

**BUREAU OF INDIAN STANDARDS**  
**DRAFT FOR COMMENTS ONLY**

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*Draft Indian Standard*

Marine energy – Wave, tidal and other water current converters –  
Part 2: Marine energy systems – Design requirements  
(ICS 27.140)

Marine Energy Conversion Systems  
Sectional Committee, ETD 54

Last date for Comments – 02/03/2024

FOREWORD

(Formal clauses will be added later)

This Draft Standard which is identical with IEC TS 62600-2 2019 Marine energy – Wave, tidal and other water current converters – Part2: Marine energy systems – Design requirements issued by the International Electrotechnical Commission (IEC) is proposed to be adopted by the Bureau of Indian Standards on the recommendation of the Electrical Installation Sectional Committee and approval of the Electrotechnical Division Council.

The text of the IEC Standard has been approved as suitable for publication as an Indian Standard without deviations. Certain conventions are, however, not identical to those used in Indian Standards. Attention is particularly drawn to the following:

- a) Wherever the words ‘International Standard’ appears referring to this standard, they should be read as ‘Indian Standard’.
- b) Comma (,) has been used as a decimal marker, while in Indian Standards the current practice is to use a point (.) as the decimal marker.

<i>International Standard</i>	<i>Corresponding Indian Standard</i>	<i>Degree of Equivalence</i>
IEC 60092-301, Electrical installations in ships – Part 301: Equipment – Generators and motors	IS 10242 (Part 3/Sec 1) : 1983 Specification for electrical installations in ships: Part 3 equipment: Sec 1 generators and motors	Identical

IEC 60092-350, Electrical installations in ships – Part 350: General construction and test methods of power, control and instrumentation cables for shipboard and offshore applications350	IS 10242 (Part 3/Sec 10) : 1992 Electrical installations in ships: Part 3 equipment: Sec 10 general construction and test requirements for low voltage shipboard power cables - Specification	Technically Equivalent
IEC 60204-1:2016, Safety of machinery – Electrical equipment of machines – Part 1: General requirements	IS 16504 (Part 1) : 2019 Safety of Machinery — Electrical Equipment of Machines Part 1 General Requirements ( First Revision )	Identical
IEC 60204-11:2018, Safety of machinery – Electrical equipment of machines – Part 11: Requirements for equipment for voltages above 1 000 V AC or 1 500 V DC and not exceeding 36 kV	IS 16504 (Part 11) : 2020 Safety of Machinery - Electrical Equipment of Machines Part 11 Requirements for Equipment for Voltages above 1 000 V AC or 1 500 V DC and not Exceeding 36 kV	Identical
IEC 60228, Conductors of insulated cables	IS 8130 : 2013 Conductors for insulated electric cables and flexible cords - Specification (Second Revision)	Technically Equivalent
IEC 60812, Failure modes and effects analysis (FMEA and FMECA)	IS/IEC 60812 : 2018 Failure Modes and Effects Analysis ( FMEA and FMECA )	Identical
IEC 61643-11, Low-voltage surge protective devices – Part 11: Surge protective devices connected to low-voltage power systems – Requirements and test methods	IS 16463 (Part 11) : 2016 Low - Voltage surge protective devices: Part 11 surge protective devices connected to low - Voltage power systems - Requirements and test methods	Identical
IEC 61882, Hazard and operability studies (HAZOP studies) – Application guide	IS 16957 : 2018 Hazard and operability studies (Hazop Studies) - Application guide	Identical
IEC 62305-3, Protection against lightning – Part 3: Physical damage to structures and life hazard	IS/IEC 62305-3 : 2010 Protection against lightning: Part 3 physical damage to structures and life hazard	Identical
IEC 62305-4, Protection against lightning – Part 4: Electrical and electronic systems within structures	IS/IEC 62305-4 : 2010 Protection against lightning: Part 4 electrical and electronic systems within structures	Identical

In this adopted standard, reference appears to International Standards for which Indian Standards also exists. The corresponding Indian Standards, which are to be substituted, are listed below along with their degree of equivalence for the editions indicated:

The technical committee has reviewed the provisions of the following international standards referred in this adopted standard and decided that they are acceptable for use in conjunction with this standard.

<i>International Standard</i>	<i>Title</i>
IEC 60364-5-54	, Low-voltage electrical installations – Part 5-54: Selection and erection of electrical equipment – Earthing arrangements and protective conductors
IEC 61508 (all parts)	Functional safety of electrical/electronic/programmable electronic safety-related systems
IEC TS 62600-1	Marine energy – Wave, tidal and other water current converters – Part 1: Terminology
IEC TS 62600-201	Marine energy – Wave, tidal and other water current converters – Part 201: Tidal energy resource assessment and characterization
IEC TS 62600-10	Marine energy – Wave, tidal and other water current converters – Part 10: Assessment of mooring system for marine energy converters (MECs)
ISO 2394 General principles on reliability for structures	General principles on reliability for structures
ISO 12473	General principles of cathodic protection in sea water
ISO 17776	Petroleum and natural gas industries – Offshore production installations – Major accident hazard management during the design of new installations
ISO 19900	Petroleum and natural gas industries – General requirements for offshore structures
ISO 19901-1: 2015	Petroleum and natural gas industries – Specific requirements for offshore structures – Part 1: Metocean design and operating considerations
ISO 19901-4	Petroleum and natural gas industries – Specific requirements for offshore structures – Part 4: Geotechnical and foundation design considerations
ISO 19901-6	Petroleum and natural gas industries – Specific requirements for offshore structures – Part 6: Marine operations
ISO 19902	Petroleum and natural gas industries – Fixed steel offshore structures
ISO 19903	Petroleum and natural gas industries – Fixed concrete offshore structures
ISO 31010	Risk management – Risk assessment techniques
DNVGL-OS-C301	Stability and watertight integrity
DNVGL-RP-C205	Environmental conditions and environmental loads
EUROCOMP	Structural design of polymer composites

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated expressing the result of a test, shall be rounded off in accordance with IS 2: 2022 'Rules for rounding off numerical values (*Second Revision*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

## Scope

This standard provides design requirements to ensure the engineering integrity of wave, ocean, tidal and river current energy converters, collectively referred to as marine energy converters. Its purpose is to provide an appropriate level of protection against damage from all hazards that may lead to catastrophic failure of the MEC structural, mechanical, electrical or control systems. Figure 1 illustrates the scope of this document and critical interfaces with other elements of a marine energy converter installation. This document provides requirements for MEC main structure, appendages, seabed interface, mechanical systems and electrical systems as they pertain to the viability of the device under site-specific environmental conditions. This document applies to MECs that are either floating or fixed to the seafloor or shore and are unmanned during operational periods.

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Note — The technical content of their document has not been enclosed as there are identical with the corresponding IEC standards for details, please refer the corresponding IEC TS 62600-2-2019 or kindly contact:

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