

节能

ISSN1004-7948
CN21-1115/TK

2
2013

ENERGY CONSERVATION

第32卷 第02期 (总第365期)



链条锅炉第八代分层燃烧技术——

SFFFG型

三辊式分层分行分段

给煤装置



130t/h单炉排分层分行分段给煤装置

MHJ—8061型智能煤耗计

1. 三辊式结构 (专利号972182721), 湿煤不粘、冻煤不棚、干煤不自流, 任何煤质条件下下煤都均匀流畅。
2. 配“可变形组合式筛分器” (专利号2006200904651), 可根据不同煤质, 在“分层燃烧”与“分行燃烧”之间任意切换, 具备适应煤种变换的能力。
3. 煤闸板根据锅炉吨位按3~12段布置, 可以对局部煤层厚度 (风阻) 做单独调节。
4. 可变形组合式筛分器与多段煤闸板配合应用, 均匀煤层风阻充分燃烧的效果, 完全超越混煤器。不仅一机双能, 尤其价格公允安全可靠。
5. 配MHJ—8061型“智能煤耗计”, 实现单炉、单位时间煤耗量的显示、打印和数据输出。
6. 较普通煤斗相比, 平均节煤5%~10%, 投资回收期50个连续运行日之内; 较早期分层煤斗相比, 平均节煤2%~5%, 投资回收期100个连续运行日之内。

质品如钻 人品似金

沈阳市建功能源技术研究所 沈阳市建功能源环保有限公司

地址: 沈阳市沈河区北站路146号 邮编: 110013 电话: 024—82511155 82511177

http://www.jiangong.com.cn E-mail: jiangong666888@163.com

ISSN 1004-7948



9 7710月分数据004

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2期(总第365期)
2013年2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

主任/主编:金娜

副主任:王建成

责编:佟昕

编辑:高峰 董媛媛 赵博

电话/传真:(024)23933125(编辑部)

(024)23940370(广告部)

电子信箱:jieneng1981@vip.sina.com

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

目次

论坛

- 我国高校能源消耗模型构建与能效策略研究 陈伟,屈利娟(4)
碳排放交易现状及其在中航工业的发展展望 李金芝,王明珠(8)

研究与探讨

- 基于夹点技术的航煤加氢换热网络优化 马欣,朱红,刘兴华,等(12)
部分填充多孔介质通道内流动的格子 Boltzmann 研究 姬翔,陈宝明,刘芳,等(15)
高炉余能余热驱动的内可逆闭式布雷顿热电冷联产装置烟经济性能分析 冯辉君,陈林根,孙丰瑞(18)
油泥-煤混合燃料热解产物的研究 宋翔(25)
喷射制冷系统关键部件的数值分析 张敬亭,张琨,任伟(31)
加装低温省煤器后锅炉尾部90°弯道流场的数值模拟 张燕(34)

电力行业节能

- 高加解列对600MW核电机组经济性的影响及分析 吴洪浩,李豪杰(38)
热电厂低加疏水泵节能改造探讨 李杰,张全(42)
应用因素分析法对降低电厂能耗过程的实例分析 方丽(45)

建筑行业节能

- 绿色建筑中可再生能源利用方案的设计 杨光(48)
现役家用空调改造为空调和热水联供机的设计及运行节能特性分析 邱金友,余晓明(52)

冶金行业节能

- 炼钢电炉余热发电技术的研究与应用 何立波(55)
蒸汽蓄热器在炼钢厂转炉余热发电中的应用 王华锋(58)

热点技术

- 多效蒸馏/闪蒸太阳能海水淡化系统数值模拟 崔夏菁(61)

事故与故障

- 循环流化床锅炉过热器爆管诊断分析 刘景新,刘乃江,赵斌,等(66)
精益六西格玛方法论论证冷水机组节能优化方案 陶冬梅,李毅,秦泽恩,等(70)
某公司变压器节能运行方式的选择实践 路慧丽,宋颖,王志国(75)

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

Feb. 2013 Vol. 32, No. 2 Total Issue No. 365

Construction of energy consumption model and investigation of energy efficiency policy for China universities
 CHEN Wei, QU Li-juan
 (Logistics Department, Zhejiang University, Hangzhou 310058, China)

Abstract: For long time, the overall, objective and authoritative statistical data of energy consumption and efficiency for China University were not obtained due to the inconformity of statistical caliber. A model of energy consumption is constructed in the paper to analyze the current status, developing trend and characteristic of energy utility of China University. With the quantitative analysis employed to investigate the potential of energy saving, the policy of energy efficiency management is presented consequently.

