

Kongsberg Maritime AS

News and Trends

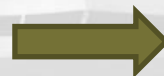
Bjarne Torkelsen, Kongsberg Maritime





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“Det kostbare utstyret!”



Hovedpunkter:

- ***Refleksjon!***
- ***Litt om trender***
- ***Fremtidens verktøy!***



Refleksjon!



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Human Error – the Downside of having a Brain

Refleksjon!

Skolenes oppgaver:

- Grunnleggende opplæring + 3 x “T-R”

- Trening – Refleksjon!
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Vår oppgave!

Skape det verktøet som gjør dette mulig!

Refleksjon!

-Trening – Lære å håndtere Risk

Risk:

- Potensiell Risk!
- Konsekvens!



Refleksjon!



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Forbedre sikkerhets barrierer!

- Optimising the defence between Error and Accident



Refleksjon!

***Verdier og holdninger!
- Skolenes ansvar?***

***Motivasjon!
- Skolenes ansvar?***

***Vårt oppgave:
Legge til rette for maksimal opplevelse og realisme!***

Trender!

Overordnet:

Må tilfredstille STCW og IMO rammeverk!

- ***Polarkoden, Is navigation, Miljø, nye DP krav fra NI, HigVoltage, LNG, batteri +++***

Må også dekke nye rammeverk!

- ***Samarbeid!***
- ***Samkjøring***
- ***E-læring***
- ***Kompetanse***

Trender!



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Fremtidens verktøy!



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- ***K-Sim Navigation***
- ***K-Sim Engine***
- ***K-Sim Cargo***
- ***K-Sim Offshore***
- ***K-Sim DP***
- ***K-Sim Crane***



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Fremtidens verktøy!

“maksimal opplevelse og realisme!”



THANK YOU FOR YOUR ATTENTION



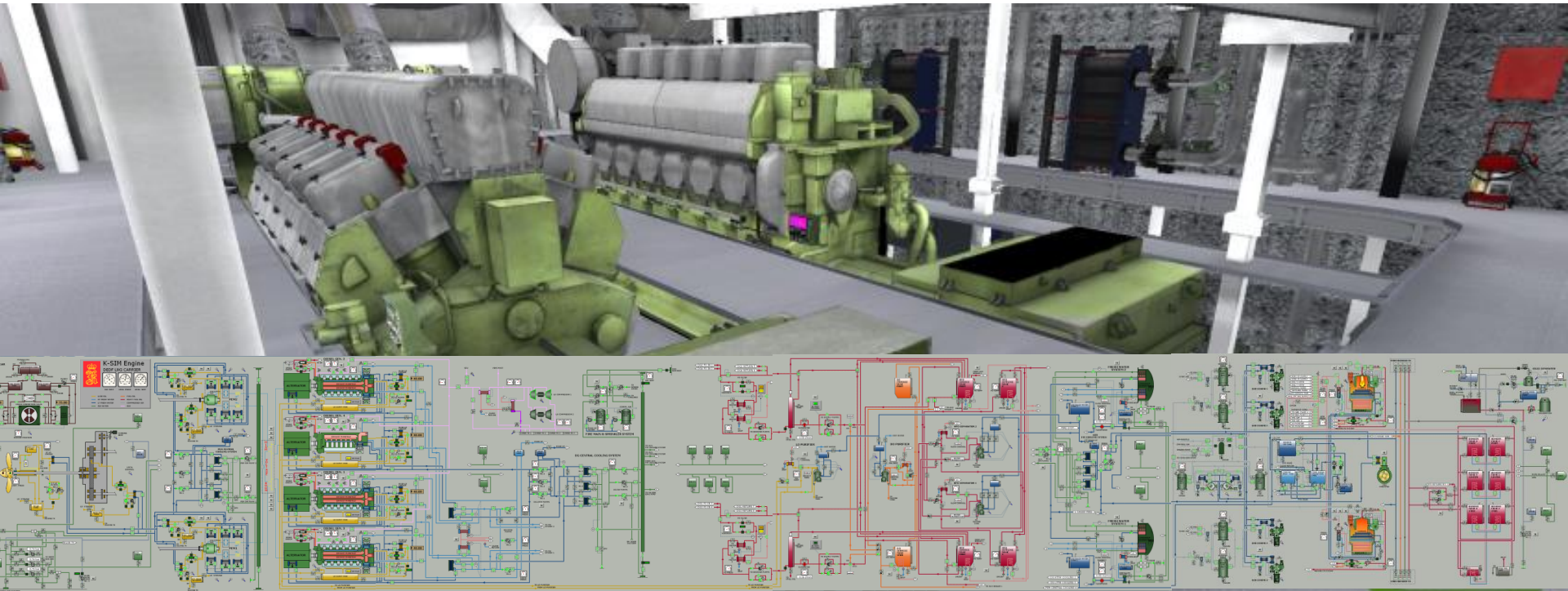
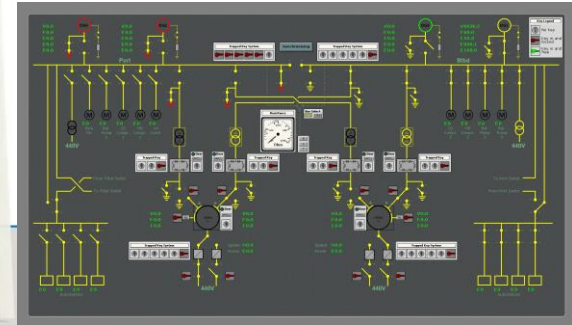
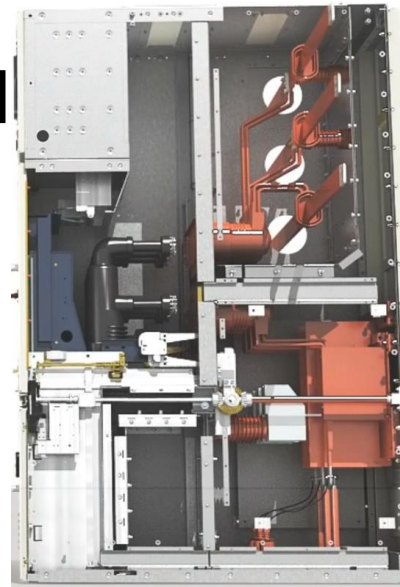
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DEDF LNG Carrier G21

