

DP Capability Rosettes - Problem

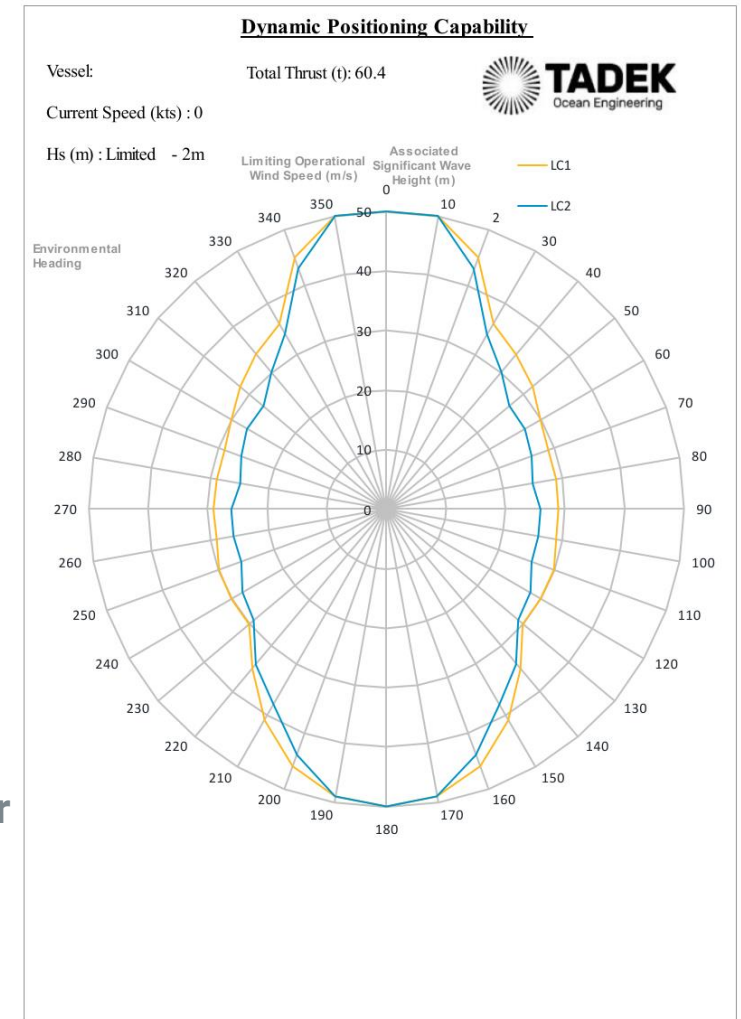
- DNV / IMCA Rosettes are useful to compare vessels.
- But unrealistic environment (e.g. DNV wind wave well above project Hs limits)

Need

- Project specific DP rosettes (e.g. limited / capped Hs, directional current) that can support planning and ops team
- MWS approved.

Solution

- **Tadek DP capability software**
- **Stage 1 – Validate Tadek software against Kongsberg / Rolls Royce or other approved rosettes**
- **Stage 2 – Deliver project specific rosettes using Tadek software**

