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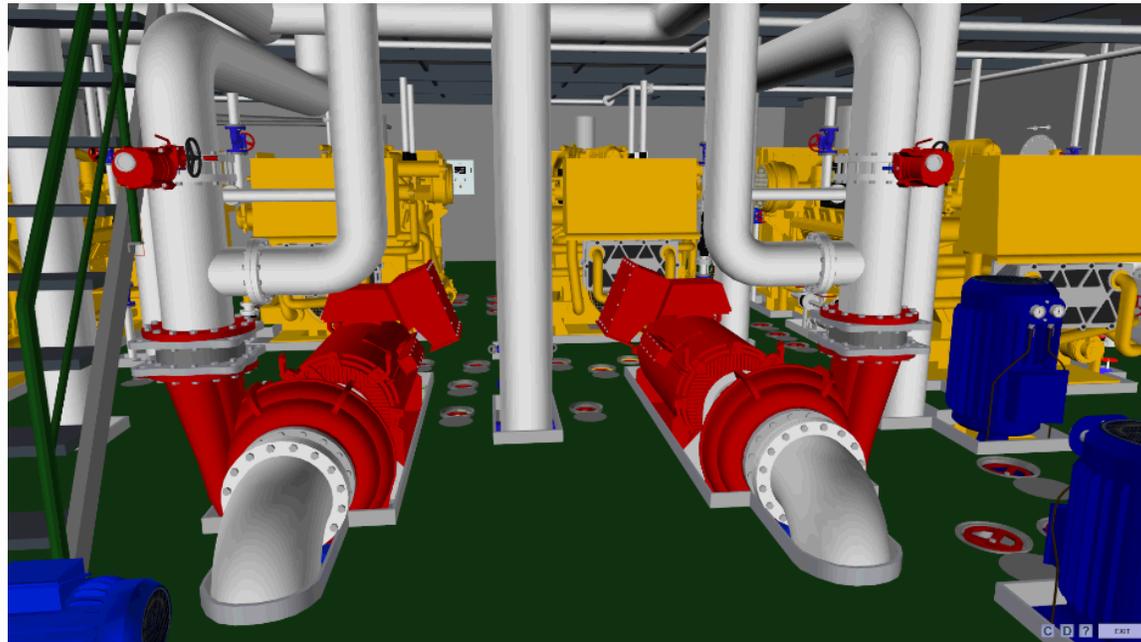
# High Voltage Diesel Electric Engine Room Simulator HV-DE3D

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The UNITEST HV-DE3D Engine Room Simulator has been based on engine room with diesel electric propulsion system (four diesel generators, two main azimuth thrusters, one retractable and one bow thruster).

The simulator is designated for training students of maritime academies as well as for different types of marine vocational training centres. The simulator has universal features and may be used both for training merchant and navy fleet crew.





The main purpose of the simulator is the practical preparation of the trainee for engine room operation, and more particularly:

- familiarization with the basic engine room installation (compressed air system, fresh and sea water cooling system, lubricating and fuel oil system, hydraulic system etc.);
- acknowledgment with main diesel generator and auxiliary equipment starting procedure;
- propulsion system maneuvering (main generators – main azimuth thrusters- retractable and one bow thrusters);

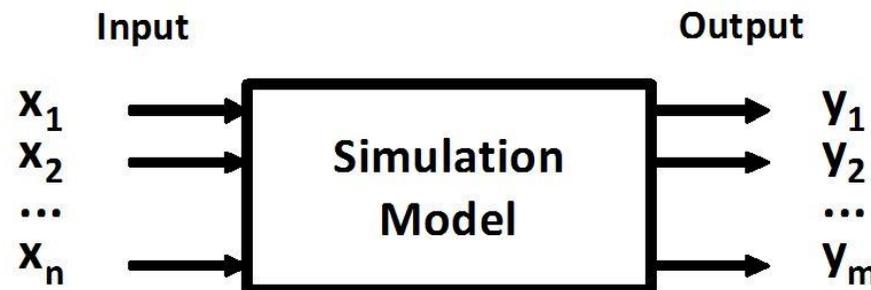




## Simulation model

The simulator is based on an engine room composed on diesel electric propulsion system. The model of the propulsion plant is typical for Platform Supply Vessel. Generally the propulsion system can be described below:

- vessel is to be propelled by two (2) azimuthing thrusters with fixed pitch propellers,
- power to the propellers is to be delivered by four (4) marine, constant speed diesel generators,
- engines and propellers are correctly matched for all operating models, including crash stop,
- propulsion control system is to be arranged so, that control may be safely put from full ahead” to “full astern” and vice versa.
- propulsion control system is to be arranged so, that may be controlled manually or automatically by DP system.