- Real Breaker Interface.
- High Voltage Training
- Virtual Engine Room.
- BigView
- Wärtsilä Dual Fuel Gas Engines



3D Virtual Engine Room



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Mc 90-V VLCC:

- Main engine: (MAN B&W MC 90)
- Diesel Generators (2 x Wärtsilä 6L20)
- HFO Separators (Alfa-laval)
- LO Purifier
- DO Purifier
- Start Air System



Diesel Electric Cruise Ship:

- Diesel Generators (4 x Wärtsilä 12V46)
- DG LO Cooling System

Diesel Electric Dual Fuel (LNG carrier) *NEW Systems 2015*

- Diesel Generators (4 x Wärtsilä DF 50)

RT Flex. Container Ship *NEW Systems 2015*

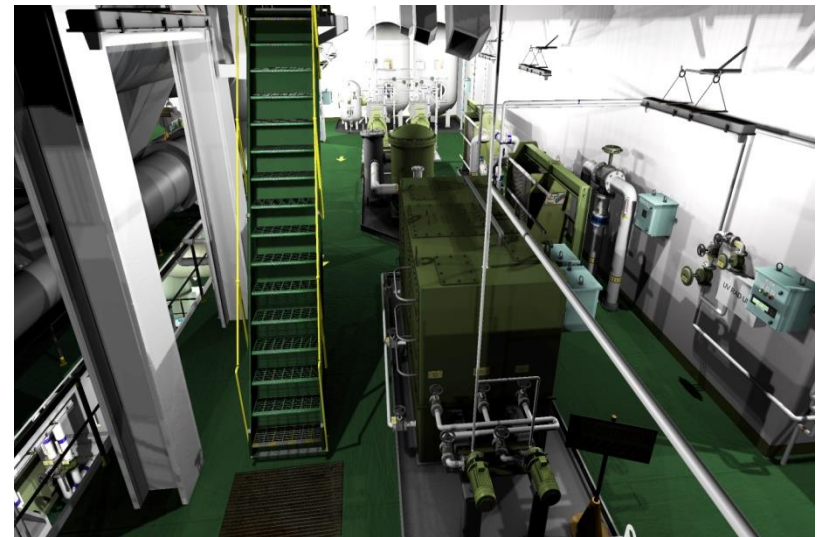
- Main engine: (Wärtsilä 12 RT-Flex 82-C)
- Diesel Generators (3 x Wärtsilä 6L20)
- HFO Separators (Alfa-laval)
- LO Purifier
- DO Purifier
- Start Air System



MC90 V VLCC "Walk Through"



