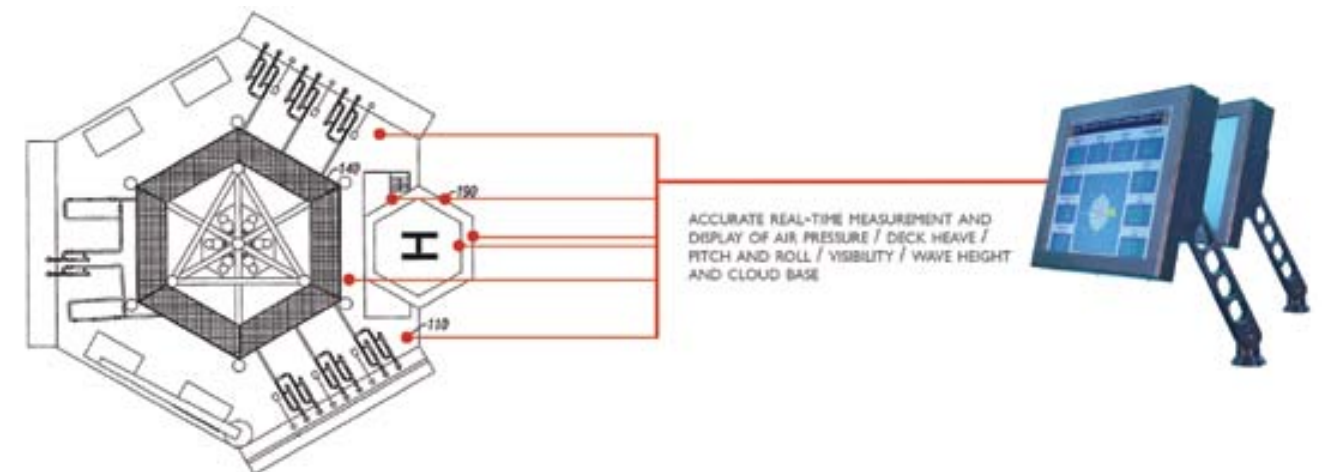


# Heli Deck & Environmental Monitoring

**Monitor Systems** is an experienced provider of offshore heli-deck & meteorological environmental monitoring systems for a wide range of vessels.

Heli-deck Monitoring Systems are particularly important for offshore environments improving the safety of helicopter operations. All Helideck Monitoring Systems supplied comply with all current rules and regulations worldwide, including CAA CAP437.

Environmental Monitoring Systems provide important meteorological and weather forecasting information. Parameters such as Wind, Temperature, Barometric Pressure, Sea Current, Wave Height, Pitch and Roll, Visibility and Cloud Height can be accurately measured and presented in a clear user friendly manner.







# Crane & Bespoke Load Monitoring

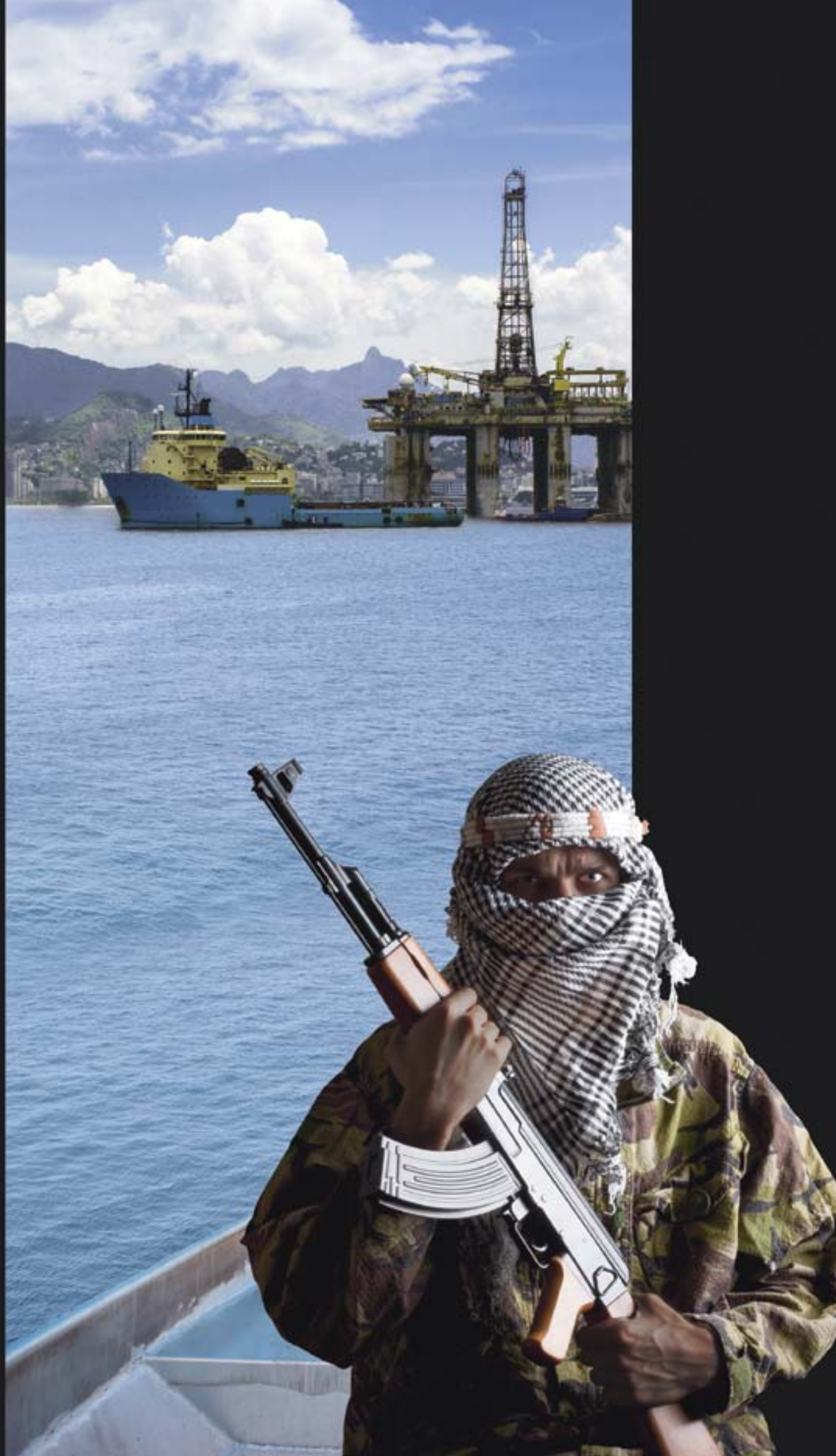
**We can provide monitoring solutions for any weighing systems and operations. Typical systems include the load monitoring of Winch Line, Wireline, Vessel Mooring Tension, Buoy Mooring Tension, Vessel Towing Tension, Module Weighing, Subsea Ploughs and Cable Recovery Systems.**

