KONGSBERG

Kongsberg Maritime AS - Maritime Simulation

K-Sim® Offshore

Empower the future
of maritime training

Maritime Simulation

Kongsberg Maritime

Shaping the maritime future

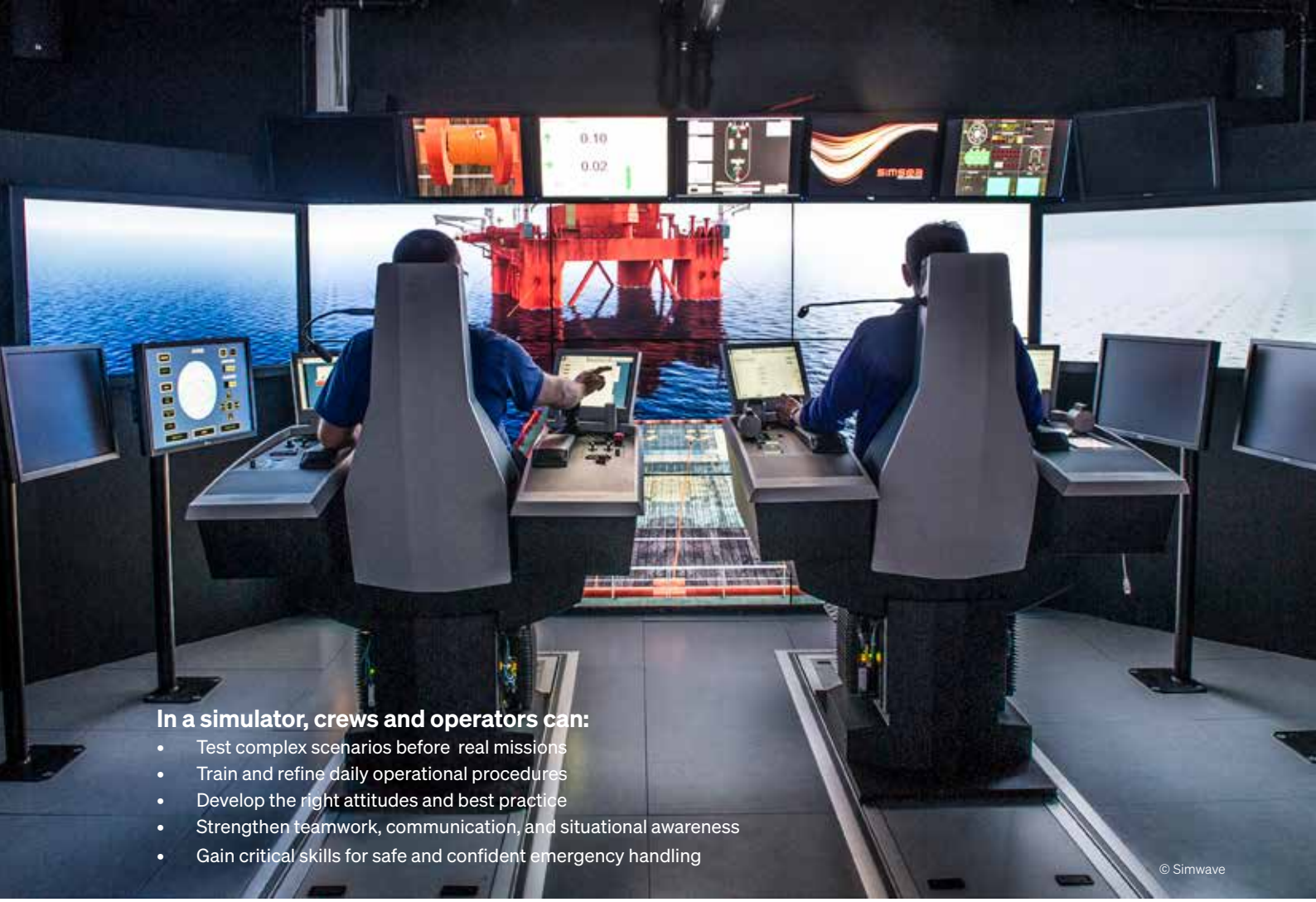
Kongsberg Maritime is a global leader in sustainable maritime innovation. We deliver safe, efficient, and long-term performance across a wide range of ocean space markets - from passenger to cargo, from fishing to complex naval and offshore energy solutions.

With pioneering digital solutions and seamless integration, we help the maritime industry optimise operations, reduce emissions, and move toward a decarbonised future. Our committment to technological advancements keep us at the forefront of ocean space expertice, driving progress and shaping a greener, more connected maritime world.

