

## ABSTRACTS

## Section of «Metallurgy»

UDC 669.162 Kryachko G., Zapanyonok S., Safina-Valuyeva L. SMELTING OF STEEL-MAKING IRON ON THE BASIC SLAG WITH KACHKANARSKY PELLETS INTRODUCTION IN THE CHARGE. The smelting of steel-making iron on basic slag ( $\text{CaO} + \text{MgO}/\text{SiO}_2 = 1,35-1,40$ ) with the introduction in the charge of kachkanarsky pellets with a high content of  $\text{TiO}_2$  is accompanied by the difficulties of hydro- and gas-dynamic processes in the blast furnace and the deterioration of the technical and economic indices of the smelting. To save the forced work under the specified slag mode the ratio of Kachkanarsky pellets should not exceed 5%. The use of pellets from this plant (Kachkanarsky Ore Mining and Processing Enterprise (Kachkanarsky GOK) in the iron-ore charge helps to improve the skull state of the metal reservoir.

*Keywords:* steel-making iron, basic slag, pellets, smelting indices, charge, metal reservoir.

UDC 669.162.263:519.85 Dovichuk B. AUTOMATED BLAST FURNACE CONTROL SYSTEM. The system includes the following sub-systems: charging and optimization of burden distribution inside the blast furnace; wind rate optimization at the maximum furnace operation level; optimization of fuel additive consumption and blast moisture. Adoption of the system will allow for 3-4% lower energy product consumption and 8-10% higher furnace production capacity.

*Keywords:* blast furnace, automated control, optimization of wind, fuel additives, blast moisture.

UDC 669.162.263:519.85 Dovgaliuk B. INFORMATION RELIABILITY AS THE MAIN CONDITION OF CAM BLAST FURNACE EFFICACY. CAM blast furnace effective use is possible with the process parameters high precision. Due to the reliable information of charge, combined blast, pig iron and slag quality parameters considerable fluctuations, blast furnace complex thermal performance indices reflect the transition dynamics and cast iron quality forecast high accuracy. The blast furnace gas mathematical model as a base of information reliability control method in real-time of CAM operation is worked out.

*Keywords:* CAM blast furnace, information reliability, cast iron quality forecast, blast furnace gas mathematical model.

UDC 669.162.267 Sigarev E. DISPERSION OF GAS STREAM AT THE ROTATION LANCE. Factors, having influence on thermal work of lining-up lance, are considered, reagents intended for insufflations in the stream of gas-transmitter deep into fusion, length of basic area and dispersion of gas stream. Offered expression for the calculation dynamics changes temperature of lining-up lance, length of gas stream and diameter of pop-up bubbles.

*Keywords:* revolved lance, scoop, lining-up, gas stream.

UDC 669.184 Kulik A., Kascheev M., Pohvality A., Ponomar A. ON THE URGENT NEED TO EXPAND REFINING CAPACITY OF CONVERTER TECHNOLOGY (WORKING HYPOTHESES: IN ORDER OF DISCUSSION). Opportunities converter reduction were unused in the twentieth century due to excessive intensification of the crisis. Increased demand for steel products has enabled companies that produce equipment to equip an additional melting works link in the form of units LF. Because of this converter redistribution has become a producer of intermediate product. Converting the same is by its nature, is the sim-

plest and transient redistribution, which can be carried out first oxidative and then - metal finishing operations.

*Keywords:* converter technology, combined blowing, dignity, refinement, two-slag reduction.

UDC 669.18.244.66 Operchuk I., Ogurcov A. DETERMINATION OF MODE BLOWING OUT OF THE CONVERTER MELTING FOR TERMS OF THE DNEPROVSKY METALLURGICAL COMBINE. For the terms of the Dnepr metallurgical combine the choice of the Blowing mode of the oxygen-converter melting is offered depending on the concrete terms of its leadthrough: period of campaign of converter, description of charging materials and mark of the smelted steel. Application of sixnozzle oxygen lance is offered in place of operating fivenozzle. Optimization of technology of smelting of steel allows to stabilize motion of blowing out, decrease the amount of extrass and outflow, promote stability of oxygen lance.

*Keywords:* oxygen lance, converter, melting mode, charging materials, character of refining.

