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 36 卷第 6 期（总第 417 期）
2017 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
主　任：王　笑
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编　辑：韩倩茜　石　琳　田　源　高　原
编辑部电话：（024）83186050
广告部电话：（024）83186053
传真：（024）83186052
电子信箱：jieneng1981@ vip. sina. com
网址：www. jieneng1981. cn
出版：《节能》杂志社　　**邮编**：110168
地址：沈阳市浑南新区朗月街 2 甲号
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：建设银行沈阳浑南中路支行
账号：21050143560109123456
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: DONG Yuanyuan
Address: Lang Yue Street No. 2A, Hunnan District, Shenyang City, Liaoning Province, China
Post Code: 110168

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Jun. 2017 Vol. 36, No. 6 Total Issue No. 417

Study on the air pollutant emission regulation of the utility boiler outside area variation

WANG Shi-chang
(Energy, Power and Mechanical School, North China Electric Power University, Beijing, 102206)

Abstract: On the basic structure data of 60 utility boilers, this paper calculates the outside area of the utility boilers, including the secondary air duct area, and analysis the heat release, power supply coal consumption and the SO_2, NO_x, Hg and flue gas dust emission regulation caused by the outside area variation. The calculation reveals that, based on the average outside area of the four tangential burner and opposite burner arranged Π type pulverized coal fired boiler, (1) "Back-to-Back" arrangement oil fired boiler reduce the utility boiler outside area, W shape flame, lignite burnt and tower shape PCB increase the the utility boiler outside area, the CFB boilers have the largest outside area, H shape CFBB has the bigger outside area than the M shape CFBB. (2) Larger the outside area, larger the power supply coal consumption increment, CFBB has bigger intensity of the power supply coal consumption increment than PCB. (3) Larger the outside area, greater the air pollutants increment coming from the utility boiler outside area.

Key words: Utility Boiler; Outside Area; Heat Release Increasing; Power Supply Coal Consumption Intensity; Air Pollutants Increment

Effect of chemical water supplement on thermal economy of thermal power plant

WANG Yu-tian, HUANG Zi-hao, WANG Jiong
(Shen Hua Guo Hua(Beijing) gas-fired cogeneration power plant, Beijing, 100018, China)

Abstract: In the actual operation of thermal power plant, the chemical water must be added to the thermodynamic system. There are two common ways of water supply: first, the chemical water enters the system through the condenser; secondly, the chemical water enters the system from the deaerator. In this paper, the effect of two different ways of water supply on the thermal economy of the power plant was analyzed by using the equivalent enthalpy drop method, which is an example of a N25-35 thermal power system. The theoretical calculation results show that the energy efficiency of water from the condenser into the thermal system is better than that from the deaerator into the system, its thermal efficiency was increased by 0.16223%, coal consumption fell by 0.796 g/kW? h, a year can save standard coal 149.25t. The conclusion of this paper has certain guiding significance for the design of power plant thermodynamic system.

Key words: Thermal system; The equivalent enthalpy drop method; Extraction equivalent enthalpy; Thermal economy; Energy saving

Experimental design of air temperature field in high building atrium

WANG Lin, YU Jin, HAN Chao
(School of Municipal and Environmental Engineering, Shenyang Jianzhu University, Shenyang 110168, China)

Abstract: Objective to design an experimental method for measuring the temperature field of the vertical direction of the atrium of public buildings. Methods using the atrium under winter conditions as the experimental object, the temperature change of 1.5 meters in the atrium 24 hours a day was measured. Results the lowest temperature was 7℃, and the temperature was the highest. According to the energy-saving design standard, the winter heating design of the library hall should reach 18℃, and only 5 and 6 levels will appear briefly at about 14:00 in the afternoon, higher than 18℃, reach the standard temperature. Conclusion the trend of temperature in the vertical direction of the atrium in winter is investigated, and the reference scheme is provided for the researchers to measure the winter heating temperature in the atrium.

Key words: tall atrium; winter condition; temperature field; experimental design

The reformative repairment of Boiler Air Preheater and Auxiliary Equipment

ZHANG Yong-wang
(Hebei Steel Xuanhua Steel, Equipment energy division, Xuanhua 075100, China)

Abstract: Through the research and analysis of the leakage and leakage of the air blower and auxiliary equipment of the boiler air preheater and the auxiliary fan, the corresponding solutions are put forward, and the air preheater leakage and induced draft fan and blower are realized. Bearing the purpose of oil spills, boiler operation stability can be improved.

Key words: Air Preheater; Auxiliary Equipment; Reformation

Analysis of defect Inspection and eliminating method for pressure vessel

ZHAI Kun, GAO Ming-fei, DONG Chang-wei, et al
(North China University of Science and Technology, Tangshan 063210, China)

Abstract: The pressure vessel under long time running will appear all sorts of defects in the failure environment. It is required to do a scientific test in order to find the existence of these defects for pressure vessel. A chlorine gas tank was taken as an example to conduct a comprehensive inspection on it. The defects was found and analyzed of existed reason. Solving measures and methods were put forward to eliminate the defects. The results can provide theoretical basis and technical support for a long time, safe and stable operation for pressure vessel.

Key words: pressure vessel; damage model; inspection methods; defect analysis; elimination

Application analysis between diesel generator and natural gas engine in data center

SHEN Jian-feng, MAO Yu-hai, XIANG Bing, et al
(Jiangsu Sunpower Piping Technology Co. Ltd., Nanjing 211112, China)

Abstract: This paper analyzed the differences between diesel generator and gas engine in combination with the load demand and fuel properties of data center. In addition, the feasibility of transfor- mation of diesel generator using natural gas as fuel was discussed.

Key words: data center; diesel generator; natural gas engine