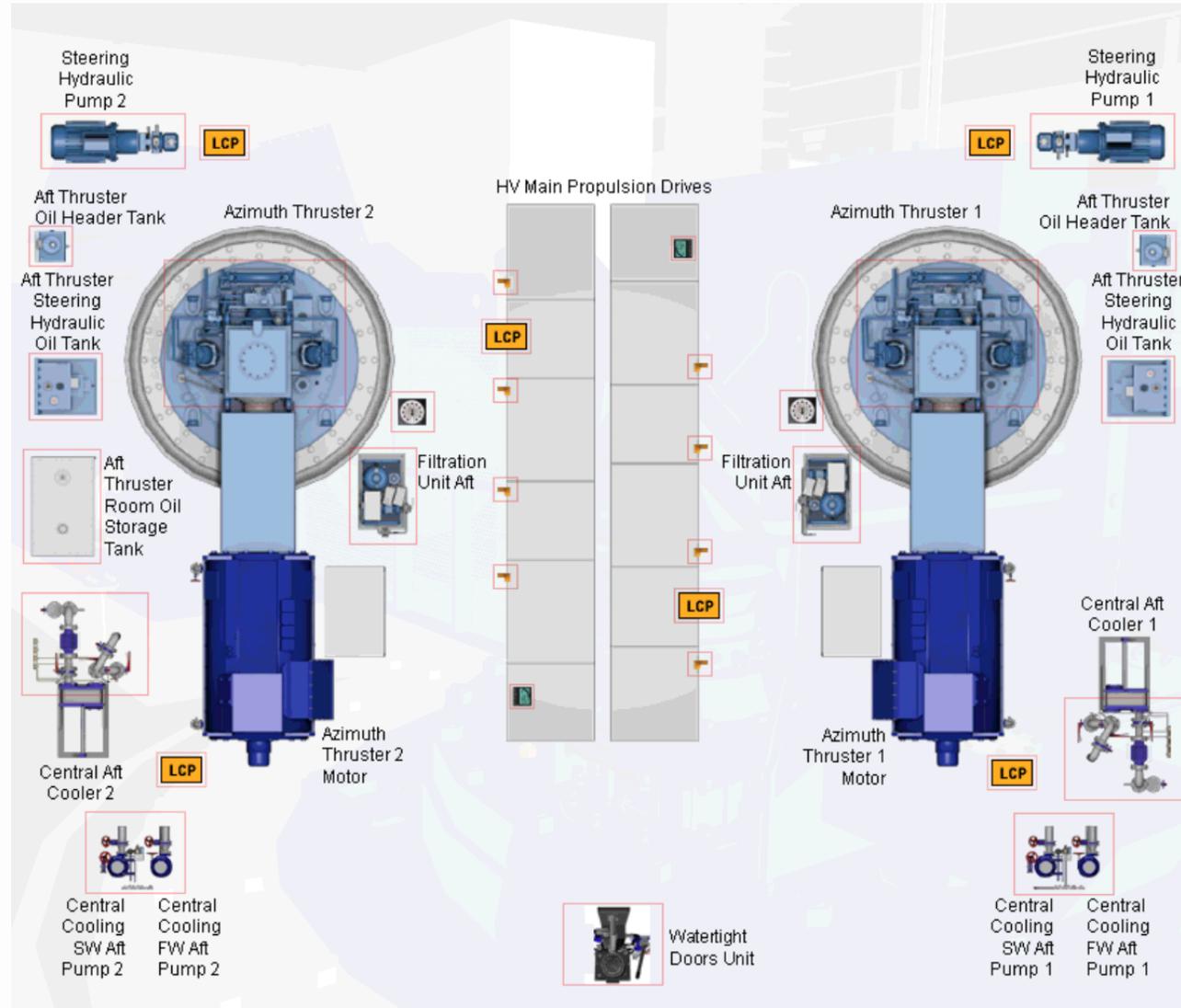
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Main Switchboard – 4160 V





