A high precision portable berthing aid system, compliant with pilot requirements for approach, berthing and docking can help improve the safety and efficiency of complex marine operations.

**High Precision Approach and Docking**

During complex marine operations, environmental factors can affect the location of tankers, FPSO and CALM buoys. Precise real-time positioning and heading data, combined with metocean data, is essential to vessel pilots to give advanced warning of conditions that may affect the movement and motion of the vessel.

**Solution**

The Fugro PilotSTAR berthing aid system provides positioning assistance during the offloading operations of tankers with a CALM buoy or in tandem with an FSO/FPSO. The system integrates with metocean/hawser tension sensors to provide a complete overview of the prevailing conditions affecting the vessel. This allows appropriate action to be taken to keep the vessel on course and within operational safety margins.

**Benefits**

- Effective and reliable
- Improves safety during all phases of loading operations
- Reduces the risk of collisions
- Reduces costs
- Worldwide local support
PilotSTAR Berthing Aid System

The PilotSTAR system comprises two fully autonomous PilotSTAR wing units, that are set up by the pilot on both sides of the tankers wing.

These units together with the permanent equipment installed on the CALM buoy/FPSO/FSO allows for the calculation of a positioning solution based on Real Time Kinematics (RTK) and moving base line (MBL) algorithms.

A rugged carry case provides the pilot’s display, including tanker, FPSO and tug navigation data, prediction and historical tanker position, hawser tension and metocean information (wind and sea current).

Features

- Light and portable equipment
- Rugged reinforced components for long term durability and reliability
- Information available at all key locations (Tanker, tugs,FPSO/FSO)
- Integrated system (navigation and meteocean systems)
- Record and replay all events
- Quick and easy installation
- User friendly software
- Integration of AIS information and metocean sensors
- Long Autonomy (38 hours)
- Sub decimetre accuracy
- 0.01 degrees accuracy in the azimuth determination
- Sensitive enough to highlight slow speed motion
- Multi-baseline determination

Technical Specification

**System**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tanker DGNSS position accuracy</td>
<td>1 m</td>
</tr>
<tr>
<td>Relative position accuracy (Tanker/FPSO/CALM Buoy)</td>
<td>5 cm</td>
</tr>
<tr>
<td>Heading accuracy (20 m wing unit separation)</td>
<td>0.01°</td>
</tr>
<tr>
<td>Bow and stern speed accuracy</td>
<td>1 cm/s (0.02 knots)</td>
</tr>
<tr>
<td>Rate of turn (ROT)</td>
<td>0.1°/min</td>
</tr>
<tr>
<td>Dedicated AIS receiver</td>
<td>Yes</td>
</tr>
<tr>
<td>Wi-Fi connection to pilot display</td>
<td>Yes</td>
</tr>
<tr>
<td>Tanker wing unit dimensions (L x W x H)</td>
<td>20 x 18 x 20 cm</td>
</tr>
<tr>
<td>Battery capacity</td>
<td>38 hrs</td>
</tr>
<tr>
<td>Wing unit weight</td>
<td>3.6 kg</td>
</tr>
</tbody>
</table>

Navigation information received on iPod Touch via Wi-Fi network