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Air-conditioning and ventilation of wheelhouse on board ships — Design conditions and basis of calculations

Conditionnement d'air et ventilation de la timonerie à bord des navires — Conditions de conception et bases de calcul

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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 8864 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 wheelhouse 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 wheelhouse 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).

It applies to a wheelhouse supplied with air-conditioning and ventilation either by the general accommodation system or by its own individual system.

The annex provides guidance and details of good practice in the design of ventilation and air-conditioning systems for the wheelhouse 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 :

wheelhouse : Enclosed area of the bridge (excluding radio cabin).

4 Design conditions

4.1 General

The system shall be designed for the indoor air conditions at the stated outdoor air conditions, etc. specified in subclauses 4.1, 4.2 and 4.3 of ISO 7547.

NOTE — The conditions are applicable only when the doors and windows are closed and the climatic situation in the room stable.

While the system is designed for these stated conditions, normal use of the vessel will seldom allow them to be fully met.

4.2 Occupancy

The number of persons to be allowed for in the wheelhouse shall be 5.

5 Calculation of heat gains and losses

5.1 Applicability

For the calculation of summer conditions, subclauses 5.2 and 5.3 of ISO 7547 shall apply except as modified below. For the calculation of winter conditions, subclause 5.2 of ISO 7547 shall apply.

NOTES

1 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.

2 The external sides and top of the wheelhouse are assumed to have light-coloured surfaces unless otherwise stated by the purchaser.

3 The maximum value for the total heat transfer coefficient, k, for the wheelhouse roof shall be taken as 0,5 W/(m^2·K). For other surfaces, reference is made to table 2 in ISO 7547.

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 lighting shall be ignored.

Heat gain from apparatus and equipment shall be based on the input of the equipment during operation.

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 during operation is not specified by the purchaser, it shall be taken as 2 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, chart-table, furniture, stationary equipment, etc. shall not be deducted in calculating the gross volume of the wheelhouse.

6.2 Supply airflow

The air supply to the wheelhouse 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.)

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

NOTE — The wheelhouse is regarded as "Control station" according to Chapter II-2 in the International Convention for the Safety of Life at Sea (SOLAS 1974) as amended, which shall be taken into consideration when designing the system.

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