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

NB/T 11512-2024

Code for chimney design of fossil-fired power plant

火力发电厂烟囱设计规范

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Foreword

This document was issued on 24 May 2024 by the National Energy Administration of the PRC and takes effect on 24 November 2024.

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 27.100, Chinese classification P 60.

This standard was prepared in accordance with the requirements of the Notice of the General Department of the National Energy Administration on issuing the 2019 plan for the formulation and revision of industry standards in the energy field and the plan for the translation and publication of English versions, document Guo Neng Zong Tong Ke Ji [2019] No. 58. The drafting group carried out extensive engineering investigation and special research, summarised the practical experience of chimney design in fossil-fired power plants, referred to the relevant standards in China and abroad, and prepared this standard on the basis of thorough analysis, research, discussion and wide consultation.

The main technical content of this standard is: general provisions; terms; basic requirements; chimney type selection and anticorrosion scheme; actions and combinations of actions; single tube chimneys; single liner and multi-liner chimneys; steel chimneys; chimney foundations; chimney ancillary facilities; and chimney renovation.

This standard is administered by the National Energy Administration, was proposed by the Electric Power Planning and Engineering Institute, and is under the routine administration of the Power Generation Design Standardization Committee of the Energy Industry. The Electric Power Planning and Engineering Institute Co., Ltd. and China Power Engineering Consulting Group Northwest Electric Power Design Institute Co., Ltd. are responsible for the interpretation of the specific technical content.

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1 Scope

NB/T 11512-2024 is the Chinese code for designing the chimney of a fossil-fired power plant, and for renovating an existing one. It exists because flue gas desulphurisation changed the chimney from a hot dry structure into a cold wet one, and in doing so turned a solved problem back into an unsolved one. A chimney built for 130 degree gas kept its own flue above the acid dew point and stayed dry; a chimney fed by a wet scrubber discharges saturated gas at 50 degrees carrying sulphuric acid mist, so the inside surface runs wet with acid for the whole of a fifty-year design life. That is why the code classifies chimneys as dry, humid or wet by the humidity and temperature of the gas they carry, and why the choice of type and of anticorrosion scheme comes before any structural calculation. The document covers every part of the problem in turn: the basic requirements, including the

fifty-year design working life and the rule that any chimney of 200 m or more, or serving a unit of 300 MW or more, is safety grade one; the selection of chimney type and the anticorrosion measures; the actions and their combinations, with separate treatment of wind load, earthquake action, thermal action, gas pressure, platform live load and dust load, ice load and construction load; then the three structural families - the single tube chimney, the single liner and multi-liner chimney, and the steel chimney, self-supporting or framed - each with its shell design and its construction measures, and for the liner types the brick, steel and fibre reinforced plastic options, the internal platforms and the flue frame. It continues with the subgrade and foundation design, the ancillary facilities that make a chimney operable and legal - lightning protection and earthing, aviation obstruction lighting and markings, internal lighting, the environmental monitoring platforms, the collection and discharge of flue gas condensate, the rain cover over the liner and the lift - and closes with the renovation of existing chimneys of each type. Two appendices give the calculation of cross-wind vibration of the shell, which is what governs a tall slender chimney, and the reinforcement calculation for openings in the shell. It was issued on 24 May 2024 by the National Energy Administration and took effect on 24 November 2024.

1.0.1 This standard is formulated in order to implement the construction policy of safety, reliability, economy and applicability in the construction of new chimneys and in the renovation of existing chimneys in fossil-fired power plants, and to control the engineering cost reasonably.

1.0.2 This standard applies to the design of newly built chimneys and to the renovation design of existing chimneys in fossil-fired power plants.

1.0.3 This standard does not apply to brick chimneys.

1.0.4 In addition to complying with this standard, the design of chimneys in fossil-fired power plants shall also comply with the provisions of the relevant current national standards.

2 Terms

2.0.1 chimney

A tall structure used to discharge the flue gas of a boiler.

2.0.2 dry chimney

A chimney discharging flue gas whose relative humidity is not higher than 60 percent and whose temperature is not lower than 90 degrees Celsius.

2.0.3 humid chimney

A chimney discharging flue gas whose relative humidity is higher than 60 percent and whose temperature is not lower than 60 degrees Celsius and not higher than 90 degrees