Crane Safe Load Indicators can be supplied with various options such as Dead End Load Cells, Running Line Tensiometers, Load Pins, Boom Length Sensors, Boom Angle Sensors, Anti Two Blocks and Wind Speed Monitors. To Compliment our Safe Load Indicators, Monitor Systems can also offer Crane CCTV Systems.

Monitor Systems provides a full sales, supply, installation and commissioning service for all load monitoring equipment. Our experienced technical, electronic and electrical engineering staff are fully conversant with the product range and have installed and commissioned bespoke systems for a large number of clients throughout the world.





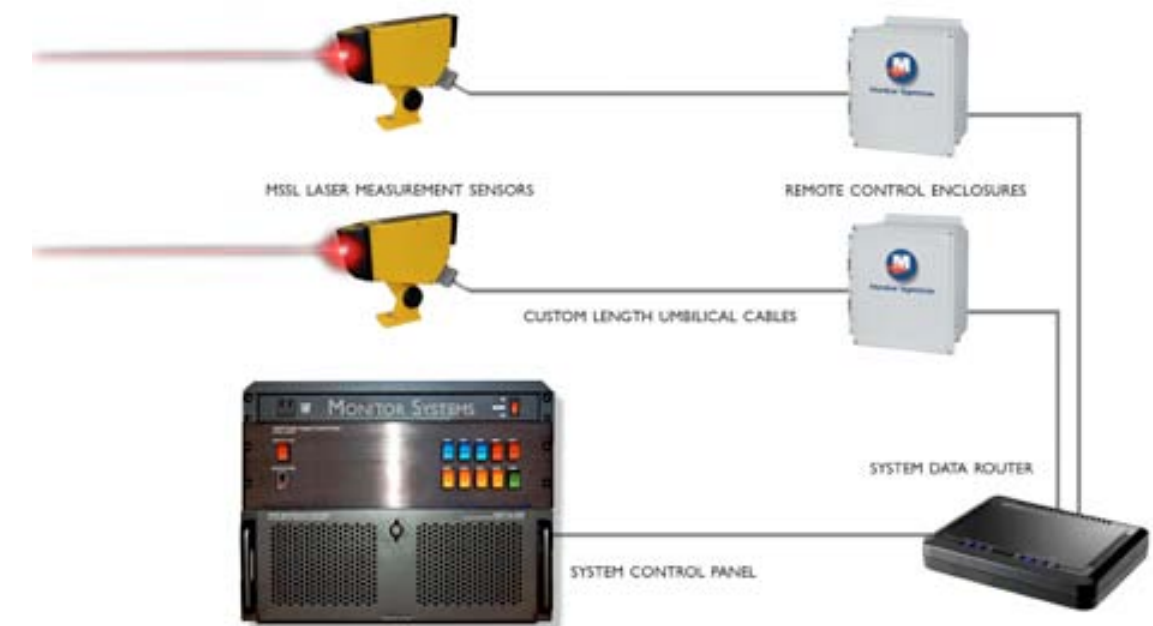


# Anti-Piracy & Maritime Security



**Monitor Systems design, supply and install Maritime Security Detection Systems. Our system offers a comprehensive layered security approach with onboard advance alarm warning for marine vessels, rigs, platforms and pipelines against acts of terrorism, hijacking, piracy and other violations of security wherever a vessel is operating.**

Utilising perimeter sensors, infra-red tracking day/night vision cameras and onboard radar equipment, our detection system generates a secure perimeter network extending outwards from the vessel.