Key words: university; energy consumption model; energy efficiency policy

4

Present status of carbon emission trading and outlook for aviation industry

LI Jin-zhi, WANG Ming-zhu
 (China Aviation Planning and Construction Development Co. Ltd., Beijing 100120, China)

Abstract: Carbon emissions are the general name for greenhouse gas emission. With the worsening of global warming, carbon emissions trading is becoming an important means of mitigating global warming. The origin, basic principles and market mechanism of carbon emissions trading are introduced in this paper. The carbon emissions trading market present status and prospect at home and abroad are analyzed. The outlook of carbon emissions trading in aviation industry is looked forward to.

Key words: carbon emission trading; market mechanism; trading quotas; trading pilot; clean development mechanism

8

Optimization for the heat exchanger network of aviation kerosene hydrofining unit based on pinch technology

MA Xin, ZHU Hong, LIU Xing-hua, et al
 (School Of Mechatronic Engineering, Southwest Petroleum University, Chengdu 610500, China)

Abstract: The pinch temperature difference of a heat exchanger network is unreasonable which can lead to more energy consumption. As a result, it must be considered seriously. This paper aims at the current situation of high energy consumption for a kerosene hydrofining unit. The pinch technology is used to analyse and optimize its heat exchanger network. Some temperature differences are selected according to the actual pinch temperature difference. The total annual cost is calculated for the temperature difference corresponding heat exchanger network. The minimum total annual cost corresponds to pinch temper-

ature difference which is obtained through comparison. Then a new heat exchanger network is generated based on the optimal pinch temperature difference. Finally, it gains good energy conservation effect.
Key words: pinch technology; heat exchanger network; optimization; aviation kerosene hydrofining

12

Exergoeconomic performance analysis for an endoreversible closed Brayton cycle combined cooling, heating and power generation plant driven by residual energy and heat of blast furnace

FENG Hui-jun, CHEN Lin-gen, SUN Feng-rui
 (School of Power Engineering, Naval University of Engineering, Wuhan 430033, China)

Abstract: The exergoeconomic performance for an endoreversible closed Brayton cycle combined cooling, heating and power (CCHP) generation plant with one endoreversible four-heat-reservoir absorption refrigeration cycle driven by residual energy and heat of blast furnace is investigated by finite time thermodynamics. The basic relation between the profit rate and compressor pressure ratio as well as the relation between the exergy efficiency and compressor pressure ratio are derived. The effects of the ratio of power to heat demanded by the heat consumer and the distribution of the total heat rejection quantity between the condenser and the absorber on the profit rate vs. exergy efficiency characteristic are analyzed by numerical examples. Furthermore, the effects of design parameters on the maximum profit rate and the corresponding exergy efficiency are also discussed.

Key words: finite time thermodynamics; brayton cycle; four-heat-reservoir absorption refrigeration cycle; combined cooling; heating and power (CCHP) generation plant; exergoeconomic performance; profit rate; exergy efficiency

18

Analysis of sludge-mixed coal fuel pyrolysis products
 SONG Xiang

(China Sinopec Shengli Oilfield Company, Dongying 257061, China)

Abstract: The technique of chromatographic analysis is used to study pyrolysis products exhalation law of oil sludge and coal mixture. Research shows that pyrolysis products of oil sludge and coal mixture are H_2 , N_2 , CO_2 , CO , CH_4 , C_2H_6 , C_2H_4 , C_3H_8 and C_3H_6 . Inorganic gas productions reach the top at 900°C. Hydrocarbon gas production reaches the top at 650°C. Pyrolysis productions reach maximum when the coal accounts for 40%.

Key words: gas chromatography analysis method; oil sludge mixed with coal; pyrolysis production

25

Numerical investigation of the critical opponent in ejector refrigeration system

ZHANG Jing-ting, ZHANG Kun, REN Wei
 (Shandong Institute of Urban Planning and Design, Jinan 250013, China)

Abstract: In this paper, a mathematical model is established to simulate the flow of a novel-adjustable ejector by FLUENT (CFD). The flow field of adjustable and conventional ejector is compared, and also is that of different spindle positions. It indicates that the velocity at the nozzle exit of adjustable ejector is 3.5% faster than that of conventional ejector, 65.3% more pressure loss, and 47.6% higher in entrainment ratio. The spindle moving into nozzle axially makes pressure lower and the axial velocity 8.9% drop at the nozzle exit.

