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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 9652.1-2019

Specification of hydraulic turbine governing systems

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Foreword

GB/T 9652 is divided into the following two parts.

---GB/T 9652.1 "Technical conditions for turbine governing system";

---GB/T 9652.2 "Turbo Turbine Speed Control System Test".

This part is the first part of GB/T 9652.

This part is drafted in accordance with the rules given in GB/T 1.1-2009.

This part replaces GB/T 9652.1-2007 "Technical Conditions for Hydraulic Turbine Control System", compared with GB/T 9652.1-2007

The changes are as follows.

--- The scope of application has been modified (see Chapter 1);

--- Modified the working conditions (see 3.3, 3.4,.2007 version 3.3);

--- Considering that the mechanical hydraulic governor and analog circuit governor have been discontinued in China for more than ten years, the current turbine governor products are

It is a microcomputer type governor, so the relevant provisions of the mechanical hydraulic governor and the analog circuit electro-hydraulic governor have been deleted (see Table 2,.2007).

Versions 4.4.3.3, 4.6.1, Table 2);

--- Modified the speed dead zone assessment requirements (see 4.1.3);

--- Increased the technical requirements of the pump turbine governor system (see 4.3.12);

--- Adjusted and supplemented the manual and automatic no-load frequency swing assessment indicators (see 4.2.1, 4.2.2, 4.2.3);

--- In view of the actual status of the stationary time of the relay of the large-scale unit turbine governing system, the indicator of the stationary time evaluation of the relay

Adjustments have been made (see 4.2.4);

- Adjusted and supplemented the 100% load assessment requirements (see 4.2.5);
- Added technical requirements for frequency modulation and power regulation (see 4.2.6, 4.2.7);
- Increased the technical requirements for the regulation of isolated networks (see 4.2.8);
- Modified the volume requirement for available oil for pressure tanks/accumulators (see 4.4.2);
- Modified the standby pump starting conditions (see 4.4.5, 4.4.10);
- Increased the division of pressure levels (see 4.4.12);
- Increased the indicator requirements for the start interval of the oil pump motor (see 4.4.14);
- Removed the terms of the through-flow governor (see 4.6.7 of the 2007 edition);
- Increased the technical requirements of the impact turbine governing system and the turbine governing system with pressure regulating valve control (see 4.3.10, 4.3.11);
- Increase the technical requirements of the two-way tubular tidal unit speed control system (see 4.3.13);
- Increased the indicator requirements for the positional drift of the servomotor under manual conditions (see 4.3.19);
- Increased the requirements for the oil pressure drift of the speed control system (see 4.3.20);
- Adjusted and supplemented the technical requirements of the governor and hydraulic unit/component modules (see 4.5).

This section uses the redrafting method in accordance with IEC 61362.2012 "Guidelines for the specification of turbine control systems", with IEC 61362.2012

The degree of consistency is non-equivalent.

This part was proposed by China Electrical Equipment Industry Association.

This part is under the jurisdiction of the National Turbine Standardization Technical Committee (SAC/TC175).

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1 Scope

This part of GB/T 9652 specifies the working conditions, technical requirements, scope of supply and spare parts, drawings and drawings of the turbine governing system.

Information, nameplate, packaging, transportation and storage, warranty period, etc.

This section applies to the design, manufacture and acceptance of the turbine governing system (including the pump turbine governing system).

2 Normative references

The following documents are indispensable for the application of this document. For dated references, only dated versions apply to this article.

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

GB/T 150.1 Pressure vessels - Part 1. General requirements

GB/T 150.2 Pressure Vessels Part 2. Materials

GB/T 150.3 Pressure Vessels Part 3. Design

GB/T 150.4 Pressure vessels - Part 4. Manufacture, inspection and acceptance

GB/T 191 packaging storage and transportation icon

GB/T 3047.1 Basic size series of panels, shelves and cabinets with a height of 20mm

GB/T 3797 electrical control equipment

GB/T 4588.1 Non-metallized hole single-sided printing board sub-specification

GB/T 4588.2 Metallized hole single-sided printing plate sub-specification

GB/T 8564 Hydrogenerator Set Installation Technical Specifications

GB/T 10886 three screw pump

GB 11120-2011 Turbine oil

GB/T 11805 Hydrogenerator set automation components (devices) and their systems basic technical conditions

GB/T 14039-2002 Hydraulic transmission oil solid particle pollution level code

GB/T 17626.4 Electromagnetic compatibility test and measurement technology Electrical fast transient burst immunity test

GB/T 20663 energy storage pressure vessel

GB/T 25133 hydraulic system assembly pipeline flushing method

Technical guidelines for grid-connected operation of DL/T 1245 turbine regulating system

JB/T 4711 Pressure Vessel Coating and Transport Packaging

JB/T 7036 hydraulic isolation accumulator technical conditions

JB/T 7041 hydraulic gear pump

JB/T 8091 screw pump test method

3 working conditions

3.1 The maximum stroke of the servomotor is compatible with the full opening of the guide vane. For medium, small and extra small speed controllers, the actual maximum opening of the vanes corresponds to at least

More than 80% of the maximum stroke of the servo. The working capacity selection of the governor and the hydraulic device is suitable.

3.2 Pipe installation, welding, cleaning and inspection shall comply with the provisions of GB/T 8564 and GB/T 25133.