

Purpose:

The e-learning module (ELM) is designed for theoretical training of ship officers on oil tankers while maintaining operations connected with tank atmosphere control.

What is an e-learning module?

E-learning module is the electronic textbook on one or more sections. Theoretical materials can be accompanied by drawings, diagrams, photos, animations and videos. There is a test for assessment of knowledge gained at the end of each section.

Contents:

1. Fire and explosions conditions on tankers
2. Design of inert gas system. General requirements
3. Safe operation of inert gas system

Target groups

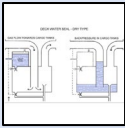
Deck - Management
Deck – Management
Engine – Management
Engine – Operational

Ship types

Oil Tankers

Regulations

- Regulation V/1-1 STCW Convention
- Section A-V/1-1, Table A-V/1-1-2 STCW Code “Specification of minimum standard of competence in advanced training for oil tanker cargo operations”
- IMO Model Course 1.01 “Advanced Training for Oil Tanker Cargo Operations”



1.2. The conditions leading to fire or explosion on tankers.

If any of the three elements can be eliminated, the danger of explosion is also eliminated, and this is the philosophy behind the Inert Gas system.
When looking for the simplest element to remove, one will find that:

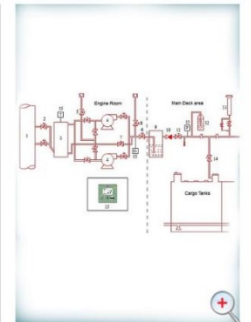
1. The fuel part can never be eliminated, due to the nature of cargo, which is itself highly inflammable. The cargo will always evaporate explosive hydrocarbon vapours, which will fill any void spaces in the tanks, and mix with the air entering the tanks through open hatches, etc. On ballast voyage, the empty tank is also filled with a mixture of air, drawn in when unloading and vapours from the cargo remain in the tank;
2. The energy spark to set off an explosion is also very difficult to eliminate completely. Exhaustive studies have been made by maritime bodies worldwide. No exact conclusion has been drawn, but it is a recognized fact that the most dangerous source of ignition is that of static electricity, which may be created in various ways inside the tank. The nature of this static electricity is such that is difficult to recognize, and therefore almost impossible to



2. Design of Inert gas system. General requirements.

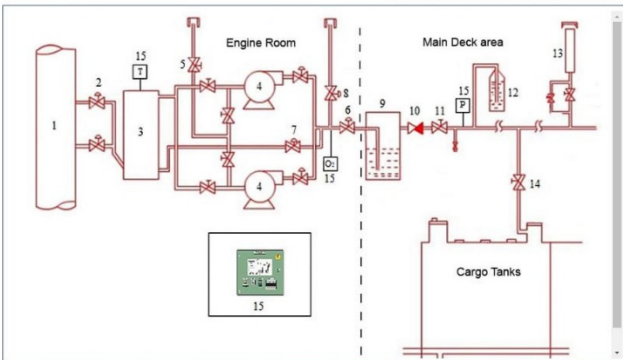
Basically the Inert Gas System consists of:

1. The source of Inert gas;
2. Flue gas isolating valve;
3. Scrubber;
4. Inert Gas Blower;
5. Fresh Air Inlet valve;
6. Pressure regulating valve;
7. Recirculation valve;
8. Purge/excess control valve;
9. Deck Seal;
10. Non-return valve;
11. Deck isolating valve;
12. P/V Breaker;



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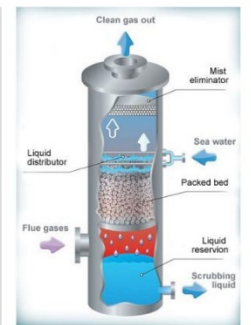
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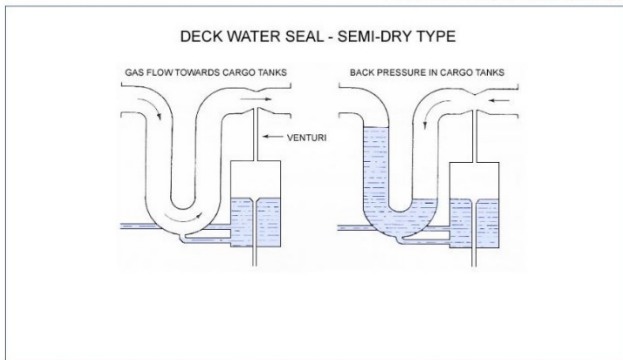
The purpose of the scrubber is:

- Cooling of the flue gas
- Removing of no less than 90% of the sulphure dioxide
- Removing of particulate soot.

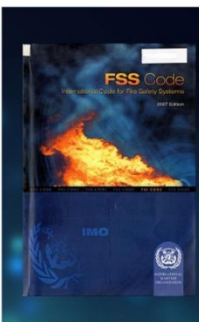


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2. Design of Inert gas system. General requirements.



Test assignments



Question test:

During discharging operation, the inert gas is replacing the discharged cargo. What is the requirements to the inert gas plant's capacity?

Choose the right variant of answer

at least 150% of the maximum rate of discharge capacity

at least 125% of the maximum rate of discharge capacity

at least 100% of the maximum rate of discharge capacity

Efforts: 1