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Research and application on HOPSCA smarter energy
GENG Fang, ZHOU Xu, WANG Zhi-jie
(Ji'nan Energy Construction & Development Co. Ltd.,
Ji'nan 250001, China)

Abstract: With the development of urbanization, Jinan and other cities proposed the requirements of construction of HOPSCA, The urban energy system planning is not scientific and reasonable, and it is the biggest disadvantage of the construction of the Smarter Energy system of the HOPSCA. Building HOPSCA smarter energy system is an effective way to avoid duplication of investment and invalid operations, and ecological destruction. Development Proposals of HOPSCA smarter energy is proposed preliminarily, it is still blank in China, the specific implementation details of the construction, the relevant departments and agencies still need to do the research and policy support.

Key words: HOPSCA; smarter energy; construction; development

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The analysis based on research of biodiesel prepare aviation fuel

YUAN Wei-wei, WANG Lei, WANG Jian, et al
(School of Energy and Environment, Shenyang Aerospace
University, Shenyang 110036, China)

Abstract: Analyzed the characteristics and physical-chemical properties of biomass fuels. Compared and analysis the differences between biomass fuels and aviation fuel and provide the direction of modification of biodiesel. Several main methods of preparation of aviation fuel were summarized. The development situation and research progress of biomass fuel were introduced. Several key issues facing the development of biomass fuel were analyzed.

Key words: biodiesel; aviation fuel; analysis of property; development status

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Research status and development trend of MILD combustion by liquid fuels

CHEN Dong, LV Tian, GU Gen-xiang
(Shanghai Marine Diesel Engine Institute, Shanghai
201108, China)

Abstract: MILD combustion is a new type of energy-saving combustion mode with enormous economic value. Liquid fuels have some difficulties to achieve MILD combustion due to their own characteristics. So this article will introduce the international studies of MILD combustion by liquid fuels and analyze the effect of key factors such as fuel kind, mixed method, Damkhole number and fuel air equivalence ratio.

Key words: liquid fuels; MILD combustion; NOx emission

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Discuss the backpressure and it's variation in distributed power system

JIA Yun-fei, WU Zhi-xiang, ZHAI Meng-xian, et al
(School of Environmental and Chemical Engineering,
Xi'an Polytechnic University, Xi'an 710048, China)

Abstract: Analyzing the energy's whereabouts what is from users pump from the point of view of energy conservation. The article quantifies the users backpressure on the system, take into account the changing backpressure with the load while the system is running, and analyze the influent of backpressure changing on pump operation adjustment. At last, the article provides selection guide for water pump's parameters and number in the design and operation regulation.

Key words: distributed power system; backpressure; variable-frequency pump; valve

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Top row pipes' heat transfer performance experimental research of direct expansion system

SHEN Jiang, BIAN Yu-jun, ZOU Guo-wen
(Refrigeration Key Laboratory of Tianjin, Tianjin University
of Commerce, Tianjin 300134, China)

Abstract: As one of the commonly used cooling equipment in the refrigeration storage, the top row pipes has many advantages in the cooling process in cooling storage. However, due to the complexity of natural convection process, the whole heat transfer process consists of three heat transfer forms such as heat conduction, convection and radiation. This paper studies the top row pipes' heat transfer performance at different temperature, different temperature difference of heat transfer between a total of 12 set of conditions, and obtains the change of the heat transfer coefficient and the best operating mode.

Key words: refrigerator; top row pipes; natural convection; heat transfer coefficient

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Experimental study on energy consumption model of evaporative cooling chiller

ZHOU Xiao-feng, YU Xiang, LI Bin, et al
(PLA Logistics Academy, Beijing 100858, China)

Abstract: Exploratory study was conducted in the form of energy consumption model for evaporative cooling chiller. Considering evaporative cooling chiller works similarly with ordinary water chillers, the evaporative cooling chiller model was established by replacing the cooling water temperature effect with inlet air enthalpy on the basis of analyses on effect of meteorological parameters on system's energy consumption, and parameter estimation and error checking were completed. The results show that the test error of the improved model is limited in 8%.

Key words: evaporative cooling; energy consumption model; chiller; enthalpy

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The analysis of natural convection heat transfer in a inclined closed square cavity by field synergy principle

HE LIAN Ya-xin
(School of Thermal Energy Engineering, Shandong Jianzhu
University, Jinan 250101, China)

Abstract: Studied the phenomena of natural convection heat transfer in a inclined closed square cavity by field synergy principle. Numerical simulation is used to study the synergic relationship of natural convection in a square cavity in the different Rayleigh number ($Ra = 1 \sim 106$), and under the fixed-Ra number the influence on the natural convection of square cavity in the different angle. The results showed that:

with the increasing Rayleigh number, natural convection in a square cavity field coordination number $lg Fc$ is smaller, the synergy is better. With the change of angle, when Ra is less than 103, the change of the curve of $lg Fc$ approximate rendering parabolic law; when Ra is between 10^4 and 10^5 , the curve of $lg Fc$ is monotonic; when Ra is more than 10^6 , the curve of $lg Fc$ has two extremums and a point of inflection.

