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ISSN1004-7948
CN21-1115/TK

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ENERGY CONSERVATION

第33卷 第04期 (总第379期)



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<http://www.jiangong.com.cn>

E-mail: jiangong666888@163.com

ISSN 1004-7948



04 >

9 771004 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33卷第4期(总第379期)
2014年4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
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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:沈阳市东陵区朗月街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:盛京银行沈阳市火炬支行
账号:070310300100309004254
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: Lang Yue Street No. 2A, Dongling District, Shenyang City, Liaoning Province, China

Post Code: 110168

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Apr. 2014 Vol. 33, No. 4 Total Issue No. 379

Discussion on present research of sludge dewatering technology by mechanical methods

BAI Bing, LI Xian-jin, XU Chang-si, et al
(School of Mechanical Engineering and Automation, Northeastern University, Shenyang 110004, China)

Abstract: Harmless treatment, reduction and recycling of excess sludge were the theme of sludge treatment nowadays. However, the development of sludge treatment technology was restricted by the high moisture content of excess sludge. Introduced several mechanical sludge dewatering methods, including vacuum dewatering technology, pressure filtration dewatering technology, centrifugal dewatering technology and granulation dewatering technology. This study tried to provide a reference for the practical application of mechanical sludge dewatering technology.

Key words: sludge treatment; vacuum dewatering; pressure filtration dewatering; centrifugal dewatering; granulation dewatering

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Economic study on intermittent transportation of low flow rate hot oil pipelines

CHEN Cong-lei, XU Xiao-xuan, KANG Ze-tao
(Research Institute of Petroleum exploration and Development of China Petroleum Chemical Co, Beijing 100083, China)

Abstract: With oilfield entering latter period of developing and oil production decrease, more and more hot oil pipelines run at low flow rate. This condition caused great waste of energy and increased security risks. Power consumption and fuel costs models were established on normal and opposite direction transportation and intermittent transportation of low flow rate hot oil pipelines. Then economic results were contrasted on the same flow rate. Studies suggest that, under the same condition, using intermittent transportation can achieved good economic and social benefits.

Key words: hot oil pipelines; low flow rate; normal and opposite direction transportation; intermittent transportation; optimum operation

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Operating technical summary of gas turbine energy saving optimization

TIAN Ming-quan, ZHAO Jie, ZHI Yong-an, et al
(Graduate School of Yangtze University, Jingzhou 434023, China)

Abstract: During single rotor gas turbine running, the influencing factors of energy consumption were analyzed and some responding

countermeasure was adapted in order to guide the running process and maintenances in dairy. By means of the optimization in the running process and maintenances, the specific energy consuming of the gas turbine powering decreased significantly, the favourable activity was obtained not only in energy saving and emission reduction, but also the eminent economic benefits.

Key words: gas turbine; energy saving; optimization; running

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A simulation study on solar-seawater source heat pump system for heating supply

YUAN Peng-li, YIN Hong-chao, YING Peng
(School of Energy and Power Engineering, Dalian University of Technology, Dalian 116024, China)

Abstract: A solar assisted heat pump system with solar collectors, a hot water storage tank and a water source heat pump has been proposed. The operating mode is determined. Taking Dalian as an example, TRNSYS software is used for simulated calculation to analyze the operating condition of the system and evaluate energy saving benefit. The result shows that the solar-seawater source heat pump system for heating supply can improve heating coefficient of performance of the heat pump and fractional energy saving of the system is 25.8%.

Key words: seawater-solar source heat pump; solar energy; TRNSYS; combined heating

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Feasibility analysis of a high school in cold regions design project for energy retrofit

LI Zhi-yong, DIAO Nai-ren, LIU Feng
(Key Laboratory of Renewable Energy Utilization Technologies in Buildings, Ministry of Education, Jinan 250101, China)

Abstract: For one high school which was in cold regions, based on old and heat source investigation materials, the present situation of the existing system problems as a starting point, retrofit existing cold and heat source system from the load forecast, the transformation plan design, the transformation efficiency analysis. By SEGCHP, the standard coal consumption could be saved by 1097.11 t. The emission of CO₂ could be decreased by 2735.1 t. The power cost can be saved annually by 1843500 yuan RMB, the payback period of investment is 7 years. So we can really realize energy-saving and environmental protection.