Our simulation technology is widely embraced by maritime research and training centers worldwide, serving as a foundational tool for training both students and crew members. Moreover, it supports advanced studies in critical domains such as human factors, fuel consumption, emission reduction, port development, operational verification, digital twins, and the pioneering field of autonomous shipping operations.

Photo on frontcover © Simwave

Driving innovation and sustainability



In a simulator, crews and operators can:

- Test complex scenarios before real missions
- Train and refine daily operational procedures
- Develop the right attitudes and best practice
- Strengthen teamwork, communication, and situational awareness
- Gain critical skills for safe and confident emergency handling

When excellence matters

Competence that saves money and the environment

As offshore operations move into deeper waters and harsher conditions, success depends on high competence, strong safety standards, and efficient operations. Achieving this requires advanced training tools—not experience alone. Simulator-based training provides a safe, efficient, and structured way to test the scenarios prior to mission and to build real sea skills without risking people, assets, or the environment.

Illustration: K-Sim Offshore simulator DNV Class A, configured as an aft bridge for anchor handling operation training

Enhance skills with K-Sim Offshore

K-Sim Offshore is the market-leading offshore vessel simulator, delivering immersive and highly realistic training for today's demanding operations. Crews can train with confidence in a safe, risk-free environment where mistakes become valuable learning experiences.

Built on more than 50 years of Kongsberg Maritime expertise, K-Sim Offshore combines advanced vessel modelling, sophisticated physics engine, and high-fidelity hydrodynamics ensuring exceptional realism—making simulator training directly transferable to real-world operations. The result: safer operations, higher competence, improved efficiency, and measurable cost savings.

Compliant with standards & regulations

K-Sim Offshore is certified by DNV and fulfy compliant with key international maritime training standards, including:

- International Convention of Training, Certification and Watchkeeping for Seafarers (STCW), Regulation I/12
- DNV-ST-0033:2014-08 Maritime Simulator Systems
- Nautical Institutes (NI) standards for Dynamic Positioning training
- IMCA Guidance of the Use of Simulators (C 014 Rev.2)

Leading simulation technology

The worlds most advanced simulator

K-Sim Offshore is specially designed to train in best practice and to build competence even for demanding operations. It integrates an advanced physics engine, which in addition to advanced hydrodynamic modelling, allows vessels, objects and equipment to behave and interact realistically, improving the quality of training significantly. Together with a state-of-the-art visual system and the many integration possibilities with additional equipment and simulators, K-Sim Offshore has been recognized as the most advanced simulator within offhore vessel operation training.

Fully equipped training environment

K-Sim Offshore's full mission bridge includes instrumentation that looks, functions and feels like the real equipment used on-board offshore vessels. It is delivered with a set of standard instrument panels and bridge equipment complete with controls and functions necessary to train operations such as ship handling, tugging, anchor handling and offshore supply. To optimize the learning experience further, and achieve full familiarization with the real ship, all K-Sim Offshore bridges are adaptable to various offshore vessel types.