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## Azimuth Thruster Switchboard



## Azimuth Thruster Local Control Panel

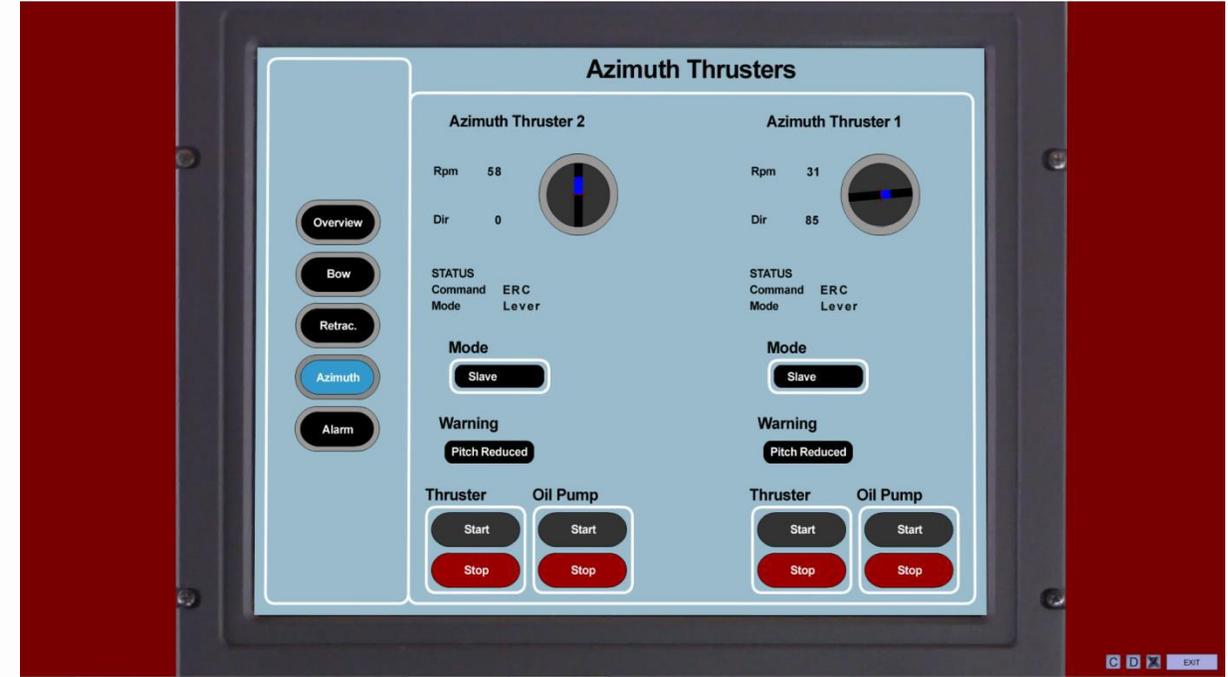
Control possibilities:

- drive control mode change (local/remote)
- drive start
- drive stop
- drive emergency stop
- drive revolution change



## Azimuth Thrusters Control Room Panel Control possibilities:

- drive control mode change (ECR/Bridge)
- drive start
- drive stop
- drive revolution change
- drive azimuth change