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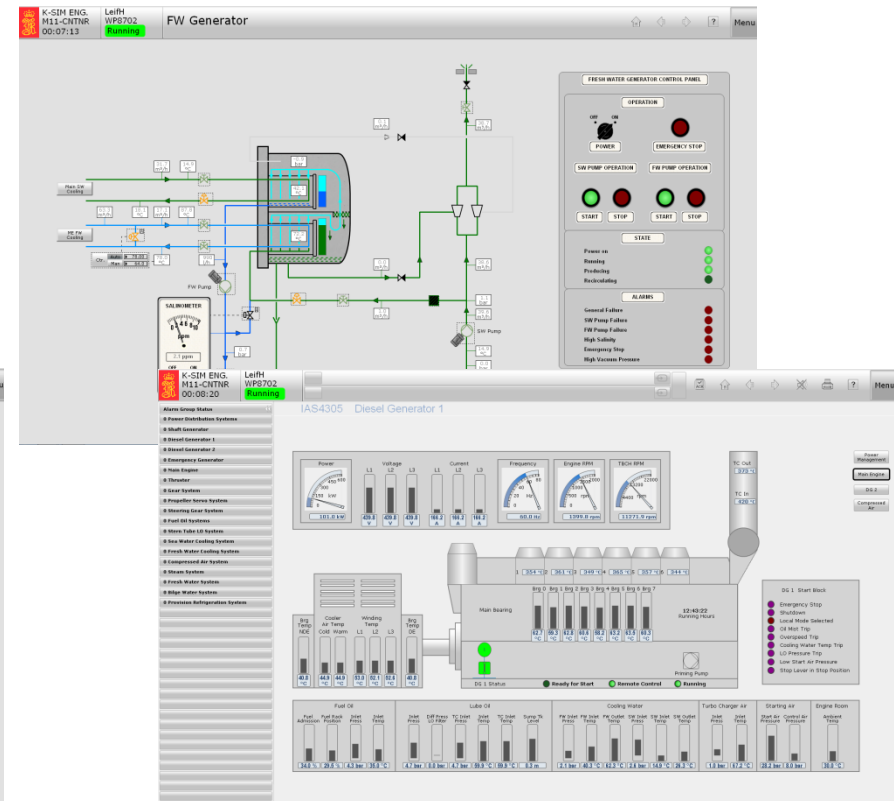
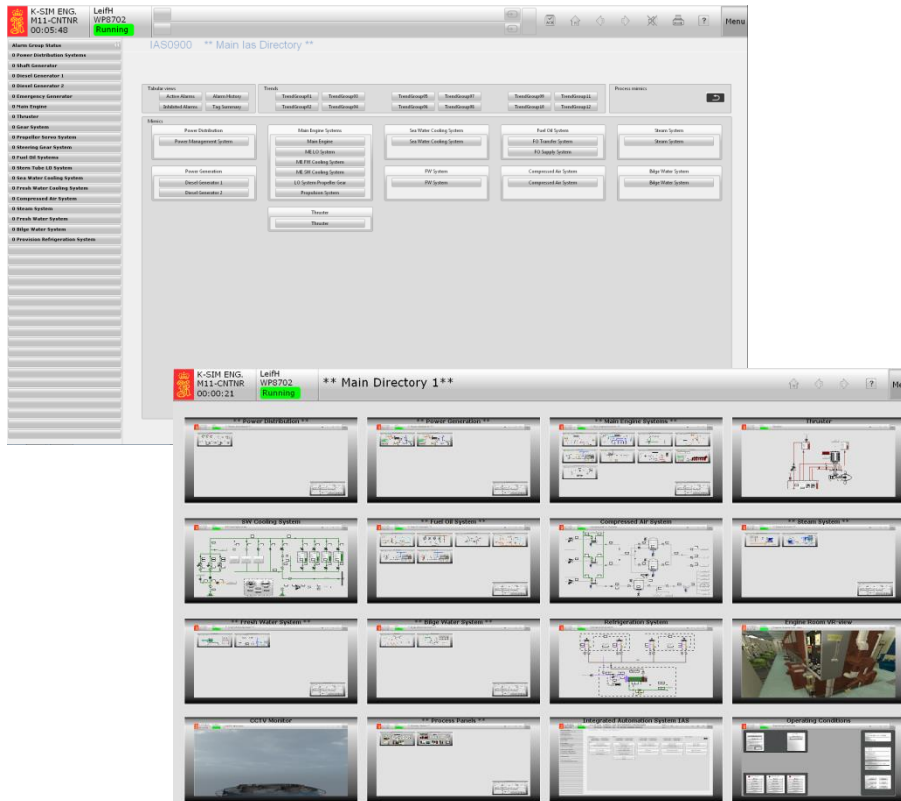


New M11 Container.



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- New IAS
- Based on OCCL St Petersburg
- New HMI
- Walk Through Virtual Engine Room



Suezmax Crude Oil Carrier (SCC-II)



New MAN B&W ME model 2016!

