

NASNet® MkII SUMMARY

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 tracked targets. The positions of the targets can then be determined with ranges from a minimum of 3 NASNet® Stations.

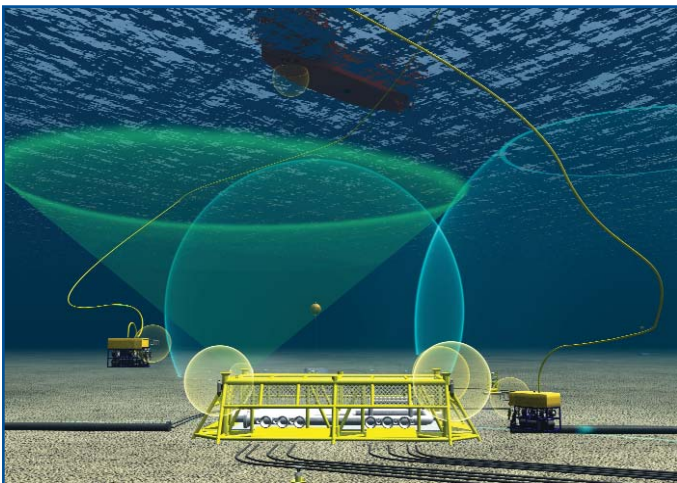


Illustration of NASNet® in a typical field development scenario

This approach successfully overcomes the limitations of conventional Long Baseline (LBL) systems and provides a true multi-user system able to simultaneously position unlimited objects at fast update rates and with no acoustic interference.

Key NASNet® Features

- Broadcast 'transmit only' technique

Passive receive allows multiple simultaneous users (no 'frequency management') and provides high update rates for all positioned objects

- Nautronix ADS² (Acoustic Digital Spread Spectrum) signalling

The advanced signalling technology provides robust positioning in acoustically noisy environments and allows reliable detection of signals at low power levels. This in turn increases battery life and potential deployment duration.

NASNet® can be used alongside traditional acoustic systems with no risk of inference.

Positioning accuracy also benefits from the digital encoding of the acoustic signal which allows extremely long ranges to be very precisely and accurately detected.

- Long range capability – up to 10km (5km for seabed positioning)

The long range capability of NASNet® has a direct effect of significantly reducing the numbers of seabed assets for any given area. This provides commercial benefits through savings in vessel time required for positioning system installation, calibration and maintenance.

NASNet® makes full field coverage using a single system commercially and operationally viable.

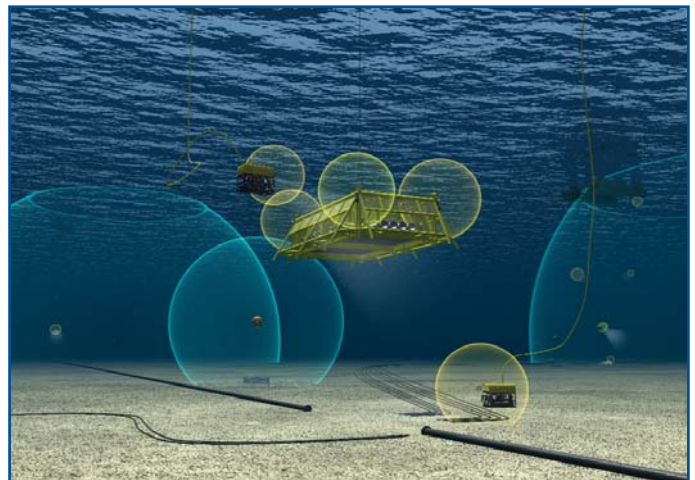


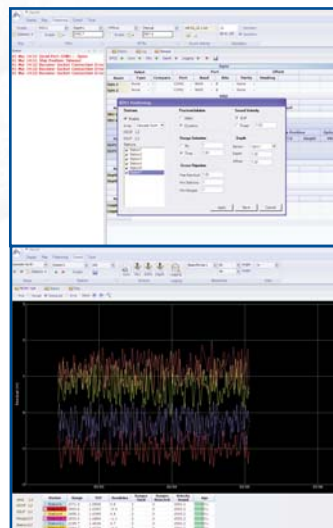
Illustration of NASNet®'s multi-user capability

Applications of NASNet®

- Surface vessel and vehicle positioning
- Deep water survey operations
- Seismic and Hydrographic surveys
- Drilling operations
- Subsea construction operations
- Pipeline inspection and maintenance
- Work-over and intervention
- Tracking and Remotely Operated Vehicles (ROV's)
- Data Telemetry of critical sensor data

NASNet® Stations

NASNet® Stations are designed to be deployed on the seabed in networks to provide accurate long term positioning throughout the water column, from seabed to surface. NASNet® Stations provide extremely long range acoustic coverage, making accurate full field positioning coverage operationally and economically viable.



NASNet® ICIS

NASNet® ICIS (Integrated Control and Interface Software) is the user interface providing control of all aspects of NASNet®.

ICIS is a modular system providing varying degrees of control and security for different levels of user.

The 3 modes provided by ICIS are:

- NASNet® Dynamic Positioning user
- NASNet® Survey user
- NASNet® Advanced user.



NASNet® Mini Stations

NASNet® Mini Stations are designed to be deployed on the seabed in networks to provide accurate positioning throughout the water column, from seabed to surface. NASNet® MS can be deployed either in frames or in buoyancy collars with a weight securing them to the seabed.

NASNet® MTrx

NASNet® Mobile Transceivers (MTrx) are used to provide accurate positioning for remote objects. NASNet® MTrx can also be used as an acoustic data telemetry link for internal or external interfaced sensors.



NASNet® BF (Beamforming Hydrophone)

A rigidly mounted NASNet® BF is normally used for calibration of NASNet® Stations or positioning of the vessel. The BF is also capable of controlling and monitoring all subsea NASNet® components.

One of the distinguishing factors in the acoustic performance of NASNet® is the Beamforming hydrophone which provides greatly enhanced acoustic detection in challenging acoustic conditions.

The BF is designed to allow deployment through a standard 10" gate valve and is compatible with a range of Hydrophone Deployment Systems.



NASNet® VRx

The NASNet® VRx is an ROV mounted passive receiver system designed to provide fast, stable and accurate positioning for ROVs throughout the water column, using ranges received from a seabed array of NASNet® Stations.



The NASNet® Dunking Deployment System (DDS) is also available for easy mobilisation where vessel positioning is not required.

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