Welcome to

#RIG'up'

Monitor Systems are delighted to introduce the first edition of RIG 'up' our company e-newsletter.

RIG ‘up’ will be published every quarter, keeping you in touch with company news, awards, work contracts and business developments throughout the UK and across the world. Our ‘Project Talk’ pages feature some recent RIG ‘up’ case studies and current project developments of interest ... we hope you enjoy the read.

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Since 1997, Monitor Systems Engineering has become a leading designer and manufacturer of instrumentation, monitoring, handling and control systems for the offshore and onshore oil, gas and renewable energy industries worldwide. Our unique enterprise has gained an industry reputation for ‘attention to detail’ from a team of ‘excellent’ engineers that make a difference.

Monitor Systems Engineering offers in situ repair, upgrade and conversion of rigs, semi-submersibles, trading tankers, FSU, FSO and FPSO and FSRU units; with full on site surveys for all instrumentation monitoring, handling and control systems. Significant areas of applications experience and expertise include Anchor Monitoring, Ballast Control and Tank Gauging, BOP Control Systems, Bulk Tank Systems, Machine Alarm Monitoring, Rack Phase Differential Monitoring and (VMS) Vessel Management Systems.

Product Support: Through our ‘special partner products’ agreement, we also offer various ‘support’ products and systems for Anti Terrorism and Piracy Vessel Security, Crane Safe Load Monitoring, Drilling Data Acquisition, Load Measuring and Monitoring, Environmental & Heli-Deck Monitoring, Tank Gauging Sensors and Wireless Web Enabled Camera Monitoring Systems.

Distribution Partners: Monitor Systems Engineering are exclusive distribution partners for C’treat Watermakers. With nearly 30 years of innovative engineering technological development and field testing, along with hundreds of systems installed and operating worldwide, Monitor Systems Watermakers combine the latest proven technology and advances in design.

Teamwork: Monitor Systems Engineering encourages teamwork at all times and has an in-house culture of ‘one team combined strength’. Our ‘teamwork’ methodology makes a real difference in everything we do, from project management to project delivery. True integration at ground level ensures that everyone at Monitor Systems Engineering is committed to delivering ‘integrated solutions’ through working together, taking personal responsibility and being proud to be a ‘team player’, driving improvements throughout the business.

As part of our programme for expansion and growth, Monitor Systems would like to take this opportunity to welcome on board Allan Gillivray (General Manager UK) and Jamal Saad (Director of Sales ASIA).

Brian Sinclair
Managing Director, Monitor Systems Engineering.
Singapore’s role as a major player in many sectors of the oil & gas industry is well established. Today, Singapore is recognised as the world’s leading centre for the conversion of tankers into Floating Production Storage and Off-loading vessels (FPSOs) and Floating Storage and Off-loading vessels (FSOs). It is estimated that Asia has a majority worldwide market share of FPSO conversions and jack-up rig construction as well as a strong refining industry. Singapore is commonly regarded as South East Asia’s oil & gas hub.

# Expansion into Asia
Monitor Systems forms new company in Singapore

Monitor Systems has been undertaking projects on drilling vessels in the Singapore region for many years; however, business of this nature has almost always originated through customers based in the UK as opposed to customers in Asia.

In August 2013, Monitor Systems set up the company Monitor Systems S.E. Asia Pte Ltd (MSSEA) in Singapore for the purpose of marketing and selling its range of engineering solutions and specialist partner products to the fast developing oil and gas industry in the region. The new company is registered as a limited liability company formed under the Republic of Singapore Company Law with its registered office in Singapore.

Monitor Systems regard Singapore as an ideal location to grow its businesses. The new development will also allow the company to tap into other emerging markets in Asia. “Setting up the new company and sales office in Singapore will prove a huge benefit to the company. Strong trade and industry investment makes Singapore the most competitive Asian country and because the use of English is the main language, business can be done efficiently and professionally without any communication issues.” ... commented (MD), Brian Sinclair.
Monitor System’s Ballast Control and Tank Gauging System enables marine vessel operators to use reliable informative data to critically and safely manage the ballast and trim of a vessel according to operational needs, deck loading and sea conditions.

Ballast control functions are presented graphically to the operator providing an easy interface between operator and equipment. Tank levels are shown both graphically and numerically, whilst audio-visual alarms are displayed in an alarm banner shown on selected screens and a separate alarm page. The system can be supplied in its entirety or installed to utilise client’s existing valves, actuators and tank sensing installations.

“Monitor Systems were approached by the Maintenance Department of the Transocean Sedneth 701 to look at the upgrade of their existing Ballast Control System interface from two to four industrial computers.”