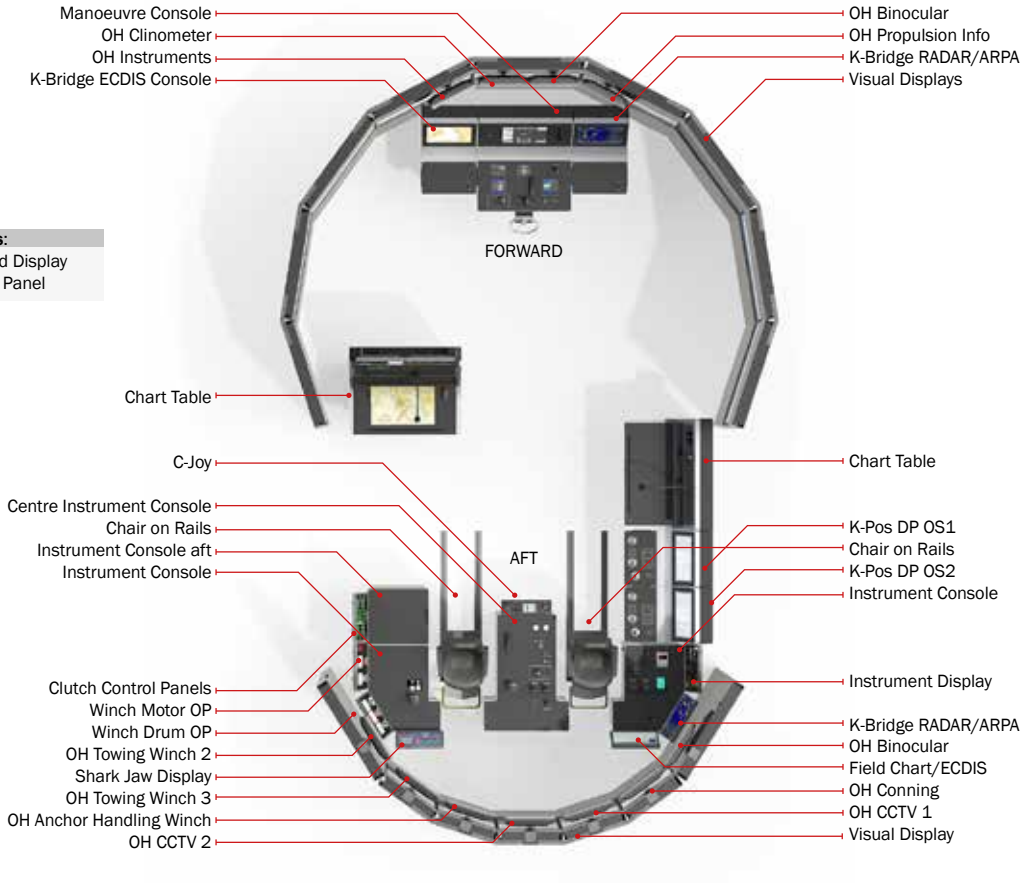
Dynamic Positioning

K-Sim Offshore integrates with KONGSBERG K-Pos Dynamic Positioning (DP) systems. The training solution supports DP training on all levels, including operator training according to DNV and Nautical Institute's standards. K-Sim Offshore with DP also includes interface to a range of absolute and relative reference systems based on different principles like; DPS/DARPS, HiPAP, HAIN and RADius.

Power Management System

Knowledge and operational experience of the Power Management System (PMS) is vital for Dynamic Positioning Operators (DPO). A comprehensive PMS is available for advanced offshore vessel and rig models. Here the DPO can monitor vessel systems and practice how to take appropriate action during power failures.

By integrating K-Sim Offshore with K-Sim Engine, it is possible to run a complete exercise and include marine engineers, who can experience high voltage switch-board configurations with realistic scenarios related to the Diesel Generators (DG) and Switchboard behaviour.