Key words: ejector; nozzle; adjusting; flow field

31

The flow field numerical simulation of economizer 90 degree curved tail flue of boiler after

ZHANG Yan

(Chengxin Green Integration Co. Ltd., Xiamen 361006, China)

Abstract: In order to solve the layout problem of low-temperature economizer for 300MW units in a power plant, the layout scheme of low-temperature economizer in 90 degree curved tail flue exit of boiler is proposed through analytical site condition, add numerical simulation on gas flow field in 90 degree curved tail flue of boiler is carried out by FLUENT software and the relational structure optimization is achieved in this paper. The studies indicates that vortex is created in 90 degree curved tail flue of boiler, and increase the curve flaring size into a limited space can make the flue gas velocity tend to be uniform in and around curve. Created conditions to arrangement of low-temperature economizer. And it can serve as a reference for the retrofit of the power plants of the same type.

Key words: tail flue; low-temperature economizer; numerical simulation; structure optimization

34

The scheme design of renewable energy application in green building

YANG Guang

(Shanghai Integrity Low Carbon Technology Design Co. Ltd., Shanghai 201103, China)

Abstract: The provision about renewable energy application in evaluation standard for green building is analyzed in the article. Then, the evaluation content and method about renewable application in green building is summarized. The article analyzes the feasibility of the different renewable energy type in the different building type, so as to provide some guidance for renewable energy application scheme selection in green building. The development direction about renewable energy application in green building is put forward at last.

Key words: green building; renewable energy; energy-saving building; solar energy; ground source heat pump

48

Research and application of waste heat power generation technology of steelmaking EAF

HE Li-bo

(Beijing Century Benefits Co. Ltd., Beijing 100036, China)

Abstract: Integrating with the engineering examples in which the saturated steam of steelmaking EAF is used for waste heat power generation, the statistics of exhaust gas waste heat and technical solutions of waste heat power generation systems was introduced. Through the successful application of waste heat power generation technology in steelmaking EAF to open up a new approaches for energy saving and emission reduction of steelmaking EAF, and achieved remarkable economic effect and social effect.

Key words: steelmaking EAF; waste heat power generation; saturated steam

55

Numerical simulation of multi-effect distillation/ flash desalination system powered by solar energy

CUI Xia-jing

(Hebi Automotive Engineering Professional College, Institute of electric vehicle drive and control system, Henan 458000, China)

Abstract: Based on the determined down-flow five effect distillation/flash desalination system powered by solar, the system operation characteristics are analyzed by numerical simulation under the conditions of solar intensity at spring equinox and winter solstice in Guangdong, the optimal operation parameters of the system in different seasons are obtained; the value of the pressure difference between each effect in the solar desalination system in different seasons are obtained at the same time in order to provide a basis for the decision that whether the system can work normally all the year around. The results lay the theoretic foundation for the system operation.

Key words: solar energy; desalination; multi-effect distillation; numerical simulation; maximum pressure difference

61

Analysis of superheater tube burst of CFB boiler

LIU Jing-xin, LIU Nai-jiang, ZHAO Bin, et al

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

Abstract: Boiler tube failure is a kind of technical problems that obsess power production chronically. It has engineering practical significance to research on how to prevent the boiler tube failure. In this paper, first is analysed the faculty's diagnostic method of superheater tube bursting of boiler and take the elbow explosion of the low temperature superheater of 1# CFB boiler in a power plant for example. We make sure that the elbow cracks of superheater dues to the thermal fatigue cracks initiatively by the way of examining the bursting tube's macroscopic examination. Further, the metallographical, chemical composition and stress of the superheater tube elbow is analysed, indicating that the main reason of tube bursting is the material do not accord with the standard, leading mechanical properties decrease, and the superheater tube elbow reduce thin obviously under the flue gas scour. The superheater tube elbow cracking is leded by the combined action of creep strain and bending residual stress finally.

Key words: CFB boiler; superheater; thermal fatigue; material; finite element

66

Study on efficiency improving of chilled water system by lean six sigma

TAO Dong-mei, LI Yi, QIN Ze-en, et al

(Kunming Cellulose Fibers Co. Ltd., Kunming 650224, China)

Abstract: Following Lean Six Sigma Methodology, by Minitab software, the power efficiency improvement space of the chilled water system is demonstrated. Systematically collect process running data, precisely statistic chillers' load efficiency and total chilling load supplied. Calculate the payout period for each option, doing options analysis. Finally provide scientific data for enterprise's project screen and rank which related to power efficiency improvement.

Key words: chilled water system; power efficiency improvement; option study

70

企业名录

* 盘锦环帮节能设备有限公司 * 辽宁省锅炉技术研究所 * 沈阳达源节能环保科技有限公司