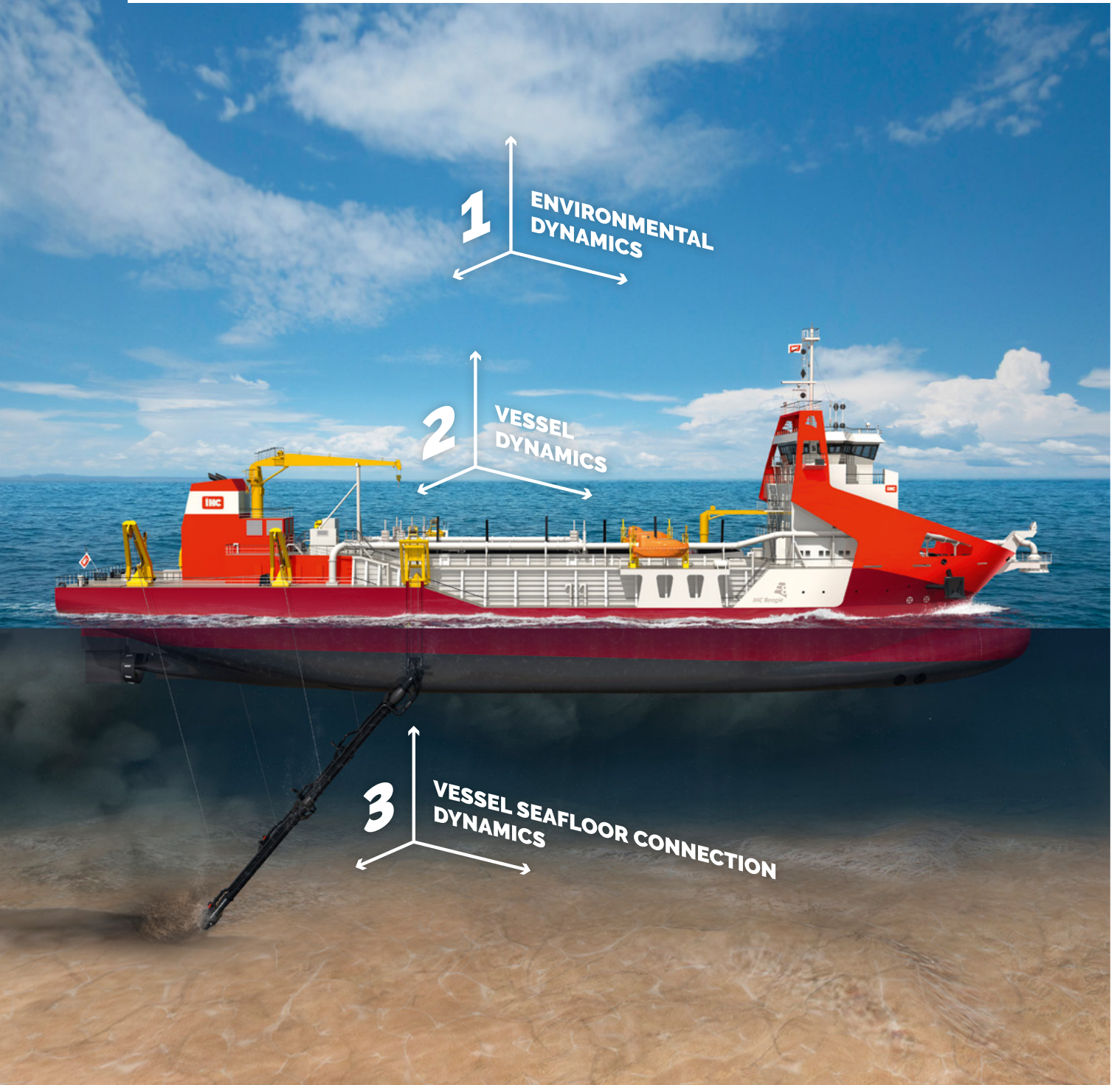


ROYAL IHC

DYNAMIC POSITIONING/ DYNAMIC TRACKING SYSTEM (DP/DT)



**THE TECHNOLOGY
INNOVATOR.**

SEAMLESS INTEGRATION BETWEEN VESSEL AND ENVIRONMENT



ADDRESSING A TRIPLE DYNAMIC RELATIONSHIP

Specialist vessels perform essential maritime dredging and offshore operations, including rock dumping, pipelaying, and diving support. Beyond free sailing ships, Dynamic Positioning / Dynamic Tracking (DP/DT) systems on such specialist vessels have to address a triple dynamic relationship between the vessel, environmental forces and the vessel-seafloor 'connection'.

