



Providing innovative engineering solutions around the globe

MetOcean System Solutions

www.nesscogroup.com

Introduction

Accurate local weather information is critical to aviation and marine operations offshore.

Nessco MetOcean Systems provide accurate, reliable, weather data measurement and collation to the International Marine and Oil and Gas Industry, thus providing critical information for safe and efficient operations offshore.

Nessco enjoys a worldwide reputation in the field of System Integration and specialises in design, engineering, installation and maintenance of marine weather monitoring and oceanographic equipment. Nessco uses its extensive in-house resources to cover over 30 sites in the UKCS.

Using the latest NIMOS (Nessco Integrated MetOcean Observation System Software) specifically developed for Nessco and integrated with the highest quality sensors, we provide a package that meets all industry standards including the latest CAP437 regulations for UKCS operations.

Services:

- Turnkey Meteorological and Oceanographic Monitoring Systems
- Upgrades
- Sensor Replacements
- Maintenance
- Surveys
- Calibration and Repairs

MetOcean System Package:

- Overall project management design and specification
- Procuring equipment and system integration
- Assembly and FATs
- Installation and commissioning on site
- Documentation
- Technical support

Sensor Package:

- Wind
- Temperature/Humidity
- Pressure
- Waves
- Visibility/Present Weather
- Cloud
- Rainfall
- Motion

Offshore Installations:

- Production Platform
- Semi Submersible
- Jack-Up
- FPSO
- DSVs
- Supply Vessels
- Tankers

For more information or to receive a competitive quotation, please contact: enquiries@nesscogroup.com

NIMOS Software

NIMOS is a platform independent software application designed to collect metocean data and process it in real-time, to produce a set of required parameters which are essential for the offshore industry. The data is used and displayed around the platform, so personnel can determine whether it's safe to conduct operations such as crane lifts or helideck landings.

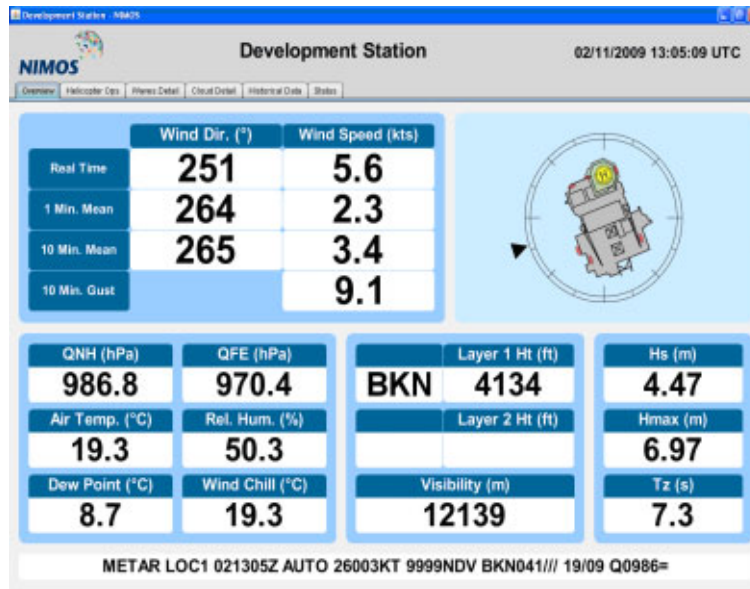


Fig. 1 - General overview of all weather data

Short and medium term archived data is stored and available locally from the NIMOS system, which also transmits the data to an onshore web server for permanent archiving and multi-site displays (MET-REACH), using a reliable and secure data transmission technique available from within any enterprise.

