

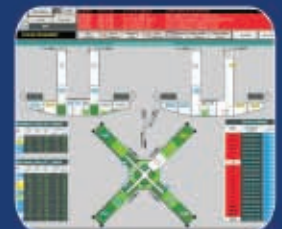
A Diverse Monitoring Service

Strainstall is a world leader in all areas of load measurement, strain and stress determination across a wide spectrum of applications – in fact, wherever there is a need for accurate, cost-effective and comprehensive data generation and analysis. Whatever the application, from a few strain gauges to multi-channel dynamic data acquisition systems in real time, Strainstall will provide the right products and services, at the right time.

- Structural Monitoring
- Load Cells and Shackles
- Mooring Load Monitoring Systems
- Jetty Management Systems
- Hull Stress Monitoring
- Crane Overload and Weighing Systems
- Winch Load Monitoring and Control Systems
- Anchor Load Leg Monitoring
- Tendon Tension Monitoring
- Integrated Vessel Monitoring

As a specialist instrumentation and monitoring contractor, when it comes to oil & gas applications, Strainstall can provide you the highest quality and most dependable systems available.

In a dynamic market like Oil & Gas you need powerful answers. Strainstall are ready to provide them!



Straininstall Middle East L.L.C.

4.26

INTRODUCTION

Straininstall is a world leader in all areas of load measurement, strain and stress determination across a wide spectrum of applications - in fact, wherever there is a need for accurate, cost-effective and comprehensive data generation and analysis. Whether monitoring and control systems or structural stress and fatigue analysis, Straininstall can offer a total solution.



Our capabilities in the civil and construction market include structural monitoring, static and dynamic load testing, geotechnical instrumentation and bi-directional static load testing. In the marine and offshore sectors we supply sophisticated mooring systems, berthing systems, docking systems and hull stress monitoring, as well as structural monitoring of offshore platforms and installations. Industrial applications include crane weighing, overload protection and load monitoring equipment, as well as the manufacture and supply of both standard and specialised load cells, shackles and load pins. For the rail market we provide specialist services and products, including Wheel Impact Load Detection systems, railway track stress measurement and monitoring.



OIL & GAS/ENERGY

Straininstall in Oil & Gas – decades of dependability

For over 25 years, major offshore installations have depended on Straininstall on-site services for load, stress and strain monitoring and data analysis. From basic stand-alone mooring load monitoring to comprehensive fully integrated systems which monitor vessel draft and ballast, metocean conditions, vessel loading and structural dynamics, Straininstall offers turnkey capabilities. Experienced in ABS, DNV and Lloyds certification requirements, we have the knowledge required to offer our customers the highest quality and the most dependable systems available.



Structural Monitoring

We supply and install sensors to monitor stress and strain in offshore structures, flare stacks, risers, pipelines, adapters, fixed and floating units. With real-time displays and off-line data analysis from strain gauges, accelerometers, thermocouples, oceanographic and meteorological instruments.

Stresses in Riser Systems

Straininstall design, manufacture and install riser stress-monitoring systems to provide an indication of riser tension, including warnings of riser disconnection from the fixed seabed equipment. All monitored data is channelled topside via umbilical or fibre-optic cables. The systems are suitable for use in deep-sea environments, measuring the stresses present at the specified strain gauge positions, during operations at water depths of up to 3000m.

- Pressure compensated strain gauges
- Data acquisition systems
- Signal amplification
- Fibre optic interfaces
- High and low frequency data acquisition available

Cumulative Fatigue Damage Monitoring

To provide advance warning of impending failure due to fatigue. Straininstall design, manufacture and install monitoring systems to investigate the effects on structures due to, for example, environmental and vibrational conditions. Systems can be designed for unattended operation, and remote data access – ideal for installations where access is limited or expensive. Systems are suitable for both safe or hazardous area use, due to the in-built intrinsically safe characteristics. The incorporated software carries out real-time processing of raw data to meet various objectives including:

- Measurement of stresses present at various strain gauge positions
- Recording variations in stress peaks
- Calculating cumulative fatigue using approved S-N curves
- Maintaining records of cumulative fatigue
- Recording high and low frequency vibrations
- Providing early warning of potential cracking at sensor positions
- Recording wind speed and direction
- Data storage and automated reporting in pre-defined formats

Hazardous Area Instrumentation

Primarily for the oil & gas and chemical industries. Products include intrinsically safe Ex i(a), explosion proof (Ex d) technologies and encapsulated (Ex m) products, all of which are supplied with the appropriate certification. Intrinsically safe sensors include:

Accelerometers, Strain gauges, Anemometer, Amplifier (Zone 1)

Crane Instrumentation

Strainstall manufactures a comprehensive range of crane weighing and overload protection systems to suit different requirements. From simple displays to PC-based systems with dynamic sea state load charts, equipment may be fitted either to new cranes or retrofitted to existing cranes. Each system comprises a load cell to sense the load monitoring cell and an indicator to display the load and any control outputs that may be required. The type of load sensor used in a system will depend upon many factors including: crane design, accuracy required, headroom available etc.

Mooring Winches

Strainstall offer a range of new and retrofit systems for winch load monitoring, to measure line tension, speed and line out, mode of operation, control parameters and facilitate emergency release. Real-time winch and anchor line data is provided during ring positioning and mooring, utilising strain gauged load cells to supply accurate measurement. PC and PLC based monitoring systems are available, and configurations range from basic stand-alone local winch monitoring packages to comprehensive mooring load monitoring and control systems. Strainstall application software is menu driven and operator friendly, and may be configured to interface with other onboard monitoring and control systems. Application software may be tailored to the customer's requirements and is designed for long-term upgrades.

Tendon and Riser Load Monitoring

Submersible load monitoring of tendons and risers of TLP's, compatible with ballast control sensors, central monitoring and display or linked to platform IMMS and DCS. Monitors jackets, cranes, flare stacks, risers, pipelines and adapters, ship hulls, decks and other related structures. Strainstall provide an on-site structural monitoring and analysis service by an experienced offshore-trained field operations team, offering a complete service from design, through to installation to analysis.

Applications from a few strain gauges to multi-channel dynamic data acquisition turnkey systems are available.

Strain gauge installation, Structural monitoring, Load cells & shackles, Intrinsically safe instrumentation, Stress analysis, Data acquisition systems, Crane overload and weighing systems, Linear displacement transducers, Rotational potentiometers, Inclinometers, Temperature sens.

Anchor Leg Load Monitoring

Provides real-time data on mooring tensions for all types of production vessels, including turret and conventional spread mooring installations. Load measurement is achieved by using instrumented load measuring shackles and pins, which are installed in the anchor legs using custom connection hardware. The system is capable of monitoring multiple channels simultaneously and provides a broad selection of archiving and analytical capabilities. Application software can be tailored to meet specific customer requirements, and can also be configured to interface directly with other onboard monitoring and control systems.

Recent Projects

Recent projects include:

- Supply of offshore structural monitoring system to study stress distribution and onset of potential fatigue damage due to thermal cycling of heat exchangers.
- Continual tension monitoring of flare tower guy ropes, within a Zone 1 Hazardous Area.
- Design and installation of subsea monitoring systems for sea depths up to 3000m, using pressure compensated strain gauges to monitor riser axial loads at the BOP, indicating when riser disconnection has occurred. All monitored data is channelled topsides via umbilical or fibre-optic cables.
- Supply of a structural monitoring system to assess cumulative fatigue damage in offshore steelwork.
- Design and installation/commissioning of a monitoring system to determine bearing stresses in the link bridge on the Scott Platform in the North Sea.

Special Projects

Strainstall engineers have specialised experience in providing load and force measurement for novel applications. What ever your requirement, we will be happy to discuss practical and innovative ways in which we can meet your needs.

MARINE/OFFSHORE SYSTEMS

Strainstall Marine Safety Systems – on board, onshore, offshore

Marine safety systems work year after year in changeable and often hazardous environments. Reliability is essential, as vessels and equipment on the move around the world depend on the systems to ensure safe operation. Strainstall have experience in providing long-term solutions for the unpredictable and often severe challenges posed by marine and offshore operations. Our systems range from high-performance load cells to custom designed integrated multi-sensor packages, and design, manufacture and testing are supported by comprehensive installation and after-sales services.



