

NASNet® DPR

NASNet® Dynamic Positioning Reference System

Overview

NASNet® DPR combines the traditional Long Base Line (LBL) acoustic positioning concept with GPS inspired 'receive only' functionality to provide an extremely stable, fast update positioning solution for use in DP systems.

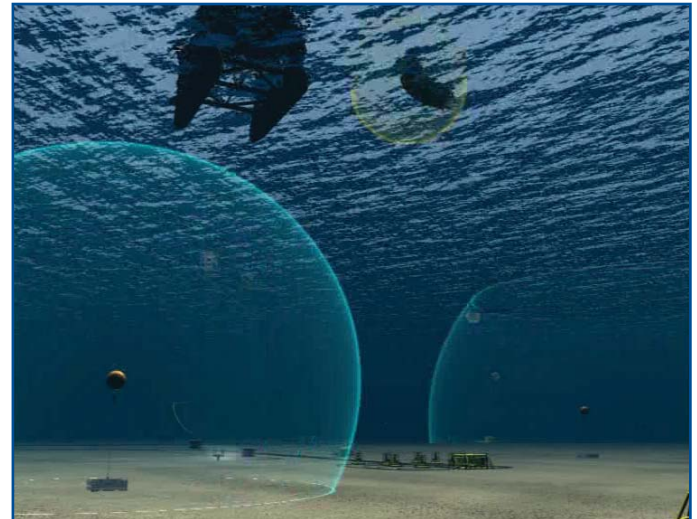
Positioning can be provided from the system by utilising any pre-installed NASNet® array. Alternatively a local NASNet® seabed array can be rapidly deployed and calibrated at any required working location.

NASNet® DPR is an acoustic based position reference system, independent of GPS, and therefore provides a DP reference input which remains immune to instability caused by periodic episodes of scintillation – a phenomenon affecting satellite positioning systems, particularly in tropical latitudes, caused by solar activity affecting the earth's atmosphere.

NASNet® Operating Principle

NASNet® is an advanced subsea positioning system with a concept similar to GPS. Using advanced Nautronix Acoustic Digital Spread Spectrum (ADS²) signalling technology NASNet® employs a broadcast technique to determine accurate range measurements between the calibrated NASNet® array and the passive receivers on tracked targets. The positions of the targets can then be determined with ranges from a minimum of 3 NASNet® Stations.

Due to the one way range measurement techniques and advanced spread spectrum signalling technology utilised, multiple NASNet® DPR systems can be used simultaneously with the same NASNet® Stations. This provides increased



acoustic positioning redundancy and enables multiple vessels to position simultaneously using the same array.

Ranges in excess of 7.5Km can be used for positioning meaning that in an existing NASNet® field large numbers of Stations lie within a usable range. This provides dual benefits of fast update rate (typically 1Hz) and high levels of redundancy ensuring stable and reliable positioning.

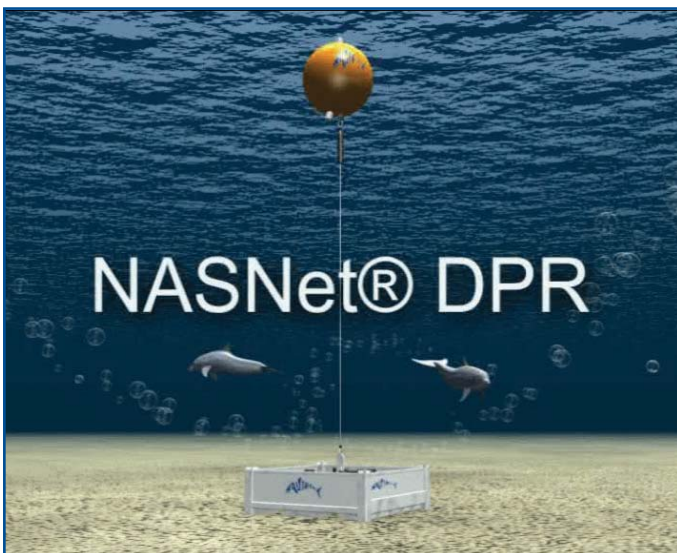
Due to the unique Nautronix ADS² signalling the NASNet® DPR system is completely interference-free with other commercial acoustic systems, meaning no 'frequency management' or risk is introduced for any vessels in the area.

