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ISSN1004-7948

CN21-1115/TK

6

2013

ENERGY CONSERVATION

第 32 卷 第 06 期 (总第 369 期)

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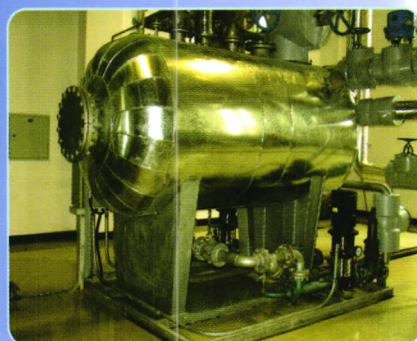
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ISSN 1004-7948



9 771004 794004

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E-mail: xcd8489@163.com

节能 (月刊)

Jieneng

中国核心期刊(遴选)数据库全文收录期刊
中国学术期刊综合评价数据库(CAJCED)统计源期刊
中国期刊全文数据库(CJFD)全文收录期刊
中文科技期刊数据库全文收录期刊
1981年创刊 第32卷第6期(总第369期)
2013年6月15日出版

主管:辽宁省科学技术厅

主办:辽宁省科学技术情报研究所
辽宁省能源研究会

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出版:《节能》杂志社 邮编:110181

地址:沈阳市高新技术产业开发区浑南二路8号

网址:www.china-energy-conservation.com

印刷:沈阳中科印刷有限责任公司

订阅:全国各地邮政局

国内发行:辽宁省邮政公司报刊发行公司

国外发行:中国国际图书贸易总公司

邮发代号:8-150 国外:M5170

刊号:ISSN1004-7948
CN21-1115/TK

广告经营许可证号:2101001500026

开户名:辽宁省科学技术情报研究所

开户行:中国建设银行沈阳建行鲁美支行

账号:21001383908052504526

定价:每期10.00元 全年120.00元

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Energy Conservation (Monthly)**Sponsor:** Liaoning Provincial Institute of Science and Technology Information**Publisher:** Energy Conservation Magazine Publishing House**Chief Editor:** JIN Na**Address:** No. 8, Hunnan 2 Road, Shenyang high-tech industrial development zone, Shenyang City, Liaoning Province, China**Post Code:** 110181**CONTENTS**

Jun. 2013 Vol. 32, No. 6 Total Issue No. 369

Present situation and countermeasure analysis on energy conservation in China

LI Huo-yin, WANG Ya-bo

(China College of Chemical Engineering and Energy of Zhengzhou University, Zhengzhou 450001, China)

Abstract: Based on the analysis of effect on energy conservation and the investigation of several enterprises in certain industries in China during the period of "11th Five-Year Plan", this paper carried on the thorough analysis and research on the present situation of energy utilization in China and concluded that unreasonable energy consumption structure, low efficiency of energy utilization and serious energy waste phenomenon are three problems on our country's energy conservation. Combination of the more severe energy conservation tasks and goals during the "twelfth five-year", we can put forward a series of energy saving measures. Such as adjust energy structure, strengthen scientific energy-using, improve and promote energy management system, improve energy-saving consciousness and form long-term energy conservation mechanism and so on. All of these has important practical significance to improve China's energy situation and the smooth completion of the "twelfth five-year" goals, at the same time, they can provide important guarantee for China's economic sustainable and healthy development.

Key words: energy efficiency; distributed energy; energy-saving technology; energy management system

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The research of low-carbon energy utilization for plateau town Yangbajing

YANG Yang

(China Academy of Urban Planning & Design, Beijing 100037, China)

Abstract: The lagging status quo of energy utilization of plateau town Yangbajing not only reduces the energy efficiency, but also impacts the fragile ecological environment of the plateau town seriously. Based on the analysis of the natural ecological conditions, energy utilization status and low-carbon energy inherent conditions of Yangbajing, through the research of the utilization patterns of low-carbon energy, this paper raises the suitable utilization patterns of low-carbon energy for plateau town Yangbajing ultimately.