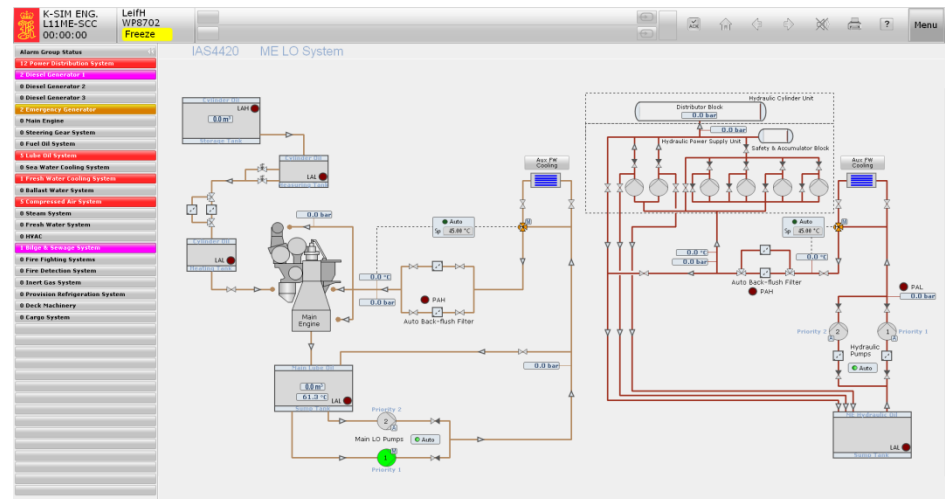
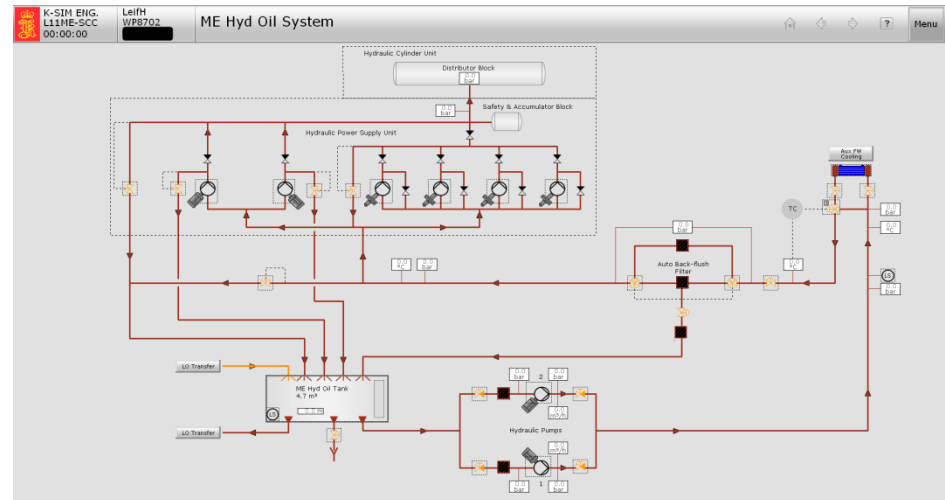
L11-MAN 6S70ME-SCC

Main Engine Data

Type	MAN 6S70ME-C
Cylinder bore.	70 cm
Piston stroke	280 cm
No. of cylinders	6
Nominal rating	18660 kW
Corresp. Eng. speed	91 rpm
Mean indicated press.	20 Bar
Scavenge air press.	2.1 Bar
Turbocharger speed	8500 rpm
Spec. fuel consumption	169 g/kwh
Fuel	HFO 700cst/MDO

Vessel's Main Particulars

Length Overall	269.00 m
Breadth Moulded	46.00 m
DWT, Scantling	152.522 mt
Draught, Moulded	24.40 m
Speed	15,5 knots



Nyheter fra K-Sim



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What is risk?

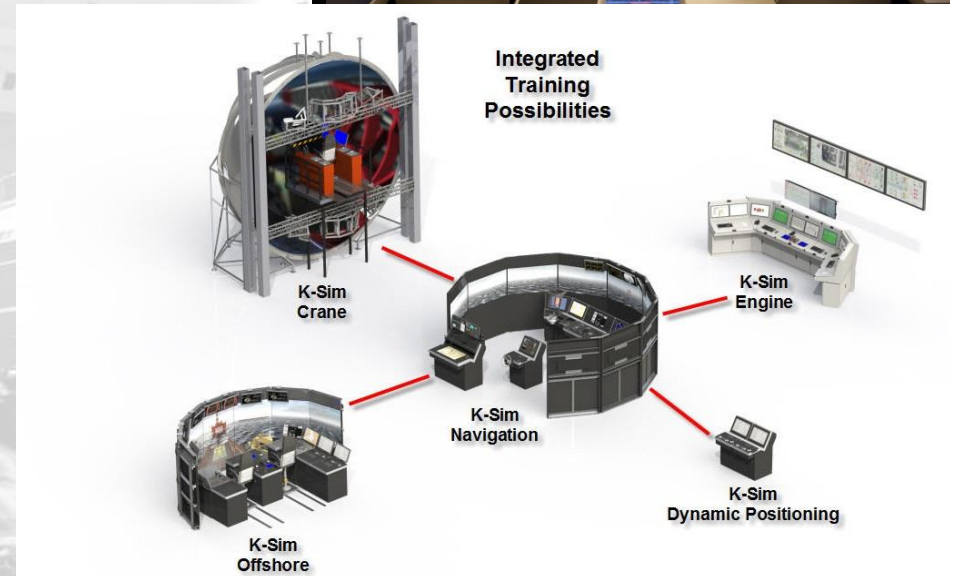
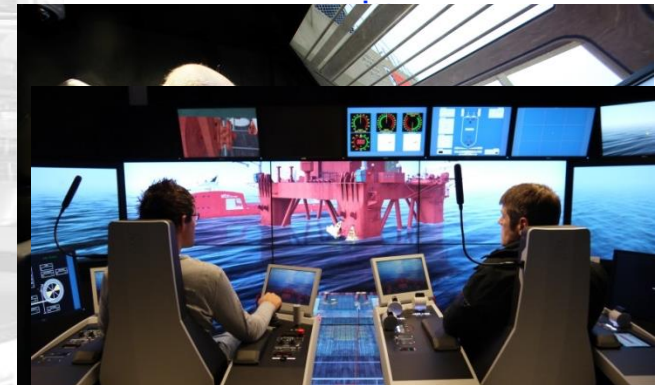
RISK = PROBABILITY X CONSEQUENCE

