

ICS 27.180

NB

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

NB 31089-2016

**Code for design of fire protection for wind farms
(English Translation)**

Issued on: January 7, 2016

Implemented on: June 1, 2016

Issued by: National Energy Administration

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1 General provisions

1.0.1 To prevent wind farm fire hazards, reduce fire hazards, protect personal

1 General provisions

1.0.1

To prevent wind farm fire hazards, reduce fire hazards, protect personal and property safety, this Code is hereby formulated.

1.0.2 This Code applies to the newly-built, re-built, expanded onshore wind

farms.

1.0.3 The firefighting design of wind farm shall follow the relevant current state and industrial policies, take into account the specific conditions of the project, from the overall situation, take all factors into consideration, actively adopt new technologies, new processes, new materials and new equipment, to ensure safety and application, advanced technology, economical rationality.

1.0.4 The firefighting design of wind farm shall be based on the principle of "prevention coming first, combination of prevention and elimination, based on self-rescue". On the basis of strengthening fire monitoring and alarm, it shall consider as a whole the firefighting

measures of the critical fire prevention locations such as the wind turbine generator's nacelle and tower, unit transformer, power cable, main transformer, power distribution device room, central control room, relay protection room, DC disk room, battery compartment, file room, all kinds of warehouses in the wind farm.

1.0.5 In addition to complying with this Code, the firefighting design of wind farm shall also comply with the requirements of relevant national standards.

2.0.1 Production building

In the step-up substation, the process equipment room to finish the power supply and distribution as well as power substation functions.

2.0.2 Office and life building

In the step-up substation, a building that serves the operation and management of wind farms.

2.0.3 Wind turbine generator

A device consisting of wind turbine blades, nacelles, towers and control systems that continuously convert wind energy into electrical energy.

2.0.4 Nacelle

A closed space enclosed by a nacelle cover supported by a tower. It contains such components as spindle assembly, lubrication and cooling system, gearbox, brake system, coupling, generator, hoist, wind vane, anemometer, yaw bearing, yaw drive, cabin base, lighting system, transmission cable, control cabinet, etc.

3 Wind turbine generators and unit transformers

3.0.1

The use of materials shall meet the following requirements.

3.0.3

The configuration of the unit transformer shall comply with the following provisions.

3.0.4

The cable between the wind turbine generators and the transformer unit as well as the cable inside the wind turbine generators shall use flame-retardant cable. The hole through which the cable passes is sealed by the non-combustible material which has a fire endurance of not less than 1.00 h.

4 Transmission line

4.0.1

The overhead lines in the wind farm shall not cross warehouse areas where flammable and explosive dangerous goods are stored.

4.0.2

The power cable shall not be laid in the same pipe trench with the pipes which deliver category A, B and C liquid, inflammable gas pipe, thermal pipes.

5.1 Building fire fighting

I Fire hazard classification and fire resistance of building (structure)

5.1.1

The fire hazard classification and fire resistance rating of the building (structure) in the step-up substation shall comply with the provisions of Table 5.1.1.

5.1.7

The fire spacing of each building (structure) and equipment in the step-up substation shall not be less than that specified in Table 5.1.7.

5.1.15

The design of evacuation stairs for buildings in the step-up substation shall comply with the following requirements.

5.1.26

For other general room, ceilings and wall shall use the decoration materials of not lower than Grade B1; the floor and partition shall use the decoration materials of not lower than grade B2.

V Fire lane

5.1.27 Fire lanes shall be provided in the step-up substation. When the fire

hazard of the building in the step-up substation is category C, and the floor space of the building exceeds 3000 m², or the voltage level of the step-up substation is 220 kV and above, the fire lanes in the substation should be arranged in a loop. When it is difficult to form a loop and it is arranged into the end-type lane, it shall provide the turnaround or return lane. The area of the turnaround shall not be less than 12 m x 12 m. When used for large fire engines, it should not be less than 18 m x 18 m.

5.2 Fire water supply

I General provisions

5.2.1

When designing the step-up substation, the fire water supply system and fire protection facilities shall be designed. If the building in the step-up substation meets the requirements that the fire resistance rating is not less than grade II, the volume does not exceed 3000 m³, the fire hazard is category E, it may not provide fire water supply. However, it should provide the fire hose reel or light fire hose.

5.2.2

The design of the fire water supply system of the step-up substation shall comply with the current national standard "Code of design on building fire protection and prevention" GB 50016 and "Code of design on fire protection water supply and hydrant systems" GB 50974.

5.5.12 The alarm area and detection area shall be divided according to the following principles.

5.5.13 The design of automatic fire alarm and fire linkage system shall meet the following requirements.

5.5.15 The setting of the point-type fire detector at the step-up substation shall meet the following requirements.

5.5.20 The exhaust fan's control and linkage shall meet the following requirements.

5.5.23 The openings through which the gas-insulated tubular conductor, common-box busbar, insulated busbar of the gas-insulated metal-enclosed switch (GIS) pass shall be sealed by the fireproof sealing materials.

5.5.24 Pipe ditches and openings between the electrical equipment rooms and external part shall be sealed by fireproof sealing materials.

5.5.25 The battery room shall be equipped with explosion-proof lamps and ventilation motors. The indoor lighting cables shall be laid in a concealed manner by passing through casings. The switches and sockets shall not be installed indoors.

ENERGY INDUSTRY STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA ICS 27.180 P 61 Registration number. J2181-2016 P NB 31089-2016 Code for design of fire protection for wind farms Issued on. JANUARY 07, 2016 Implemented on. JUNE 01, 2016 Issued by. National Energy Administration ENERGY INDUSTRY STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA Code for design of fire protection for wind farms Main drafting organization. General Institute of Hydropower and Water Resource Planning and Design Approved by. National Energy Administration Date of implementation. June 01, 2016