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**River energy resource assessment and characterization**

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## Foreword

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 modified to adopt IEC TS62600-301:2019 "Ocean energy wave energy, tidal energy and other current energy conversion devices"

Part 301: River Energy Resource Assessment: The document type was adjusted from IEC technical specifications to my country's national standardization guiding technical documents:

There are many technical differences between this document and IEC TS62600-301:2019:

The clauses involved in these differences have been adopted outside it:

Vertical single lines (|) in the margins are marked, and a list of corresponding technical differences and their causes is given in Appendix A:

The following editorial changes have been made to this document:

---The name of the standard is changed to "River Energy Resource Assessment and Characteristics Description";

---Deleted the note in IEC TS62600-301:2019:

Please note that some content in this document may be subject to patents: The publisher of this document assumes no responsibility for identifying patents:

## Introduction

Extracting energy from the flow of rivers and waterways to generate electricity is a new type of power generation that uses river energy: This type of power generation does not require building

The establishment of traditional hydropower dams has less impact on the environment: River energy resource assessment and characterization are important prerequisites for efficient development and utilization of river energy:

carry: However, our country currently lacks relevant standards or technical specifications: Therefore, detailed standards need to be developed for river energy resource assessment in my country:

and feature description to provide scientific methods and basis:

This document aims to give a method for calculating the annual power generation of the river energy conversion device (array) to be deployed:

In addition to containing relevant definitions, normative references, symbols and units, tables, appendices and other supporting material, the core content of this document is

Contains the following main contents:

---Method to establish flow duration curve based on measured data or hydrodynamic numerical model;

---Method to establish flow velocity duration curve based on measured data or hydrodynamic numerical model;

---Method to calculate annual power generation based on flow velocity duration curve:

This document will provide researchers working on river energy development and utilization with guidance on assessing river energy resources:

## River energy resource assessment and characterization

### 1 Scope

This document describes methods for determining theoretical river energy resources to ensure consistency and accuracy of resource assessments: This method is based on actual measurements

Or numerical model or a combination of both to obtain the standard water flow velocity distribution, which will be used to evaluate the power generation performance of river energy resources:

This document specifies feasible data collection methods and/or modeling techniques for river energy resource assessment, and a framework for reporting the results:

This document is applicable to the stage of determining theoretical river energy resources in areas where river energy conversion devices (RECs) are deployed:

This document does not apply to technical or physical resource assessments, assessment of the generation performance of river energy conversion devices, and environmental impact studies, assessments or

Similar studies etc:

### 2 Normative reference documents

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

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

this document:

GB/T 27418 Evaluation and expression of measurement uncertainty (GB/T 27418-2017, ISO /IEC Guide98-3:2008, MOD)

GB/T 37551 Terminology for ocean energy wave energy, tidal energy and other current energy conversion devices (GB/T 37551-2019,

IEC TS62600-1:2011, MOD)

GB/T 39569 Tidal current energy resource assessment and characterization (GB/T 39569-2020, IEC TS62600-201:2015, MOD)

GB/T 50138-2010 Water level observation standard

SL58-2014 Hydrographic Measurement Specification

SL257-2017 Waterway Observation Specifications

SL/T 278-2020 Hydrological calculation specifications for water conservancy and hydropower projects

SL337-2006 Acoustic Doppler Flow Test Specification

IEC TS62600-300 Ocean energy wave energy, tidal energy and other current energy conversion devices Part 300: River energy conversion devices

### 3 Terms and definitions

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

3:1

equivalent diameter

The diameter of a circle equal to the projected area of the conversion device's captured area:

3:2

power-weighted speed

The cube root of the three-dimensional weighted average of water velocities in different areas within the projected area of the capture area:

3:3

The main direction or direction of travel of water: