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Technical requirements for intelligent thermal power plants

智能火电厂技术要求

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Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part

1. Structure and drafting rules for standardization documents" Drafting. Please note that some of the contents of this document may involve patents. The issuing organization of this document does not assume the responsibility for identifying patents. This document was proposed by the China Electricity Council. This document is under the jurisdiction of the National Power Plant Process Monitoring and Information Standardization Technical Committee (SAC/TC376). This document was drafted by: Rundian Energy Science and Technology Co., Ltd., Xi'an Thermal Engineering Research Institute Co., Ltd., State Grid Zhejiang Electric Power Co., Ltd. Electric Power Research Institute, China Resources Electric Power Technology Research Institute Co., Ltd., Shanghai Minghua Electric Power Technology Co., Ltd., Zhejiang Baimahu Laboratory Co., Ltd., State Power Investment Corporation, North China Electric Power Research Institute Co., Ltd., Huaneng Qinmei Ruijin Power Generation Co., Ltd. Ren Company, Huadian Electric Power Research Institute Co., Ltd., State Energy Group Science and Technology Research Institute Co., Ltd., Huaneng International Power Co., Ltd. Co., Ltd., China Datang Corporation, Nanjing NARI Relay Protection Electric Co., Ltd., China Southern Power Grid Electric Technology Co., Ltd., Shaanxi Yan Changshi Fuxian Power Generation Co., Ltd., Shaanxi Shaanmei Huangling Mining Co., Ltd., State Power Investment Group Inner Mongolia Energy Co., Ltd., State Power Investment The Group's Inner Mongolia Baiyinhua Coal-fired Power Co., Ltd. Mine Mouth Power Generation Branch, Tongliao Power Investment Power Generation Co., Ltd., Zhejiang Zheneng China Coal Zhoushan Coal-fired Power Limited Liability Company, State Grid Hunan Electric Power Co., Ltd. Electric Power Research Institute, and Hangzhou

Yineng Electric Power Technology Co., Ltd. The main drafters of this document are. Guo Weimin, Zhu Feng, Cai Junyu, Li Jun, Yin Feng, Yao Jun, Hua Zhigang, Gao Haidong, Zhang Guangtao, Liu Lei, Cheng Ming, Yan Xinrong, Cui Qingru, Li Hui, Liu Yucheng, He Sheng, Liang Zhengyu, Gao Lin, Su Ye, Hu Jing, Cai Dan, Zhao Xiaobing, Ma Jiangang, Guan Haiping, Jia Honggang, Xie Zengxiao, Li Hua, Pan Fengping, Gao Xiangzhong, Zhang Jiangfeng, Wang Xihui, Chen Huanle, Wang Lin, and Sun Changsheng. Technical requirements for smart thermal power plants

1 Scope

China's national technical requirements for intelligent thermal power plants. The idea is more consequential in China than the phrase suggests, because the role of coal generation is changing there faster than anywhere else. A fleet built to run at constant output is now required to follow the load left over after wind and solar have generated - which means starting, stopping, and operating at low load far more often than it was designed for, with all the thermal cycling and efficiency loss that implies. An intelligent plant is one instrumented and controlled well enough to do that without destroying itself: predicting the ramp it will be asked for, optimising combustion continuously rather than at a design point, monitoring the components that thermal cycling damages, and scheduling maintenance from condition rather than from hours. The requirements have to describe that capability in terms a specification can reference.

This document provides the main features, key attributes, and architecture of smart thermal power plants, and specifies the smart devices and equipment, smart platforms, and smart The technical requirements for intelligent platforms and intelligent applications, as well as the technical routes and evaluation conditions adopted by thermal power plants in the intelligent construction, etc. This document is applicable to the planning, design, construction and evaluation of smart thermal power plants.

2 Normative references

The contents of the following documents constitute the essential clauses of this document through normative references in this document. For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies to This document.

GB 11291 (all parts) Robots and robotic equipment Safety requirements for industrial robots

GB 13223 Emission Standard of Air Pollutants from Thermal Power Plants

GB/T 15969 (all parts) Programmable controllers

GB/T 20273 Information security technology - Security technical requirements for database

management systems

GB/T 22239 Information security technology - Basic requirements for network security level protection

GB/T 22240 Information security technology - Guidelines for cybersecurity graded protection

GB/T 26863 Terminology for thermal power station monitoring systems

GB 33863 (all parts) OPC Unified Architecture

GB/T 33905 (all parts) Intelligent Sensors

GB/T 34068 Internet of Things Overall Technology Intelligent Sensor Interface Specification

GB/T 34982 Basic Requirements for Cloud Computing Data Centers

GB/T 35278 Information security technology - Technical requirements for mobile terminal security protection

GB/T 36293-2018 Technical requirements for distributed control systems of thermal power plants