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Analysis on the theoretical feasibility of bio-gas and radiant heating mode in rural residence

JIN Jun-jie, TANG Zhong-hua, SI Guo-ying, et al
(School of Civil Engineering and Architecture, Southwest University of Science and Technology, Mianyang 621010, China)

Abstract: The feasibility of adopting bio-gas and radiant floor heating was proposed. Taking a typical rural residence in Zhengzhou City for example, the study through theoretical analysis and calculation showed that compared to the household air condition heating, such a heating mode is an economic way and efficient in energy conservation and environment protection, and elaborated the theoretical feasibility of putting into use such a heat supply mode in the future.

Key words: biogas; household air condition; radiant floor heating; economical efficiency

Retaining structure determination of wall heat transfer analysis and economic insulating layer thickness

BAO Sheng-chang, QING Shan, JIN Jiang, et al
(Community Management Center of PetroChina Company Limited Qinghai Branch, Dunhuang 736200, China)

Abstract: Retaining structure wall heat transfer theory is analysised, the heat transfer differential equation is established, and the palisade structure wall thermal insulation layer thickness of economic calculation method is proposed. On retaining wall structure by thermal insulation engineering after the example analysis and calculation, to prove its energy saving effect is remarkable. The proposed thermal insulation layer thickness of economic calculation method has higher precision, the external wall thermal insulation structure optimization has important reference function.

Key words: retaining wall; heat transfer analysis; economic thickness of the insulation layer; energy saving

Preliminary analysis of the solar floor heating system

PAN Xue-zhu, ZHAO Lei
(Municipal and environmental engineering institute of shenyang architecture university, Shenyang 100168, China)

Abstract: Comparing the solar floor heating with conventional radiator heating, the efficiency of the solar collector is higher under the condition of the lower working medium temperature, and the floor heating system's requirement for water temperature is lower, the solar floor heating system is designed and its working principle and system form is discribed. By setting up physical model and mathematical model of two different heating means, we simulate and compare the temperature field distribution in different rooms, and know that the thermal comfort and indoor temperature of solar floor heating system are higher and more stability, and it has the advantage of energy conservation.

Key words: solar energy; floor heating; simulation and calculation

Solid seal type permanent magnet vacuum circuit breaker application in the field of coal mine

SHAO Ming-jie, ZHANG Wan-ze, YANG Hua-song, et al
(Shenyang Research Institute of Coal Technology Engineering Group Corp, Fushun 113122, China)

Abstract: At present our country coal mine safety production form better, but with increasing intensity of coal mining, depth, put forward higher requirements on coal mine safety production. Coal mining flame-proof vacuum circuit breaker as the main equipment of power system under mine, its performance is good or not can directly related to the power grid safe operation. Based on coal power system environment, in view of the permanent magnet temperature rise of the enclosed type vacuum circuit breaker structure, characteristics and problem solution are introduced, and the solid sealing type permanent magnet vacuum circuit breaker application prospect in the field of coal mine was discussed.

Key words: permanent magnet mechanism; enclosed type; vacuum circuit breaker; coal mine

Discussion on the measures for safe operation of gas burner

LIU Hong-xing, WANG Ming-ting, LIU Jing-xin, et al
(Tangshan Institute of Special Equipment Inspection, Tangshan 063000, China)

Abstract: With the improvement of national requirements for energy saving and environmental protection, gas burners were widely used in industry or related areas. The safe of gas burners operation has become particularly important. This paper based on the gas burner operation and inspection experience, through the simulation analysis of six cases of burner flame, summarizes the safety precautions in the operation process of gas burner, the measures which can provide reference for safety inspection and operation of gas burner.

Key words: gas burner; numerical simulation; safe in operation; safety precautions

Study on the problem of operating the oil-to-oil heat exchanger and the effect onthe energy-saving

SUN Fa-feng, WU Hai-chen, FAN Hua-ping, et al
(Petrochina Oil & Gas Control Center of Beijing, Beijing 100007, China)

Abstract: Based on the original heat system, the oil-to-oil heat exchangers are added to the first stations of the western crude oil pipeline to save energy and emission reduction. Some problems were met during the process in operation, for instance, whether the condition of starting a pump is satisfied and the rising freezing point of the crude under transporting caused by the higher freezing point crude remained in the oil-to-oil heat exchanger. Solutions were provided at last. We also study on the effects after the oil-to-oil heat exchanger being operated. Such as the effects on the freezing point of the outlet oil caused by the temperature decrease speed after shutting down or the temperature increase speed after starting up and the effect of energy-saving when the heating furnace is being used. The result of using the oil-to-oil heat exchanger indicates lower temperature decrease speed after shutting down, little change of temperature. The effect of energy-saving is significant. It remains more spare heaters. It is more helpful for operating in winter.

Key words: oil-to-oil heat exchanger; kerosene heat exchanger; abnormal operation; solutions; advantage and disa; dvantageenergy-saving

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