Key words: cold and heat source; energy saving renovation; ground-coupled heat pump; solar energy

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Analysis of the effect of energy saving and emission reduction airport greening planning

YU Jing-lei, ZHAO Xiao-dong, GUO Feng
(Civil Aviation Engineering Consulting Company of China, Beijing 100621, China)

Abstract: Analyzed the carbon fixation effect of the airport afforestation work. Results show that more than 1.86 million tons of carbon can be fixed as result of airport afforestation work, while China civil aviation industry discharge 20.09 million tons of carbon dioxide in 2008. Therefore, airport afforestation work will play positive role in fixing carbon.

Key words: airport afforestation work; fix carbon and release oxygen; carbon fixation effect; energy saving

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**Preparation and reserch on Si-Ni anode material
of lithium ion battery**

LIU Yun-hai, WU Zhi-xin, JI Chao, et al
(School of Environment and Chemistry Engineering,
Shenyang Ligong University, Shenyang 110159, China)

Abstract: Sodium hypophosphite is use as reducing agent, activation solution is use as colloid palladium Nickel plating to Silicon powder surface, get the best results of plating technology through orthogonal experiment. analysis object image and morphology to composite powder. Charge-discharge performance tests the composite powder to use as negative electrode of lithium ion battery. The results showed that the charge and discharge efficiency above 90% to improve the electro-chemistry performance of the battery.

Key words: lithium-ion batteries; anode materials; thin films

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**Application research of special incorporate air
conditioner and water heater in the kitchen**

XING Jin-cheng
(Jinan petrochemical design institute, Jinan 250100, China)

Abstract: Briefly introducing the composition and working principle of incorporate air conditioner and water heater, in the cooling system of hot water and mode of operation is analyzed, and compared with conventional air conditioning, electric water heater. The results show that energy saving effect of the incorporate air conditioner and water heater is remarkable. The machine is worth popularization and application in new or modified kitchen structures.

Key words: air conditioner; hot water; integrated machine; refrigeration; heating; economy; energy saving

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**Design and test analysis on a new intelligent temperature
control evaporative thermantidote**

LIAO Zhen-qi, ZHOU Dong-yi, WANG Quan
(Department of Mechanical and Energy Engineering,
Shaoyang University, Shaoyang 422000, China)

Abstract: Maintaining the original internal structure of electric fan, a new type of intelligent temperature control evaporative air cooling fan was designed. A around pipe connected to the ultrasonic atomizer been added behind the fan, the fog is sprayed by atomizer and been suctioned through holes on the pipe, thus reducing the temperature of the air, improve the effect of the cooling fan, can automatically adjust the fan speed according to the indoor temperature at the same time. This fan is made of the electric fan and temperature controller and spray creative by low cost, it has the good economic efficiency, suitable for wide popularization and application.

Key words: temperature control; evaporative; thermantidote; energy conservation

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**Demonstration of oil-free screw air compressor
heat recovery system**

CHEN Yi
(Shanghai East Low Carbon System Jntegration
Co. Ltd., Shanghai 200031, China)

Abstract: A measure of oil-free screw air compressor heat recovery is introduced. Taking a specific project as an example, analyze the solution design, system components, operation principle, energy savings and simple payback of the heat recovery system. Provide a reference for other oil-free screw air compressor heat recovery retrofit project.

Key words: oil-free screw air compressor; heat recovery; energy saving

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Compressed air line freeze analysis in northern

WANG Fu-cai, LIU Bao-hua, GUO Qing-hai
(Liaoning Diaobingshan Coal Gangue Power Generation
limited Company of Liaoning Province,
Diaobingshan 112700, China)

Abstract: Winter moisture content of compressed air as the power generation companies Diaobingshan summer, significantly more than conventional lead pipe freeze anomaly cause analysis, combined with the actual situation at the scene to verify the results, and take effective measures to eradicate the chronic problem of power plant production-stable. The winter safe operation of the compressed air system for cold northern regions have high practical significance.

Key words: air compressors; dryers; air dew point; freezing

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Compacted sand filter causes and treatment

ZANG Dian-rong
(Shandong Guangming Heat & Power Co. Ltd.,
Taian 271221, China)

Abstract: By reason compacted sand filter media in-depth research and analysis to identify the factors that influence media compaction, high alkalinity water hardness is the intrinsic cause compaction of filter backwash strong enough, such as bacteria and algae breeding operations and external environmental conditions and external factors affecting the direct cause of their compaction and develop pickling according to the corresponding factors, changes in backwash mode, impact resistance and other preventive measures to filter sterilization in a good filter condition. Can to mine water, deep well water as high hardness high alkalinity water, sand filtration system with reverse osmosis pretreatment equipment to ensure the safety of its long-running reference.

Key words: sand filters; media compaction; pickling; backwash; sterilization

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