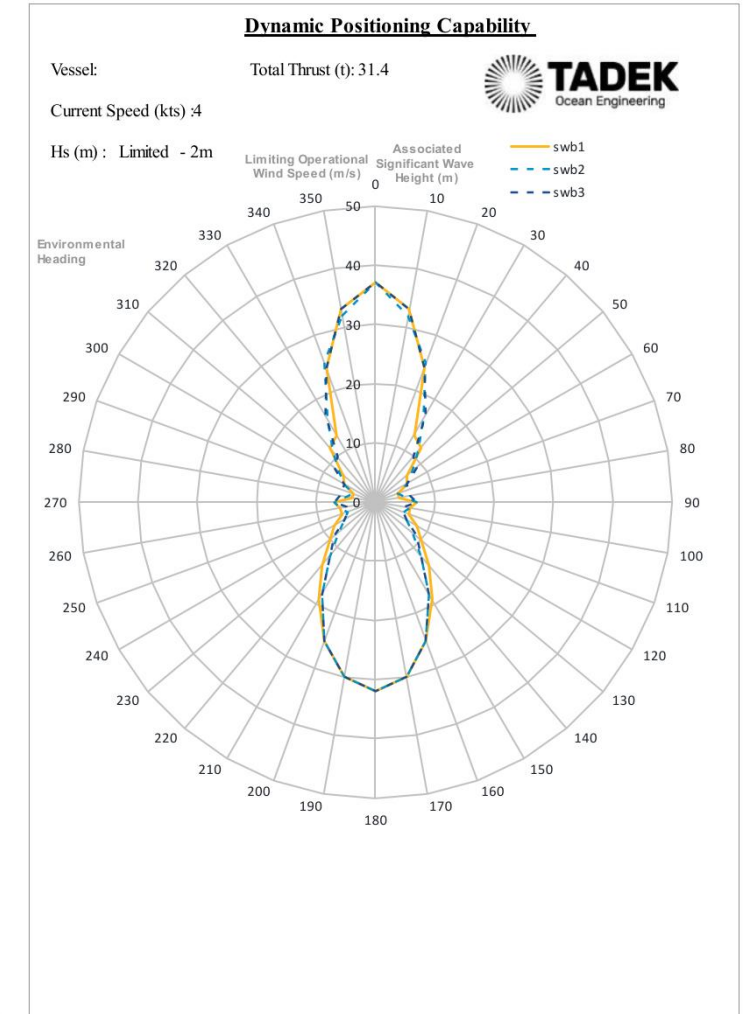
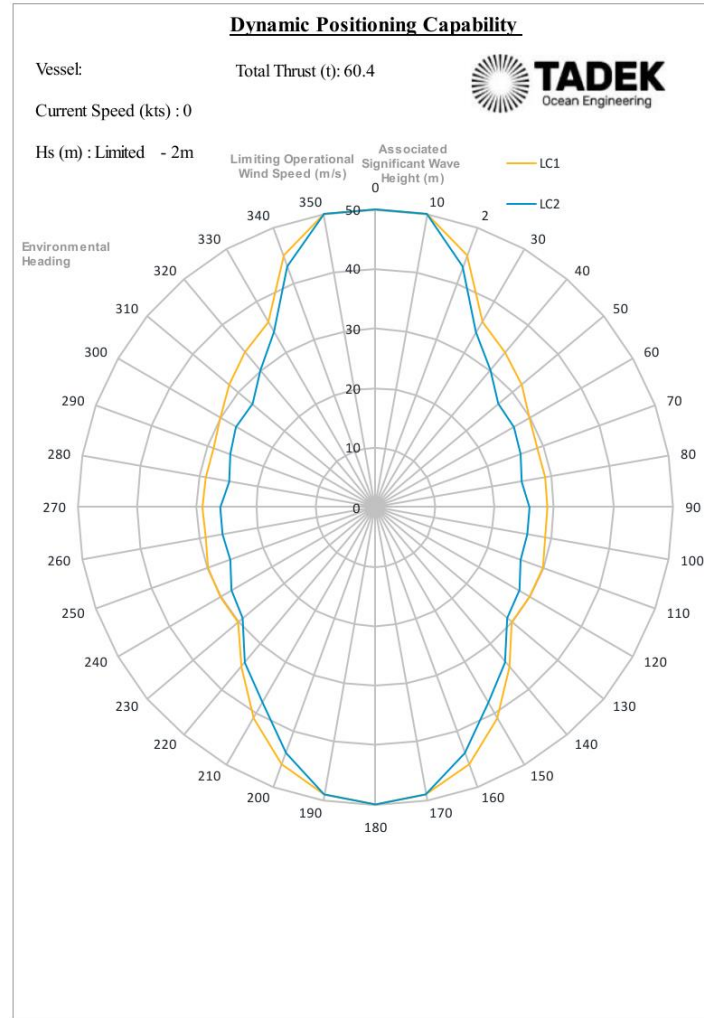


Focus: DP Capability Software

- Validated against Kongsberg DP capability
- Project specific rosettes (e.g high/directional current, realistic Wind & Hs conditions)
- In-house developed software.
- Software delivers optimised thruster allocations to maximize operability.
- Environmental loading calculated using Tadek derived wind & current coefficients and RAOs.
- Available thrust calculated and input into software, used to calculate force required to oppose the environmental loading for pre-defined headings.
- Forbidden zones also determined, accounting for 'alive' and 'dead' thrusters.

Deliverables

- DP capability rosettes for range of current speeds, vessel loading conditions and other site-specific limitations.
- Vessel environmental loadings
- Shallow water effects and considerations
- High-current sites
- Operation specific assessment



Focus: Site/Operation Specific Assessment

High-current and shallow water site considerations alter vessel DP capability.

Water depth specific RAOs and current coefficients developed.