UDC 669.18 Cymbal O., Poletaev V. FEATURES OF COOLING OF METAL AT BLOWING OUT BY ARGON. The execution of analysis of terms of interfusion of metal is executed in a 250-ton ladle at blowing out by his argon with intensity of 30 m<sup>3</sup>/hour. In establish theory minimum time of blowing out of metal is grounded by neutral gas, necessary for homogenization of fusion on a temperature and chemical composition, equal 3-5 minutes.

*Keywords:* argon, ladle, temperature of metal, homogenization of fusion.

UDC 669.184.244.66 Panteykov S., Motsnaya R. SCORIFICATION OF LINING-UP OF OXYGEN CONVERTERS. PART 1. ANALYSIS OF MODERN DEVELOPMENT OF TECHNOLOGIES STATUS. The analysis of modern development of world technologies of scorification of lining-up of oxygen converters status is conducted by the blowing-free of liquid slag fusion the nitric streams of overhead tuyere with the purpose of finding out of advantages and lacks of existent technologies, and also basic factors which considerably influence on the process of blowing-free of slag, efficiency of causing of it on the walls of converters and quality of forming of the slag sheeting on a lining-up.

*Keyword:* scorification, garnisazh, blowing-free of slag, firmness of lining-up.

### **Section of «Welding»**

UDC 612.791 Sukhomlin V., Nosov D., Peremit'ko V., Reyderman Yu. PROSPECTS APPLICATION OF HIGHLY-DURABLE STEEL OF 10G2FB AT THE PRODUCTION OF WELDED METAL CONSTRUCTIONS. PHYSICS-MECHANICAL AND METAL-GRAPHIC RESEARCHES (PART I). Terms and modes of termomechanical treatment are certain for steel of 10G2FB which inherited ferrit-pearlitic striped is removed at. It is set that the separate groups of pearlitic colonies part from each other grains of ferrit, and pearlitic «grains» – ground down.

*Keywords:* highly-durable steel, structure, heat treatment.

UDC 612.791 Sukhomlin V., Nosov D., Peremit'ko V., Reyderman Yu. PROSPECTS APPLICATION OF HIGHLY-DURABLE STEEL OF 10G2FB AT THE PRODUCTION OF WELDED METAL CONSTRUCTIONS. PHYSICS-MECHANICAL AND METAL-GRAPHIC RESEARCHES (PART II). The results of mechanical tests of pre-production models rotined that shock viscosity trough the length and breadth rolling of thick sheet practically identical, and the insignificant decline of limit of fluidity keeps indoors for scopes pos-

sible. Thus, conduct of metal at mechanical tests identically to the results of tests for steel of 09G2C, that allows to utilize pipe steel of 10G2FB in build constructions, in place of steel of 09G2C.

*Keywords:* highly-durable steel, structure, heat treatment, mechanical properties.

UDC 621.791.048-52 Stakhov S. RESEARCH OF PROPERTIES BUILT-UP METAL AT AUTOMATIC WELDING LOW-ALLOYED STEELS UNDER THE AGGLOMERATED GUMBOIL. Experimentally well-proven advantage of the agglomerated gumboil of AHKC-28 before meltings AH-60II, at the twoarc automatic welding of HDLA steel of 17Г1С-Y for welding of pipes of diameter 1020 mm at the low temperatures of circumferential environment and dynamic loading. The gumboil of new generation of AHKC-28 is agglomerated to the recommended users for use at the automatic multiarc welding high-durable lowalloying steels, as replacement of gumboils of AH-348A and AH-60 deserves.

*Keywords:* analysis, agglomerated and meltings gumboils, mechanical properties to the metal of guy-sutures and welded connection.

### **Section of «Rolling production»**

UDC 621.771.01 Maximenko O., Ershov S., Romanjuk R. EQUILIBRIUM OF METAL IN ROLLS WITH THE ACCOUNT OF THE AVERAGE RESULTANT OF HORIZONTAL FORCES. On the basis of consideration of equilibrium of metal in the byte of deformation, it is displayed, that retractable forces are expended not only on overcoming pushing out, but also an equilibration of internal forces which originate at a metal flowage. For security of this equilibrium, the angle of neutral cross-section adopts a value, corresponding to interacting of these forces. Thus, certain agency on an angle of neutral cross-section, except contact forces, renders also a triaxial stress of rolled metal.

