

Engine room simulators

The Faculty of Maritime Studies has ship engineering simulators of two most renowned manufacturers: Kongsberg and Transas.

Kongsberg K-Sim simulator (lecture room 407)

It consists of one instructor station and eight student stations. It is possible to work with 16 students at the same time. Thirteen models were installed on the instructor station and one laptop; seven of them were ship engineering models and six models were used for liquid cargo handling.

a) Ship engineering models include the following engine rooms plants:

- MAN B&W MC 90 slow-speed diesel engine plant on VLCC
- RTA slow speed diesel engine plant - container ship
- RTFlex slow speed diesel engine plant - container ship
- Steam-turbine propulsion plant (SP DF) - LNG ship
- Diesel-Electric Dual Fuel Propulsion Plant (DFDE) - LNG ship
- Gas turbine plant (GT 22) - LNG ship.
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b) Models for liquid cargo handling (CHS):

- LNG Carrier with spherical tanks (CHS LNG-S)
- LNG Carrier with membrane tanks (CHS LNG-M)
- LPG ship with semi-cooled type C tanks (ethylene ship - CHS LPG)
- Very Large Crude Oil Carrier (CHS VLCC DH)
- Product Tanker (CHS PrC)
- Chemical Tanker (CHS CC).



Ships powered by Liquefied Natural Gas (LNG) IGF Ships

The latest investment in the engine room simulator was made in 2019. – the installed simulator model enables students' education for the latest technologies for ships powered by liquefied natural gas (LNG) IGF ships. It consists of the engine room model of a RO-RO passenger ship - Ferry with DE plant on liquefied natural gas. Additionally, the simulator has been upgraded with an interactive panel (Big View Panel) consisting of four 65" touch screens. Monitors can simulate 3D engine rooms with the MC90-V model and the DFDE model for the LNG tanker.

The panel may show interactive displays of complete model systems in a schematic, 3D, or combined display.



TRANSAS ERS 5000 TechSim (lecture room 410A)

It consists of one instructor station and six student stations with the possibility of simultaneous work of 12 students. Two ship engineering models have been installed at the instructor station, which include the following ship engine rooms:

a) Steam Turbine Kawasaki UA-400 – LNG Carrier

The steam-turbine plant on board for the transport of the liquefied natural gas with the main propulsion turbine Kawasaki UA-400, has a capacity of 30,000 kW. The propulsion system includes two high-pressure, water-tube steam generators with the possibility of using liquid and gaseous fuel, two turbo-generators and one diesel generator. The power system has a high voltage system of 6600 V and a frequency of 60 Hz.

Instructor software support refers to the creation of complex scenarios enabling an objective assessment of the acquired knowledge.

b) MAN B&W ME Type Cam-Less Electronic Engine – Container Ship

The model refers to the engine plant of a 397-meter-long container ship (18,000 TEU) with a 63,910 kW two-stroke slow-speed MAN B&W 11S90ME diesel engine and associated auxiliary systems. The electric power system consists of four diesel generators of 2 x 3800 kW and 2 x 2800 kW, 6600 V. Four-stroke diesel generators are HYUNDAI 8H32 / 40 and 6H32 / 40.

The simulator is divided into several logical units: alarm systems, parameters monitoring system, steering control system, malfunction diagnostics system, main switchboard control system, boiler monitoring and control system, fire fighting control system, bow thrusters, steering gear, and other auxiliary systems.

Both modules include a system for evaluating and estimating students' engagement during exercises.

Ship refrigeration system simulator

The simulator consists of a class room with the model of real marine refrigeration system on which can be presented and simulate real ref. process on provision plant, air conditioning plant and cascade refrigeration system on reefer ship.



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