

层燃锅炉第九代实用节能技术



——混煤分层一体机、混煤器

图2、在链条锅炉上的应用

图3、在往复炉排锅炉上的应用

1. 适用所有带煤仓的各类层燃锅炉，包括正转链条锅炉及往复炉排锅炉，是解决炉排上两侧块多中部面多、尾部断火线不齐整(呈燕尾状)的神器。
2. “混煤分层一体机”(专利号2017200703449)兼有混煤器及分层燃烧装置的全部功能，新建设锅炉改以前分别采购混煤器、分层燃烧装置两台设备为现今只采购一台，一次性投资大大减少。
3. “混煤分层一体机”(见图1)特别适用原分层燃烧装置使用年限较久、技术落后、损坏严重、节煤效果不明显等急需更换新分层燃烧装置的锅炉。
4. “混煤器”(见图2、图3)特别适用原分层燃烧装置使用年限较短、分层效果尚可但炉排两侧块多中部面多的锅炉；
5. “混煤分层一体机”及“混煤器”都非常适用煤仓内经常发生燃煤严重粘结和棚堵的锅炉。
6. 选用“混煤分层一体机”之后，可节煤5%~20%。如果锅炉在80%以上负荷连续、稳定运行，投资回收期最多不超过100天，60t/h以上锅炉不超过50天。(详情请见本刊第62页文章)

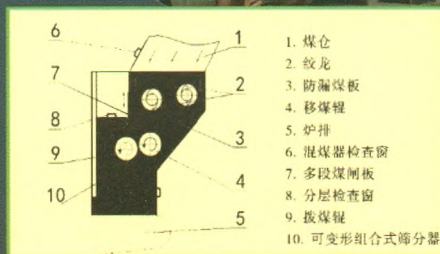


图1、混煤分层一体机结构示意图

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一直被模仿 从未被超越

沈阳市建功能源技术研究所

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yang City, Liaoning Province, China**Post Code:** 110168**CONTENTS**

Feb. 2017 Vol. 36, No. 2 Total Issue No. 413

Review on study application of wind-solar hybrid power systemWANG Kan-hong, LI Xi-zhen, YANG Zhen
(Hebei University of Engineering, Handan 056000, China)**Abstract:** The purpose of this paper is to review two aspects: on the one hand, it is introduced the main structure and working principle of wind-solar hybrid power system; on the other hand, in recent years, the research and application are reviewed at home and abroad, that is, from the theoretical conception of the technology, practical application, gradually mature and widely used. The development potential of wind-solar hybrid power system, which is the darling of the electric age, is unlimited.**Key words:** wind-solar hybrid power system; renewable energy; wind energy; solar energy

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Application of micro encapsulation in organic reversible thermo-induced discolorationYANG Xiao-wei, WANG Shuang, ZUO Juan, et al
(School of Environment and Chemistry Engineering,
Shenyang Ligong University, Shenyang 110159, China)**Abstract:** This thesis of microcapsule technology in the application of organic reversible cause the color change materials to compare the detailed in this paper. Preparation methods of microcapsule are usually according to the properties, the forming mechanism of cystic wall and into the conditions of the capsule can be divided into physical method, chemical and physical method, chemical method and other three categories, among them with condensed, interfacial polymerization, in situ polymerization is the most widely used. At present technology has microcapsules in medicine, pesticide, chemical industry, commodities anti-counterfeiting, coating, ink, food, textile, advertising, and many other fields is widely used. Microcapsule technology was applied to the preparation of organic reversible heat discoloration materials process, can improve the thermal stability of organic reversible heat discoloration materials and chemical stability, enlarging the application scope of organic reversible cause the color material.**Key words:** colour changing compound; microcapsule; in situ polymerization; thermochromism

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Research progress in denitrification for low carbon-nitrogen ratio wastewater by adding external carbon sourcesFANG Yuan-hang
(Shenyang Jianzhu University, Shenyang 110168, China)**Abstract:** According to the low efficiency of denitrification in low carbon-nitrogen ratio wastewater, this paper detailed described external

carbon sources including small organic molecules; larger organic molecules; natural materials cellulose-based; artificial polymer materials and new materials; and discussed the advantages and disadvantages of each external carbon sources.