*Keywords:* stability, a technique, an orthographic epure, effort, force, an angle of neutral cross-section, equilibrium, an internal triaxial stress

UDC 621.771.01 Ershov S., Melnik S., Mospan V., Gavrilyn S. ANALYSIS OF THE PRODUCTION OF LARGE SHAPED SECTIONS OF U-TYPE WITH FOLDED EDGES. In the article the analysis of production of the shaped types of washtub type is done with the unbended edges such as: shape of sheet pile of type of «Larsen», shape of for fastening of the mountain making – SIP, shape of railway railroad tie. Comparison of charts of rolling of the examined types is resulted in forming calibers.

*Keywords:* chart of rolling, deformed state, method of constructing of calibration.

UDC 621.771.01 Galitsky E. THE RATIONAL CONSTRUCTION OF PRESSURE CAPSULE FOR HIGH-QUALITY MILLS. During explorations the new construction of a pressure capsule of membrane type has been developed. Its habit is presence of three legs representing ring sectors, the diaphragms executed totally with a body and had bevel way 120° on a ratio to each other, and also absence of direct outdoor angles in a diaphragm zone. In this case in the diaphragm the directed camber irrespective of quality of bearing areas and even presence of sags is created.

In-process also curve dependences of a slope of the calibration chart on a ratio of altitude of a pressure capsule to diameter of legs and to interior span which can be used at constructing of new types of pressures capsule have been gained. Recommended sizes of pressures capsule for various mills are resulted.

*Keywords:* pressure capsule, force, mill, calibration chart, responsivity, sensing transducer, leg, camber.

UDC 621.771.251 Shtoda M., Brezhe S. CALIBRATION OF ROLLERS FOR THE PRODUCTION OF STRIPES THE METHOD OF ROLLING-SLITTING. Two possible variants of technology of production of round profile a method are considered longitudinal rolling- slitting of low initial purveyance. It is exposed, that during realization of the first variant longitudinal division of stripe not feasibly, but at rolling on the second method implementation of tops of type is not provided in the first passage-ways. On the basis of preliminary calculations new calibration of rollers is developed for realization of fourthread rolling-slitting.

*Keywords:* rolling-slitting, of fourthread rolling, round profile, division by the driving rolls, first forming caliber.

### **Section of «Engineering»**

UDC 621.9 ISLAMKULOV K., SEITKULOV A. RESEARCH OF THE CHARACTER OF WEAR AND USEFUL LIFE OF HIGH-SPEED STEEL TOOL WITH DIFFERENT REINFORCEMENTS. Complex surface treatment, including ion nitration and deposition of coatings, improves service characteristics of cutting tools.

*Keywords:* ion nitration, deposition of coatings.

UDC 621.9 SEITKULOV A., ISLAMKULOV K. PRINCIPLES OF MATERIAL SELECTION FOR COATINGS AND MODIFIED LAYERS. Different types of surface treatment can be used to meet required tribo-engineering purposes. It is very important to apply an appropriate methodology in selecting the composition of surface layer as well its structure and method of production for the given tribo-engineering use.

*Keywords:* surface layer, structure, tribo-engineering use.

UDC 621.9.025.6 Grechanik E., Tararuk Y. RESEARCH OF INFLUENCE OF COVERAGE IS ON PROPERTY OF METAL-CUTTING INSTRUMENT. The research of changes of roughness and micro hardness are resulted depending on type and thickness of layer of coverage the surface. Depending on exactness of treatment it is needed to use those coverage and such thickness, to provide necessary exactness.

*Keywords:* change of roughness, change of micro hardness, layer of coverage, thickness of coverage.

UDC 621.876.212 Belmas I., Biloyis E., Cherednichenko E. STRESS STATE OF COOL BANDS INCLINATION CONVEYOR SUPPLY CHARGEFOR BLAST FURNACE TOP. The model and solution algorithm for determining the stress-strain state of rubber-rope on the site make it drop shape. Brought the possibility of choosing the transitional design of the site to reduce the maximum effort in the traction elements of ribbons.

*Keywords:* high furnace, semi-steep conveyer, serve of charge, tense state of ribbon, transitional area, form of drop.

UDC 621.0.077 Shulga A. RESEARCH OF ROLL STIFFNESS OF ROTATING DEVICES GUIDES. The work shows the results of theoretical research into the effect of flatness deviation upon the contact stiffness of ring guides of machine accessories with unsymmetrical load. The problem is solved through nonlinear dependence between pressures and contact displacements.

*Keywords:* accessory, ring guides, contact displacements, roll stiffness.

UDC 622.625.28 Ziborov K. MODEL OF THE TRANSMITTING OF MOTION BY FRICTION IN THE MINE LOCOMOTIVES. The article presents the main theoretical propositions, which allow a single position to approach the solution of various problems in different conditions between the contacting bodies, which allow a high degree of accuracy to solve the problem of mining rail transport dynamics.

*Keywords:* contacting bodies, deformation, relative slipping, contact patch.

UDC 621.74 Mogilevtsev O., Litvinenko A., Taranukcha E. INFLUENCE OF LOAD ON FUNCTION OF JAR MECHANISMS OF MOLDING MACHINES. The influence of actual load on characteristics of function of molding jar mechanisms has been investigated. The investigation was accomplished with computer model worked up by Dneprodzerzhinsk State Technical University. It was ascertained that maximum power of jar mechanism takes place if its actual load is within 0,6...0,8 of maximum, minimum compressing air expenditure if actual load is within 0,4...0,5 of maximum.

*Keywords:* jar mechanism, computer model, power, air expenditure.

UDC 621.744 Mogilevtsev O., Ermakova L. ANALYSIS OF PRESSING CASTING MOULDS BY LEVER MECHANISMS. The methodology of analysis of the pressing process of casting forms by means of lever mechanism is offered. Analysis is realized on the worked out computer model. The methodology is illustrated by two examples. Advantage of mechanism with an eccentric on one of links of the lever system is shown. The methodology can be useful during exploitation and at constructing of molding machines.

*Keywords:* molding machine, lever press mechanism, computer model, methodology of analysis.

UDC 629.025:531.3 Beygul V., Lepetova A., Shirin L. THE DEVELOPMENT OF DISTURBANCE MOTION THEORY FOR MINING DUMPERS MOTOR TUGS. The mathematical model of system "motor tug-dumper" disturbance motion for dumper elastic and rigid suspension, when dumper front or back wheels are lifted has been worked out. The dynamic factors for variation of towing has been calculated. The theory of disturbance motion for mining dumpers motor tugs has been development.

*Keywords:* theory, model, disturbance motion, motor tugs, mining dumper.

UDC 622.272:622.257.1 Stupnik N. STUDY OF THE POSSIBILITY OF THE HYDRAULIC BLOW IN MOUNTAIN PRODUCTION AND DETERMINATION OF THE VALUE OF THE FULL PRESSURE. By the analysis of descriptions of breaches of clay breeds, which took place it is set on the mines of the Krivoriz'kogo pool, that at a breach in making under considerable static pressure they are able to spread on certain distance. Results of researches of properties of watered clay breeds, which can break through in making show that they during 7-10 days from a fluid phase pass to the noncompressed state.

Survey results and total pressure detection methodology of watered clayish rocks defining on underground mining balks in dependence of clayish rock pressure on working input, mentioned value of friction and pressure force from load impact with possibility of clayish rocks breakthrough into the face area of underground mines.

*Keywords:* breaches, clay breeds, mountain making, pressure, water-hammer, friction.

### **Section of «Radioelectronics»**

UDC 621.396.67:001.57 Syanov A., Kosuhina E., Miroshnichenko Y. NUMERAL RESEARCH OF SUPERFICIAL CURRENT DISTRIBUTING OF CURRENT AND RADIATION OF ELECTROMAGNETIC WAVES IN FREE SPACE. The mathematical model of superficial current distribution of current and radiation of electromagnetic wave in free

space has been considered. Numerical research of electromagnetic descriptions of aerials of different configuration has been conducted. Work results as the built diagrams of aerial orientation of different configuration have been presented.

*Keywords:* electromagnetic field, aerial, method of moments, diagram of orientation, frequency descriptions.

UDC 681.84.086 Ryazantsev O., Gninenko I. NONLINEAR DISTORTION IN OUTPUT CASCADE of the AMPLIFIERS of the SOUND FREQUENCIES. It is organized comparative experiment analysis to linearity output cascade intensify of the audio frequencies, is revealed main reason of the arising the nonlinear distortion, is offered simple chart technology variant of the improvement to linearity of such amplifiers.

*Keywords:* nonlinear distortion, coefficient harmonicas, spectrum of output signal, mode of cut-off.