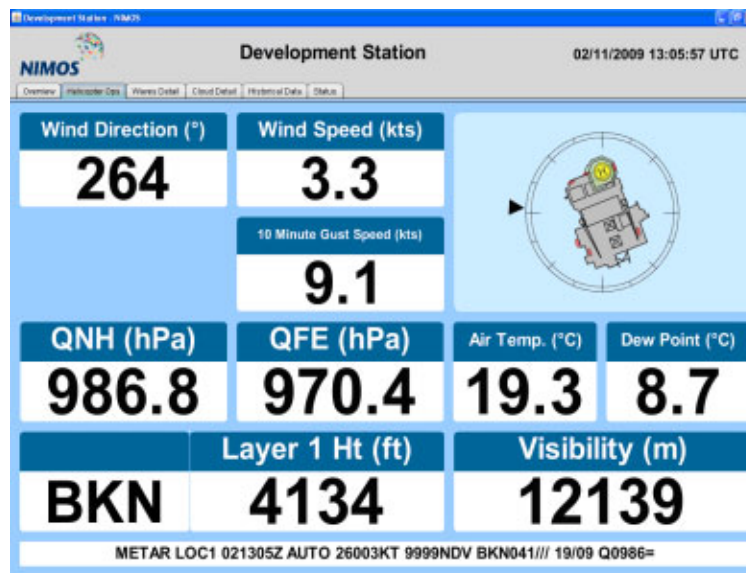


Fig. 2 – Data relevant to helicopter operations

NIMOS Software

NIMOS produces standard statistical data (instantaneous, averages and extremes) for all of the following:

- Wind Direction
- Wind Speed
- Wind Gust
- Wind Variations
- Temperatures
- Humidity
- Dew Point
- Pressures (QNH, QFE, QNE, QFF, Multi Cell Comparison)
- Visibility
- Waves (all recognised height, period and directional parameters derived both deterministically and spectrally, and other spectral parameters indicating the sea state)

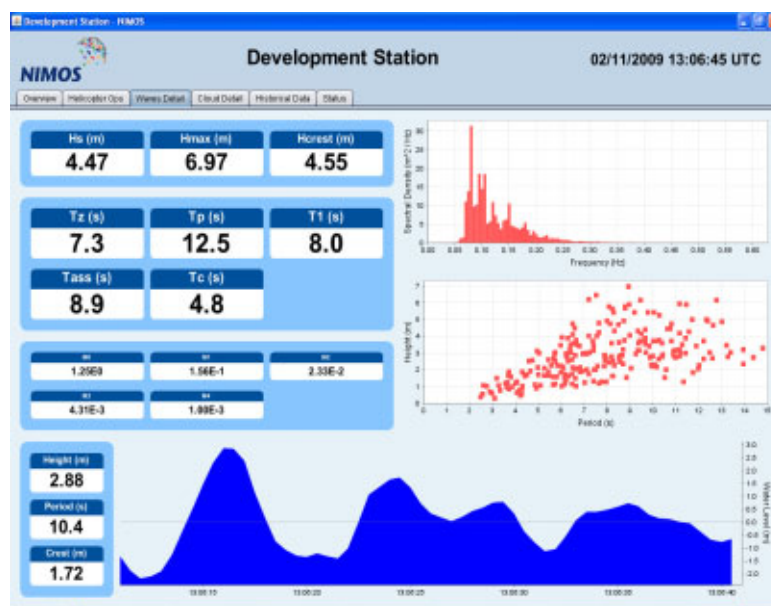


Fig. 3 – Provides more detail on the sea state for vessel loading and unloading

NIMOS produces informative data for the following:

- Status of Sensors
- Current Weather Conditions (precipitation and fog)
- Current Sea State

It also produces standard reports for the following:

- Metars
- Synops
- Climatological
- User Defined

NIMOS conforms to all current standards, e.g. CAP437, CAP746 and also derives data which is most likely to be used in future standards.

MET-REACH Web-Based Package

Nessco’s onshore metocean data collection platform, MET-REACH, is a web-based system which uses standard web protocols for collecting real-time metocean data from remote locations, typically offshore. Data is presented to users via a series of auto-refreshing web pages customised to meet individual client’s requirements as well as providing the facility for interrogating archive data in either graphical or exported data file form.