NASNet® DPR

NASNet® DPR provides a simple, intuitive and robust user interface via touch screen monitors, which is designed to satisfy and augment DP Operators' requirements with comprehensive Quality Control feedback of system performance. User interaction with the system is generally limited to the activation and selection of Stations to be used, with automated system functions carrying out routine time synchronisation of the seabed Stations.

In order to assist with the optimal selection of Stations NASNet® DPR uses Nautronix' Geometric Support (GSUP) indicator to show the geometric quality of the selected Stations, along with predicted values for alternative Station selections and warnings for poor geometry situations.

The system provides real-time feedback on positioning quality, command status and warning of any potential issues which allows the DP Operator to make important operational decisions based on the best available information.





NASNet® DPR deployment and setup

NASNet® DPR can easily be utilised on a vessel moving into a pre-installed NASNet® array. In this scenario no additional subsea Station deployment is necessary with the vessel based NASNet® DPR topside equipment simply communicating with the existing seabed array. A reliable DP position reference can be established within minutes of arrival in the field.

NASNet® DPR can also be used if working in a location where NASNet® Stations have not been pre-installed. In this case a localised grid of NASNet® Mini Stations would be installed from the vessel by the most effective operational manner (commonly by vessel based ROV system). The deployed Station reference positions would then be established using a simple and efficient baseline calibration routine which is integrated into the NASNet® DPR control software. Following this short calibration process the system would be available for use as a position reference.

Key benefits of NASNet® DPR

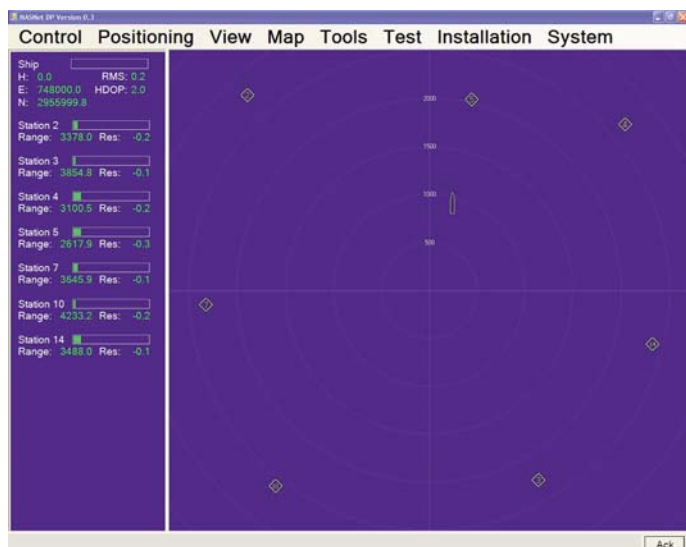
- Fast and responsive position updates
- True multi-user functionality
- Robust, stable positioning
- High accuracy
- Reliable communications due to advanced digital signalling techniques
- User friendly interface
- High level of redundancy
- Reduced risk of interference
- Immunity to acoustic pollution from other commercial acoustic systems
- Minimal setup time
- Integrated acoustic DP reference for NASNet® ready fields
- Easy deployment and calibration in new locations

Typical applications of NASNet® DPR

- Primary or secondary acoustic DP position reference sensor
- Mitigation against disruption to satellite based DP position references (typically due to scintillation effects)
- Additional acoustic position reference sensor for improved redundancy

* NASNet® is now operating in its second generation form as NASNet® MkII

Interfacing to the DP system is carried out through common data telemetry telegrams suitable for use in DP consoles such as the standard NMEA 0183 GPGGA data string.



NASNet® DPR map display

Global Leaders in Through Water Communication and Positioning Technology for the Offshore Industry