Key words: Low C/N; external carbon sources; biological nitrogen removal; denitrification

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A simulation study of ground source heat pump air conditioning systemZHANG Bo-xuan, DI Yu-hui, YIN Hui
(College of Environmental and Chemical Engineering
Xi'an Polytechnic University, Xi'an 710048, China)**Abstract:** In order to study the temperature rise of underground soil after a long period of operation with the ground source heat pump air conditioning system, which take measures to balance the heat exchange or not, this paper makes a simulation study of ground source heat pump air conditioning system to a building in Xi'an. Two system models was established based on the TRNSYS software, one model is consistent with the air conditioning system of the project, which using the measure of preparing domestic hot water in the whole year to balance heat exchange, another model did not take measures to balance the heat exchange. Through whole year and ten years' simulation run, the system with thermal equilibrium measures, whose soil temperature around the ground heat exchanger rose 0.12°C and 1.14°C; the system without thermal equilibrium measures, whose soil temperature around the ground heat exchanger rose 0.64°C and 3.46°C, this system has a greater impact on the soil than the system without thermal equilibrium measures.**Key words:** ground source heat pump; TRNSYS; thermal equilibrium; temperature rise

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Research on suitability evaluation of shallow geothermal energy of major cities in Guanzhong basinZHOU Yang, MU Gen-xu, LIU Jian-qiang, et al
(Shaanxi Geological Survey Center, Xi'an 710068, China)**Abstract:** Shallow geothermal energy that has many advantages of non-polluting, renewable, widely distributed, energy is an advanced technology and it has broad prospects for development and utilization. According factors of regional engineering geological conditions, environmental geological conditions and hydro geological conditions and, We have established zoning suitability evaluation system of groundwater heat pumps and ground heat pump, and then get a comprehensive evaluation of the suitability district of shallow geothermal energy in every cities. Based on the results of the suitability assessment, Evaluate of the main city of shallow geothermal energy resources, including heat capacity calculation, heat power calculation and thermal potential is calculated. in order to Increase with the theories of the development and utilization of shallow ground temperature can survey and evaluation effectively, Lay the foundation of exploitation and utilization of shallow ground temperature. This method is designed to provide a scientific basis and support for the development and utilization of guanzhong basin of shallow geothermal energy, It has a very important significance to build a resource-saving and environment-friendly society, protect national energy security, improve our existing energy structure, promote the realization of the goal of national energy strategy.**Key words:** the guanzhong basin; shallow; geothermal energy; occurrence; rule

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Energy saving strategy about fresh air supply of process air conditioning system for cigarette making

WANG Shou-qiang, GAO Xian-jun

(Golden Leaf Production Center Henan Tobacco Co. Ltd., Zhengzhou 450000, China)

Abstract: By analysis the cooling load of cigarette production workshop, in addition factual dates, which collected by energy management system about process air conditioning, show that cigarette workshop need cooling throughout most of the year. Theoretical analysis and calculation indicates, central air-conditioning energy consumption there is a huge difference, compared with three cooling methods; fresh air, cold water and atomized water humidification. With adjusting the opening of fresh air valve, air-conditioning energy consumption has significant change. Therefore, process air conditioning for cigarette making should stick to energy-saving operation strategy that meet the minimum new atmosphere requirements, which can primly guide economical operation of constant temperature and humidity process air conditioning north area of Yangtse River.

Key words: cigarette making; process air conditioning; fresh air supply; energy-saving

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Energy saving design and study on shipboard air-conditioning system

LIU En-hai, JIANG Yuan-yuan, PAN Jia-xin, et al

(School of Energy and Environment, Zhongyuan University of Technology, Zhengzhou 450007, China)

Abstract: Combining with heating, ventilation and air-conditioning design norms (GB50736-2012), it describes the design of 16500t shipboard air-conditioning system for a ship in Zhejiang Province, and puts forward the design scheme of using refrigeration compressor and winter auxiliary steam heating and humidifying device in summer. The design technical parameters of the air-conditioning system and the calculation of load, equipment selection, air volume calculation and duct system design and so on. The results show that the rational selection of shipboard air-conditioning system is very important to realize the system energy saving and reduce the thermal environment, which is very important to the environmental protection of ships running in various parts of the world, the requirements of ship navigation to air-conditioning system operation and the optimization design of the air-conditioning system, the adjustment movement and so on has certain reference value.

