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NB

**ENERGY INDUSTRY STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

NB/T 10345-2019

Replacing DL/T 5396-2007

**Code for design of high voltage electrical equipment selection
and arrangement for hydropower plants**

水力发电厂高压电气设备选择及布置设计规范

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Foreword

This document was issued on 30 December 2019 by the National Energy Administration of the PRC and takes effect on 1 July 2020.

It is a NB/T standard: recommended rather than compulsory, but it is the text a Chinese reviewer applies when assessing a submission.

It is classified under ICS 27.140, Chinese classification P 59.

It replaces DL/T 5396-2007, which is superseded.

This code was revised by the drafting group in accordance with the requirements of the Notice of the National Energy Administration on Issuing the 2016 Plan for the Formulation and Revision of Industry Standards in the Energy Field (Guo Neng Ke Ji [2016] No. 238). The revision was carried out after extensive investigation and research, a careful summary of practical experience, and wide solicitation of opinions.

The main technical contents of this code are: basic requirements, selection of high voltage electrical equipment, and arrangement of high voltage electrical equipment.

The main technical contents revised in this edition are listed in the four items that follow.

The terms disassembly-transported power transformer and take-over current were added to the terminology clause.

Provisions were added covering solid-insulated tubular busbars, disassembly-transported power transformers, station service (auxiliary) transformers, electronic voltage transformers, electronic current transformers, insulators, bushings, line traps, gas-filled metal-enclosed switchgear and high voltage fuses.

The scope of application of the code was revised from a nominal voltage range of 3 kV to 500 kV to a nominal voltage range of 3 kV to 750 kV.

The altitude correction formula for the external insulation of electrical equipment, the classification of pollution severity levels and the requirements for the specific creepage distance were revised.

This code is under the administration of the National Energy Administration. It is proposed by, and under the routine management of, the China Renewable Energy Engineering Institute (Hydropower and Water Resources Planning and Design General Institute).

The Standardization Technical Committee for Hydropower Electrical Design of the energy industry is responsible for the interpretation of the specific technical contents. Comments and suggestions arising during implementation should be sent to the China Renewable Energy Engineering Institute, No. 2 Liupukang Beixiaojie, Xicheng District, Beijing, postcode 100120.

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Approval record: Announcement of the National Energy Administration No. 8 of 2019, dated 30 December 2019, which approved 152 energy industry standards listed in Attachment 1 and the English versions of 39 energy industry standards listed in Attachment 2.

In the catalogue of industry standards forming Attachment 1 of that announcement, this code is item 22: standard number NB/T 10345-2019, standard replaced DL/T 5396-2007, date of approval 30 December 2019, date of implementation 1 July 2020.

Structure of the Document

The code is organized in five numbered chapters followed by three closing parts, and the official English table of contents printed in the document runs to 61 numbered pages of main text and explanatory material.

Chapter 1, General Provisions, occupies page 1 and sets out the purpose, the field of application from 3 kV to 750 kV, and the relationship with other current national standards.

Chapter 2, Terms, occupies page 2 and defines five terms used throughout the code.

Chapter 3, Basic Requirements, runs from page 3 to page 8 and is divided into General Requirements on page 3, Electrical Requirements on page 3, Mechanical Requirements on page 5 and Climatic and Environmental Conditions on page 6.

Chapter 4, Selection of High Voltage Electrical Equipment, runs from page 9 to page 37 and is the longest chapter of the code, divided into twenty subclauses.

The equipment-selection subclauses of Chapter 4 cover, in order, Conductor, Main Transformer, Auxiliary Transformer, Generator Circuit Breaker, Electrical Brake Switch, High Voltage Circuit Breaker, High Voltage Load Switch, and High Voltage Disconnecter and Earthing Switch.

They continue with Gas-Insulated Metal-Enclosed Switchgear, AC Metal-Enclosed Switchgear, High Voltage Fuse, Voltage Transformer, Current Transformer, Shunt Reactor, Current-Limiting Reactor, Generator Neutral Equipment and Surge Arrester.

The chapter closes with Bushing and Insulator on page 36 and Line Trap on page 37.

Chapter 5, Arrangement of High Voltage Electrical Equipment, runs from page 38 to page 55 and is divided into Arrangement of Main Electrical Equipment on page 38, Clearance Requirements on page 43, Passway and Fence on page 51, and Requirements for Buildings and Structures on page 54.

The closing parts are Explanation of Wording in This Code on page 56, List of Quoted Standards on page 57, and the Addition, Explanation of Provisions, beginning on page 61.

The standards quoted in the opening chapters of the code include NB/T 35043 for the calculation of three-phase AC short-circuit currents in hydropower projects, GB/T 311.1 for