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

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**Technical code for retrofitting of heating system on energy
efficiency**

供热系统节能改造技术规范

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1 General Provisions

1.0.1 The code was drawn up in order to carry through the national laws, regulations and policies on saving energy and protecting the environment, to regulate the energy saving retrofitting of existing heating systems and to achieve energy saving and emission reduction.

1.0.2 The code applies to the energy saving retrofitting projects of existing heating systems.

1.0.3 A heating system comprises the heat source, the heating station, the heating network and the heating system inside the building. The heat source of a heating system may be the first station of a cogeneration power plant, a district boiler plant or another form of heat source.

1.0.4 The energy saving retrofitting of a heating system shall comprise the energy efficiency survey of the heating system, the energy efficiency assessment of the heating system, the energy saving retrofitting of the heating system and the evaluation of the effect after the retrofitting.

1.0.5 An energy saving retrofitting project of a heating system should be carried out on the heating system of one heat source or of one heating station.

1.0.6 Besides complying with this code, an energy saving retrofitting project of a heating system shall also comply with the provisions of the relevant current national standards.

2 Terms

2.0.1 heating centralized monitor and control system: a system made up of the monitoring centre, the field controllers, the sensors, the actuators and the communication system, able to collect automatically the heating parameters of the heat source, the network, the heating stations and the users, to monitor them remotely and to adjust them automatically, with the aim of keeping the heating system running economically and safely.

2.0.2 boiler plant centralized monitor and control system: a system that achieves fully automatic optimised operation of the boiler, built on the control system of the boiler itself.

2.0.3 outdoor reset control system: a system that adjusts the heat supply automatically according to the outdoor weather conditions and the indoor temperature.

2.0.4 zone control system: a control system that manages the heating parameters of a building automatically and independently, by zone and by time period, according to the heating demand of the building and the pattern of heat use.

2.0.5 heat recovery by flue gas condensation: a device installed in the boiler flue that recovers the sensible heat of the flue gas and the condensation heat of the latent heat of vaporisation.

2.0.6 load rate of boiler: the ratio of the actual operating thermal power of the boiler to its rated thermal power.

2.0.7 energy saving ratio: the ratio of the energy consumption reduced per unit heated building area after the energy saving retrofitting to the energy consumption per unit heated building area before it.

2.0.8 heat transfer efficiency of heating network: the ratio of the total heat output of the heating network to the total heat input of the heating network.

2.0.9 multi-source heating system: a district heating system with two or more heat sources.

2.0.10 primary heating network: in a heating system provided with heating stations, the heating network running from the heat source to the heating station.

2.0.11 secondary heating network: in a heating system provided with heating stations, the heating network running from the heating station to the buildings.

2.0.12 the first station in cogeneration power plant: a heat exchange station made up of the base heaters, the peak heaters and the circulating pumps of the primary heating network and the like, which takes the cogeneration power plant as its heat source and exchanges heat using the steam extracted or exhausted by the heat supply turbine.

2.0.13 ratio of make-up water: the percentage of the daily make-up water during the heating period to the water capacity of the heating system.

2.0.14 pressure insulation station: in a multi-stage heating network, a heating station made up of water to water heat exchangers, circulating pumps and the like, which insulates and lowers the pressure of the heat medium and separates completely the hydraulic conditions of the heating networks on the two sides of the heat exchange equipment.

3 Heating System Survey on Energy Efficiency

3.1.1 Before a heating system is retrofitted for energy saving, an energy efficiency survey and an assessment of the heating system shall be carried out. The survey work shall include the collection and the examination of the relevant technical documents, and the on

site survey of the configuration of the heating system, of its operating condition and of the energy efficiency testing.

3.1.2 The energy efficiency testing of the several parameters of the heating system shall be carried out after the heating system has reached stable operation and with the load rate of a single heat source unit above 50 %. The several indexes shall be tested within the same period, and the duration of the testing shall not be less than 48 h.

3.1.3 The methods for the energy efficiency testing of a heating system shall comply with the relevant provisions of the current national standards Thermal performance test code for industrial boilers GB/T 10180, Technical code for inspection and testing of heating ventilation and air conditioning works JGJ/T 260, Standard for energy efficiency test of residential buildings JGJ/T 132 and Standard for energy efficiency test of public buildings JGJ/T 177. The reference list is printed in Chinese; the English wording renders those Chinese titles.

3.1.4 The instruments used in the energy efficiency testing of a heating system shall hold a verification certificate or a calibration certificate issued by a statutory metrology body, and shall be within its period of validity.

3.1.5 The heating operation records collected in the energy efficiency survey shall be the actual operating records of the last one to two years.

3.2.1 For the energy efficiency survey of the first station of a cogeneration power plant, the following documents shall be collected and examined: 1 the as built drawings, the design drawings and the technical documents and product data of the relevant equipment; 2 the heating area served, the heated floor area, the design heating parameters, the design heating load of the district and the design heating load of the first station; 3 the names of the heating stations connected to it, the types of heat using units, the time at which they were put into operation and the number of heating days; 4 the operating regulation mode and the dispatching arrangements of the multi-source system; 5 the heat supplied, the electricity supplied, the steam consumed, the water consumed and the electricity consumed during the heating period; the list continues beyond the last page available for this record.