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Ships and marine technology — Determination of the shaft power of ship propulsion systems by measuring the shaft distorsion —

Part 2: Optical reflection method

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Contents

Page

Foreword ... **iv**
Introduction ... **v**
1 Scope ... **1**
2 Normative references ... **1**
3 Terms and definitions ... **1**
4 Principles of the measurement ... **2**
5 Components of the device ... **4**
5.1 General ... 4
5.2 Mounting rings ... 5
5.3 Torsion meter ... 5
5.4 Reflecting mirror ... 5
5.5 Transmitter ... 6
5.6 Receiver and power supply system ... 6
5.7 Revolution sensor ... 6
6 Calculation of the shaft power ... **6**
6.1 Shaft torque ... 6
6.2 Shaft power ... 7
7 Factors for determining the measuring accuracy ... **7**
7.1 General ... 7
7.2 Shaft diameter ... 7
7.3 G-modulus ... 7
7.4 Distance between mounting rings ... 7
7.5 Thickness of the mounting ring ... 7
7.6 Vibration of the shaft ... 7
7.7 Zero adjustment ... 8
7.7.1 Zero point ... 8
7.7.2 Procedure for zero adjustment ... 8
7.8 Calibration ... 8
7.8.1 General ... 8
7.8.2 Calibration procedure ... 8
8 On-board documentation for the device ... **8**
Annex A (informative) **Sample form of calibration results** ... **9**
Bibliography ... **10**

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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 (see 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,* Subcommittee SC 2, *Marine environment protection*.

A list of all parts in the ISO 20083 series can be found on the ISO website.

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.

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Introduction

Selecting the optimum rating of a ship's main engine is important for ship owners, because it greatly affects the expenses of operations, maintenance and management as well as the ship's construction cost.

Measuring the output of the ship's main engine is important for confirming the ship efficiency, as well as for assessing the possible deterioration of the propulsion equipment or the accumulation of fouling on the hull over time. There are many methods of measuring an engine's output: (1) measuring the distortion of the shaft, (2) determining the fuel consumption, and (3) observing engine indicators such as cylinder pressure gauges.

Among these methods, ISO 20083 addresses the shaft distortion measurement with a shaft power meter, a method commonly used as the principal measurement of engine power output.

The purposes of shaft power measurement are:

— to provide a measurement of the ship's main engine output,

— to provide information regarding the ship's most efficient speed,

— to select optimum engine operational characteristics,

— to estimate maintenance and repair costs, and

— to monitor heavy propeller running.

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Ships and marine technology — Determination of the shaft power of ship propulsion systems by measuring the shaft distorsion —

Part 2:
Optical reflection method

1 Scope

This document specifies a procedure to determine the shaft power of engine ships, by measuring the shaft distortion using an optical reflection type device. It gives the principles of the measurement, the components of the device and the calculation method. It also describes the factors for determining the measuring accuracy, including the calibration procedure, and specifies the on-board documentation for the device.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

For the purposes 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/s

3.1
shaft
propeller shaft or intermediate shaft that transmits the engine power to the propeller, and on which the shaft power meter is installed

3.2
shaft torque
Q
turning moment transmitted to the shaft that is generated by the engine to rotate the propeller

Note 1 to entry: It is expressed in newton meters.

3.3
shaft power
P_S
power transmitted to the shaft that is generated by the engine to rotate the propeller

Note 1 to entry: It is expressed in kilowatts.

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