

## Vessel Motion Monitoring System (VMMS)<sup>™</sup>

Significantly improving the safety of personnel during offshore transits and critical operations



**The Vessel Motion Monitoring System (VMMS)<sup>™</sup> significantly improves the safety levels of wind turbine transfer vessels through accurate motion monitoring data.**

The system provides an objective assessment of offshore conditions, protects personnel from injury during transfers, and also protects the vessel and equipment from sustaining damage.

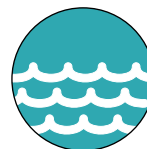
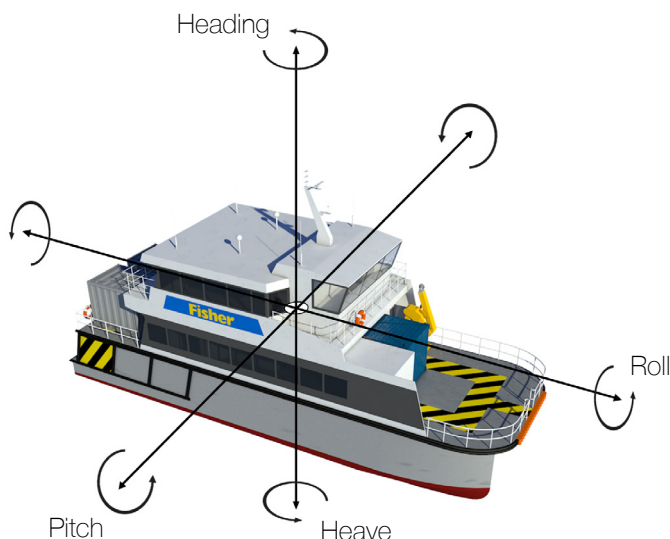
VMMS<sup>™</sup> is designed to assist the Master's decision making during two main operational phases. The transit phase, from shore to the wind farm, and the docking phase, transferring personnel to the turbines. The system allows the Master to monitor all motion parameters rather than relying on significant wave height as the main limiting factor, increasing the operational window.

### Benefits:

- Improves personnel safety during vessel transfer operations
- Provides an objective assessment of conditions
- Mitigates nausea and sickness of personnel and improves wellbeing
- Protects the vessel and equipment from damage
- Increases operational windows by measuring all vessel motions
- Determines vessel efficiency and supports selection and management decisions

### Features:

- Accurate motion monitoring of roll, pitch, heave and heading
- Collects data for statistical/analytical purposes
- Alarms provide warnings when heave levels reach pre-set limits
- Graphic display with live and historical data of roll, pitch, heave and heading
- Threshold setting limits
- Quick and easy to install



Improves safety during vessel transfer operations



Protects the vessel and equipment from damage



Increases operational windows by measuring all vessel motions

# Vessel Motion Monitoring System (VMMS)<sup>™</sup>

Significantly improving the safety of personnel during offshore transits and critical operations



**The Vessel Motion Monitoring System<sup>™</sup> protects both personnel and the vessel from any incidents by monitoring heave, pitch and roll levels during vessel approach, push-ons and transfers.**

VMMS<sup>™</sup> provides advanced warning to the Master when approaching pre-set operational limits, so transfers/operations can be aborted until conditions improve.

Alternatively, VMMS<sup>™</sup> can be used for vessel trials when validation<sup>™</sup> is required across fleets, or the vessel is performing trials of third party access systems, lifting equipment or specialist operations.

## System specification

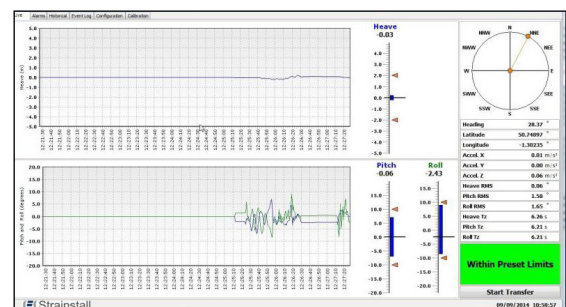
- Readings from Hardware are: Heave, Pitch, Roll & Heading
- Display current values for each motion
- Display graph for each motion showing last 360s of data
- Trend History for each motion
- EventLog: Logging of errors to file
- Configurable Alarms
- Configurable Traffic light system for transfer operations
- On screen calibration
- 1-50Hz sampling rate
- Accelerations on X,Y,Z
- Heave, Pitch, Roll crossing period (tz)
- Heave, Pitch, Roll RMS
- RMS vertical accelerations (m/s<sup>2</sup>) at CoG
- RMS lateral accelerations (m/s<sup>2</sup>) at CoG
- Vibration and inclination monitoring
- Meteorological conditions and wave monitoring
- Data available via remote web based server

## Additional monitoring parameters that can be derived from collected data:

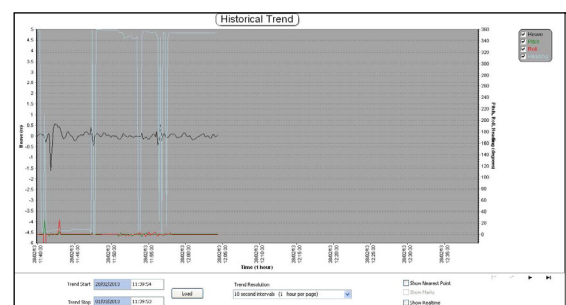
- Vertical acceleration, slip magnitude (m/s<sup>2</sup>) at point of transfer
- Vertical displacement, slip magnitude (m) at point of transfer
- Lateral acceleration, slip magnitude (m/s<sup>2</sup>) at point of transfer

VMMS<sup>™</sup> has the option of being used as standalone system or integrated into Strainstall's pioneering Offshore Wind Management System (OWMS)<sup>™</sup> and used in conjunction with the Intelligent Fender System<sup>™</sup> to provide full oversight of wind farm operations.

With OWMS<sup>™</sup> the system offers additional features such as automatic reporting for post-operation data analysis, becoming a powerful management tool for setting weather threshold limits for different vessels and supporting vessel selection.



Operations interface



Historical data feed