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Electric Industry Standard of the People's Republic of China

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火力发电厂汽水管道应力计算技术规程

Technical code for stress calculating of steam/water piping in fossil fuel power plant

Issued on 17- 12 – 2006 Implemented on 01 – 05 – 2007

By National Development and Reform Commission of the People's Republic of China

Contents

Foreword

This Standard is formulated in accordance with the requirement of *Circular on printing and distribution of industrial standards in 2006 by the Office of National Development and Reform Commission* (File No. FGBGY [2006] 1093)

The Appendix A and Appendix C of this Standard are normative appendixes; Appendix B is and informative appendix.

From the effective date of this Standard, the original *Technical code for stress calculating of steam/water piping in fossil fuel power plant* No. SDGJ 6 – 1990 issued by former Ministry of Electric Power shall be abolished

This Standard is proposed by China Electricity Council.

This Standard is governed and construed by the National Standardization Technology Committee for Electric Power Planning and Design in Electric Power Industry of China.

Drafting unit of this Standard: East China Electric Power Design Institute

Main drafters of this Standard: Gu Jin and Shen Qinfeng.

1. Scope

This Standard has stipulated the basic technical requirements for calculations on the stress of steam /water piping in fossil fuel power plant.

This Standard is applicable to the stress calculation for steam /water piping in newly-built, expanded or reconstructed fossil fuel power plant, as well as to the stress calculation for steam /water piping made of low carbon steel, low alloy steel and high chrome steel.

The stress calculation for the piping with oil or gas as medium and the stress calculation for non-nuclear level piping can implement this Standard as a reference.

2. Normative References

The provisions contained in the following standards have become the provisions of this Standard when they are cited herein. All the dated documents and all the modification lista made thereafter (excluding corrections) or the revised versions thereof shall not be applicable to this Standard, but all the parties who have concluded agreement based on this Standard are encouraged to study the possibility to use the latest edition of these documents. All the undated documents shall be applicable to this Standard.

DL/T 5054 Technical regulations for design of steam/water piping in fossil fuel power plant

SY/T5037 Spiral submerged arc-welded steel pipe for pipelines for low pressure fluid service

ASME B31.1 – 2004 Power piping

3. General

The major work for pipe stress calculation shall be the checking calculations on the primary stress of pipes produced under the actions of internal pressure, dead weight and other external loads and the secondary stress produced by thermal expansion, shrinkage and displacement binding; it shall determine and calculate the safety , economy and rationality of pipes, as well as the thrust and moment from pipes to equipment, which should be kept within the safe range for equipment to withstand.

The thermal expansion stress of pipes shall be checked according to the stress range in both hot and cold states. The thrust and moment from pipes to equipment shall be checked according to the maximum values possible to have under cold state and working state respectively.

Proper cold tightening can reduce the initial stress of piping in hot state and piping-to-end hot-state thrust, and also reduce the local overstrain of piping system. The cold tightening is not connected with the stress range to be checked.

When it is to carry out analysis on the flexibility of piping system, it may assume that the whole piping system is a elastic body.

Refer to Appendix A for the units and the meanings of symbols used in this Code.

4. Allowable Stress for Steels

The allowable stress for steels shall be the minimum value taken from the following three items according to the relevant strength properties of steels:

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