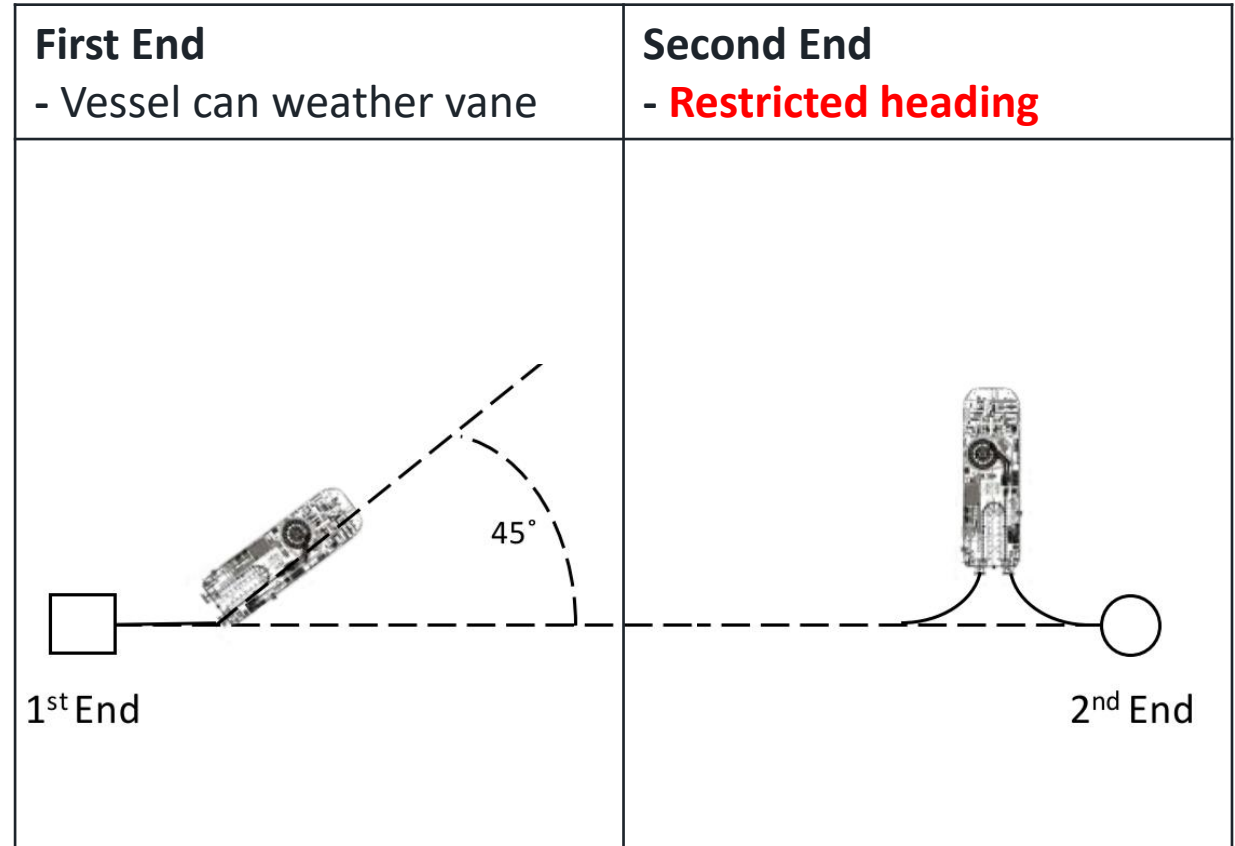
Operational heading specific recommendations.

Hs limits imposed either from operability limits or from shallow water depth implications.

Tadek on-site operational expertise driven considerations, and operational recommendations.

Deliverables

- Site specific DP capability.
- Operational specific DP considerations and operational limits.
- DP system limits integrated into vessel operations through Tadek recommendations.