Several years ago the 701 Ballast Control System was changed from an existing mimic panel layout to quantity two Industrial computers controlling the Ballast Control System. In order to enhance the Ballast Control hardware visualisation along with redundancy capability we were requested to make additional upgrades by way of hardware and additional HMI touchscreens.

The four Industrial Computers were configured as a redundant system meaning that if any computer failed it would not affect nor limit the operation of the other computers. The upgrade system has been finished and FAT’d and awaits a convenient window of opportunity to be installed & commissioned.
Monitor Systems were approached by Dolphin Drilling to supply and install four Draft Radar Sensors on the Byford Dolphin semi-sub. The Radar Sensors will measure and monitor the continuous level of the sea in relation to the rig. The advantage of these ultrafrequency sensors is that they have a constant speed (of light) offering height measurements over short distances, unaffected by environmental conditions.

Today, these radar level sensors are commonly used in hydrometry and are becoming the standard for tide stations and offshore installations around the world because of the increased need for accurate and reliable sea level measurement and monitoring. The Draft Radar Sensors used in the project has a maximum measuring range of 75m and meets all the accuracy requirements. The transducer was installed, referenced vertically from the rig structure.

A Draft Level Display (analogue input panel meter), 5-Digit 0.56" red sunlight readable display with 85 - 250 VAC supply was also installed and calibrated as per customer requirements.
Monitoring of rack phase difference during jacking operations can give an early indication of possible leg over-stresses. Taking continual manual rack phase measurements during jacking operations is both difficult and labour intensive. The Monitor Systems Engineering rack phase differential monitoring system provides an accurate electronic / mechanical system for measuring and recording the rack phase difference of each leg.

The rack pitch differential monitoring system is based around the Siemens S7-300 PLC. The S7-300 Series PLC provides high level control functions, programme structuring, networking and software integration.

# GSF Galaxy III Jack-up

Monitoring of Rack Phase Difference during Jacking Operations

> GSF Galaxy III Operating Water Depth: 325 ft. (normal water depth) , 394 ft. (with site-specific approval)

The main user interface is via a 15” Industrial Panel PC running Windows XP Professional and WinCC Flexible Runtime Scada package. This interface will display all RPD information graphically and numerically as well as displaying all alarm information, historical trending data and maintenance procedures. Three 8” remote mobile hand held HMI’s are also provided. The mobile HMI’s can be connected to Connection Points at each leg chord to display RPD information to the operator whilst operating the legs from the Remote Jacking Control Stations.

As well as RPD information the RPD Monitoring System also tracks the position of each leg and in doing so can perform calculations to monitor such variables as Leg Penetration, Distance to Tag Bottom and Total Draft. These additional calculations will be based upon manually entered data such as Air Gap and Tidal Water Depth.

All RPD alarms are fully configurable and the alarm levels can be set by the operator. If any alarms are generated an internal buzzer / beacon located on the PLC Station will be triggered.

For more information on our RPD systems please see our website ... click here for more information.
This project involved everything from management, system design, schematics, factory acceptance test and the commissioning of all tank gauging sensors. Installation of the system will be undertaken in 2014.

# Awilco WilHunter Semi-sub
Design and Installation of Tank Gauging Sensors

Monitor Systems were approached by Awilco Drilling to design, deliver and commission a Tank Gauging System for the WilHunter Semi-submersible

Tank gauging sensors are an integral part of the tank gauging systems installed on many offshore rigs including semi-submersible rigs, jack up rigs, supply vessels, ships and barges. The LC100 sensors have a wide range of applications and better versatility than most other tank level gauging sensors. The sensor is also accurate and reliable with problematic, corrosive, acid or foaming fluids, low viscosity fluids, suspended solids, variable specific gravity and temperature variations, as it is with standard liquids.

Custom Design Solution: Monitor Systems were able to custom design a solution for the rig based on ‘Bubbler’ depth sensing technology using LevelCom 100 tank level sensors. All 35 LC100 sensors will be sited directly outside the Control Room. This will minimise installation logistics allowing existing pipe-work to be utilised and thereby reducing overall installation costs.

Engineered: The LevelCom 100 sensors are engineered to meet the demands of offshore applications and environments by incorporating computer technology with state of the art features into a microprocessor based tank level indicator. The sensor combines automatic leak and plugged line detection with automatic “hardware zero” that compensates for pressure differentials. If an abnormal condition is detected, the sensor will display the appropriate error message on the digital display and/or provide the data on the communication bus to alert the operator.
Our standard winch monitoring system includes a calibrated running line tensiometer with both force and payout sensors and a LCI-90i display for each winch. The LCI-90i display is mounted on the winch control panel providing real time monitoring to the operator. A RL-20 Running Line Tensiometer (RLT) is mounted on the winch rope to measure line tension, speed and length. The RLT is connected to the LCI-90i display via a single cable, this cable is supplied with Marine Grade connectors for connection to the RLT. The RLT can therefore be quickly and very easily disconnected and removed for storage when not in use.