Key words: ecology; low-carbon; energy; plateau

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Generat electric technology discussion about waste heat of large refrigeration equipment

LI Fu-jun, MA Yuan-qing, LI Bao-lai, et al

(Fenxi Heavy Industry Co. Ltd., Taiyuan 030027, China)

Abstract: Focuses on how to transform waste heat of large refrigeration equipment into electric energy, it discussed about energy-saving and emission-reduction, put forward the project of waste heat reclaim power generation system and operational principle, expound the key technology and main equipment. The purpose is to promote the development of China's energy-saving and environmental protection.

Key words: waste heat power generation technology; collet and transform device; asynchronous alternator; system integration and control.

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The wind for heat flow meter test impact analysis of the test

ZHAO Qi-cheng

(College of Environment & Chemical Engineering, Dalian University, Dalian 116622, China)

Abstract: Thermal resistance type heat flow meter in the field test, the wind had a great influence on accuracy of heat flow meter test, field measurement and laboratory test studies confirm this. When the heat flow meter probe paste on the surface under test, destroyed the original convection heat exchange with the environment, which may effect the precision of heat flow meter test, from the perspective of influence coefficient of heat convection and wind, the wind on thermal resistance are analyzed type heat flow meter test accuracy, the influence of and the horizontal wind swept through theoretical analysis and experimental study on the circular tube as an example, the wind effects on the heat flow meter test curve are obtained.

Key words: heat flux meter; the wind; the test error

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Design of the calculation software of industrial boilers energy efficiency based on Matlab

TU Xuan-yi, WANG Wei, XIAO Qiu-ju

(Wuhan Nari Limited Liability Company Of State Grid Electric Power Research Institute, Wuhan 430074, China)

Abstract: The use of Matlab language development of thermal calculation software for industrial boiler based on Windows, introduces the characteristics of calculation software Matlab language development of industrial boiler thermal, expounds the ways of solve the problem of key technology.

Key words: industrial boiler; Matlab; positive balance; counter balancing method; energy efficiency

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Off-design performance analysis of 660MW HAILLER indirect air-cooled system

YANG Li-ming

(Baoji No.2 Power Generation Co. Ltd., Baoji 721405, China)

Abstract: HAILLER indirect air-cooled system has the property of saving water and high thermo-economic. Take a 660MW supercritical coal-fired unit with HAILLER indirect air-cooled system as an example, the calculation of heat transfer coefficient was simplified, and the off-design model was also built. The main influence parameters for thermo-economics were analyzed. The results show that condenser pressure increases with enhance of environment temperature and condenser heat load. Condenser pressure is logarithmically increased with the decrease of wind speed. The paper provides a theoretical basis for improving the performance of HAILLER indirect air-cooled system.

Key words: indirect air-cooled system; off-design; condenser; performance

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320MW unit reconstruction scheme of induced draft fan with booster fan

ZHAO Guan-yong

(Shenwan Anqing Power Generation Co. Ltd., Anqing 246000, China)

Abstract: This article briefly describes the merge and reconstruction scheme of Induced Draft Fan with Booster Fan in 2X300 MW Unit in Shenwan Anqing Power Plant. It discusses the selection of the induced draft fan and the influence of the merger to the boiler. It also analyzes the measures taken, fully guarantee the safety of the unit. It proves that the scheme of the combination and reconstruction of 300 MW Unit is feasible and safe.

Key words: induced draft fan; FGD booster fan; bypass

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The research of how capacity optimization of electrically driven feed pumps influences the power saving of air cooling units

LI Xiao-long
(Guangdong Electric Power Design Institute,
Guangzhou 510663, China)

Abstract: According to the analysis of the operating characteristics of the air-cooling unit, in terms of the engineering construction of 2 × 300MW subcritical direct air-cooling unit, it's better to configure 3 × 50% of the capacity of the electric feed water pump. To optimize the capacity of the pump electric, each unit is proposed to match 3 electric feed water pump of 50% TRL capacity. Compared with optioning 3 electric feed water pump of 50% BMCR capacity in accordance with the provisions, it can reduce the power consumption of 6.54 × 106 kWh per year. The saving effect is remarkable.