Focus: Hydrodynamic Modelling

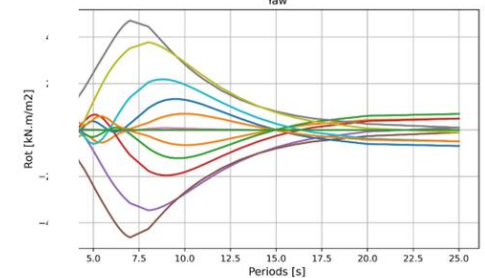
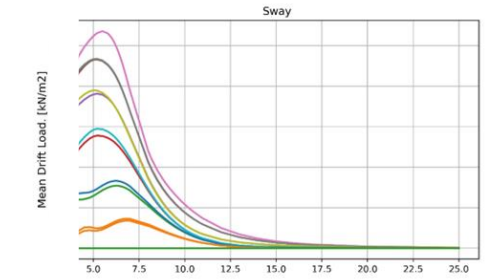
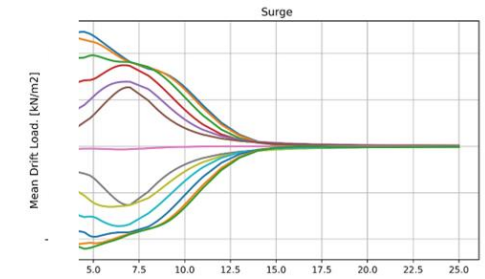
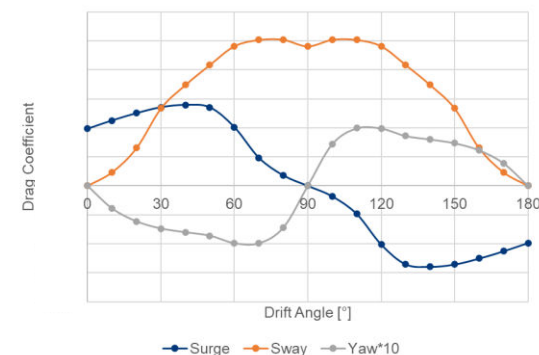
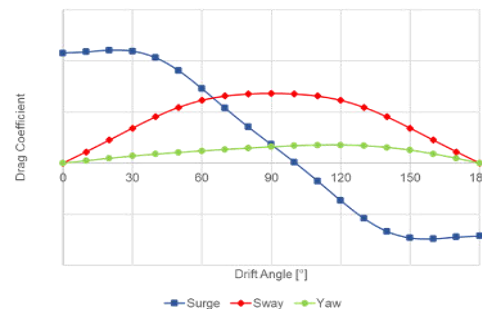
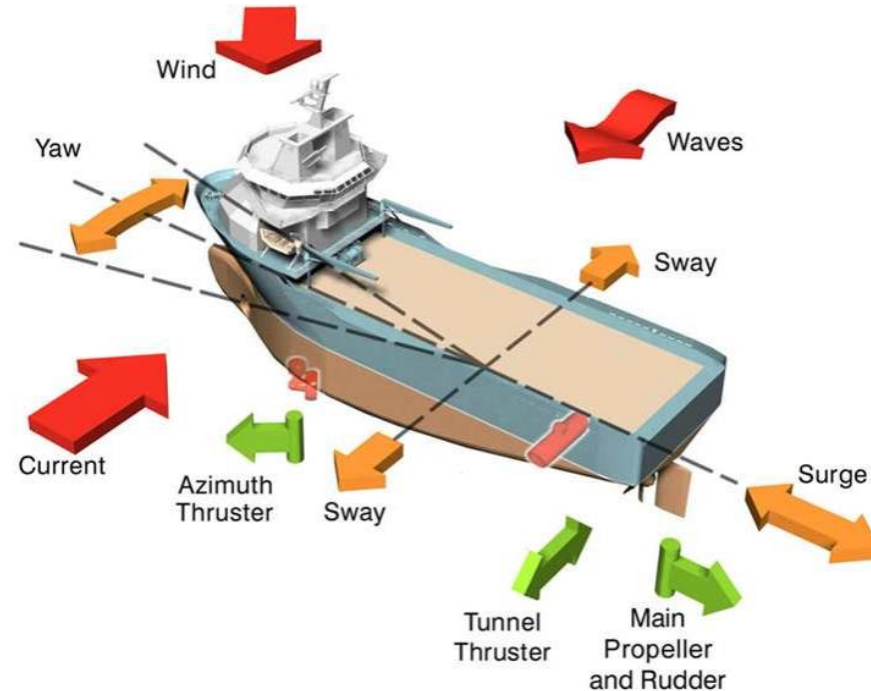
Vessel mesh models are derived either from provided lines plans, or vessel GAs and other sources if lines plans are not available.

Wind and current coefficients are derived utilising empirically derived industry standard methodologies such as OCIMF and Fujiwara.

Wave mean drift load coefficients are determined through the radiation-diffraction solver OrcaWave, using the fare-field methodology.

Deliverables

- Vessel hydrodynamic model
- Wind, wave and current coefficients for deep and shallow water, for each vessel draught.
- Vessel diffraction model for input into OrcaFlex or similar.



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