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**Specification for distributed control systems in thermal power  
plants**

火力发电厂分散控制系统技术条件

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### Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009. This standard is proposed by the China Electricity Council. This standard is under the jurisdiction of the National Power Plant Process Monitoring and Information Standardization Technical Committee (SAC/TC376). This standard was drafted by: Xi'an Thermal Power Research Institute Co., Ltd., Huaneng Power International Co., Ltd., Shanghai Xinhua Control Technology Group Technology Co., Ltd. The main drafters of this standard. Xiao Yong, Yang Xinmin, Li Hui, Chen Guangyuan, Chen Feng, Ma Jun, Jia Qiangbang, Wei Xiang, Sun Deliang, Hao Defeng. Thermal power plant decentralized control system technical conditions

### 1 Scope

China's national specification for the distributed control system of a thermal power plant. The DCS is the plant's control system in the general sense: it runs the boiler, the turbine auxiliaries, the feedwater, the fuel and air systems, the ash handling and the emissions control, and it is the screen through which the operators see the plant. Distributed means the processing is spread across controllers positioned near the equipment rather than concentrated in one computer, which is what makes the system survivable - a failure takes out one area rather than the plant. A large unit has tens of thousands of measured points and its control room may have no other instrumentation at all, so the specification has to cover availability and failure behaviour as much as function: what the system does when a controller fails, when a network segment is lost, when power is interrupted, and how it hands control back to the operator when it can no longer act.

This standard specifies the hardware, system software, application functions, data, packaging, storage and acceptance of the distributed control system (DCS) of thermal power plants. Technical requirements for testing. This standard is applicable to the DCS (Distributed Control System) of units with a capacity of 300 MW or more in thermal power plants newly built or expanded or expanded. The DCS of the unit can be implemented by reference.

## 2 Normative references

The following documents are indispensable for the application of this document. For dated references, only dated versions apply to this article. For undated references, the latest version (including all amendments) applies to this document.

GB/T 2421.1 Electrical and Electronic Products Environmental Testing Overview and Guidelines

GB/T 4208 enclosure protection (IP code)

GB/T 8117.2 Turbine Thermal Performance Acceptance Test Procedure Part 2. Method B Steam Turbine Span of Various Types and Capacity Accuracy test

GB/T 10184 Power Station Boiler Performance Test Procedures

GB/T 13384 general technical conditions for mechanical and electrical product packaging

GB/T 17214.1 Industrial process measurement and control device working conditions Part 1. Climatic conditions

GB/T 17626.2 Electromagnetic Compatibility Test and Measurement Technology Electrostatic Discharge Immunity Test

GB/T 17626.3 Electromagnetic compatibility test and measurement technology Radio frequency electromagnetic field radiation immunity test

GB/T 17626.4 Electromagnetic Compatibility Test and Measurement Technology Electrical Fast Transient Burst Immunity Test

GB/T 17626.5 Electromagnetic Compatibility Test and Measurement Technology Surge (Shock) Immunity Test

GB/T 17626.8 Electromagnetic Compatibility Test and Measurement Technology Power Frequency Magnetic Field Immunity Test

GB/T 17626.11 Electromagnetic compatibility test and measurement techniques Voltage dips, short interruptions and voltage variations immunity test

GB 17859 Computer Information System Security Protection Rating Division Guidelines

## 3 Terms and Definitions

The following terms and definitions as defined in GB/T 26863-2011 apply to this document. For ease of use, the following is repeated. Some terms and definitions in GB/T 26863-2011.

3.1 Distributed control system distributed control system; DCS Adopt computer, communication and screen display technology to realize the data collection, control and protection functions of the production process, using communication technology Data

sharing is now a multi-computer monitoring system. Its main features are decentralized functions, centralized operation and display, and data sharing. According to the specific situation

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