Steps to reduce risk and increase awareness



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- Establish best practice and implement G-OMO
- Improve Safety Management systems – ISM
- Incorporate incidents into training programmes
- Train and maintain individual competencies
- Team training for complex and advanced operations
- Crew Resource Management (CRM) training in full-mission simulators, focus on human factors (non-technical skills):
 - decision making
 - communication
 - teamwork
 - leadership
 - situation awareness
- Improve objectivity in assessment





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Offshore Support Vessels (OSV)

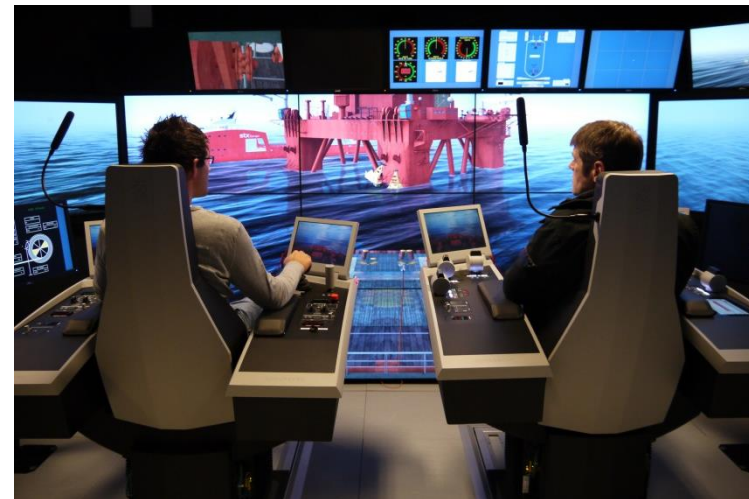
Challenges faced by crew during operations:



Increased Safety & Performance Enhancement by Simulator Training

Crew Resource Management (CRM) training in high-fidelity full-mission simulators:

- Improve technical and operational skills
- Learn, understand and practice human factors
- Increase situational awareness
- Improve communication skills
- Practice effective teamwork



Increased Safety & Performance Enhancement by Simulator Training

Resulting in:

- Manage and reduce operational risks
- Meet project schedules
- Avoid unnecessary downtime
- Break down language and cultural barriers
- Train for the best and prepare for the worst
- Save cost and increase profitability



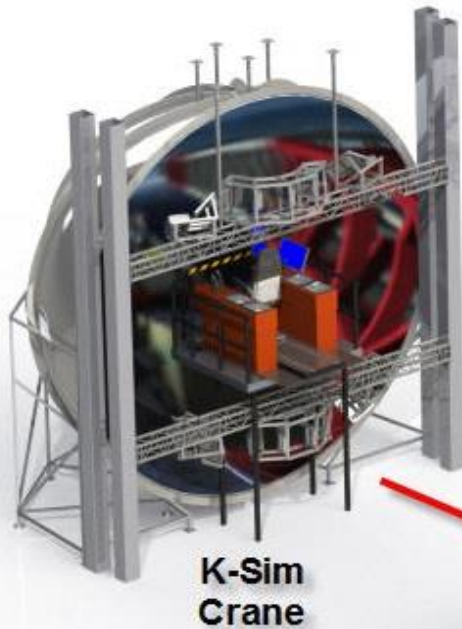
K-Sim Offshore



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Realism in operations is key