UDC 621.396.67 Ryazantsev O., Checha A., Gnatyuk M. THE ANALYSIS OF EFFICIENCY OF ELECTRICAL VIBRATORS OF VHF-RANGE. The comparative analysis of efficiency  $\lambda/2$  and  $\lambda$  symmetric vibrators in VHF-range is carried out. A concordance and simmetrizashion of vibrators with feeder was produced by means of wideband transformers executed on toroidal and two-hole HF-ferrite. It is shown that efficiency of the second in four times more, than the first.

*Keywords:* symmetric linear vibrator, input impedance, coordination, longacting.

UDC 621.314.26 Syanov A., Kulik M., Boroday O. MODEL OF THE SYSTEM MICROCONTROLLER-AUTONOMOUS VOLTAGE INVERTER. In the given work in program Proteus, was developed simulation models of autonomous voltage inverter (AVI). Virtual models can simulate the process of any complexity with high accuracy for minimal financial cost. Thanks to the simulation models an opportunity to compare the shape and nature of the signals on the findings of the microcontroller. All this is possible to optimize the control algorithm and investigate the system of protection in emergency conditions.

*Keywords:* inverter voltage, mykrokontroller, IGBT module, protection.

UDC 006.91-389.14 Ihnatkin V., Litvinenko V., Avramenko A. MODEL QUEUING NETWORK FOR REPAIR OF MEASURING INSTRUMENTS. The models of queuing for timing recovery in the repair of the FTA, which allow to evaluate and forecast the level of operational reliability of groups of similar FTA, based on the requirements for product quality and production efficiency. Results can be used in the work of metrological services of enterprises in the planning and organization of the metrological service.

*Keywords:* measuring instrument, the network queuing and repair.

UDC 004.8+616.12 Trikilo A., Menyaylo I. MATHEMATICAL DESCRIPTION AND CONSTRUCTION NEURAL NETWORK DESIGNER MODEL OF ADAPTATION POTENTIAL AND ESTIMATION OF RISK OF DEATH. In the article on the basis of analysis of methods of determination of adaptation potential and estimation of risk of death from a cordially vascular disease Neural Network Designer model is got for determination of adaptation potential and estimation of risk of death from a cordially vascular disease in a flow subsequent 10 years with the use of computer technologies.

*Keywords:* adaptation potential, estimation of risk of death, heart attack, computing technologies.

UDC 535.41, 535.39.01 Trikilo A., Dubovik I. RESEARCH AND MATHEMATICAL DESCRIPTION OF UNINVASION METHOD OF DETERMINATION OF SUGAR IN BLOOD WITH THE USE OF COMPUTER TECHNOLOGIES. In the article, on the basis of analysis of suctive ability in the infrored range of radiation of certain wave-length, a working equalization is got for creation of device which allows an uninvasion an express to determine maintenances of sugar a method in blood of man.

*Keywords:* infrored radiation, absorpction ability, maintenances of glucose in blood, diagnostician, diabetes.

### **Section of «Electromechanics. Electrical engineering»**

UDC 62-83:681.513.5 Kluyev O., Sadovoy A. RESEARCH OF ENERGY CHARACTERISTICS OF THE ASYNCHRONOUS MACHINE. In paper it is revealed, that the basic power characteristics of the asynchronous electric drive can be optimised in static modes regulation of size of the module flux linkage a rotor. Analytical expressions of functions of quality of extreme regulation are received. Control by all considered criteria is realised on conditions of heating of the asynchronous motor. It is proved, that at control on a minimum of reactive power probably to use linear model with reception enough exact approximations to extreme flux linkage.

*Keywords:* energy characteristics, criterion function, extreme control, reactive power, optimum value flux linkage.

UDC 621.3.051.025 Sadovoy A., Alekseev I., Trykilo A. STUDY PARAMETER RESONANCE TRANSFORMER IN SYSTEM OF ONE WIRE TRANSMISSION TO ELECTRIC ENERGY. This article contain analysis of electrics, geometric and frequency parameters of resonance transformer and the main regularities of the building the new power resonance networks. In work is shown that all ensemble of the resonance frequencies, sidebar primary and secondary windings of the transformer, are located in three frequency bands and harmonic are bound between itself.

*Keywords:* the transformer Tesla, resonance transformer, resonance frequency, secondary winding.

