ICS 47.020.20
CCS U 44

NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 41889-2022

Ships and marine technology - Verification method for portable power measurement using a strain gauge

Issued on: October 12, 2022 **Implemented on: October 12, 2022**

Issued by: State Administration for Market Regulation, China National Standardization Administration

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foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for Standardization Work Part 1.Structure and Drafting Rules of Standardization Documents"

Drafting.

This document is equivalent to ISO 23048.2018 "Verification method for portable dynamometers for ship and offshore technical strain gauges".

Please note that some content of this document may be patented. The issuing agency of this document assumes no responsibility for identifying patents.

1 Scope

This document specifies procedures for laboratory validation of the use of strain gauges as portable power measurement devices.

Power measurement equipment validated in accordance with this document may be used on merchant ships.

2 Normative references

The contents of the following documents constitute essential provisions of this document through normative references in the text. Among them, dated citations

documents, only the version corresponding to that date applies to this document; for undated references, the latest edition (including all amendments) applies to

this document.

ISO 15016.2015 Ships and offshore technology Guide for the assessment of speed and power performance by analysis of speed trial data

Note. GB/T 30007-2013 Ships and offshore technology Guidelines for the evaluation of

speed and power performance by analyzing speed test data

(ISO 15016.2002, IDT)

3 Terms and Definitions

The following terms and definitions apply to this document.

3.1

strain gauge strainauge

An instrument for measuring the strain of an object.

NOTE. When the object is deformed, it will cause a change in resistance. This change in resistance is related to strain and is usually measured with a Wheatstone bridge, a quantity called scale

coefficient.

3.2

A device designed to provide true torque to a torque measuring device. This torque is produced by a torque arm loaded with a known precise mass.

3.3

Equipment temporarily installed on a ship and operating during sea trials to measure the power delivered to the propeller by the engine and drive train without

Is a stationary shaft power measuring device (if installed).

4-axis power meter verification equipment composition

4.1 General

Shaft power meter verification equipment consists of torque arm, weight plate, torque arm shaft, shaft, torque sensor, mass and rotational speed [revolution per minute (r/min)].

The composition of the organism is shown in Figure 1.The actual torque is produced by a weight with a known exact mass attached to a known length attached to the shaft