ABSTRACT

Energy saving

N. V. KOLESNICHENKO,D. E. BURLAKOVA, Y. M. MAGERA, **REGARDING WAYS OF REDUCING NATURAL GAS CONSUMPTION IN UKRAINIAN PUBLIC UTILITIES…..2**

The paper gives consideration to four most feasible heating and hot water supply plans based on the air-to-water, water-to-water and air-to-air heat pump systems. It analyzes the operating aspects of these plans under various operating conditions, their energy and economic feasibility. The paper presents basic performance of the schemes to provide load heating and hot water. The values of energy conversion factor for such systems were obtained. It makes conclusions regarding the effectiveness and feasibility of the heat pump systems in heating and hot water supply systems.

I. A. NEMIROVSKIY. **REGARDING RESULTS OF AUDIT OF HEAT SUPPLY ENTERPRISES (Part I)……11**

Based on the results of energy audits the paper presents an analysis of the state of equipment of district heat supply companies, shows the objective causes of the tariff increase, gives an analysis of losses throughout the whole supply chain from generation to the consumer and their share assessment.

Power engineering

O. M. MALIAVINA. **CLASSIFICATION, ANALYSIS AND SELECTION OF RELIABILITY INDEX OF HEATING NETWORK…….……..18**

The paper develops classification, makes analysis and selection of heating networks.

Key words: *reliability, pipeline, failure flow parameter, analysis, damage, operation, heating networks.*

I. V. GALUSHCHAK. **HEAT TRANSFER IN CROSS-FLOW STAGGERED TUBE BANKS WITH CUT-THROUGH COILED RIBBON FINNING.....….27**

The paper presents results of the experimental study of convection heat transfer in staggered tube banks with cut-through coiled ribbon finning in transverse gas flow. It offers empirical relationships for engineering calculations of heat transfer considering the characteristics of the bank arrangement, the finned tube factor and the height of the cut-through part of the fin.

L. N. KUZNETTSOVA, L.G. LIMONOV. **DESIGN OF SMOKE EXHAUSTER CONTROLLED ECLECTIC DRIVES IN STEELMAKING…….....39**

The article presents the results of work on development of a set of electric drives of powerful smoke exhausters of the gas cleaning system of the shaft arc melting furnace of the meltshop of the integrated iron and steel works.

Key words: smoke exhauster, controlled electric drive, electric motor, gas cleaning.

Scitntific and technical progress and efficiency of production

A.B. GRIGOROV, A.A. MORDUPENKO, K.V. CHEVCHENKO. **ADSORPTION REMOVAL OF SULFUR COMPOUNDS FROM DIESEL FUEL 47**

The paper presents the results of laboratory investigations to reduce the mass fraction of sulfur in diesel fraction and commodity diesel fuels when contact treated with milled adsorbent. It was established that the best results for sweetening of diesel fuel can be achieved using water suspension of adsorbent.

ABSTRACT

YU. S. KURSKOY. **FRACTAL ANALYSIS OF ELECTRICAL MEASUREMENTS RESULTS…….....……..52**

It is observed the tasks of measurement in nonlinear dynamical systems. The new metrological approaches, measurement model and model for analysis of measurement results of dynamic variables of nonlinear dynamical systems are discussed. It is shown that electrical networks of general purpose can be researched as the nonlinear dynamical systems. The voltage of electrical network was measured. The dynamic of the voltage behavior was realized the way of fractal analysis of measurement results. The fractal analysis showed that during the observation voltage had changed the nature of its dynamic from random to regular and persistent.

N. KUNDENKO, L.N. MIKHAYLOVA. **EFFECT OF LOW-INTENSITY ACOUSTIC VIBRATIONS IN THE PROCESS OF CRYOPRESERVATION…….58**

The paper suggests using ultrasonic vibration as a mean to increase the cryoresistance of biological objects and to find ways of additional cryoprotection of their structures.

V. A. KUTOVYI, A. S. LUTSENKO. **SPECIFICS OF THE MECHANISMS OF THERMAL VACUUM DRYING PROCESS AND GRINDING PARTICULATES….63**

The paper gives an account of theoretical and experimental study aimed at solving scientific and applied problems of determination of the mechanism of continuous drying process with simultaneous grinding particulates in the thermal vacuum installation.

It gives description and the principle of operation of the experimental thermal vacuum installation.

The results of theoretical and experimental studies were demonstrated using obtaining of zirconium dioxide from zirconium hydroxide as a case study, which confirms the possibility to significantly reduce energy consumption in drying and grinding of various particulate materials as compared to existing dryers.

E. D. NEMIROVSKAYA. **PROBLEMS OF ENVIRONMENTALLY FRIENDLY ENERGY CARRIERS…….....……...71**

The article presents data on the evaluation of the potential for use of renewable energy sources and the challenges on the way to their wide introduction. It shows some data on changes in such characteristics as cloud cover and wind speed, which substantially affect potential energy production.

N. M. PRODAN. **FORMATION OF ENVIRONMENTAL CONSCIOUSNESS FROM CHILDHOOD UP - FOUNDATION OF STATE POLICY IN THE FIELD OF ENERGY SAVING AND RENEWABLE ENERGY….....……...75**

The papers demonstrates the need to support initiatives aimed at accumulation of knowledge and beliefs by children of pre-school and elementary school age, which helps to reduce the human impact on the environment.