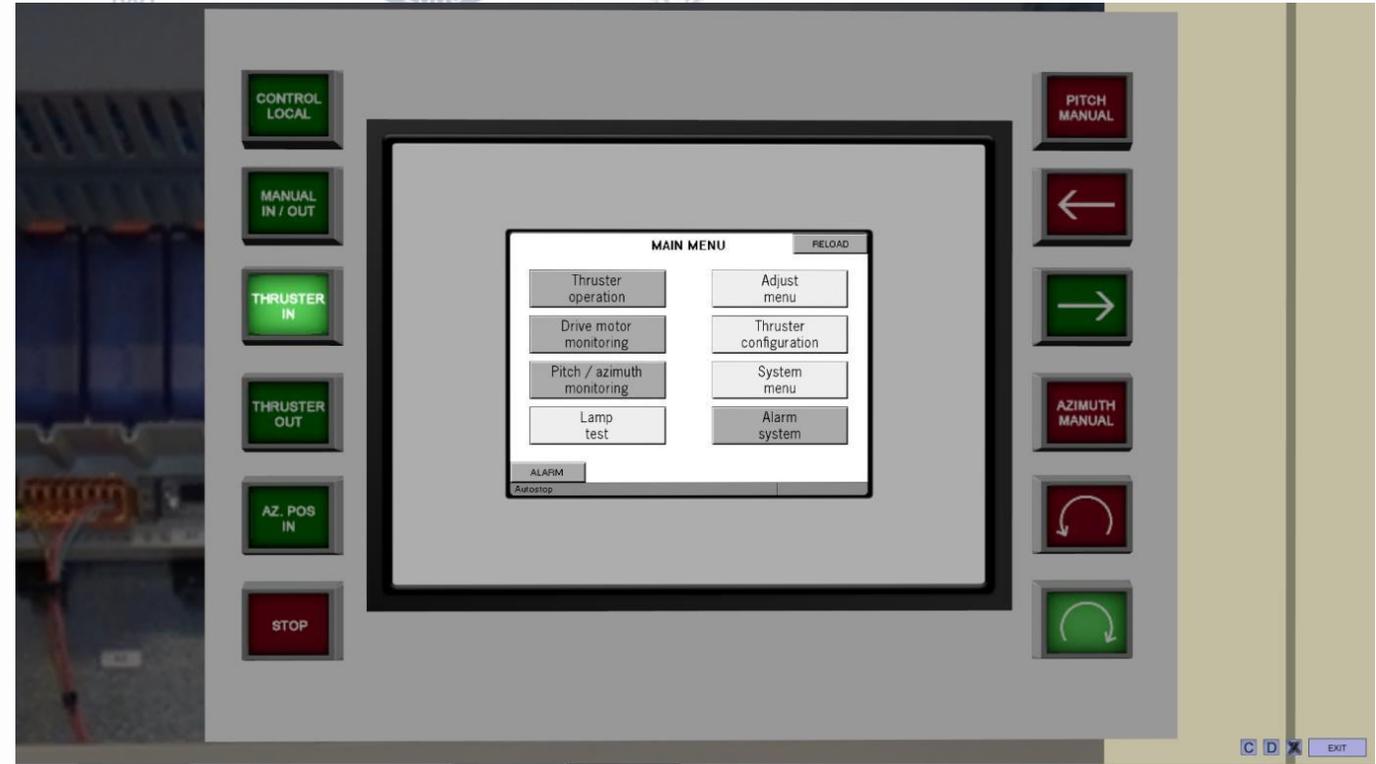
### Control Computer, possibilities:

- drive start (PS/SB)
- drive stop (PS/SB)
- drive master change (
- oil pump (hydraulic) start (PS/SB)
- oil pump (hydraulic) stop (PS/SB)



### Dropdown (Retractable) Thruster Local Panel Control possibilities:

- drive start (*Thruster Operation Menu*)
- drive stop (*Thruster Operation Menu*)
- oil pumps (hydraulic) start (*Thruster Operation Menu*)
- oil pumps (hydraulic) stop (*Thruster Operation Menu*)
- thruster in-out manual control (In/Out)
- pitch manual control
- azimuth manual control





The screenshot displays two main control panels within a simulation environment. The left panel, titled "SERVO UNIT CONTROL", features two columns of controls for "SERVO PUMP 1" and "SERVO PUMP 2". Each pump has a "STOPPED" status indicator and a "START SERVO" button. Below these are "STOP SERVO" buttons. To the right, "SERVO PRESS. STATUS" and "PRESS PUMP 1/2" are shown with "LOW" indicators. The right panel, titled "DRIVE MOTOR CONTROL", shows a "STOPPED" status, a "MOTOR LOAD" of 0.0 (Kw), and a "START DRIVE MOTOR" button. Both panels include "ALARM" and "BACK" buttons, and a status bar at the bottom indicating "Autostop" and the date/time "22.07.2014 21:47". The interface is surrounded by various physical-style buttons like "THRUSTER IN/OUT" and "AZIMUTH MANUAL".