UDC 681.5.03 Volyansky R., Sadovoy A. DESIGN FUNCTIONALS OF CONTROL SYSTEMS WITH AN EXPONENTIAL ACTIVATION FUNCTION. Control systems for the generalized linearized dynamic object with an exponential activation function by solving the inverse problem of dynamic programming to determine the integral functional quality. Found functionals contain two components that determine the consumption of energy management and sustainability of the trajectories of the control object. Each of these components has an extremum. In some cases, these components can not be represented by elementary functions, but their solution can significantly extend the class of control inputs are used to improve accuracy and reduce power consumption control object.

*Keywords:* integral functional quality, dynamic programming, the exponential activation function, a dynamic object, the optimal electromechanical system.

UDC 621.3.333 Kalinichenko Y., Khvorost N., Shavkun V. ABOUT TASK OF ACCOUNT OF VORTICAL CURRENTS IN ELECTRIC MACHINE OF DIRECT-CURRENT. The generalized analysis of raising of task of account of vortical currents is considered in different parts of machine of direct-current - in the explorers of puttee, massive areas magnet wire in the non-stationary modes. It is shown that the use of equalizations of the field in combination with interpretation a magnet a wire as a chart of substitution requires correct application. The concept of equivalent magnetic conductivity is reasonable for areas with a vortical current.

*Keywords:* vortical field, Maxwell's equation, equivalent conductivity.

**Section of «Heat-power Engineering. Heat Engineering»**

UDC 532.542.86.(088.8) Gotsulenko V., Gotsulenko V. MATHEMATICAL MODELING OF THERMOACOUSTIC SELF-OSCILLATIONS AT THE VARIATION OF ACOUSTIC PARAMETERS OF GELMGOLTZ RESONATOR. In this work the mathematical model of Rijke's pipe is received at connection to it of resonator Gelmgoltza. Forms of self-oscillations of mechanisms of L.Krokko raised by action and negative thermal resistance are received at a variation of acoustic parameters of the resonator.

*Keywords:* tube Rijke, heat supply, instability, Gelmgoltz resonator, thermal resistance, self-oscillations.

UDC 665.521.004.17 + 536.423.4 Grekov V., Piankov A., Yalovoi N., Kuznetsov A., Ovsiyevsky A. CONDENSATION OF PETROL'S VAPOURS FROM VAPOUR – AIR MIXTURE.

Possibility to create conditions for condensation of petrol's vapours in the vapour-air mixture developed in the gaseous space of receptacles at different temperatures of external medium is considered in this work.

Practically performed processes connected with utilization of the petrol products vapours losses by way of their condensation are given below:

- pressure increase of mixture at constant temperature;
- temperature increase of mixture;
- increase in pressure and decrease of temperature of mixture.

*Key words:* mixture, component, parameter, compressor, temperature, pressure.

UDC 621.01.216 Klimov R. CHARACTERISTICS OF TECHNOLOGICAL CALCULATIONS OF PROCESSES HOMOGENIZATION OF EMULSIVE ENVIRONMENTS. In this work the basal method of definition technological characteristics of process homogenization of emulsive environments is described at effervescence of water phase as a result of sharp bleed off, taking into account the power affecting of one drip other, based on the criteria of instability of Bond and Veber.

*Keywords:* emulsion, effervescence, crushing, acceleration, instability.

UDC 532.5.072.15 Koshlak A. FEATURES OF FORMING OF THERMOPHYSICAL DESCRIPTIONS OF POROUS MATERIAL. Experimental information, on the basis of which influence of different factors was studied on porosity, heat conductivity, durability and heat-resistance of new thermal insulation porous material, is presented in the article. The mathematical model of influencing of these factors is resulted on the indicated indexes, by which it is possible to forecast his properties.

*Keywords:* porous materials, technologies of swelling, thermophysical descriptions, mathematical model.

UDK 532.5.072.15 Yakovleva A., Pavlenko A. USEFUL RADIANT POWER of U-VIVID «DARK» PIPE EMITTER. Calculation these estimations over of useful radiant power of U-vivid emitter are in-process brought, the analysis of influence of thermal losses is executed from the outward surface of corps of reflector on useful radiant power of emitter, basic conformities to the law of radiant heat exchange are certain into an U-vivid emitter and way of increase of efficiency of the systems of heating.

*Keywords:* emitters, useful radiant power, systems of heating.



UDC 532.5.072.15 Pavlenko A., Osennyaya O. DESIGN of PROCESSES of EMULSIONS of FUELS in VORTEX VEHICLES. The method of estimation of basic structural parameters of vortex chambers in which homogenization of oil-fuels is by the complex hydrodynamic and thermodynamics affecting structure of the primary emulsified environments is offered in the article.

