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PEOPLE'S REPUBLIC OF CHINA**

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**Electrical installations in ships - Primary DC distribution -
System design architecture**

船用电气装置 一次直流配电 系统设计结构

(English Translation)

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Foreword

This document is a standard or guiding technical document.

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

This document is equivalent to IEC PAS63108:2017 "Design and structure of primary DC power distribution systems for marine electrical installations". (Document type...)

The publicly available specifications from the IEC have been adapted into my country's national standardization guidance technical documents.

The following minimal editorial changes have been made to this document.

---Added Appendix NA (Informative) "List of National Standardization Documents on the Conformity Correspondence between IEC 60034 and IEC 60092".

Introduction

Existing marine power distribution systems are primarily AC systems, powered by constant-speed generator sets, and use fixed frequencies and voltages.

This is also reflected in the current IEC 60092 series of standards. New environmental regulations require more flexible solutions to meet new market demands.

Request. As is well known, the shipping industry is developing innovative power and distribution solutions to reduce air pollution emissions and lower fuel consumption.

Next-generation power distribution systems involve the use of various power sources and DC power distribution architectures. Innovative approaches have been developed in the design of marine electrical systems.

These systems integrate advanced control technologies for energy storage devices, main power supplies, and emergency power supplies, covering critical load services such as propulsion systems.

Yes. New energy systems, by integrating multiple cutting-edge technologies, can significantly optimize fuel consumption efficiency, emissions, and other aspects of ship operation. Operational performance.

Compared to traditional power generation and distribution system solutions, primary DC

distribution systems adopt advanced technologies in system design/configuration, operation, and control.

A new approach was used. This document aims to describe these solutions.

The main purpose of this document is to establish design and testing standards for primary DC power distribution systems. Marine electrical installations primary DC power distribution System Design Structure

1 Scope

This document specifies the requirements for primary DC power distribution systems and interconnection devices. The requirements of this document establish the following general principles.

---The system's operation can reduce environmental impact without compromising the safety of equipment and personnel;

---Existing and new generator sets, new DC power distribution concepts for advanced control of power, energy storage, and total power balance, including semiconductors Power converters (AC-DC, DC-DC, DC-AC power converters) and dynamic load controllers; and

---Related system studies and calculations are used to verify protection concepts that meet the necessary selectivity, isolation methods and equipment requirements.

This document also provides guidance for energy integration of different natures, as well as applicable methods for identifying suitable locations for such devices.

2 Normative references

The contents of the following documents, through normative references within the text, constitute essential provisions of this document. Dated citations are not included.

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

Note: See Appendix NA for a list of national standardization documents corresponding to IEC 60034 conformance.

Note: See Appendix NA for a list of national standardization documents corresponding to IEC 60092 conformance.

IEC 60364-4-41 Low-voltage electrical installations - Part 4-41. Protection against electric shock

Note: GB/T 16895.21-2020 Low-voltage electrical installations - Part 4-41. Protection against electric shock (IEC 60364-4-41:2017, IDT)