# GSF Constellation 1

Winch Monitoring System / Indonesia

Monitor Systems in conjunction with Measurement Technology NW provided a winch monitoring system for the Transocean high specification Jack-up rig GSF Constellation 1 in Indonesia. The system included running line tensiometers, local displays, interconnect cabling and an output to the rigs Vessel Management System (VMS).

WinchDAC’s graphical interface shows at a glance winch speed, tension, and payout readings as well as alarm status, and all charts feature user-set parameter scaling and real time graphical display. WinchDAC charts feature user-set scaling and an intuitive display of any or all winch parameters. The WinchDAC electroluminescent 320x240 high resolution display is 160 degree readable in all conditions.

Both visual and audible alarms are available. Visual alarms use winch icon colour bar changes to indicate high or low alarm conditions. The vertical bar graphs will also change colour indicative of the alarm condition.

Alarm values can be easily adjusted at the local LCI-90i display or back at the WinchDAC PC computer.

**Interface:** With the LCI-90i interface, all programming functions required to set or change displayed units, (1. alarm limits, 2. silence external alarms and 3. reset payout readings) are available through the five bottom front panel push buttons.

Even diagnostic information (raw Ma signals and counts) are available in this manner to the winch operator.
Monitor systems were commissioned the design, installation and testing of a new Ballast Control Console and Tank Gauging System for Semi-submersible Sedco 704.

# Sedco 704 Semi-sub

Project Management, Design, Installation, Test & Completion

The Monitor Systems Ballast Control System provides monitoring and control of the ballast and bilge system valves, pumps and sensors. Redundancy is provided in all applicable areas to ensure continuation of operation in the event of a fault and to comply with regulations.

A new bespoke console has been installed in place of the existing console in the control room. The new console features six touchscreen displays, five of which are for the ballast control system and the sixth is a monitor for the rig’s existing barge stability PC. The seventh display shows Environmental and Heli Deck Monitoring information.

Each of the 19” HMI IPC displays connect to the system’s datanetwork. A SCADA software package especially designed for the 704 has been installed on all display IPC’s and is operable through the display’s touchscreen interface. Provision has been made for an external mouse and keyboard to be plugged into each IPC. Alarm sounders, console lamps and a beacon installed in the control room will alert personnel to situations requiring operator intervention.

Bilge Valves and Sensors were also supplied to monitor the Bilge Pots. New Brace Leak Detection Sensors were also integrated into the system to provide automatic monitoring of the leg bracings.

Monitor Systems also supplied a 6KVA UPS to power the Ballast Control System.
Monitor Systems Engineering are proud to be the exclusive UK (North Sea) distribution partner for C’treat Watermakers. With nearly 30 years of innovative engineering technological development and field testing, along with hundreds of systems installed and operating worldwide, Monitor Systems watermakers combine the latest proven technology and advances in reverse osmosis watermakers (desalination watermakers). Monitor Systems can supply the most simple, reliable and economical desalination watermakers for the offshore oil and gas industry. As a combined strength, Monitor Systems have a qualified in-house team of engineers that can SUPPLY, COMMISSION and SUPPORT reverse osmosis desalination watermakers.

# Sedco 711 Semi-Sub

Reverse Osmosis Watermaker Supply and Installation

Monitor Systems recently supplied the Sedco 711 Semi-submersible rig with a new reverse osmosis watermaker system. Monitor Systems provides its customers with reliable and economical supplies of fresh water, generated from seawater using the reverse osmosis process, and is committed to increasing customer satisfaction through product innovation. Monitor Systems has build a reputation for delivering high quality, innovative integrated water systems solutions for the offshore oil & gas industry.

Monitor Systems has provided seawater and freshwater filtration, pumping and storage packages, ultraviolet and chlorine sterilization packages and completely custom engineered water systems for customers around the world.

**In Detail:** The Reverse Osmosis watermaker consists of pre-treatment (multi-media, bag, & cartridge filters), pumping (single-stage centrifugal) and permeation (fresh & brine water separation by reverse osmosis) sections, rigidly mounted to a single, rugged, welded-steel frame. The simplicity of Monitor Systems watermakers allows for easy operation and maintenance in demanding offshore environments. Unique system technology provides excellent reliability and constant water production without chemicals.

For more information please see our website ... click here