IHC's DP/DT system optimally addresses these three factors, and seamlessly integrates with existing mission equipment control systems, optimally utilising a vessel's functional features. It is the benchmark DP/DT for trailing suction hopper dredgers (TSHDs) and the ideal choice for offshore specialist vessels.

HARDWARE

DP/DT features one, two or more certified and marinised DP/DT servers, connected to human machine interface (HMI) clients and the input output (I/O) system through a redundant server network. It is powered by UPS (uninterruptible power supplies) units.

Each HMI is operation-centred. It includes a touch conning display, a trackball and – if required – an operator panel, designed in close cooperation with experienced DP Officers. The certified conning display/mouse/trackball arrangement and optional repeaters feature eight main conning pages, each dedicated to the current operational mode and several auxiliary pages. Consequence Analysis is included for DP2 only. Acoustic warnings alert the operator of vital actions. DP capability plots and onboard simulator pages can also be ordered.

The operator panel contributes to a simpler operation. It facilitates the selection of mode and conning pages, stepped-control allocation and vessel axis control. Smooth and safe control switch-over, and maximum freedom for operator preferences, are also offered.

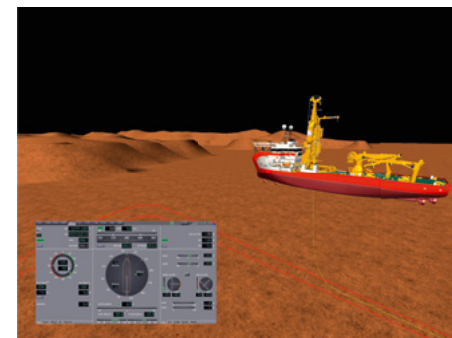
A wireless – or wired – remote control (RC) panel is available in two versions: joystick DP or manual actuator control. This eliminates the need to install wing consoles.

IHC DP/DT MAIN FEATURES

- supports the operational requirements of TSHDs, FPSOs, OCVs, PLVs, DSVs and similar
- supports FPP, CPP, azimuth and tunnel thrusters, and rudders
- supports diesel-direct, electric, diesel-electric and hydraulic propulsion drives
- supports GPS, DGPS, MRU, USBL, SSBL, SBL, LBL, RADIUS, gyro, wind and force sensors
- seamless integration with PCS, TCS, PMS, VMS and/or mission equipment automation systems
- no need for prior hydromechanical studies
- exceptionally short commissioning time: plug-and-play and self-learning characteristics
- modular, certified electronics and software
- complies with standard maritime body regulations.

OPERATIONAL FEATURES

- Transit, Sail Pilot, DT-Sail, Medium Pilot, DT-Medium, DT-Slow, DP Joystick Position Control, DP-Auto modes (*Optional: DP-Follow and/or Anchor Assist mode*)
- optimal utilisation of workable windows: increased levels of production with reduced fuel consumption, wear and downtime
- ergonomic keyboard and conning display: gives operators peace of mind and optimises safety
- wireless remote control unit eliminates the need for DP wing consoles
- smooth, easy, intuitive, individual and/or collective manual/automatic transition of actuators.
- built-in and/or optional offline simulator for DPO training support
- only system in the world that is able to keep a dredging TSHD on a predefined track and speed.



INPUT/OUTPUT SYSTEM

DP/DT systems work in conjunction with all major equipment on board, so this has to be operational. The vessel and her power systems also have to translate the DP/DT commands into vessel movements.

The I/O system provides both configurable serial connections to the required reference systems and integration into the vessel's class approved propulsion control system (PCS), as well as connections for mission equipment automation systems.



SOFTWARE

The hydromechanical control software applies extended Kalman filter modules, also used for dead reckoning during reference system failures. Model-based, Artificial Intelligent and patented algorithms, accurately estimate and process varying external forces.

Embedded and type-approved track control software provides the necessary functions, including inertia-compensated autopilot and track control. Built-in features include optional capability plots and – for Class 2 systems – alternative position suggestions and consequence analysis.



SERVICES

- address class rule, arrangement, hydromechanical, DP capability and design issues
- feasibility studies offered for retrofits
- customer-attended and attested FAT testing, including FMEA design and execution for Class 2 systems
- harbour acceptance tests concluded with a type-approved HAT protocol
- sea trials, involving only three to four days at sea, concluded with a type-approved SAT protocol as evidence to authorities and legislative bodies
- equipment, simulator and maintenance training
- service organisation supported by an experienced DP support team, 24/7.

* Please note, performance and outlook of actual systems may deviate from those presented in this document, depending on technology and ordered options.

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