This screenshot shows a more detailed control panel. At the top, it displays "0.00 (Deg.) Pitch (%)" and "0.00". Below this is a horizontal scale. The panel is divided into several sections: "SERVO UNIT CONTROL" (with "STOPPED" status), "AZIMUTH RETRACT /LOWER" (with "RETRACTED" status), and "DRIVE MOTOR CONTROL" (with "STOPPED" status). In the center, there are "Command" and "Feedback" fields, both showing "0.0". Two blue circular arrows indicate a feedback loop. On the right, "Load (kW)" and "Power available (kW)" are both shown as "0.0". The bottom status bar shows "Autostop" and "22.07.2014 21:47".



## Switchboard Key Lock System

Key lock system protects the thrusters after switchboard panels before opening during operation of the Main Drives. In order to connect power to the Main Drives, individual security keys for Panels 1, 2, 3, 4 should be placed in the main key terminal. Security keys for After Switchboard Main Drive Switch and for Control Room Main Drive Switch can be then removed and placed then in proper field to unlock the switches.





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Marsnet Project Multiplayer Event: Simulation environment in Maritime Education and Training



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After Switchboard Main Drive Switch with Security Key

[Marsnet Project](#) [Multiplayer Event](#): Simulation environment in Maritime Education and Training



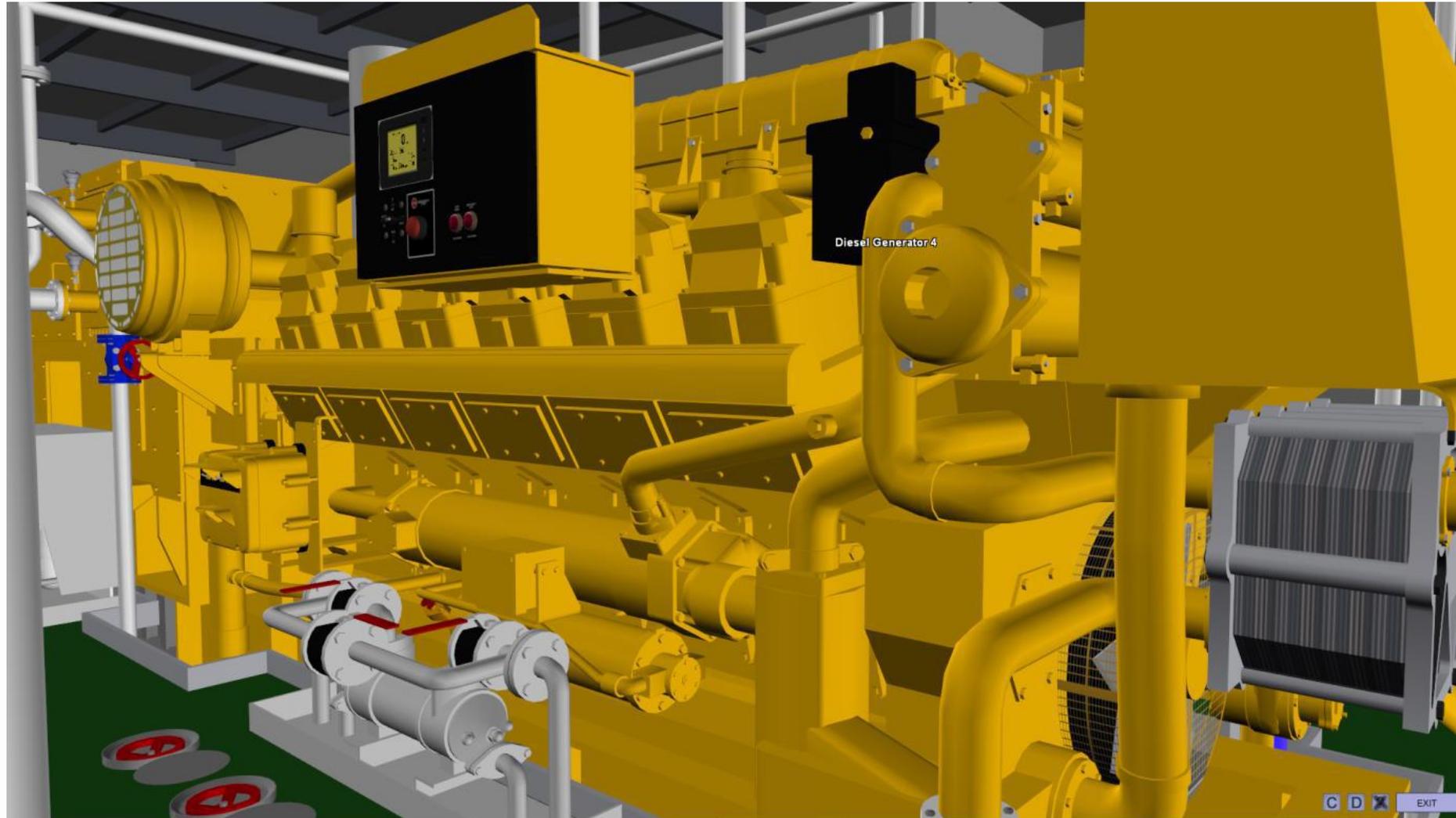
## Control Room Main Drive Switch with Security Key



