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Technical requirements for the heat treatment of vacuum low pressure carburizing and high pressure gas quenching

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Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009. This standard was proposed and managed by the National Heat Treatment Standardization Technical Committee (SAC/TC75). Drafting organizations of this standard. Beijing Mechanical and Electrical Research Institute Co., Ltd., Changzhou New District Hehai Heat Treatment Engineering Co., Ltd., Jiangsu Fengdong Thermal Technology Co., Ltd., Beijing Huahai Zhongyi Energy Saving Technology Co., Ltd., Hunan Dingli Technology Co., Ltd., Zhejiang Shuanghuan Transmission Machinery Co., Ltd. Company, Xi'an Flat Heat Treatment Co., Ltd. The main drafters of this standard. Cong Peiwu, Xu Yueming, Yin Heping, Li Qiao, Xiang Jianhua, Hu Dongbiao, Ma Weidong, Niu Wanbin, Yang Hongfei. Technical requirements for vacuum low pressure carburizing and high pressure gas quenching heat treatment

1 Scope

China's national technical requirements for vacuum low pressure carburizing with high pressure gas quenching. Carburizing hardens the surface of a steel part by diffusing carbon into it, and the conventional process does that in an atmosphere furnace and quenches into oil. The vacuum process does it at low pressure with acetylene or propane admitted in pulses, and quenches with nitrogen or helium at high pressure instead of oil, and the advantages are substantial. There is no oxygen in the furnace, so the intergranular oxidation that weakens the surface of atmosphere-carburized parts does not occur. The gas quench is gentler and more uniform than oil, so distortion is much reduced - which for a gear means less grinding afterwards, and sometimes none. And there is no quench oil to burn, wash off or dispose of. It is the process by which precision transmission gears are

now made, and its requirements are exacting because the gas flow determines the case depth uniformity.

This standard specifies a vacuum low-pressure carburizing and high-pressure gas quenching heat treatment device with a dual-chamber structure and a high-pressure gas quenching absolute pressure of 2 MPa. Equipment, and its technical requirements for technological process, quality control and inspection, safety and health, and environmental protection. This standard applies to the heat treatment of steel parts using acetylene, propane and other hydrocarbon-based gases as carburizing media for vacuum low pressure carburizing and high pressure gas quenching Craft.

2 Normative references

The following documents are indispensable for the application of this document. For dated reference documents, only the dated version applies to this document. For undated references, the latest version (including all amendments) applies to this document.

GB/T 150.1 Pressure Vessel Part

3 Design

GB/T 150.4 Pressure Vessel Part

4 Indirect resistance furnace

GB/T 13324 Terminology for heat treatment equipment

GB 15735 Safety and hygiene requirements for metal heat treatment production process

GB/T 22561 Vacuum heat treatment

GB/T 25744 Steel carburizing quenching and tempering metallographic inspection

GB/T 30822 Environmental protection technical requirements for heat treatment

GB/T 32541 heat treatment quality control system