Berth Manager – Jetty Management System

Based on over 40 years of experience in load and force measurement, Strainstall's Berth Manager system is designed to assist the mooring master by providing comprehensive surveillance of mooring and vessel-related parameters during approach to the berth, and while moored. Sensors monitor speed of approach, mooring loads, weather conditions, oceanographic parameters and detect any drift off. All of these values are processed and presented on a PC based control room display system, which provides graphics and lists of all critical data, and which is available on screens in the harbour office and via fibre-optic link or radio to the ship.

The Berth Manager jetty management system integrates a number of sub-systems which are all available as stand alone packages. These systems are:

- DockAlert vessel approach monitoring - provides speed, distance off and drift-off data

- MoorAlert mooring load monitoring - provides mooring set-up, mooring tension and alarm data
- Meteorological/oceanographic monitoring - provides weather and sea-state information for reference

DockAlert – Vessel Approach Monitoring

The Strainstall DockAlert vessel approach system uses distance-measuring lasers on the mooring jetty to compute the speed of approach, angle of approach and distance off for a vessel being manoeuvred onto a dockside mooring. The vessel approach parameters can be displayed in the harbour office and can also be made available to the ship’s master via a large digit display on the jetty which is visible from the ship, or via a data link. With the vessel moored alongside, DockAlert can provide information on drift-off and fender compression. External items can be supplied certified for hazardous areas to meet the requirements of oil & gas jetties.

MoorAlert – Mooring Load Monitoring

Strainstall’s MoorAlert mooring load monitoring system provides an accurate indication of mooring loads in multi-line mooring spreads. A vessel’s mooring lines are measured and monitored by strain gauged load measuring pins, installed in the quick release mooring hooks. This enables each mooring line to be pre-tensioned according to each vessel’s individual mooring scheme. The load pins detect any deviation from these defined values and indicate any alarm conditions. The instrumented hooks and electronics can be supplied in hazardous area certified form for use on oil and gas jetties, and have been supplied to many port and harbour installations world-wide.

Towing Load Monitoring

The Strainstall towing load monitoring system is designed to give towing vessel masters a direct reading of tension in a towing hawser. It consists of load cells or a load measuring pin fitted to the towing hook, quick release mooring hook or winch, plus a readout/alarm warning unit which can be set with overload thresholds to suit the gauge of rope or wire being used for the towing operation.

There are 3 typical towing load monitoring configurations:

- A single channel system with the load pin designed for incorporation into a swivel joint of a tugboat quick release mooring hook
- For double drum winches, with both outputs leading to a single display unit with a switch to select the desired measurement channel
- For marine towing winches, with the load being measured by load cells in the brakestay or under the bed of the winch.

Key features of towing load monitoring include simple installation, full environmental sealing, accurate readings, easy maintenance and optional additional readouts.

StressAlert – Hull Stress Monitoring

StressAlert enhances vessel safety by maintaining a log of hull stresses throughout the life of a ship, and warning the master in real-time of any overstress or bow slamming. This is achieved

by continuous measurement of the hull using deck-mounted long baseline strain gauges and a bow accelerometer to provide displays of bending moments, alarms when unsafe levels of stress are experienced, detection of bow slamming and long-term monitoring of fatigue. Additional sensors (bow pressure, wave height, heave/pitch/roll) can be fitted to meet more advanced certification requirements. StressAlert is in use with major ship operators around the world, and installations have been approved by the major certifying authorities, including DNV, LRS, ABS, BV etc.

FPSO and Single Buoy Mooring Tension Monitoring

A typical offshore FPSO tandem mooring consists of chain and/or synthetic sections coupled together with shackles or tension links. The shackles and links can be fitted with load measuring sensors (load pins or load links) and connected by hard-wire or radio link to a master unit which provides load readouts, alarm handling and logging facilities. Strainstall load pins, load links and load cells are designed for harsh environments and will withstand prolonged immersion in seawater. The master units are similarly rugged and sealed to work in the offshore environment. Hazardous area certification is also available, and load cell calibration and proof loading can be certificated by the main authorities eg.DNV, LRS and ABS.