*Keywords:* fuel, vortex vehicles, methods of calculation.

### **Розділ « Інформаційні технології »**

UDC 519.24: 330.43 Avramenko V. ERROR RESEARCH OF PARAMETER DEFINITION OF DEMAND AND SUPPLY REGRESSIONS. The estimation of number observation effect and deviative dispersion on the accuracy of non-linear regression parameters on the example of demand and supply functions have been done by methods of statistic modeling. Systematic and occasional calculation errors of each parameter and reliability interval of regression function have been estimated.

*Keywords:* statistic modeling, demand and supply regression, interval estimation.

UDC 65.011.56:681.3 Tityuk V., Mikhaylenko O. ANALYSIS OF THE PRODUCTIVITY OF MULTISTAGE TECHNOLOGICAL PROCESSES TAKING INTO ACCOUNT THE STATISTICAL DEVIATIONS OF THE PRODUCTIVITY OF THE SEPARATE STAGES. A simulation model of the process stage, characterized by the capacity and number of products stored and transported in the course of technological operations, are developed. Found that the average performance multistage process significantly affects the value of allowable inward stocks.

*Keywords:* multistage process, a periodic process, performance, simulation.

### **Section of «Chemical Technology, Biotechnology. Ecology»**

UDC 662.749 Makhovsky V. ANALYSIS of INFLUENCE of PETROGRAPHIC COMPOSITION of COALS ON QUALITY of CHARGE And COKE. Results over of research of parameters of metamorphizes are in-process brought, components of petrographic composition of coals, their distributing on the classes of largeness on quality of coal charge and determination of influence of degree of the separate grinding down of large (+12 mm) and shallow (6-12 mm) concentrate of charge on the indexes of mechanical durability of coke. Synonymous influence was set on the indexes of durability of coke of M25 and M10 of grinding down of large classes (+12 mm) of charge. The index of M25 with a change the degree of grinding down of both large and shallow changes practically identically, and the index of M10 stronger changes at a change the degree of grinding down of shallow classes of charge. The area of optimum correlation of both indexes of durability of coke is set: it corresponds grinding down of large classes of charge to maintenance of class < 3 mm – 83%, and shallow class of charge to maintenance of class < 3 mm – 84%.

*Keywords:* mixture of coal, microcomponents, metamorphizes, coke.

UDC 662.749.62.776(048) Nagornuu Y., Sokol A., Nagorna S. CHARACTERISTIC COAL RESINS'. The results of quality definition narrow classes' size of hard phase coal fuses are given. It is proved that the biggest (30%) coal's contents are concentrated in the hard phase fuses with size about 3-6 mm. Small grains of hard phase fuses are characterized by high ash content (23%) and it's have a low yield of volatility matters (5.0%).

*Keywords:* coal resins', viscosity, dimensioned composition, density, charge.

UDC 662.71.74 Viazovik V. INFLUENCE OF ELECTROCATALYSIS ON THE PROCESS OF BURNING OF COAL. A message I. A SELECTION AND BURNING OF VOLATILE CONNECTIONS ARE AT BURNING OF COAL. Theoretical bases of process of selection and burning of volatile connections at incineration of hard fuel and influence of

electrocatalysis are considered on this process. The brought results over of researches on influence of electrocatalysis on the process of selection and burning of volatile connections at incineration of hard fuel.

*Keywords:* burning, volatile connections, electro-catalysis, coal.

UDC 662.71.74 Viazovik V. INFLUENCE OF ELECTROCATALYSIS ON THE PROCESS OF BURNING OF COAL. A message II. BURNING DOWN OF COKE REMAIN. Theoretical bases of process of burning of coke remain at incineration of hard fuel and influence of electrocatalysis are considered on this process. The brought results over of researches on influence of electrocatalysis on the process of burning of coke remain and diffusion of oxygen at incineration of hard fuel.

*Keywords:* burning, coke remain, electrocatalysis, coal.