Key words: closed square cavity; field coordination number; natural convection; inclined angle

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Application of a condenser on-line cleaning robot in a 330MW power unit

PAN Hai-lu, QI Yun-long

(Key laboratory of intelligent thermal process control in Jiangsu province, Nanjing 211102, China)

Abstract: Common condenser cooling pipe cleaning methods in power plant were introduced. In order to overcome the shortcomings of existing cleaning technology, a condenser on-line cleaning robot appeared in domestic, which involved robots technology, high-pressure water jet and underwater dynamic sealing. At present, the robots have been installed successfully in a 330MW power unit. Compared with the condenser performance indicators before installation, the condenser pipe cleaning coefficient increased by about 0.221 after adding robots. Test data were corrected to the design conditions. The condenser terminal temperature difference decreased by 2.31°C on the average. The condenser pressure decreased by an average of 0.71 kPa, resulting in reducing power generation coal consumption by an average of 1.4 g/kWh.

Key words: robot; on-line cleaning; condenser

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Numerical study of the air cooled unit with curvifoliate deflectors

CHENG You-liang, ZHANG Ning, SHI Ya-jun, et al

(MOE's Key Laboratory of Condition Monitoring and Control for Power Plant Equipment, North China Electric Power University, Baoding 071003, China)

Abstract: The highest temperature of the air cooled unit directly affects the long-time safety of the unit, and it is also a symbol of the heat transfer efficiency. In order to decline the local high temperature at the outlet of heat exchanger of the typical direct air cooled condenser unit, we established a model of deflectors, taking the Long-shan power plant 600MW air cooled unit as example. And the numerical simulations of the air cooled unit with different curvifoliate and arrangement were conducted. The result was desirable and it was compared with the results of the direct air cooled condenser units without and with bow-shaped deflectors. This can be considered as a reference for the optimal designing of the structure of air-cooled cell.

Key words: direct air-cooled unit; deflector; comparative analysis; flow and heat-transfer characteristics; numerical simulation

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Power system fault diagnosis based on rough set and Bayesian network

XIONG Jun-hua, ZHANG Chun-ge

(North China University Of Water Resources And Electric Power, Zhengzhou 450045, China)

Abstract: With the rapid development of social economy, the current power quality standards can not meet the requirements of users, but the power system fault is difficult to avoid. Therefore, when the power grid unstable operation state, it is required that the staff in the shortest time to determine the cause of failure, position and remove the fault, to

maintain the stable operation of the power grid. The method of rough set theory and Bayesian network in the fault diagnosis of power system is described. The original decision table is formed in the fault diagnosis, and then the rough set theory is used to reduce the redundant information. Then the Bayesian network model is established according to the reduction results, which overcomes the shortcomings of the fault diagnosis results caused by the missing information, which greatly improves the reliability of the diagnosis results.

Key words: rough set theory; bayesian network; power system; fault diagnosis

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Analysis of heat storage and release of building envelope for office building in Ji'nan by transys software

GUAN Bao-lei

(School of Thermal Energy Engineering, Shandong Jianzhu University, Jinan 250101, China)

Abstract: Conducting some numerical simulations for office building model in ji'nan by using transys software, and then present the analysis of heat storage characteristics of building envelope under different flow conditions and water supply temperature. Finally, it summarizes the relationship between temperature-flow and heat storage of building envelope, and puts forward some suggestions on optimizing operation of office buildings in Ji'nan area.

Key words: office building; transys; building envelopes; energy-saving

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The design and production of pedal power device based on electromagnetic induction

CHEN Long, YU Jun-jie, ZHOU Pan, et al

(Guangdong Polytechnic of Environmental Protection Engineering, Foshan 528216, China)

Abstract: By comparing the air power and pedal power programs, making use of the electromagnetic induction and cutting power principle, studied how to collect and take advantage of the energy of the people usually stepping issued to mechanical, and the circuit design, make of finished products and social benefit analysis, the way to access to energy gets more simple, in keeping with the current theme of the times of the energy saving and environmental protection.

Key words: pedal power generation device; electromagnetic induction; energy-saving

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Fresh progress of defrosting for air source heat pumps

LI Ling, WANG Jing-gang, BAO Ling-ling, et al

(Hebei University of Engineering, Handan 056038, China)

Abstract: Traditional air source heat pump system can't meet the demand of indoor temperature and thermal comfort of human body. This paper summarizes some different defrosting mode of the Air Source Heat Pump system (ASHPs) modes, introduces current research status of the system and defects, puts forward relevant proposals and ways to improve from the effect of defrosting on the operating efficiency of the heat pump system. This paper may provide a reference for later research for ASHPs.

Key words: Air Source Heat Pumps (ASHPs); reverse cycle defrosting; hot-gas bypass defrosting; phase change thermal storage

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