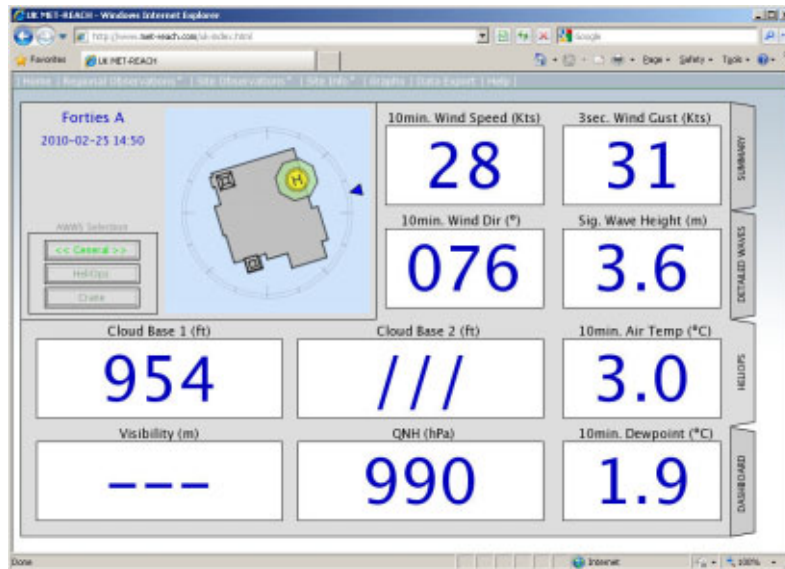


Fig. 1 – Heliops site observation display

The onshore data collection server itself is a high specification (4 dual core processors) Linux based Apache web server configured with significant redundancy in mind, operating 3 RAID hard drives and dual hot swappable power supplies.

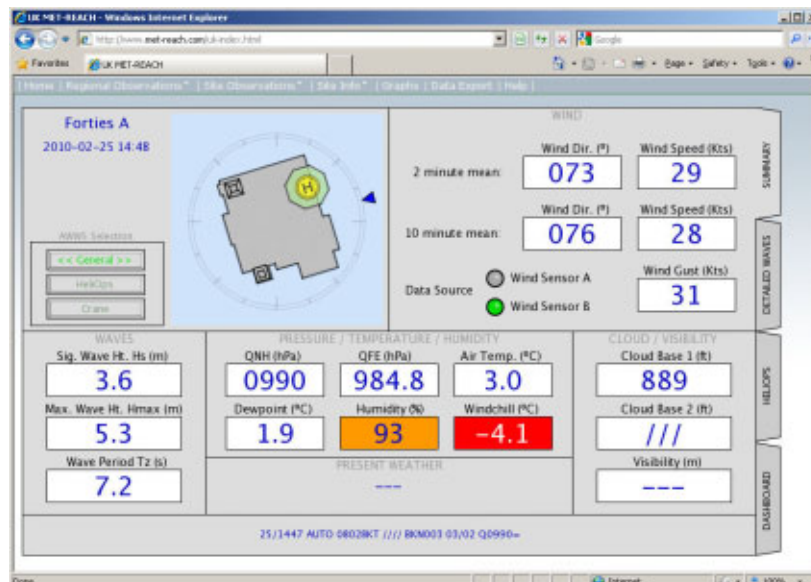


Fig. 2 – Site observations summary display

MET-REACH Web-Based Package

Data is received by the server once every minute from each remote site by simple HTTP(S) POST requests and this is then stored in individual text-based archive files on the server. The web site itself is hosted on the Internet and will be accessible by authorized users through a standard web browser after providing a username and password.

