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Air-conditioning and ventilation of machinery control-rooms on board ships — Design conditions and basis of calculations

Conditionnement d'air et ventilation des salles de contrôle des machines à bord des navires — Conditions de conception et bases de calcul

Reference number
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Foreword

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Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 8862 was prepared by Technical Committee ISO/TC 8, *Shipbuilding and marine structures.*

Users should note that all International Standards undergo revision from time to time and that any reference made herein to any other International Standard implies its latest edition, unless otherwise stated.

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Air-conditioning and ventilation of machinery control-rooms on board ships — Design conditions and basis of calculations

0 Introduction

This International Standard is fundamentally based on ISO 7547, which is required to apply this International Standard.

1 Scope and field of application

This International Standard specifies design conditions and suitable methods of calculation for air-conditioning and ventilation of the machinery control-room on board seagoing merchant ships for all conditions except those encountered in extremely cold or hot climates (i.e. with a lower or higher enthalpy than that stated in 4.1). Applicable parts of the Standard can be used for similar spaces such as the control-room for propulsion machinery.

The annex provides guidance and details of good practice in the design of ventilation and air-conditioning systems for machinery control-rooms in ships.

NOTE — Users of this International Standard should note that, while observing the requirements of the Standard, they should at the same time ensure compliance with such statutory requirements, rules and regulations as may be applicable to the individual ship concerned.

2 References

ISO 7547, *Air-conditioning and ventilation of accommodation spaces on board ships — Design conditions and basis of calculations.*

IEC Publication 92, *Electrical installations in ships —*

Part 101 : Definitions and general requirements.

Part 504 : Special features — Control and instrumentation.

3 Definitions

For the purposes of this International Standard, the definition given below, together with those in ISO 7547, apply :

machinery control-room : Space containing the system of the main alarm displays and controls for the propulsion machinery.

4 Design conditions

4.1 General

The system shall be designed for conditions as follows :

Outdoor air : + 35 °C and 70 % relative humidity
Indoor air : + 27 °C
Engine room air : + 45 °C

NOTE — All temperatures stated are dry bulb temperatures.

4.2 Occupancy

The number of persons to be allowed for in the machinery control-room shall be 3, unless otherwise stated by the purchaser.

5 Calculation of heat gains

5.1 Applicability

For the calculation of heat transmission and solar heat gain (as far as it is applicable), subclauses 5.2 and 5.3 of ISO 7547 shall apply.

Heat losses shall not be taken into account.

NOTE — Any required additional heating during winter is assumed to be carried out by separate means of heating, other than by air supply, unless otherwise specified by the purchaser.

In addition to values for the total heat transfer coefficients given in table 2 in ISO 7547, the values given in the table below shall be used where appropriate, unless otherwise specified by the purchaser.

Table — Total heat transfer coefficients

Surfaces	Total heat transfer coefficient, k W/(m^2·K)
Control-room bulkhead and ceiling against engine room	0,8
Control room floor against engine room	1,2
Window, triple glazing	2,5

5.2 Heat gain from persons

Values of sensible and latent heat emitted by a person shall be in accordance with subclause 5.4 in ISO 7547 (Activity : seated at rest).

5.3 Heat gain from lighting and other sources

Heat gain from general lighting shall be taken as 10 W/m^2 unless otherwise specified by the purchaser.

In addition, the heat gain from appliances shall be taken as the value at which the appliance generates sensible heat under normal use at the time of peak cooling load.

The purchaser shall give information about the maximum simultaneous and continuous heat gain in kilowatts from each group of electrical equipment and the location of this equipment.

Where the heat gain from the equipment is not specified by the purchaser, it shall be taken as 7 kW.

NOTE — It is assumed that the electrical equipment is designed according to IEC Publications 92-101 and 92-504 as regards environmental conditions (temperature, humidity, etc.).

6 Airflow calculation

6.1 Volume of space

Volume of consoles, cabinets, furniture, stationary equipment, etc. shall not be deducted in calculating the gross volume of the control-room.

6.2 Supply airflow

The air supply to the control-room shall be calculated using whichever of the following criteria gives the highest value :

a) airflow to maintain the conditions of 4.1;

b) outdoor supply airflow not less than 0,008 m^3/s per person.

6.3 Temperature of supply airflow

Wherever relevant, subclause 6.3 in ISO 7547 shall apply.

6.4 Air balance

The system shall provide a positive pressure in the room.

Annex

Guidance and good practice

(This annex does not form an integral part of the Standard.)

A.1 General

Guidance and good practice according to annex A of ISO 7547 is recommended to be applicable wherever relevant.

A.2 Airflow through electrical cabinets

Air distribution to be arranged to allow an airflow through electrical cabinets according to manufacturer's requirements.

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