AN UNLIMITED NUMBER OF SENSORS OR CONTROL PANNELS CAN BE ADDED TO THE SYSTEM





# Project Management

**Consistent project implementation requires total commitment. At Monitor Systems we provide a Project Management system that delivers this commitment on a daily basis by reducing project risk and improving return on investment.**

We have significant experience in understanding our customers' needs and developing feasible and accurate project plans, as well as mobilising the necessary resources required to deliver projects both on time and on budget around the world.





FAST AND EFFICIENT 'SINGLE-SOURCE' SUPPLY OF QUALITY ASSURED OIL AND GAS INDUSTRY EQUIPMENT, SPARE PARTS AND CONSUMABLES



## Source and Supply

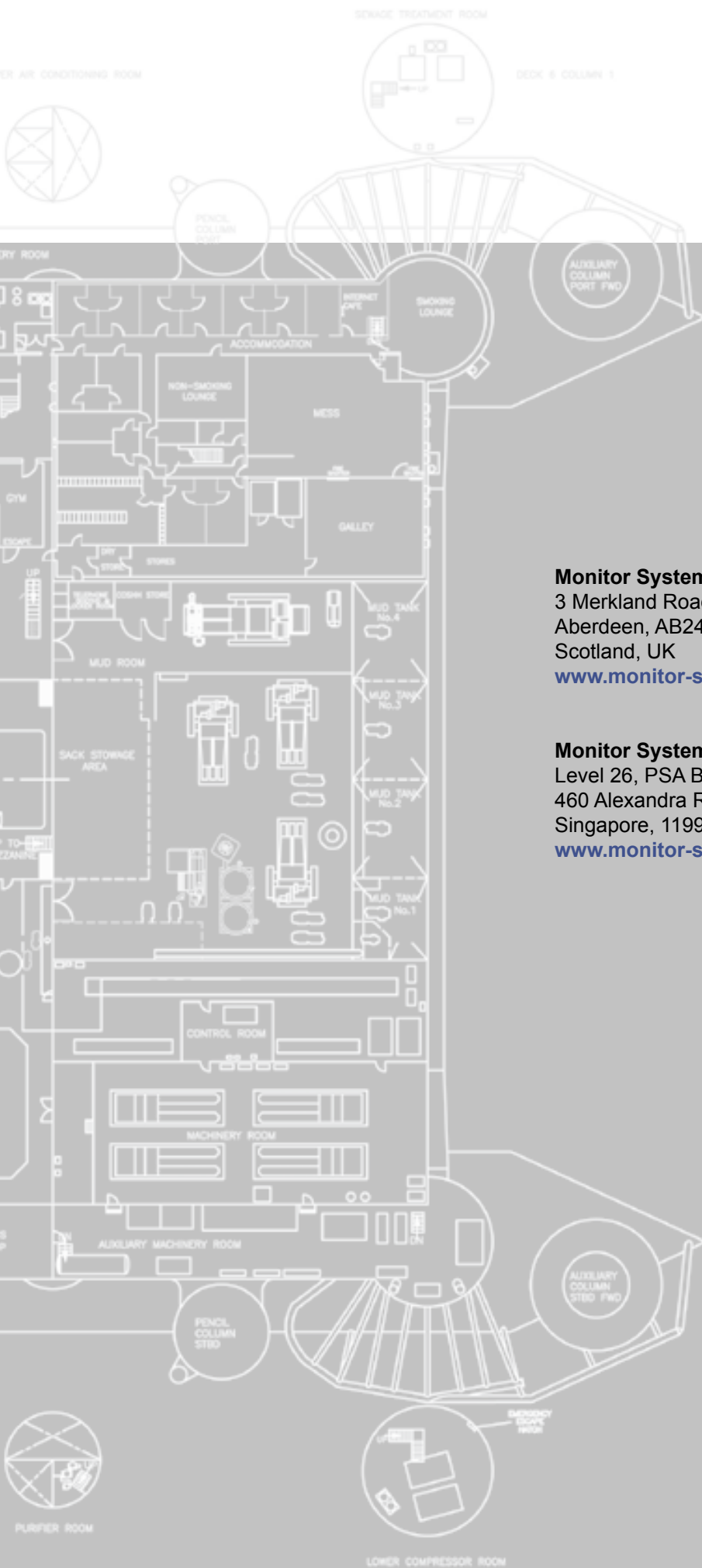
**Monitor Systems provide a fast and efficient 'Single-Source' supply of quality assured oil and marine industry equipment, spare parts and consumables to any location world-wide.**

Monitor Systems enjoy long term supply agreements with many major OEM companies and are well versed in responding to the requirements of customers operating within the oil and marine environment.

We have 'distributor agreements' and 'purchasing agreements' with major service and manufacturing companies.







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