



Назначение:

Мультимедийная тренажерная программа предназначена для практической подготовки специалистов машинного отделения по эксплуатации аварийных дизельгенераторов в соответствии с требованиями Конвенции ПДНВ и национальными требованиями.

В МТП включены:

- Интерактивные 3D имитаторы аварийного распределительного щита и аварийного дизельгенератора.
- Интерактивная мнемосхема оборудования.
- Описание аварийного дизельгенератора с фотографиями и схемами.
- Задания для проверки знаний.

Целевая аудитория

Машинная команда –
Управления

Машинная команда –
Эксплуатации

Машинная команда -
Вспомогательный

Тип судна

Все типы



Нормативная база

Конвенция ПДНВ:

- Правила III/1, III/2, III/3, III/6, III/7.

Кодекс ПДНВ:

- Раздел A-III/1, Таблица A-III/1 «Спецификация минимального стандарта компетентности для вахтенных механиков судов с обслуживаемым или периодически необслуживаемым машинным отделением», сфера компетентности «Эксплуатация главных установок и вспомогательных механизмов и связанных с ними систем управления».
- Раздел A-III/2, Таблица A-III/2 «Спецификация минимального стандарта компетентности для старших механиков и вторых механиков с главной двигательной установкой мощностью 3 000 кВт или более», сфера компетентности «Эксплуатация, наблюдение, оценка работы и поддержание безопасности двигательной установки и вспомогательных механизмов».
- Раздел A-III/5, Таблица A-III/5 «Спецификация минимального стандарта компетентности для лиц рядового состава в качестве квалифицированного моториста на судах с обслуживаемым или периодически необслуживаемым машинным отделением», сфера компетентности «Содействие наблюдению и управлению несением машинной вахты».
- Раздел A-III/6, Таблица A-III/6 «Спецификация минимальных стандартов компетентности для электромехаников», сфера компетентности «Эксплуатация генераторов и распределительных систем».
- Раздел A-III/7, Таблица A-III/7 «Спецификация минимальных стандартов компетентности для электриков», сфера компетентности «Содействие наблюдению за работой электрических систем и механизмов».



Emergency Power Plant

1. EMERGENCY POWER PLANT



The emergency diesel generator is very important part of ship electric power plant.
The typical electric power plant consists of one emergency diesel generator and two or more main diesel generators.
The emergency generator is automatically connected to the emergency switchboard in case of failure of the main source of electric power, and within 45 s automatically supply emergency consumers.
The emergency generator shall not be used for supplying power during normal operation of the vessel. Exceptionally, and for short periods, the emergency source of power may be used for blackout situations and for starting from dead ship.
In order to ensure ready availability of the emergency generator, non-emergency circuits are automatically disconnected from the emergency switchboard.
The emergency generator shall be sufficient to supply all services essential for safety in an emergency situations.
The emergency diesel generator is started with main electric and emergency hydraulic starting systems.
The emergency electric power supply system is located above the uppermost continuous deck and is readily accessible from open deck.

Emergency Power Plant

1. EMERGENCY POWER PLANT

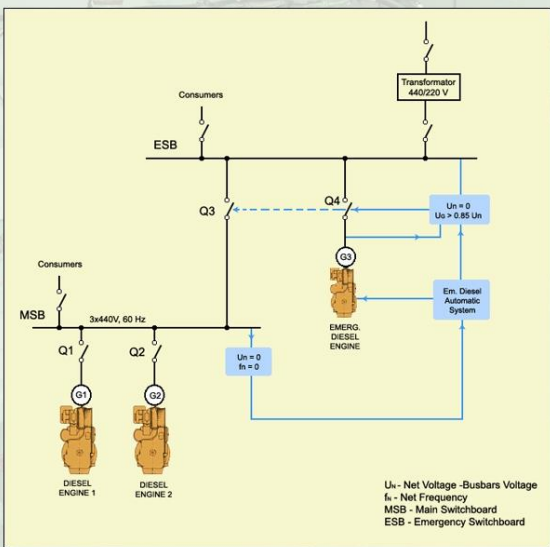
Emergency switchboard (ESB)

The emergency switchboard is located in the same space that emergency generator.

In normal operation the emergency switchboard is supplied from the main switchboard by an interconnecting feeder. This feeder is protected against overload and short circuit at the main switchboard, and is disconnected automatically at the emergency switchboard upon failure of the main source of electrical power.

The emergency switchboard is arranged for the supply of power back to the main distribution system, but shall be used only in emergency situation. Special key protected switch should be used for this purpose.

The emergency generator is started automatically in case of blackout situation (no voltage on main switchboard). The switchbreakers Q1 and Q2 are open. When the emergency generator is ready for connection the switchbreaker Q3 will open and after 2-3 s the switchbreaker Q4 will close. The emergency switchboard is supplied by the emergency generator through the breaker Q4.



Un - Net Voltage - Busbars Voltage
fn - Net Frequency
MSB - Main Switchboard
ESB - Emergency Switchboard

Fig. 1. Electric diagram of ship power plant



Emergency Power Plant

2. MAIN COMPONENTS DESCRIPTION

2.1 DEMP/MAN EMERGENCY MARINE DIESEL GENERATING SET

Integrated engine control and monitoring panel

SELCO Engine Controller M2000 has been designed to take care of the complete control of a diesel generator. It controls start and stop of the engine, monitors and protects the engine during start and operation, and simultaneously indicates – on the front – all necessary information about the conditions of the generator set.



Fig. 2. SELCO Engine Controller M2000

SELCO Engine Controller is flexibly mounted on the set and contains the following equipment:

Instruments:

- Combined Tachometer/Hour-counter

Engine controller SELCO M2000 which controls:

- automatic starting device with 3 automatic start attempts in case of mains failure
- automatic engine stop after mains have returned (delayed 5 minutes)
- indication LED's for pre-alarms and Auto Stop, mentioned previously
- indication LED's for set in operation
- indication LED's for start failure
- alarm reset
- buzzer reset
- Start/Stop push button

Buzzer

Selector switch AUTOMATIC/MANUAL/OFF

Terminals for remote indication:

- voltage supervision and control source failure
- common alarm (all alarms/ stop included)
- set in operation
- selector switch in auto/ready to start

Emergency Power Plant

4. OPERATING INSTRUCTIONS

The educational program EMERGENCY POWER PLANT SIMULATOR is intended for teaching the basic principles of how to operate a typical emergency marine diesel engine generator.

The program is based on the emergency diesel engine type D2866 E produced by MAN and the generator type **STAMFORD UCM 274 G**.

The Emergency Power Plant Simulator consists of the following parts:

1. Fuel Oil Tank
2. Diesel Generator
3. Diesel Generator Control Panel
4. Emergency Transformers Boxes
5. Battery Charger
6. Emergency Switchboard

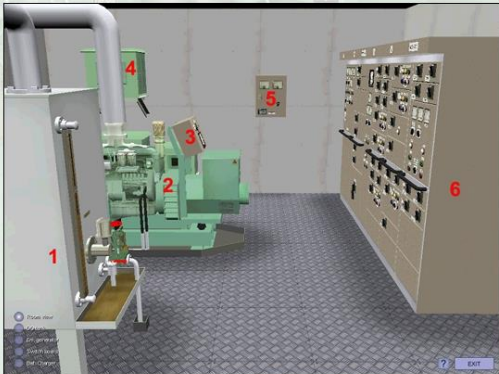


Fig.1. Emergency Diesel Generator - general view

