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Ships and marine technology — Performance test procedures for high-pressure pumps in LNG fuel gas supply systems (FGSS) for ships

Navires et technologie maritime — Procédures d'essai de performance des pompes haute pression dans les systèmes d'alimentation en gaz combustible GNL (FGSS) pour navires

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Contents

Page

Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2. www.iso.org/directives

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 8, *Ships and marine technology*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Ships and marine technology — Performance test procedures for high-pressure pumps in LNG fuel gas supply systems (FGSS) for ships

1 Scope

This document specifies performance and additional tests for high-pressure pumps in marine fuel gas supply systems (FGSS) supplying liquefied natural gas (LNG) to ships. It is applicable to positive displacement pumps (hereinafter "pumps") to assess the mechanical features of the pumps and their auxiliary devices.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 1996-1, *Acoustics — Description, measurement and assessment of environmental noise — Part 1: Basic quantities and assessment procedures*

ISO 10816-6, *Mechanical vibration — Evaluation of machine vibration by measurements on non-rotating parts — Part 6: Reciprocating machines with power ratings above 100 kW*

IGC Code, *International Code for the Construction and Equipment of Ships carrying Liquefied Gases in Bulk*

IGF Code, *International Code of Safety for Ships using Gases or other Low-flashpoint Fuels*

3 Terms and definitions

For the purpose of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

3.1
high pressure
maximum working pressure greater than 1,0 MPa

3.2
LOS
lubricating oil system
system to supply lubricant to the pump crank chamber

3.3
seal gas
gas used to separate the pump piston from the driving part and to prevent ice formation

3.4
test temperature
temperature of the fluid during the test, designated by the client

3.5
test pressure
pressure of the fluid during the test, designated by the client

3.6
test flow rate
flow rate of the fluid during the test, designated by the client

3.7
temperature stabilization
state at the conclusion of cool-down, when the temperature variation of the pump is within ±2 °C/min

4 Test arrangement

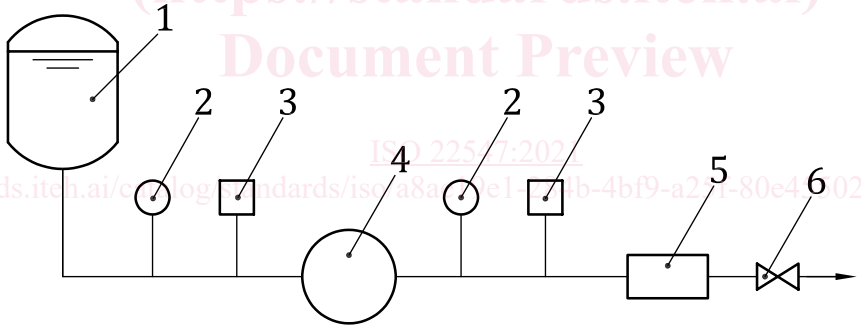
4.1 Test preparation

The client, prior to setting the test parameters, shall review the information provided by the manufacturer to ensure that the test parameters at a minimum meet the requirements of the manufacturer.

The test arrangement used for the performance test shall supply a test fluid to the inlet of the pump and related devices, at the required test pressure, test temperature and test flow rate without disruption.

In order to prevent industrial accidents during the test, the test arrangement and/or the equipment shall be reviewed and checked in advance.

Figures 1 and 2 show a conceptual diagram of a typical test arrangement.



Key
1 cryogenic tank
2 thermometer
3 pressure gauge
4. test pump
5 flowmeter gauge
6 control valve

Figure 1 — Conceptual diagram of the test arrangement