Abbreviations:
OH=Over Head Display
OP= Operator Panel

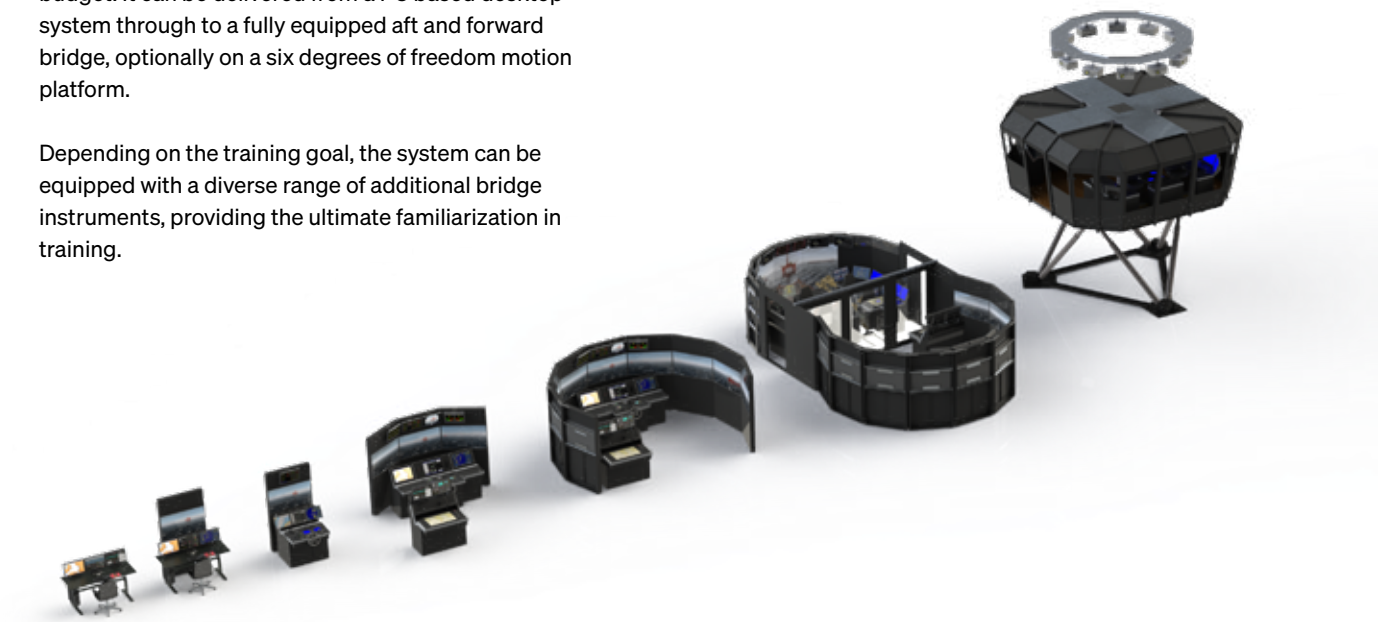
Optimised learning experience

Customized to meet your specific training goals

K-Sim Offshore offers a fully scalable range of modern bridge designs to meet every training requirement and budget. It can be delivered from a PC based desktop system through to a fully equipped aft and forward bridge, optionally on a six degrees of freedom motion platform.

Depending on the training goal, the system can be equipped with a diverse range of additional bridge instruments, providing the ultimate familiarization in training.

The flexibility of K-Sim Offshore enables expansion at any time, either with new instruments, workstations and complete integrated bridge systems, or even with other simulators for crew resource management training.



A full mission K-Sim Offshore installation can be customized to an aft or forward bridge with additional instruments depending on training and familiarization needs. It can also be configured as a rig control room, or any specified vessel. Pictures below shows various simulator configurations including aft and forward bridge and an offshore crane simulator cabin

"At our K-Sim Offshore, our students have broken equipment worth almost 180 million US happening in real life, we still will have saved Maersk Supply Service millions and millions of dollars,"

- Tonny Moeller, Global Asset Manager, MAERSK Training Centre, Denmark

Realism in simulated vessel models

K-Sim Offshore provides simulation of a range of hydrodynamic vessel and rig models with six degrees of motion, giving an excellent level of vessel motion accuracy. This is particularly important in advanced training scenarios, such as close proximity offshore operations, towing and search & rescue operations. Also important for enhanced realism, is that all simulator vessel models have dynamic loading, ballast control and possible integration to load calculators.

Use of a sophisticated physics engine supports full interaction including 3D hull collision detection with shore and maritime based objects and vessels. It provides high realism in lines, wires and chains behaviour, and calculates in detail the winch load and line forces, for instance, in tug and mooring exercises.

Sophisticated visual system

K-Sim Offshore's sophisticated SeaView visual system is recognised for its very high degree of realism in details, depth perception and motions. Vessels and objects in all possible weather conditions are brought to life in training scenarios. A range of geographical sailing areas are available to accommodate different training objectives.

Detailed exercise areas

To ensure realistic, quality simulation training, it is necessary to have geographical exercise areas that correspond exactly to the environments one will experience in real life. K-Sim Offshore offers a wide library of exercise areas that include radar, depth, buoy, chart and visual files. By using the Student Field Chart, exercise areas such as oil fields can be created to fit local requirements for DP and anchor handling.

The picture on top shows students exercising in the K-Sim Offshore simulator at Ocean Rig's Training Center, Athens, Greece.

The next picture shows the visual system in the K-Sim Offshore simulator at Simsea, Norway, and the following displays an example of an arctic exercise area.

Training possibilities

The rapid development of the offshore industry, particularly in advanced technical fields, puts high demand on the skills and competence of the workforce.

K-Sim Offshore is specially designed to train in best practice and to test and build competence even for the most critical operations. It provides training for awide range of operations, including:

- vessel manoeuvring in an offshore environment
- multiple vessel scenarios (Simops)
- rig move, tugging and towmaster training
- anchor handling
- offshore supply in close proximity
- dynamic positioning modes
- offshore loading (buoy and tandem)
- winch handling
- crane handling and lifting
- subsea operations incl. overboarding
- heavy lift and pipe laying
- rig operations
- ballast handling and stability
- wind farm installation
- seismic vessel streamer handling
- deck operations
- accommodation units with gangway
- power management
- rig control room
- riser management
- response & communication in emergency situations
- ice navigation/ice management
- well containment
- crisis management

Research and development

In addition to standard and special task training, K-Sim Offshore enables testing and R&D for:

