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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 39569-2020

Tidal energy resource assessment and characterization

Issued on: December 14, 2020 **Implemented on: July 1, 2021**

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Table of Contents

Foreword

This standard was drafted in accordance with the rules given in GB/T 1:1-2009:

This standard uses the redrafting method to amend and adopt IEC TS62600-201:2015 "Ocean Energy Wave Energy, Tidal Energy and Other Water Flow Energy"

Conversion Device Part:201: Evaluation and Characterization of Tidal Current Energy Resources:"

Compared with IEC TS62600-201:2015, this standard has many adjustments in structure: Appendix A lists this standard and IEC TS

62600-201:2015 chapter number comparison list:

Compared with IEC TS62600-201:2015, this standard has technical differences, and the clauses involved in these differences have been passed on its outer page:

The vertical single line (|) of the margin position is marked, and a list of the corresponding technical differences and their reasons is given in Appendix B:

This standard has made the following editorial changes:

---Change the standard name to "Tide Energy Resource Assessment and Characterization";

--- Delete the note in IEC TS62600-201:2015;

---Delete A:1 in Appendix A of IEC TS62600-201:2015;

--- Deleted Appendix B "Power Flow Measurement Guide" in IEC TS62600-201:2015:

This standard was proposed and managed by the National Ocean Energy Conversion Equipment Standardization Technical Committee (SAC/TC546):

Drafting organizations of this standard: Hohai University, China Three Gorges Corporation, National Ocean Technology Center, Shanghai Survey and Design Institute

Co:, Ltd:, China Power Construction Group East China Survey and Design Institute Co:, Ltd:, Harbin Institute of Large Electric Machinery, Harbin Engineering University, CNOOC

Research Institute Co:, Ltd:, Ocean University of China, Zhejiang University, Guodian United Power Technology Co:, Ltd:, National Ocean Standard Metrology

Xin, China Energy Construction Group Guangdong Electric Power Design and Research Institute Co:, Ltd:, Yangtze River Eco-Environmental Protection Group Co:, Ltd:, Shanghai City Investment Water (set

Mission) Limited:

1 Scope

This standard provides methods for analyzing and describing theoretical tidal current energy resources based on estimation or direct measurement, which can be used to estimate tidal current energy resources

And predict the annual power generation capacity of each tidal current energy conversion device location:

This standard applies to the early stage of construction of tidal current power generation projects:

This standard applies to sea areas where tidal energy conversion device arrays can be deployed, including estuaries affected by tides:

2 Normative references

The following documents are indispensable for the application of this document: For dated reference documents, only the dated version applies to this article

Pieces: For undated references, the latest version (including all amendments) applies to this document:

GB/T 12763:2 Marine Survey Specification Part 2: Marine Hydrological Observation

GB/T 12763:10 Marine Survey Specification Part 10: Submarine Topography and Geomorphology Survey

GB/T 18451:2 Wind Turbine Generator Power Characteristic Test (GB/T 18451:2-2012, IEC 61400-12-1:2005, IDT)

GB/T 27418 Measurement Uncertainty Evaluation and Expression (GB/T 27418-2017, ISO /IEC Guide98-3:2008, MOD)

GB/T 37551 Ocean energy wave energy, tidal current energy and other current energy conversion device terms (GB/T 37551-2019, IEC TS

62600-1:2011, MOD)

IEC TS62600-200 Ocean energy wave energy, tidal current energy and other water current energy conversion devices Part:200: tidal current energy conversion

Equipment power generation performance evaluation (Marineenergy-Wave, tidalandotherwatercurrentconverters-Part:200:

Electricityproducingtidalenergyconverters-Powerperformanceassessement)

3 Terms and definitions

The terms and definitions defined in GB/T 37551 apply to this document:

4 Symbols, codes and abbreviations

The following symbols, codes and abbreviations apply to this document:

ADCP Acoustic Doppler Current Profiler (acousticdopplercurrentprofiler)

The CRC comprehensive reduction factor is related to the overhaul time of the conversion device, the downtime under extreme conditions, etc: (comprehensive

reductioncoefficient)

f(Ui) The probability that the speed falls within each amplitude interval, expressed as a percentage (%)

fi(Ui) The probability that the speed falls within the i-th amplitude interval, expressed as a percentage (%)

f(Ui,thetak) The probability that the speed falls within each amplitude and direction interval, expressed as a percentage (%)

I turbulence intensity

i Index of the number of speed intervals

j Subscript of the number of time intervals

K Turbulent kinetic energy, in square meters per second square second (m2/s2)

Subscript of the number of intervals in the k direction