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NB

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

NB/T 10216-2019

**Code for design, manufacture and erection of steel tubular
tower of wind turbine**

风电机组钢塔筒设计制造安装规范

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Foreword

This document was issued on 4 June 2019 by the National Energy Administration of the PRC and takes effect on 1 October 2019.

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 27.180, Chinese classification P 61.

This code has been formulated by the drafting group in accordance with the requirements of the Notice of the National Energy Administration on Issuing the First Batch of the 2009 Plan for the Formulation and Revision of Industry Standards in the Energy Field (Guo Neng Ke Ji [2009] No. 163), on the basis of extensive investigation and research, careful summarization of engineering practice and wide solicitation of opinions.

The main technical contents of this code are: design of the tubular tower, manufacture of the tubular tower, and erection of the tubular tower.

This code is under the administration of the National Energy Administration. The General Institute of Hydropower and Water Resources Planning and Design proposed this code and is responsible for its routine administration.

The Sub-Technical Committee on Wind Farm Construction and Erection of the Wind Power Standardization Technical Committee of the Energy Industry is responsible for the interpretation of the specific technical contents of this code.

Comments and suggestions arising during the implementation of this code should be sent to the General Institute of Hydropower and Water Resources Planning and Design (address: No. 2 Liupukang Beixiaojie, Xicheng District, Beijing; postal code 100120).

Chief development organization of this code: PowerChina Northwest Engineering Corporation Limited.

Participating development organizations of this code: Xinjiang Goldwind Science and Technology Co., Ltd.; Sinohydro Bureau 4 Co., Ltd.; Northwest Water Resources and Hydropower Engineering Co., Ltd.

Chief drafters of this code: Fang Hanmei, Li Gang, Zhu Zengbing, Shen Kuanyu, Liao Yongping, Zhang Ziping, Zhu Qiannian, Zhou Caigui, Wang Dandi, Zhao Dahai, Zhao Qingjing, Zhao Chunlong, Xing Yifang, Zou Jinchun, Zhang Yangyong, Wang Haifeng, Tan Daji, Luo Tao.

Chief reviewers of this code: Chang Zuowei, Wang Yi, Lin Chaohui, Jiang Bo, Yu Jialin, Zhou Ena, Gao Pengfei, Fan Xiaoping, Sun Guangxi, Wang Bin, Chen Guibin, Wang Miao, Cao Guangqi, Zou Hanbing, Xu Chunhua, Zou Zhenzhong, Zhou Lufei, Xia Lian, Chen Zhigang, Chen Dongya, Ji Hao, Liu Wei, Chen Junling, Lu Yuankang, Zhang Yanjiang, Song Qiming, Xiong Dengyu, Li Shisheng.

Issuing Announcement and Catalogue Entry

Announcement of the National Energy Administration, 2019 No. 4.

The National Energy Administration has approved 297 industry standards, including the Code for Electrical Design of Photovoltaic Power Projects, of which 105 are energy standards (NB), 168 are electric power standards (DL) and 24 are petrochemical standards (NB/SH); these standards are hereby issued.

Attachment: Catalogue of Industry Standards. National Energy Administration, 4 June 2019.

Catalogue of Industry Standards, serial number 89: standard number NB/T 10216-2019; standard title Code for Design, Manufacture and Erection of Steel Tubular Tower of Wind Turbine; superseded standard: none stated; adopted standard number: none stated; date of approval 2019-06-04; date of implementation 2019-10-01.

1 Scope

NB/T 10216-2019 covers the steel tubular tower of a wind turbine across its whole life, from design through manufacture to erection on site. The tower is the component that carries the nacelle and rotor a hundred metres into the air and takes the full thrust and fatigue loading of the machine for twenty-five years, and the code treats it accordingly. It begins with general provisions and defined terms, then sets the design basis: the load cases derived from the turbine and the site, including operating, extreme wind, fault and transport conditions, the combination of loads, and the fatigue spectrum. Structural design follows - shell thickness and buckling, the ring flanges and their bolted connections with the preload and fatigue checks that govern them, door openings and their reinforcement, welded seams and their classification, internal platforms, ladders and cable supports, and the corrosion protection system inside and out. Manufacture is covered in its own right: plate rolling and its tolerances, longitudinal and circumferential welding with the procedure and welder qualification, dimensional tolerances of each section and of the assembled tower, non-destructive examination and its acceptance levels, and surface preparation and coating. Erection closes the document, with transport and storage, lifting and bolting, the

tightening sequence and torque control, alignment, and the inspection performed before the tower is handed over. It applies to onshore wind turbine towers in China.

1.0.1 This code is formulated in order to standardize the design, manufacture and erection of steel tubular towers of wind turbines.

1.0.2 This code is applicable to the design, manufacture and erection of steel tubular towers of horizontal-axis wind turbines.

1.0.3 In addition to complying with this code, the design, manufacture and erection of steel tubular towers of wind turbines shall also comply with the provisions of the relevant current national standards.

2 Terms

2.0.1 tubular tower.

The tubular load-bearing structure between the nacelle of the wind turbine and the foundation, including the tower shell and the accessories.

2.0.2 segment of tubular tower.

The portion of the tower shell between two adjacent circumferential welds of the tubular tower.

2.0.3 section of tubular tower.

The portion of the tower shell between two adjacent connecting flanges of a single length of tubular tower.

2.0.4 vortex-induced vibration.

The horizontal vibration of the tubular tower occurring perpendicular to the wind direction when the vortices induced by the wind are shed alternately from opposite sides of the tubular tower and the shedding frequency is close to the natural frequency of the structure.

3.1 Design of Tubular Tower - General Requirements

3.1.1 The design of the tubular tower shall satisfy the requirements of advanced technology, reliable operation, economic rationality and convenient maintenance.

3.1.2 The design service life of the tubular tower of an onshore wind turbine shall not be less than 20 years, and the design service life of the tubular tower of an offshore wind turbine shall not be less than 25 years; in both cases it shall not be less than the design service life of the wind turbine.

3.1.3 The following data shall be collected for the design of the tubular tower:

1 The operating conditions and the environmental conditions of the wind turbine.