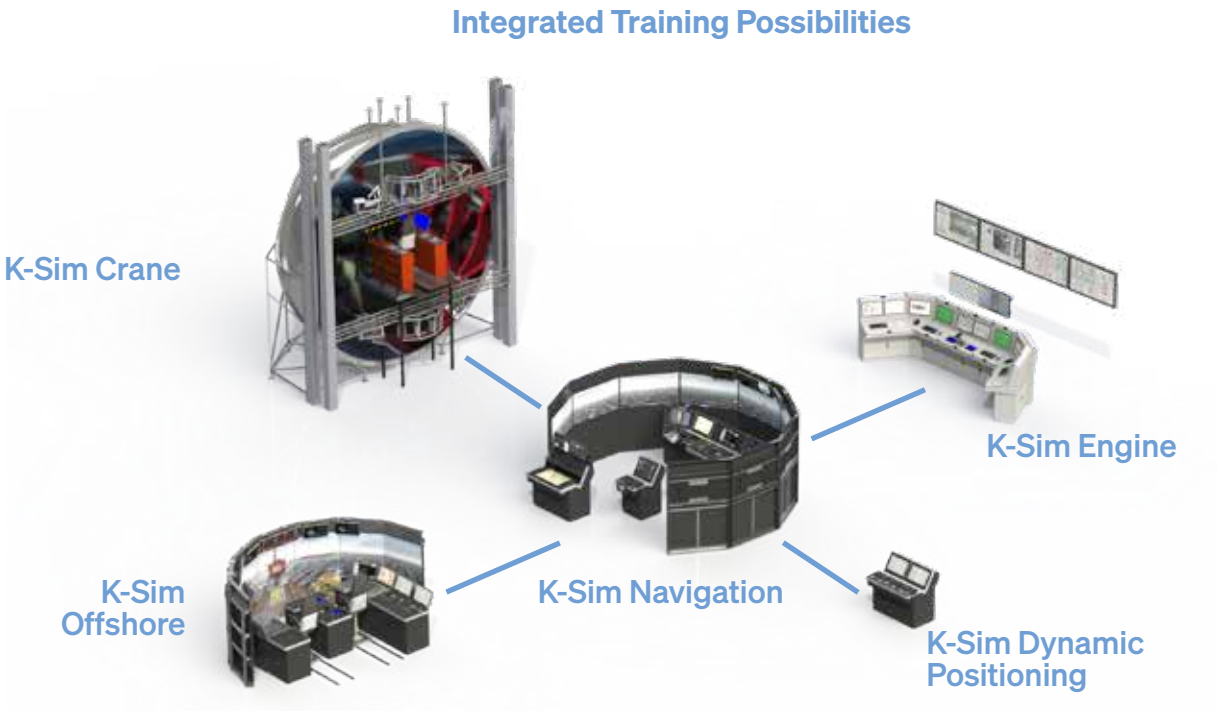
- engineering studies
- fast prototyping
- concept testing and verification
- procedure development & testing
- vessel behaviour studies
- fuel economy studies
- crew competence screening
- operator fatigue studies

Integrated team training

For operations in environments where human error can have devastating effects, it's often required to train essential crew in the same exercise. K-Sim Offshore supports interdepartmental crew training through interface to other K-Sim simulators, including: Navigation, Offshore Crane, Engine and Dynamic Positioning. The integrated solution enables focus on vital human factors such as:

- situational awareness
- interaction and team-work
- interpersonal communication
- leadership and decision-making

K-Sim Offshore enables a vast amount of training possibilities and customized course offerings according to international standards, including Bridge Resource Management (BRM) and Crew Resource Management (CRM).



An ocean of training possibilities

With a multitude of vessels, rigs, objects, equipment and geographical areas with all possible weather conditions, K-Sim Offshore enables a vast amount of training possibilites.

Navigation

Configured as a forward bridge, K-Sim Offshore enables realistic training in navigation and manoeuvring across a wide range of offshore, sea, and weather conditions. The simulated bridge can be equipped with all standard offshore vessel instruments and controls.

Additional bridge equipment and the K-Pos DP system can be integrated at any time to expand training capabilities. Built-in communication systems also allow crews to practice effective communication—essential for safe and efficient navigation.

Dynamic Positioning (DP)

Most Offshore Vessels have a Dynamic Positioning system onboard. By integrating K-Sim Offshore with KONGSBERG K-Pos DP system, it's possible to conduct seatime reduction DP operator training according to DNV and Nautical Institute (NI). Typical DP training scenarios are:

- instrument & panel familiarization
- maneuvering according to current, wind and waves
- automatic station keeping
- independent joystick control
- failures on DP reference systems
- thruster performance and monitoring, power failure

Platform Support

Operating vessels close to installations can have serious consequences in case of collision. K-Sim Offshore delivers realistic ship-handling training for critical operations within the safety zone, including:

- transfer of control between forward and aft bridge
- switching between DP mode, joystick- and manual control
- DP reference system failure
- current, wind and wave conditions

By including the platform crane operator in the scenario, full CRM training with focus on communication and human factors can be performed.