Key words: shipbuilding industry; air-conditioning system; design; energy consumption

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Research on reducing the power consumption of induced draft fan in a 660MW thermal power plants

GUAN Xiao-guang, CHENG Hao-ming

(Dandong Jinshan thermal power Co. Ltd., Dandong 118011, China)

Abstract: Through a systematic analysis of the cause for the large power consumption of induced draft fan, it found the main impact factors of the induced draft fan power consumption from two aspects of personnel and operation factors to analysis the causes. Then formulate particular measures, at the same time, collected data and analysis. For the quantitative analysis of power consumption influence factors of induced draft fan can check effect analysis. Through the reasonable adjustment of operation mode, arrangement of steam blowing, controlling SCR inlet well and air preheater outlet smoke temperature, without new equipment investment and costs, on the premise of guarantee the safety and stability, dramatically improve the safe and economic performance of generating units, has obtained the remarkable effect.

Key words: induced draft fan; energy consumption; energy saving

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Pollutant emission control technology research of Tangshan firing coal utility boilers

QI Xue-jing, LIU Jing-xin, LIU Dan-yang, et al

(Tangshan Institute of Special Equipment Inspection, Tangshan 063000, China)

Abstract: China is the largest country in the coal consumption in the world, coal caused by environmental pollution is very serious, especially, SO₂ and NO_x in coal-fired flue gas dust and smoke dust to atmosphere has become a problem that not allow to ignore. Through the analysis of the summary of pollutant emission control technology of tangshan firing coal utility boilers, Pollution control technology have different characteristics, So, for enterprises to choose more environmental and economical of power plant boiler emissions control technology to provide the reference basis.

Key words: utility boiler; pollutant emission; control technology

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The effective utilization of hot waste water in the oil fields with absorption heat pump

ZHANG Xing, CHEN Yang-yang, YAN Han, et al

(China University of Petroleum Energy and Power Engineering, Qingdao 266000, China)

Abstract: In order to utilize hot waste water associated with the oil well reasonably, the absorption heat pump is applied into oil fields in order to recycle the heat in this paper. In this paper, the hot waste water in oil fields acts as the driving force of absorption heat pump and factors that affect COP of absorption pump are discussed by programming with Matlab software. By applying pinch analysis into the research of absorption heat pump, the optimization suggestions about fluid's heat exchange within the heat pump system can be drawn to improve the work efficiency of heat pump and its environmental benefits.

Key words: absorption heat pump; design calculation; pinch analysis; the heat network optimization

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Analysis of heat-pipe property under condition of room temperature

ZHAO Tian-yu, TENG Hai-peng, ZHAO Yang, et al

(Institute for Energy Transmission Technology & Application, School of Chemical Eng., Northwest University, Xi'an 710069, China)

Abstract: The heat exchanger with heat pipe as the heat transfer element is a new type of heat transfer elements with high heat transfer efficiency, compact structure, small loss of fluid, and good controlling property of dew point corrosion. With the advancement of science and technology, the application range of heat pipe has been extended from temperature control for spacecraft to various other fields of industrial technology. In this paper, the heat pipe heat transfer principle is applied to the heat transfer of wind energy heating technology. The purpose of the heat pipe is to explore the possibility of application of heat pipe technology in wind energy heat transfer, so as to obtain basic data of heat transfer for wind energy induced heat, and provide the fundamental for the practical application. The thermal conductivity of the heat pipe at different water storage capacities was detected and analyzed by experiments. The data were comparatively analyzed, thereafter the heat transfer of the heat pipe was analyzed, and the heat transfer laws of heat pipes were obtained. The experimental results show that the thermal conductivity of the heat pipe increases with the increase of the storage capacity, and the relationship is non-linear. This is of great significance to the practical application of heat pipe technology in the thermal energy transfer of wind energy.

Key words: heat pipe; heat transfer; thermal conductivity; water storage capacity

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● 密闭式冷凝水回收技术

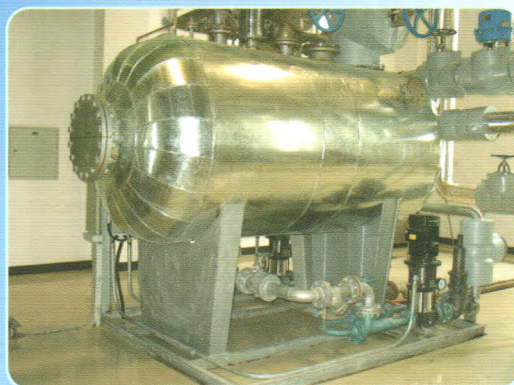
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