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## Main Diesel Generator (DG)

[Marsnet Project](#) [Multiplayer Event](#): Simulation environment in Maritime Education and Training

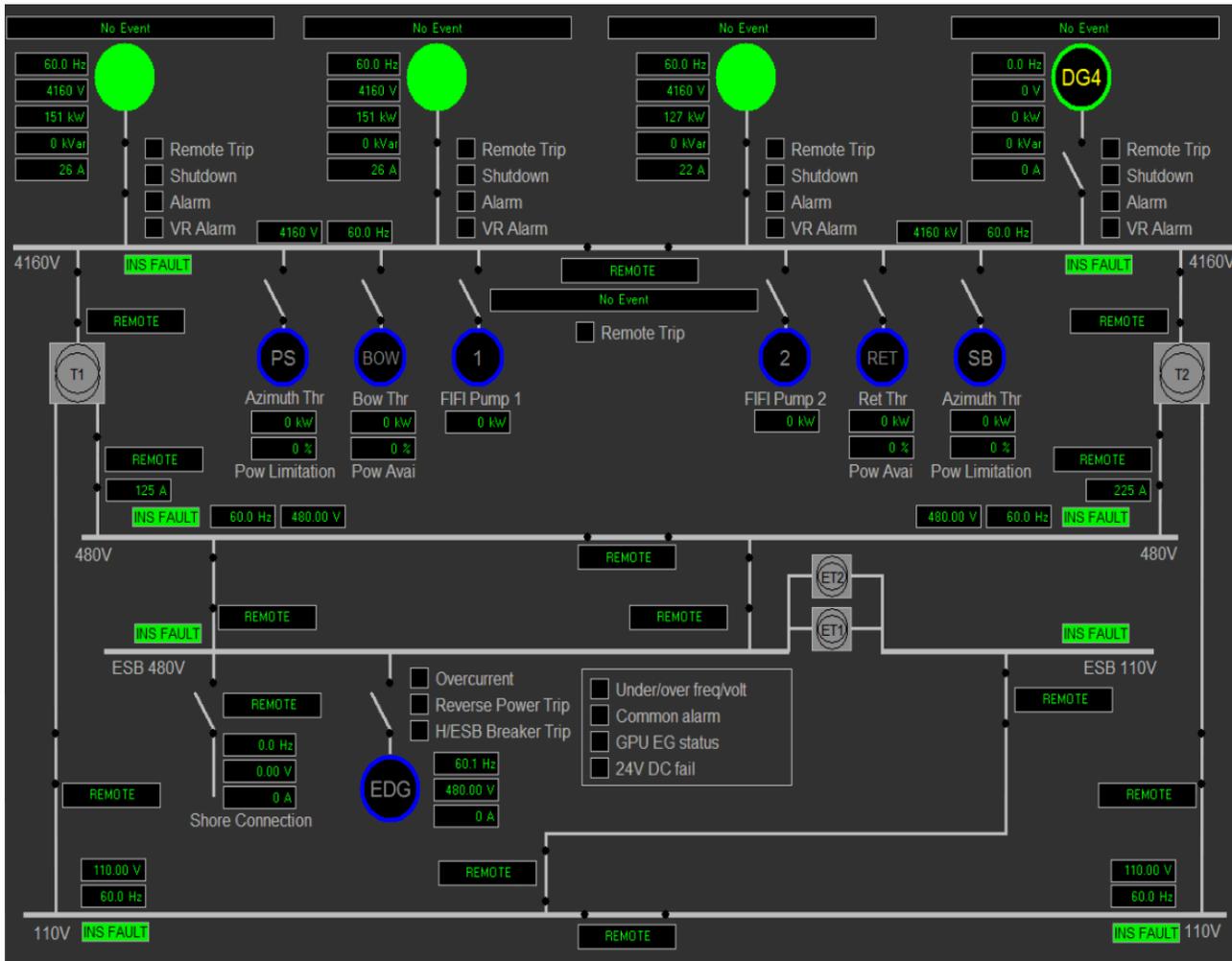


## DG Local Control Panel, possibilities:

- mode control change (Local/Remote)
- engine start-stop