Offshore Systems

Strainstall design and manufacture TTMS, RTMS, TTRTMS and IMMS systems for TLP’s and other offshore structures. We are unique in being able to design, manufacture and supply complete systems, from load cells through to display software, which enables us to control all aspects of each individual contract. At the heart of each system is the load cell, which is used to monitor the tensions . Our load cells are extremely robust, and are capable of providing long-term reliable data for the life of the structure – even when under water.

STRAINSTALL PRODUCTS

Load cells

Strainstall design and manufacture a wide variety of load sells including tension load cells, compression load cells and a well-proven range of load shackles. Custom loads cells can also be designed for your specific application.



Compressive Load Cells, Load Pins, Load Shackles, Tensile Load Cells, Weighing Kits, Amplifiers, Displays.

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For All Your Weighing Needs

Strainstall offer a range of high quality load cells to suit most weighing applications. With over 40 years experience supplying worldwide to the biggest names in the industry, Strainstall is the choice for quality.

- Load ratings from 100kg to 3000 tonne
- High accuracy
- Stainless steel construction
- High resistance to offset loads
- Suitable for aggressive environments
- Supplied with full certificate of calibration
- Range of amplifiers and displays
- Intrinsically safe solutions



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A Dynamic Onshore & Offshore Monitoring Service

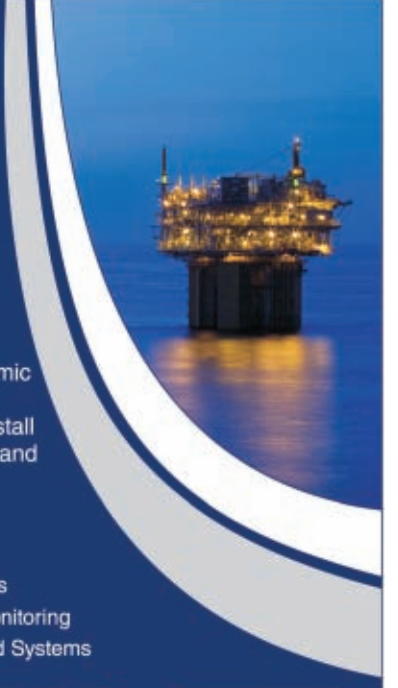
Whatever the size of the application, from a few strain gauges to multi-channel dynamic data acquisition systems monitoring in real time, Strainstall will provide the right products and services at the right time.

- Mooring Load Monitoring
- Speed of Approach Systems
- Quick Release Mooring Hooks
- Tendon and Riser Tension Monitoring
- Crane Weighing and Overload Systems



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4. MACHINERY CONTROLS

Delivering Your Design

Gravesend_LARGE CH4860-4620
 DIST: 0.60 **Strainstall**
 E: 44128.232
 N: 51213.196
 H: 47.292

Strainstall supply a range of 2D and 3D excavator machine guidance products which have been designed to simplify and increase the efficiency of earth-moving operations. Our machine guidance products can tell you where an excavator's tool or bucket is to centimetre accuracy and puts the operator in control.

- Improve Productivity
- Complete grade and depth control ensures jobs are 'right first time'
- Significantly reduces surveying costs
- 2D and 3D solutions available







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5. GEOTECHNICAL LABORATORIES
 6. TESTING & MEASURING INSTRUMENTS

A Diverse Monitoring Service

Strainstall is a world leader in all areas of load measurement, strain and stress determination across a wide spectrum of applications – in fact, wherever there is a need for accurate, cost-effective and comprehensive data generation and analysis, Strainstall can offer a total solution.

- Structural Monitoring
- Pile Integrity Testing
- Groundwork Testing
- Geotechnical Instrumentation
- Load Cells
- GPS Compatible Machine Guidance
- Dredging, Groundwork and Engineering





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TOP BANNER (WEB)