Key words: electric feed water pumps; TRL conditions; thermal-hydraulic coupling

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Electric water pump operation mode optimization

YANG Jing-tao, LV Guo-dong
(China Power Investment Group Corp Ningxia Qingtongxia
Energy Aluminum Co. Ltd., Yinchuan 750002, China)

Abstract: A considerable amount of plant for the 350 MW supercritical unit 2 pump operation mode of electricity, the output test pump different working parameters, the optimization scheme of low load stage single pump operation. Operation proves: single pump operation mode can meet the demand of safe operation of unit 73% the following load, reduce plant energy consumption effect is obvious, has the important meaning and economic operation of thermal power plant.

Key words: power plant; electrically driven feed pump; operation optimization; low power consumption

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Assessment method of coal saving benefit with boiler flue gas waste heat utilization

WANG Jin-wang, ZHANG Yan, ZHANG Jian-zhong
(Shanghai Chengxin Construction Energy Conservation
Technology Co. Ltd., Shanghai 201103, China)

Abstract: Coal-fired power plants in technology-improving of energy saving with boiler flue gas waste heat utilization, saved coal amount is the key for economy of energy saving system technology scheme. Magnitude order of saved coal amount is smaller, about 0 ~ 1.5% of coal consumption. In the evaluation of energy saving system technology and economy, Practical and scientific assessment method of coal saving benefit was needed to calculate saved coal amount. Heat balance analysis method has higher reliability in assessment method of coal saving benefit with boiler flue gas waste heat utilization because of its mature thermal engineering theory or credible manufacturer's heat balance diagram.

Key words: waste heat utilization; technology-improving of energy saving; saved coal amount; assessment method; positive balance; heat balance

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The experimental study on capillary radiant heating system using solar energy

WANG Yue, ZHANG Zhi-gang
(Tianjin Institute of Urban Construction,
Tianjin 300384, China)

Abstract: The capillary radiant heating system using solar energy was presented and analyzed the thermal environment changes in the experimental room. The test shows that the temperature of capillary wall rose faster and the average temperature of experimental room is about 4.5 degrees higher than the non-heating room. Per unit area of capillary heating power can meet the average heating load after stopping solar collector system. At the same time, the experimental room has a better thermal comfort index PMV and the temperature meet the requirement of design. The experimental results provide a reference for the feasibility of this system in the low energy building of Tianjin.

Key words: solar; capillary; radiant heating; experimental study

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An energy-saving demonstration project energy saving calculation and economy analysis

YANG Jing-wen
(Nanjing Communications Institute of Technology,
Nanjing 211188, China)

Abstract: The paper describes specific examples of projects in the Urban Groundwater-water heat pump used in residential and public buildings, introduces the main contents of the project demonstration, technical features and main equipment, and the projects and two contrast scheme for energy saving calculation, a detailed technical economic analysis and according to the project and conventional energy at project investment, the incremental cost and payback period.

Key words: groundwater-water heat pump; energy conservation demonstration; energy saving calculation; economic analysis

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The heating effect analysis of solar air collector heating system

LI Jia, LIU Zhi-qiang, WANG Lei-lei, et al
(Himin solar Co. Ltd, Dezhou 253000, China)

Abstract: Through heating system test and test result analysis for the solar air collector, Thus has carried on the analysis of of heating effect and economic benefit about solar air collector heating system. The system has the advantages of without antifreeze, pipeline blocking, and no transferring heat. But also have problems about the terminal wind and control switch, etc. So this article will also define the problems which appear in the system testing and be paid attention to system designing.

Key words: solar air collector; energy analysis; economic benefit analysis

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Causes and countermeasures of low energy efficiency of industrial boiler

LI Wei, JIANG De-long
(Yantai clean energy testing center,
Yantai 264001, China)

Abstract: Based on the industrial boiler efficiency test, the thermal efficiency of simple test method for industrial boiler energy efficiency is generally low, carry on the research analysis, advanced energy-saving management and energy-saving technological transformation, can reduce the heat loss, reduce fuel consumption, improve the boiler thermal efficiency, provides important test data for energy saving of industrial boilers.

Key words: energy efficiency test; industrial boiler; energy management

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