Integrated
Training
Possibilities



K-Sim
Crane



K-Sim
Engine



K-Sim
Navigation



K-Sim
Dynamic Positioning



K-Sim
Offshore

SIMULATOR SYSTEMS FOR CREW TRAINING OSV/AHTS



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SHIPS BRIDGE SIMULATOR

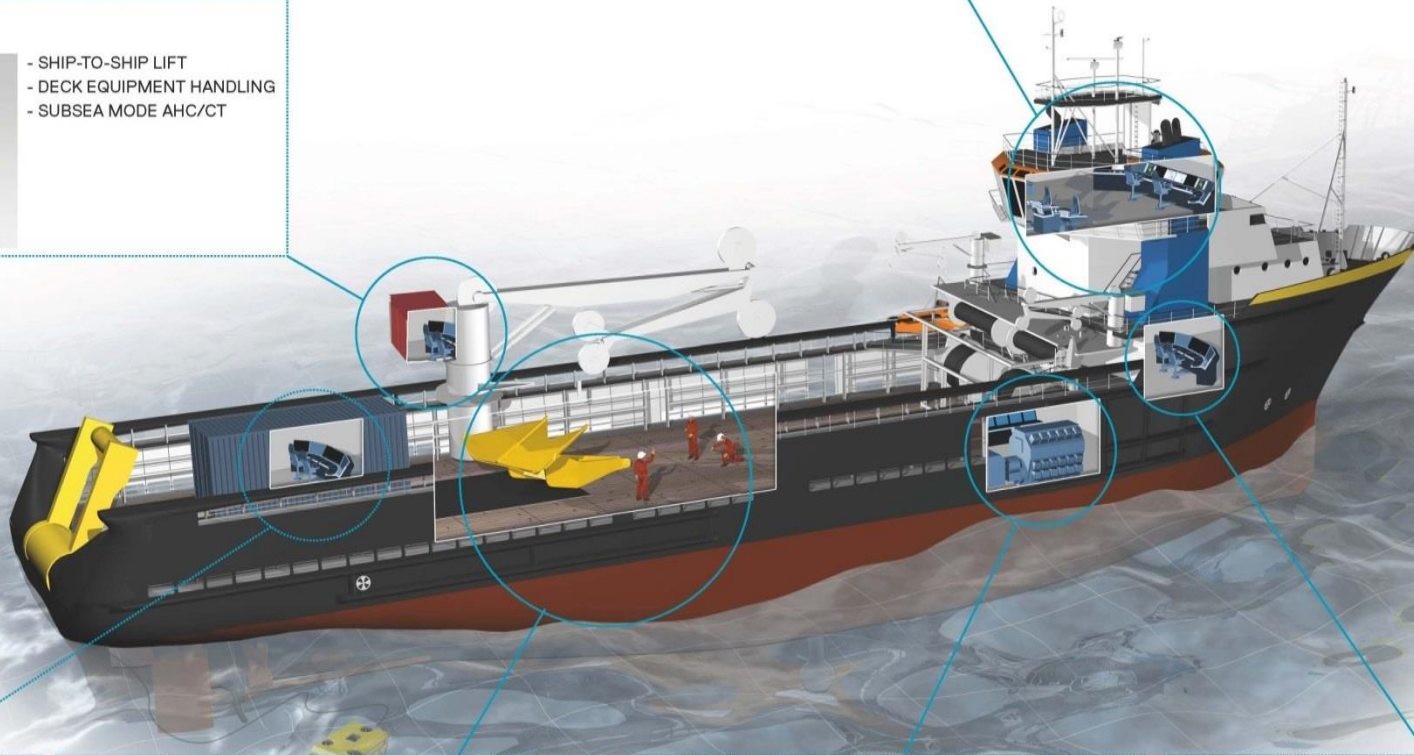


- NAVIGATION /SHIP HANDLING (FWD/AFT BRIDGE)
- DYNAMIC POSITIONING
- REFERENCE SYSTEM MONITORING & CONTROL
- POWER MANAGEMENT
- THRUSTER AND PROPULSION CONTROL
- ANCHOR HANDLING OPERATION
- TUG OPERATION
- WINCH CONTROL
- CARGO AND BALLAST CONTROL

CRANE SIMULATOR



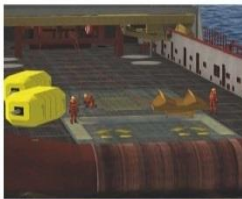
- SHIP-TO-SHIP LIFT
- DECK EQUIPMENT HANDLING
- SUBSEA MODE AHC/CT



ROV SIMULATOR

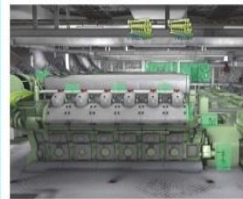


ANCHOR HANDLING MEN ON DECK



- MEN ON DECK OPERATIONS
- DECK EQUIPMENT HANDLING
- ANCHOR AND BUOY HANDLING
- WINCH HANDLING

ENGINE ROOM SIMULATOR



- ALARM HANDLING
- POWER MANAGEMENT
- ENGINE CONTROL
- DAMAGE CONTROL
- BALLAST CONTROL
- SWITCHBOARD OPERATION

ENGINE CONTROL ROOM SIMULATOR



- LOCAL CONTROL
- PROPULSION SYSTEMS
- DIESEL GENERATORS
- COOLING WATER SYSTEMS
- LO & FO SUPPLY/STORAGE SYSTEMS
- BILGE WATER
- STEERING GEAR
- SHAFT SEALS

