# OCEANSTAR™

ONBOARD DECISION SUPPORT

**The Fugro Oceanstar™ system enhances vessel safety, navigation and positioning accuracy for the shipping industry using market leading satellite positioning technology.**

## SYSTEM BASICS

Oceanstar™ uses high performance global navigation satellite systems (GNSS) to improve navigational safety and reduce operating costs. GNSS systems are installed fore and aft to build a complete picture of vessel movement and attitude.

## WHEEL MARK

Oceanstar™ is wheel marked by Bureau Veritas and are able to provide the following type approved functions:

- GPS + GLONASS GNSS Position
- Transmitting Heading Device
- Rate of Turn Indicator
- Speed and Distance Measuring Device

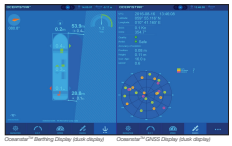
## MULTIPLE FUNCTIONS

In addition to the type approved navigation functions, the system also offers:

- Berthing Assistance: Oceanstar™ shows distances to the quayside and approach speeds for safer, faster and more efficient berthing.
- Energy Efficiency: Accurate, real-time heading and dynamic trim to reduce fuel consumption.

## PRECISE BERTHING AID

Oceanstar™ provides precision guidance during berthing that enables safe and efficient manoeuvring. Target distances are calculated out of a database with quay coordinates. This data has either been pre-surveyed or previously recorded using Oceanstar™. Oceanstar™ displays fore and aft distance information, approach speed and rate of change. Whilst at quay, the database is updated with the quay coordinates.



Oceanstar™ Berthing Display (dusk display) Oceanstar™ GNSS Display (dusk display)

## SAFE AND EFFICIENT

Using information on the precise speed and distance to quay, enables the Captain or Pilot to make quick decisions when manoeuvring vessels in confined areas.This leads to a safer and more efficient berthing operation, with less berthing incidents, and time saved.

## CLEAR AND EASY TO USE

Distances to the quay-side are automatically displayed during the approach as the vessel is closing in.
The system has quay impact alarm, quay drift alarm and speech synthesis.
The quay database is continously updated and can be shared between vessels.
Using the Oceanstar™ system for berthing is self-instructive and requires minimal training. E-learning is also available.

## NAVIGATION SAFETY

The Oceanstar™ display is designed for general navigation and manoeuvring, showing a range of precise GNSS-based information together on one compact display. The Oceanstar™ remote displays can be positioned anywhere on the bridge, the bridge wings, and/or integrated with bridge system suppliers such as Wärtsilä/SAM Electronics, Sperry Marine, Consillium and others.

APPROVED GNSS POSITIONING: Oceanstar™ uses all-in-view GNSS Positioning: GPS, GLONASS, BeiDou and Galileo combined together with sophisticated positioning technology to achieve 5-10 centimetre accuracy.

APPROVED TRANSMITTING HEADING DEVICE: Oceanstar™ is tested and approved as a Transmitting Heading Device in accordance with the IMO Resolution MSC 116 (73)/ ISO 22090-3.

APPROVED RATE OF TURN INDICATOR: A Oceanstar™ display variant that focuses on a highly visible rate of turn indicator, together with heading. Type approved: Complies with presentation and other requirements laid out in the ISO 20672 standard for marine rate of turn indicators.

APPROVED SPEED AND DISTANCE DISPLAY: Designed and tested to the IEC 61023 standard for marine speed and distance measuring equipment. Shows overall speed over ground. Information displayed includes:

- Heading
- Overall Ground Speed (speed made good)
- Ground Speed Ahead/ Astern
- Speed Athwartships at the Bow
- Speed Athwartships at the Stern
- Distance Run (x2)

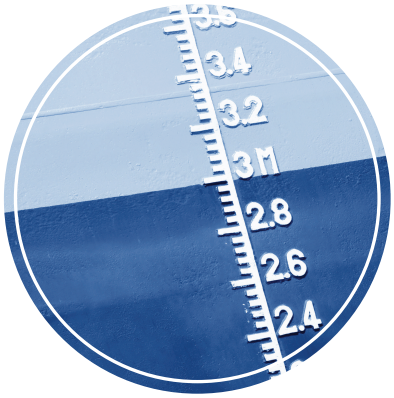
All multi-function displays can easily be switched from one role to another, depending upon current requirements.


The Oceanstar™ Speed and Distance Display (dusk display) The Oceanstar™ Rate of Turn Indicator (dusk display)

DATA RECORDING:

All of the Oceanstar™ data is recorded. Any recorded data can be replayed through Oceanstar™ to review performance, examine particular events, or for training purposes.

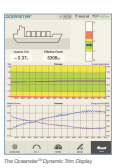
STANDARD MARINE SYSTEM: Oceanstar™ complies with relevant marine standards. Interconnect with other systems using NMEA 0183 (IEC 61162) over serial or network connections. Oceanstar™ has a standard system of visual and audible alarms which can be connected into a central alarm management system. The hardware conforms to the IEC 60945 environmental standard.




## TRIM OPTIMISATION SAVES ENERGY

Trim management has been identified as a key area for reducing operating costs, giving significant bunker fuel savings. In addition to providing operating cost advantages, reducing bunker fuel consumption is better for the environment and reduces the environmental footprint.

Oceanstar™ is measuring trim throughout the voyage. The graphical display is continuously updated with the latest trim information, together with various indicators for comparison such as shaft power, fuel flow, speed through water etc.
The challenge is to know the best trim for the vessel in current operating conditions.
Optimum trim can be displayed on top of the current dynamic trim as a simple target for efficient running.



The Oceanstar™ Dynamic Trim Display

## MEASURING TRIM WITH GNSS

The high-tech Oceanstar™ GNSS equipment measures position vertically as well as horizontally.
Taking vertical position measurements from antennas located fore and aft, the Oceanstar™ computer is able to calculate trim on a continuous, real-time basis. Sophisticated data processing techniques eliminate the effect of weather and sea.