Rig mov: towing & tugging

K-Sim Offshore supports realistic training for ocean towing and floater installation, using one or multiple towing vessels and a range of floater types, including ship-shaped units, semi-submersibles, and jack-ups.

Beyond individual skills training, the simulator enables full CRM training involving key roles across the operation. Crews can efficiently conduct:

- mission planning
- risk analysis
- procedural and mission rehearsal
- emergency response training

Anchor handling

The K-Sim Navigation is designed for watch keeping training for all bridge personnel. Operational equipment may include wing stations, binocular with bearing read-out as well, as well as a classic Pelorus.

All possible weather conditions are available: day/night with transition; fog and fog banks, local weather, rain, snow, hail, all including drift and local setting. A quadraphonic sound system enhances the realism.

Buoy loading

K-Sim Offshore supports training for shuttle and offtake tanker bridge crews, as well as assisting vessel crews, during buoy loading operations. Training covers both DP2 shuttle tankers and non-DP tankers assisted by tugs. Typical training scenarios:

- ship handling, incl. emergency disconnect and maneuvering
- berthing and unberthing
- approach, connecting, loading and disconnection
- engine blackout & propulsion and DP failure
- communication

Tandem loading

K-Sim Offshore supports training of shuttle tanker/offtake tanker bridge crew and assisting/support vessel crew during tandem loading. For DP2 shuttle tankers, the simulator integrates with K-Pos DP2 system and includes DP reference systems DARPS, Artemis and RADius, signal input and operator stations. Typical training scenarios:

- ship handling, incl. DP failure
- berthing and unberthing
- approach, connecting, loading and disconnection
- communication, emergency disconnect & manoeuvring
- engine blackout/propulsion failure

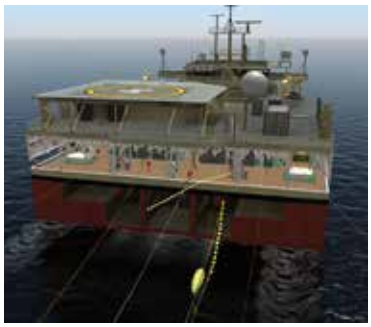
Heavy lift & pipe-lay

K-Sim Offshore enables safe pre-mission planning and rehearsal for complex heavy lift operations. Customized solutions include advanced vessel models with cranes, lifting and pipe-lay equipment, and K-Pos DP2/3, often integrated with crane and deck operator trainers. Training scenarios include:

- plan, test and verify procedures prior to mission
- detailed pre-mission training
- improving communication skills and teamwork performance between crane and deck operators

Subsea vessel operations

K-Sim Offshore fully supports subsea vessel operations for construction and IMR. Advanced DP vessel models with AHC cranes allow realistic training for tasks such as overboarding subsea structures and equipment. When linked to a third-party ROV simulator, fully integrated scenarios let the shift supervisor manage the entire subsea operation—coordinating bridge, crane, ROV, engineering, and deck personnel via radio and CCTV. This enables safe, efficient training in complex operations, strengthens teamwork, and builds critical decision-making skills for real-world subsea missions.



Deck operator training

A key feature of K-Sim Offshore is the ability to train deck personnel in mission-critical procedures before going to sea. Any deck environment can be modelled with the appropriate tools, allowing crews to practice complex tasks step by step.

Multiple students can train together, communicating in the same scenario. For example, recovery and repair of streamers on a seismic vessel's aft deck helps reduce operator errors and ensures safer, more efficient live operations.