SIMULATOR SYSTEMS FOR CREW TRAINING

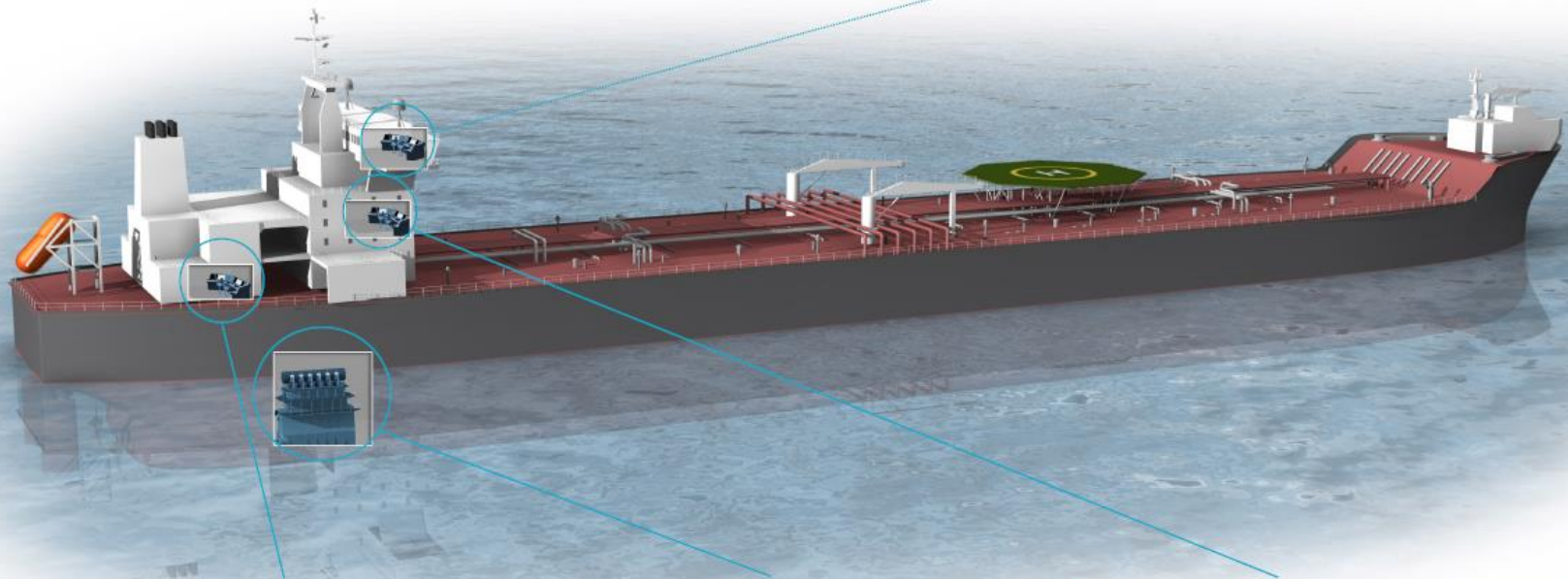


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SHIPS BRIDGE SIMULATOR



- NAVIGATION/SHIP HANDLING
- DYNAMIC POSITIONING
- REFERENCE SYSTEM
- MONITORING & CONTROL
- POWER MANAGEMENT
- THRUSTER AND PROPULSION CONTROL



ENGINE CONTROL ROOM SIMULATOR



- ALARM HANDLING
- POWER MANAGEMENT
- ENGINE CONTROL
- DAMAGE CONTROL
- BALLAST CONTROL
- SWITCHBOARD OPERATION

ENGINE ROOM SIMULATOR



- LOCAL CONTROL
- MAIN ENGINES
- DIESEL GENERATORS
- COOLING WATER
- LO & FO SUPPLY/STORAGE SYSTEMS
- BILGE WATER
- COMPRESSED AIR
- STEERING GEAR
- SHAFT SEALS

CARGO AND BALLAST SIMULATORS



- ALARM HANDLING
- LOAD CALCULATION
- PUMP/VALVE CONTROL
- GAS DETECTION
- OIL DISCHARGE MONITORING
- INERTGAS HANDLING
- TANK CLEANING