- engine emergency stop



DG Switchboard Panel



## Main SWBD – general view Control possibilities:

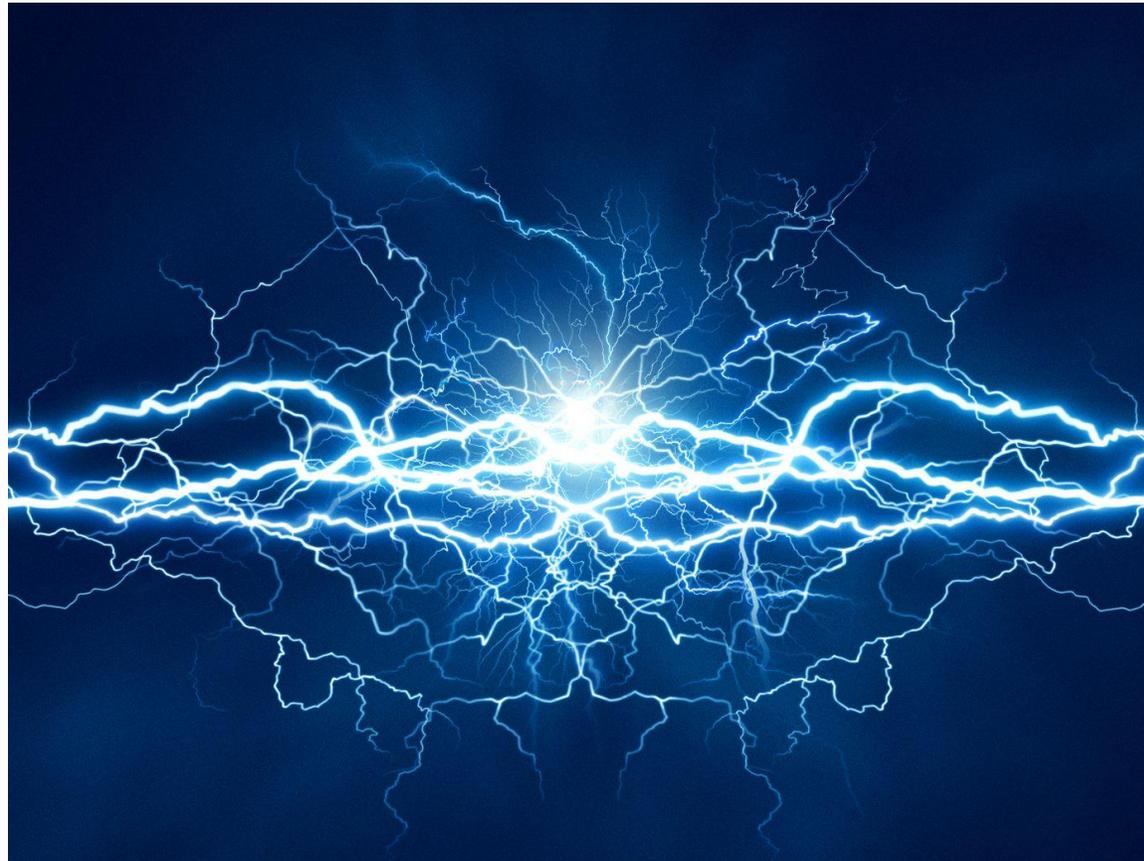
- breakers operation (in remote mode)
- PMS mode change (Transit, DP, Harbour, User 1, User 2)
- Parameters change (in User1 and User2 mode)



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# Thank you