Windmill installations

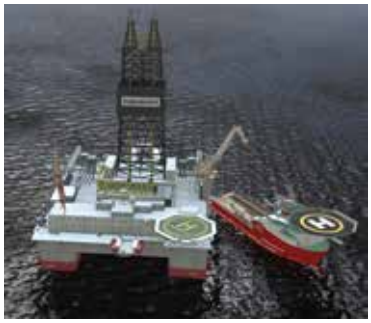
For familiarisation and training of bridge crew on jack-up windfarm installation vessels, customized simulator models with control room instrumentation and integrated DP2 and jacking system can be offered. This solution enables training in:

- navigation and DP-manoeuvring
- jacking up on site, jacking control
- pre-loading, stability, leg penetration, leg torsion and inclinometer monitoring
- emergency preparedness and crisis management,
- procedure development & review

Rig control room operations

Integrated with K-Sim Engine, K-Pos DP and K-Sim Offshore Crane, K-Sim Offshore can be configured as a rig control room and enable interdepartmental team training for the entire rig crew:

- practice power management
- test procedures prior to mission
- develop practical rig control skills
- improve communication skills between crew members and teams
- interact and build more efficient teams
- prepare for unexpected



Semi-submersible rig operations

K-Sim Offshore offers advanced hydrodynamic DP models for semi-submersibles featuring a navigation bridge, K-Pos DP2/3, power management, and ballast systems—accurately modelled to real rig specifications. Special DP functions, including RMS and posMOOR/ATA, are fully supported. Fully integrated with bridge, control room, engine room, cranes, and winches, the simulator enables full crew training. It supports all operational modes—transit, drilling, and survival—across varying load conditions as in real-world operations.

Drillship operations

K-Sim Offshore provides realistic training for drillship crews. To support both team training, it can integrate the vessel bridge with a rig control room, engine rooms, and cranes.

High-fidelity drilling vessel models with DP feature the navigation bridge, DP2/3, RMS, power management, and ballast systems, all based on actual vessel specifications. Training covers transit, multiple operational modes, and varying load conditions, delivering hands-on experience for real-world operations.

Jack-up rig operations

K-Sim Offshore facilitates towmaster training for jack-up rig-move and installation on site. An advanced hydrodynamic jack-up model with rig control-room and instrumentation enables training of towmasters and team training with the AHTS vessel master for:

- moving rig into location, positioning of anchors
- jacking control
- stability, leg penetration, - torsion and inclinometer monitoring
- pre-loading procedures
- emergency preparedness and crisis management
- procedure development & review

Gangway monitoring

K-Sim Offshore supports crew familiarization and training for the operation of telescopic gangways, suitable for installation on rigs or in training centres. Gangway models are typically integrated with semi-submersible or monohull accommodation vessels. Key features include:

- lifting, extending, retracting, latching, and releasing
- realistic dynamic gangway motion
- sensor data interfaced with DP systems
- instructor-controlled gangway setting, automatic disconnect

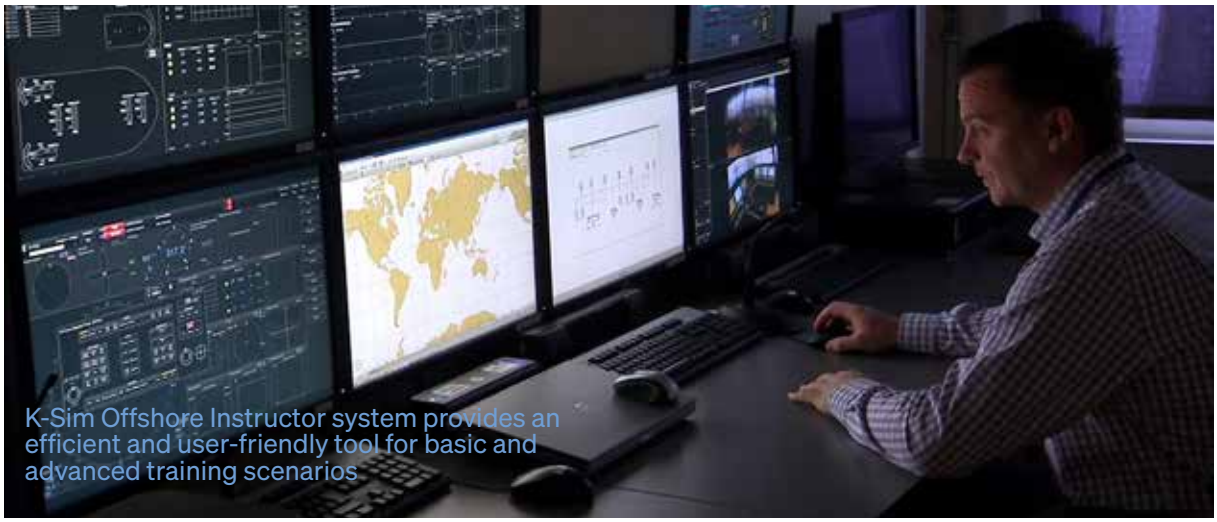
Ballast handling

Handling a semi-submersible platform is a complex and demanding task, where technical, commercial, environmental, and safety factors often conflict.

