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## No.58 Fire Protection of Machinery Spaces

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### 1. Distribution piping for flammable liquids

Cocks or valves should be provided for isolating instruments from the main pipes.

Temperature sensors should be fitted in pockets.

*All valves and cocks forming part of the fuel installation should be capable of being operated from readily accessible positions.*

### 2. Leakage containment arrangements for engines, equipment and boilers

Containment provided for areas where frequent leakage may be expected such as oil burners, purifiers, drains and valves under daily service tanks etc. should be fitted with adequate drainage. Where drain pipes are provided from collected leakages, they should be led to a suitable oil drain tank not forming part of an overflow system.

### 3. Valve for oil fuel pumps

Stop valves or cocks should be fitted on both suction and delivery sides of oil fuel pumps. All oil fuel pumps should be provided with pressure relief valves on the discharge side so that the discharged oil may be led to the suction side of the pump.

Pressure relief valves need not be fitted when the system is served only by centrifugal pumps, so designed that the pressure delivered cannot exceed that for which the piping is designed.

### 4. Overheating and seizure — oil heaters

4.1. Where steam heaters or heaters using other heating media are provided in fuel or lubricating oil systems, they should be fitted with at least a high temperature alarm or low flow alarm in addition to a temperature control, except where the temperature dangerous for the ignition of the medium cannot be reached.

4.2. When electric heaters are fitted, means should be provided to ensure that heating elements are permanently submerged during the operation.

In order to avoid in any case a surface temperature of heating element above 220°C, a safety temperature switch, independent from the automatic control sensor, should be provided. The safety switch should cut off the electrical power supply in the event of excessive temperature and shall be provided with manual reset.



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**5 Hot surfaces**

*The insulation of hot surfaces should be of a type and so supported that it will not crack or deteriorate when subject to vibration.*

**6. Oil spillages coming into contact with hot surfaces, electrical installations or other sources of ignition**

6.1. Oil filters fitted in parallel for the purpose of enabling cleaning without disrupting oil supply to engines (e.g. duplex filters) should be provided with arrangements that will minimise the possibility of a filter under pressure being opened by mistake.

Filters/filter chambers should be provided with suitable means for :

- venting when put into operation
- depressurising before being opened

Valves or cocks with drain pipes led to a safe location should be used for this purpose.

6.2. Hydraulic units with working pressure above 15 bar should preferably be placed in separate spaces. If it is impracticable to locate such units in a separate space, adequate shielding should be provided.

**7. Faults in boiler firing, scavenging manifold, boiler uptakes and exhaust gas uptakes**

7.1. The oil burners should be so arranged that they cannot be withdrawn unless the oil supply to the burners is cut off.

7.2. The fuel supply to all burners should be capable of being automatically cut off in case of total lack of flame in the combustion chamber; moreover, this should be warned by a visual audible alarm. The alarms need not be fitted for domestic boilers.

**8. Thermal oil installations**

**8.1. System arrangements**

The inlet and outlet valves of oil-fired thermal oil heaters and exhaust-fired thermal oil heaters should be controllable from outside the compartment where they are situated. As an alternative, an arrangement for quick gravity drainage of the thermal oil contained in the system into a collecting tank is acceptable.

Heating of liquid cargoes with flash points below 60°C should be arranged by means of a separate secondary system, located completely within the cargo area.



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However, a single circuit system may be accepted on the following conditions:

- system should be so arranged that a positive pressure in the coil should be at least 3 m water column above the static head of the cargo when circulating pump is not in operation.
- the thermal oil system expansion tank should be fitted with high and low level alarms.
- means should be provided in the thermal oil system expansion tank for detection of flammable cargo vapours. Portable equipment may be accepted.
- valves for the individual heating coils should be provided with locking arrangement to ensure that the coils are under static pressure at all times.

The thermal oil circulating pumps should be arranged for emergency stopping from a position outside the space where they are situated.

Vents from expansion tanks and thermal oil storage tanks of thermal oil heating plants should be led to open deck.

## 8.2. Exhaust-fired thermal oil heaters

The heater should be so designed and installed that all tubes may easily and readily be inspected for signs of corrosion and leakage.

Visual inspection and tightness testing of the heater tubes to not less the working pressure should be carried out annually, and hydraulic testing shall be carried out bi-annually.

The heater should be fitted with temperature sensor(s) and an alarm for fire detection.

A fixed fire extinguishing and cooling system should be fitted. A drenching system providing copious amounts of water may be accepted. The exhaust ducting below the exhaust boiler should be arranged for adequate collection and drainage, to prevent water flowing into the diesel engine. The drain should be led to a suitable location.

## 9. Segregation of fuel oil purifiers

9.1. Fuel oil purifiers for heated fuel oil should be subject to the following.

9.1.1. The fuel oil purifiers should be placed in a separate room, enclosed by steel bulkheads extending from deck to deck and provided with self-closing steel doors.

9.1.2. The room should be provided with :



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- 1 independent mechanical ventilation or a ventilation arrangement which can be isolated from the machinery space ventilation,
- 2 fire detecting system,
- 3 fixed fire extinguishing installation:

The extinguishing installation should be capable of being activated from outside the room.

Closing of ventilation openings should be effected from a position close to where the extinguishing system is activated.

The extinguishing system should be separate for the room, but may be a part of the main fire extinguishing system for the machinery space.

9.2. Where the size and/or design of the engine room makes it impracticable to locate the fuel oil purifiers in a separate space, special consideration should be given with regard to location, containment of possible leakages, and shielding and ventilation.

A local fixed fire extinguishing system should be provided, capable of being activated automatically or activated manually from the machinery control position or from other suitable location. If automatic release is provided, additional manual release should be arranged.