SIMULATOR SYSTEMS FOR CREW TRAINING MOBILE OFFSHORE UNITS

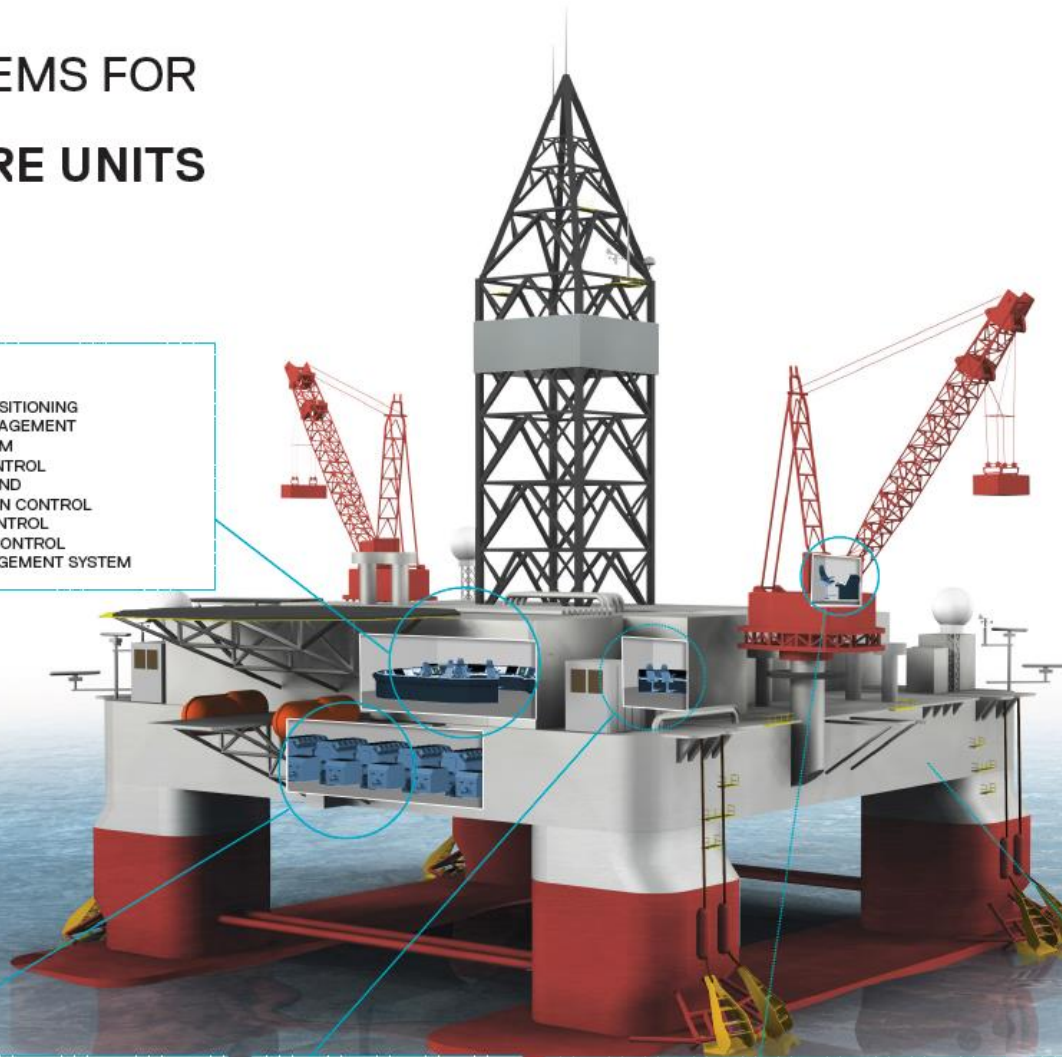


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CENTRAL CONTROL STATION



- DYNAMIC POSITIONING
- POWER MANAGEMENT
- ENGINE ROOM
- REMOTE CONTROL
- THRUSTER AND PROPULSION CONTROL
- BALLAST CONTROL
- RIG WINCH CONTROL
- RISER MANAGEMENT SYSTEM



ENGINE ROOM SIMULATOR



- LOCAL CONTROL
- PROPULSION SYSTEMS
- POWER PRODUCTION
- DIESEL ENGINES
- COOLING WATER SYSTEMS
- LO & FO SUPPLY / STORAGE SYSTEMS
- COMPRESSED AIR
- SWITCHBOARD OPERATION
- THRUSTER SYSTEMS

DRILLING SIMULATOR



CRANE SIMULATOR



- RIG INTERNAL LIFT
- SUPPLY VESSEL TO RIG
- HOSE HANDLING

OSV/AHTS SIMULATOR



Integrated Simulator Training Scenario

Subsea Construction



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Bridge



**Shift
Supervisor**



Crane Operator



Engine Control



Instructor



ROV Operator

AN OCEAN OF TRAINING POSSIBILITIES



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Gangway monitoring

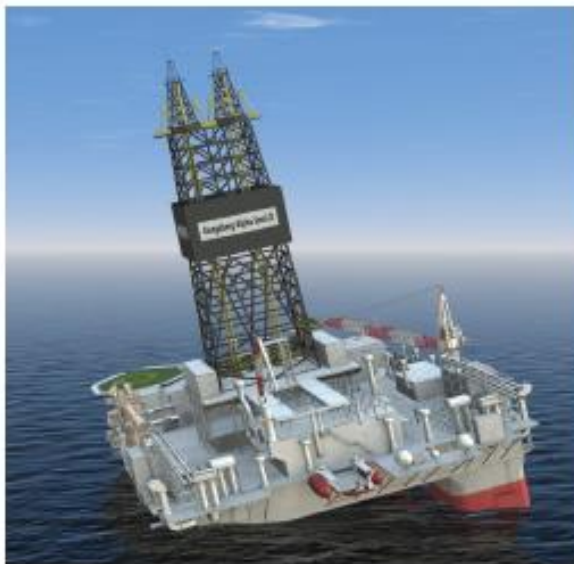
Semi-submersible rig operations

Deck operator training

Tandem loading

Rig move: towing & tugging

Navigation & ship handling



Ballast handling

DrillShip operations

Wind mill installation

Heavy lift & pipe lay

Anchor handling

Dynamic positioning



Crisis management

Jack-up rig operations

Rig control room operations

Subsea vessel operations

Buoy loading

Platform support



THANK YOU FOR YOUR ATTENTION



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