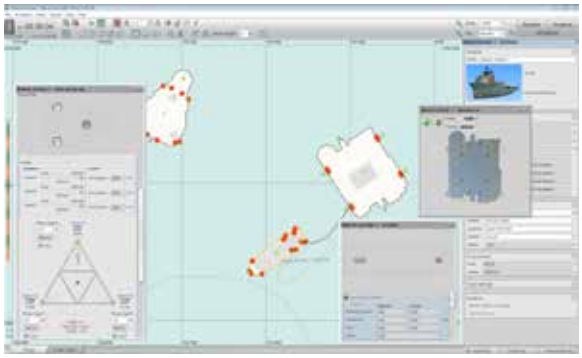
K-Sim Offshore provides ballast handling training with a realistic simulation of a platform's dynamic behavior, allowing crews to master ballast and position-keeping systems safely—without risk of hazardous or costly consequences.

Crisis management

K-Sim Offshore is ideal for preparing offshore crews and emergency management personnel for unexpected events. The system supports crisis planning and training where rapid decision-making, effective communication, and teamwork are critical. It offers a wide range of emergency scenarios, including multi-vessel operations and helicopter launch and recovery from support vessels and rigs. Object like damaged ships, heeling rigs, oil slicks, icebergs, life rafts, man-overboard situations, smoke, and flares are simulated.



K-Sim Offshore Instructor system provides an efficient and user-friendly tool for basic and advanced training scenarios



K-Sim Instructor System

Intuitive & efficient pedagogical tool

The award winning* K-Sim Offshore Instructor System provides the instructor with a powerful and efficient tool to design, control and assess customized exercises for individuals and teams.

Capabilities:

- customization of menus and pages for enhanced flexibility and user experience
- modified ECDIS chart as starting point for easily creating a geographical area for the exercises
- intuitive drag & drop function for choosing ship models and all other variables to create the exercise
- advanced Seagen GIS (Geographical Information System) tool for simple importing of third party environmental data such as current, tide, wave and wind to create optimum realism
- control of the student station configuration to define what information should be accessible and visible
- control of simulator actions derived from input variables and malfunctions, that can be initiated instantaneously, or pre-programmed, e.g., extreme weather conditions, power blackout, or loose/ stuck wire in the winch
- guidance and feedback possibilities through triggers and e-coach messages during the exercise
- control of men on deck, the ability to play the role of a tow master, winch- or crane operator to accommodate enhanced team and communication training
- underwater view to observe the realistic behaviour of chains, wires and anchor below the water
- stop, go back and resume simulation for guidance
- automatic recording of the simulated scenario and all parameters for full replay

Evaluation & assessment system

K-Sim Offshore's evaluation tools turn every exercise into a learning opportunity. Performance is tracked with trigger events, e-coach messages, and scores, while the entire scenario is automatically recorded. Instructors can replay full exercises or focus on key moments, providing targeted feedback and ensuring optimal training outcomes.

*Award for Design Excellence from the Norwegian Design Council (2011)

Life Cycle Support - stay updated!

Built for purpose – Supported for life

At Kongsberg Maritime, we don't just deliver advanced simulation systems—we support you every step of the way. Our Life Cycle Management services guide customers from initial design and installation to long-term operation, ensuring optimal system performance over time.

With deep in-house expertise in both system design and user operations, we develop purpose-built solutions that enhance efficiency, adaptability, and long-term value.

Flexible, future-proof design

K-Sim Engine systems are engineered with maximum flexibility, allowing easy upgrades and the addition of new functions or control segments. This modular design ensures your simulator evolves with your training needs—step by step.

Why choose Kongsberg Maritime?

- High system reliability
- Cost-effective life cycle support
- Simple, scalable upgrade paths
- World-class customer support

Long-Term System Support Program

Our Long-Term System Support Program (LTSSP) offers tailored service packages to keep your system up to date and fully operational. Choose from Priority Support or Premium Customised Care, depending on your needs. Both options ensure peak system performance and peace of mind—so you can focus on delivering top-quality training.

Instructor & technical training

Your people are your most valuable asset. We offer modular training programs for instructors and technical personnel to ensure they get the most from your K-Sim system—maximising safety, efficiency, and training outcomes.

Our systems are easy to install and maintain – supported by professionals either on-site or through remote connectivity. They are designed for optimal operational availability and allow for a favorable lifecycle expenditure.

We empower the future of maritime training

Please contact us if you would like more information about our K-Sim Offshore Simulator Solutions. We are here to support you.

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