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

DL/T 646-2012

**Manufacturing technical requirements for steel tubular
structures of substation and transmission line
(English Translation)**

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Table of Contents

Foreword...	3
1 Scope...	5
2 Normative references...	5
3 Terms and definitions, symbols...	7
4 General provisions...	9
5 Product classifications...	9
6 Materials...	9
7 Parts processing...	11
8 Welding...	16
9 Weldment assembly...	25
10 Correction...	27
11 Test assembly...	27
12 Hot-dip galvanizing and hot spray zinc coating...	29
13 Inspection...	30
14 Packaging, marking, storage and transportation...	36
Annex A...	37
Annex B...	39
Annex C...	41
Annex D...	42

Foreword

This Standard is a revision of DL/T 646-2006 Manufacturing Technical Requirements for Steel Tubular Structures of Substation and Transmission Line, according to National Energy Administration's Notification on Plan of Formulating/Revising 2010 Initial Energy Industries Standards (GNKJ (2010) No.320) (Plan No.. Energy 20100214), which is to standardize the production of steel pole, steel tubular tower and steel tubular structures of substation and transmission line, and promote the application of new materials, processes and technologies.

This Standard replaces DL/T 646-2006 Manufacturing Technical Requirements for Steel

Tubular Structures of Substation and Transmission Line. Compared with DL/T 646-646, the main changes are as follows.

- Sufficiently consider the characteristics of high pressure steel tubular structure products, processing technology and welding requirements of high strength steel materials;
- Various domestic enterprises have accumulated rich experiences in steel tubular structure manufacturing and testing through their years of practices. The mature parts are accepted by the present revision.
- Have adjusted, increased and decreased some of items and tolerances;
- Have increased quality requirements of flange;
- Have modified the inspection rules.

This Standard was modified according to GB/T 1.1 Directives for standardization - Part 1. the Structure and Drafting of Standards.

This Standard was proposed by and shall be under jurisdiction of China Electricity Council.

Drafting organizations of this Standard. Power Industry Power Equipment and Transmission Material Inspection Test Center, Weifang Chang'an Steel Tower Co., Ltd., Zhejiang Shengda Steel Tower Co., Ltd., Fujian YongFu Project Consultant Co., Ltd., Qingdao Wuxiao [Group] Share Co., Ltd., Anhui Hongyuan Steel Tower Co., Ltd., Changshu Fengfan Power Equipment Co., Ltd., Yunnan Power Line Material Factory, Qingdao Huijintong Electric Power Equipment Co., Ltd. AND Guangdong Electric Power Line Equipment Factory.

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The previous versions replaced by this Standard are. DL/T646-1998, DL/T 646-2006.

Manufacturing technical requirements for steel tubular structures of substation and transmission line

1 Scope

This Standard specifies the requirements for materials, process, inspection, packaging, marking, storage, transportation and so on during manufacturing steel pole, steel tubular tower and steel tubular structures of substation-and-transmission line.

This Standard applies to steel tubular structures of substation-and-transmission line, whose components mainly adopt polygonal and circular steel tubes and antiseptic treatment by hot-dip-galvanized or hot-zinc-spray (zinc alloy) coatings. Other similar steel tubular structure may reference to this Standard.

2 Normative references

The articles contained in the following documents have become part of this Standard when they are quoted herein. For the dated documents so quoted, all the modifications (including all corrections) or revisions made thereafter shall be applicable to this Standard.

GB/T 41 Hexagon nuts, type 1 (GB/T 41-2000, ISO 4034.1999, IDT)

GB/T 95 Plain washers - Product grade C (GB/T 95-2002, ISO 7091.2000, IDT)

GB/T 470 Zinc ingots (GB/T 470-2008, ISO 752.2004, MOD)

GB/T 699 Quality carbon structural steels

GB/T 700 Carbon structural steels (GB/T 700-2006, ISO 630.1995, NEQ)

GB/T 702 Hot-rolled steel bars - Dimensions, shape, weight and tolerances (GB/T 702-2008, ISO 1035-1~4.1980, MOD)

GB/T 706 Hot rolled section steel

GB/T 709 Dimension shape weight and tolerances for hot-rolled steel plates and sheets (GB/T 709-2006, ISO 7452.2002, ISO 16160.2000, NEQ)

GB/T 805 Tight nuts

GB/T 985.1 Recommended joint preparation for gas welding manual metal arc welding gas-shield arc welding and beam welding (GB/T 985.1-2008, ISO 9692-1.2003, MOD)

GB/T 985.2 Recommended joint preparation for submerged arc welding (GB/T 985.2-2008, ISO 9692-2.1998, MOD)

GB/T 1591 High strength low alloy structural steels

GB/T 2694 Specification of manufacturing for transmission line tower

GB/T 2828.1 Sampling procedures for inspection by attributes - Part 1. Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection (GB/T 2828.1-2003, ISO 2859-1.1999, IDT)

GB/T 2829 Sampling procedures and tables for periodic inspection by attributes (Apply to inspection of process stability)

GB/T 3091 Welded steel pipes for low pressure liquid delivery (GB/T 3091-2008, ISO 559.1991, NEQ)

GB/T 3098.1 Mechanical properties of fasteners - Bolts, screws and studs (GB/T 3098.1-2010, ISO 898-1.2009, MOD)

GB/T 3098.2 Mechanical properties of fasteners - Nuts - Coarse thread (GB/T 3098.2-2000, ISO 898-2.1992, IDT)

GB/T 3323 Radiographic examination of fusion welded joints in metallic materials

GB/T 5117 Carbon steel covered electrodes

GB/T 5118 Low alloy steel covered electrodes

GB/T 5267.3 Fasteners - Hot dip galvanized coatings (GB/T 5267.3-2008, ISO 10684.2004, IDT)

GB/T 5293 Carbon steel electrodes and fluxes for submerged arc welding

GB/T 5780 Hexagon head bolts-Product grade C (GB/T 5780-2000, ISO 4016.1999, IDT)

GB/T 8110 Welding electrodes and rods for gas shielding arc welding of carbon and low alloy steel

GB/T 8162 Seamless steel tubes for structural purposes

GB/T 9793 Metallic and other inorganic coatings - Thermal spraying-Zinc, aluminium and their alloys (GB/T 9793-1997, ISO 2063.1991, IDT)

GB/T 10045 Carbon steel flux cored electrodes for arc welding

GB/T 11345 Method for manual ultrasonic testing and classification of testing results for ferritic steel welds