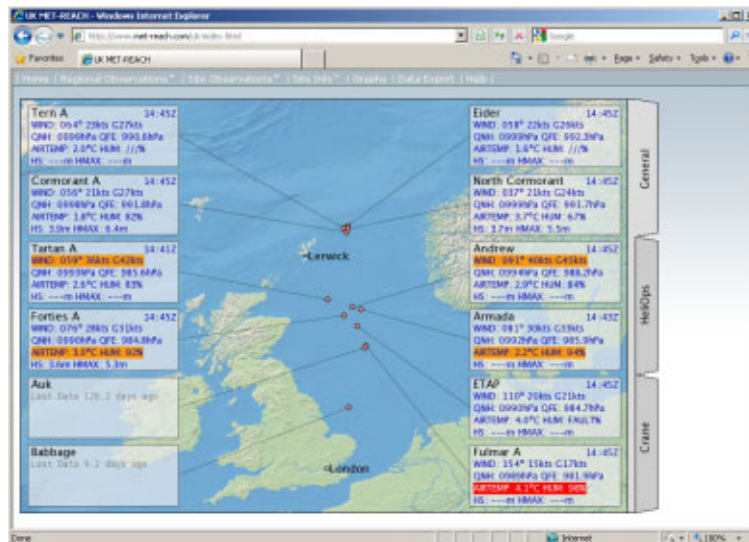


Fig. 3 – Spatial general display

The data displayed in the web pages adopt a background colouring scheme to indicate when safe limits have been exceeded for various operations, i.e. if the wind is too high for crane operations or the visibility is too low for safe helicopter operations, etc. These Adverse Weather Warning Schemes (AWWS) are predefined on the server and can be set to meet the clients own safety limit criteria. Due to the significant difference in safety criteria for different operations, each of the real-time display pages can be selected to adopt the AWWS for either General Operations, Helicopter Operations (HeliOps), or Crane Operations.

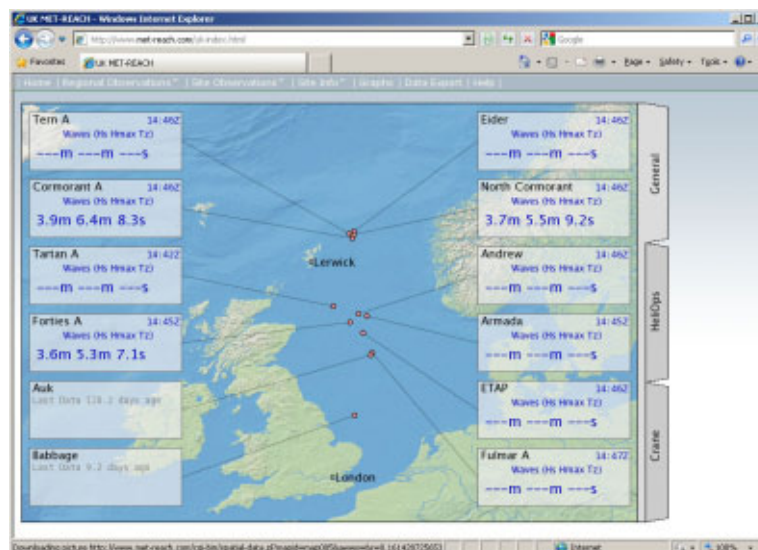


Fig. 4 – Spatial waves display

Sensors

Nessco Metocean provide various types of sensors for meteorological and oceanographic monitoring. Please see the following for a brief description of the various products we integrate and supply.

Wind Sensors

The majority of automated airport weather stations are equipped with a standard wind vane and cup system (anemometer) to measure wind speed and direction. Generally the anemometer is mounted on a 3 metre pole to ensure it is in free air and away from any obstructions.

Temperature and Humidity

Temperature sensors are used to measure the current ambient atmospheric temperature. Humidity sensors measure the moisture content of the atmosphere.

Pressure

A barometer is an instrument used to measure atmospheric pressure. It can measure the pressure exerted by the atmosphere by using water, air or mercury. Some Digital barometers can have one, two or three pressure transducers with multiple transducers providing redundancy.

Ocean Monitoring

Wave Sensors measure wave height, period and direction. Current Sensors measure sub-surface current, speed and direction, depth and temperature.

Visibility and Present Weather

Forward scatter sensors determine the local air clarity and translate it into prevailing visibility. Visibility sensors measure horizontal visibility and will determine a range of present weather types.

Cloud Base

Ceilometers are used to measure cloud height. The device works day or night by shining an intense beam of light (often ultraviolet), modulated at an audio frequency, at overhead clouds. There are two basic types of ceilometers: the scanning receiver and the rotating transmitter. The scanning-receiver ceilometer has its separate light transmitter fixed to direct its beam vertically. Cloud base can be detected reliably in fog, rain, snow and haze.

Rain

The best form of measuring rainfall is by using a tipping bucket rain gauge. Tipping bucket rain gauges are sensors for rainfall and rainfall intensity and events. They are based on a principle of a pivoted tipping bucket balance with reed relay contacts being activated every time a tip is detected. These tips are usually connected to counters or logging/data collection devices or weather stations.

Helideck Motion Monitoring

The Helideck motion sensors are typically installed on vessels or FPSO's that have a tendency to roll, heave or pitch in the water.





Solving Meteorological challenges for organisations around the globe

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