NATIONAL STANDARD
OF THE PEOPLE'S REPUBLIC OF CHINA
中华人民共和国国家标准

Code for Seismic Design of Electric Power Installations

电力设施抗震设计规范

GB 50260-96

Edited by: Ministry of Electric Power Industry of the People's Republic of China

Approved by: Ministry of Construction of the People's Republic of China

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Preface

This book is the English translation of "Code for Seismic Design of Electric Power Installations" GB 50260-96. It is the official translation of the original in Chinese for general use as examined and approved by the Ministry of Electric Power Industry and the Ministry of Construction of the People's Republic of China.

In the event of any deviation arising, the original code in Chinese is to be evidence.

Electric Power Planning and Engineering General Institute, MEP

MINISTRY OF CONSTRUCTION, P.R.C

September 2, 1996

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On the Publication of the National Standard "Code for Seismic Design of Electric Power Installations"

According to the requirements of Document (1984) JZ No. 305 of the State Planning Commission, the "Code for Seismic Design of Electric Power Installations" has been edited by the Ministry of Electric Power Industry together with related departments, and has been jointly examined by the related departments. It is now approved that the "Code for Seismic Design of Electric Power Installations" GB 50260-96 is a forcibly executed national standard, to be enforced from March 1, 1997

Administration of this standard will be responsible by the Ministry of Electric Power Industry, specific explanation work will be responsible by the North-west Electric Power Design Institute of MEP, and publication work is to be responsible and organized by Department of Standards and Norms of the Ministry of Construction.

Contents

Key Notations

Actions and action effects

F_{EK} — Standard values of overall horizontal seismic actions on structure;

G_{eq} — Representative value of total equivalent gravitational load on structure (equipment);

S — Seismic action effect (bending moment, axial force, shear force, stress and deformation), or fundamental combination of the seismic action effect and the other load effect;

M — Bending moment;

N — Axial force.

Resisting forces and material properties

R — Structural part bearing capacity design value of structure (equipment);

K — Structural part stiffness of structure (equipment);

σ_{tot} — Total stress value produced by seismic action and the other load effect;

σ_y — Destructive stress value of equipment or material.

Geometric parameters

H_o — Gravitational center height of electrical equipment system;

I_c — Cross-sectional moment of inertia;

d_c — External diameter of porcelain bushing vulcanized section;

h_c — Vulcanized height of porcelain bushing and flange;

t_c — Clearance distance between flange and porcelain bushing.

Coefficients for calculation

ξ — Structure coefficient;

γ_{RE} — Seismic resistant adjusting coefficient for bearing capacity;

X_{ji} — Relative horizontal displacement of mass i of mode j in the γ direction;

α — Horizontal seismic effect coefficient;

α_{max} — Maximum value of horizontal seismic effect coefficient;

μ — Site index;

μ_g — Contribution coefficient of average shear modulus to site index;

μ_d — Contribution coefficient o thickness of covered soil layers to site index.

Others

a — Horizontal unit time acceleration value of ground surface movement;

T — System (structure) natural vibration period;

ω — System (structure) natural circular frequency rate.

1. General regulations

1.0.1 This Code is prepared for the purpose of carrying out the policy of giving priority to the prevention of earthquake disasters in the project design of electric power installations, so that the electric power installations after taking seismic resistant measures, damage will be mitigated, and loss of life and economic losses will be minimized.

1.0.2 This Code is applicable to seismic resistant design of new project or extension project of the following electric power installations in regions of seismic fortification intensity of VI to IX:

1. Electric power installations of fossil power plant with unit capacity of 12 MW to 600 MW;

2. Related electrical appliances of hydropower station with unit capacity of 10 MW and above;

3. Electric power installations of 110 kV to 500 kV voltage substations;

4. Poles and towers of 110 kV to 500 kV voltage transmission lines, and their foundations;

5. Microwave towers of electric communication, and their foundations.

Note: 1. "Electric power installations" in this Code include: Buildings, structures and electrical appliances of fossil power plants, electric substations, transmission lines, as will as related electrical appliances of hydropower stations; but not including chimney, cooling tower, ordinary pipe lines and their supports.

2. "Electrical appliances" in this Code include: electrical equipment, electrical assemblies and connecting conductors, etc. The related "electrical appliances" of hydropower stations include the electrical appliances installed inside and above the main dam.

1.0.3 Electric power installations designed according to this Code, will not be damaged when subjected to the influence of earthquakes with an intensity equal to or less than the fortification intensity, and the installations may continue to be serviceable. When the electric power installations are subjected to the influence of expected rarely occurred earthquake higher than the fortification intensity of the

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