UDC 662.749.62.776(048) Nagorniy Yu., Marinina T., Nagorna S., Vlasyan S. IMPACT PARTICLE-SIZE, HUMIDITY AND HOMOGENEITY OF GRAINY MATERIAL ON CLOSENESS OF HIS EMBANKMENT. In work the presented results of influence of factors which change the closeness of while mass of grainy material. Certainly, that with the increase of humidity the closeness of while mass goes down for all variants of grade and amount of pouring. For superphosphate by humidity more 8,5-9,5% the increase of amount of pouring on dry mass results in the decline of while closeness.

*Keywords:* superphosphate, particle-size, while closeness, humidity.

УДК 661.632 Laricheva L. THERMAL DECOMPOSITION OF PHOSPHATES. PROCESS CONTROL PARAMETERS. The research of thermal processing aluminium and iron-containing telex phosphates under temperature of 900-1250<sup>0</sup>C in the presence of additives has been carried out. The research results showed the unreasonableness of processing telex phosphates in thermophosphates due to poor quality of product obtained at significant cost of reagents and energy. The decomposition degree in the fusion of phosphates with alkaline additives ranged from 19 to 95.5% with a maximum total content of P<sub>2</sub>O<sub>5</sub> in the product 14.3%.

*Keywords:* thermal processing of phosphates, thermophosphates, alkaline supplements, decomposition degree.

UDC 378.147:66-52 Laricheva L., Lutsenko O. APPLYING INFORMATIONAL TECHNOLOGIES IN TEACHING THE DISCIPLINE «AUTOMATION OF CHEMICAL PRODUCTION». Introducing software package TRACE MODE 6 into the educational process in teaching "Automation of Chemical Production" has been proposed. The package contains "Quick Start" function to enable working in the IDE and create projects of automated control systems of varying complexity without studying all the documentation in detail.

*Keywords:* educational process, informational technologies, process automation, TRACE MODE 6.

UDC 573.6.086.83:582.28 Antonenko L., Klechak I., Lazarenko L., Trokhimenko O. TROPHIC CHARACTERISTICS AND BIOTECH GROWTH OPTIONS FOR HIGHER BASIDIOMYCETOUS MUSHROOMS OF CORIOLUS. Trophic necessities are set for the perspective strains of *Coriolus*. Composition of liquid mediums is optimized for production the biomass of these strains with the use of methods mathematical design. Certainly, that biomass of basidiomycetes *C.versicolor* and *C.zonatus* it is immunomodulation properties.

*Keywords:* basidiomycetous mushrooms, coriolus, biomass, culture liquid, immunomodulation properties.

UDC 662.767.2:577.15 Gulyaev V., Klykova K. RESEARCH OF THE DEPENDENCE BIOGAS YIELD ON THE COMPOSITION OF MEDIUM FOR THE CULTIVATION OF METHANOGENIC BACTERIA. Reflects the results of experimental investigations of biogas production based on agricultural production combined waste, analyzes the existing biogas technologies, prospects of monofermentation methanogenic bacteria and using natural metabolites as a components of the nutrient medium. Were analyzed the experiment and ways of its introduction in biogas technology to increase the productivity of the process.

*Keywords:* biogaz, coenzyme M, nutrient medium, enzymes, energy.

UDC 662.767.1: 628.16:579.695 Gulyaev V., Klykova K. RESEARCH OF THE PROSPECTS BIOGAS PRODUCTION BASED ON WASTE WATER TREATMENT COMPANIES OF DNEPRODZERSHINSK Reflects the results of analytical research biogas production prospects based on biomass residues of water treatment technologies, analyzes the problems of existing technologies and prospects of its solution by organization of biogas production with regard of economic factors. Were analyzed the environmental consequences of the functioning of enterprises and the ways of its improvements for resource and energy conservation.

*Keywords:* anaerobic digestion, biogas, biomass, waste, water, energy, sediment.

UDC 628.113 Avramenko S., Manzuik N. THE RESEARCH OF DRINKING WATER SUPPLY SYSTEM STATE TO THE INHABITANTS OF TOWN VOLNOGORSK AND THE DEVELOPMENT OF MEASURES FOR IT IMPROVEMENT. The resources of drinking water composition in native resources of water supply have been done. It has been found out that the water quality in Dnieprodzerzhinsk water storage basin don't correspond to the standards. All these facts influence the working regime of water preparatory station and drinking water composition. That is why water supply to inhabitants from bore hole with the depth over 120 m with filter of primary purification and polishing is recommended. The recommendations concerning the most effective and grounded methods of water getting ready for inhabitants of Volnogorsk have been developed.

*Keywords:* town Volnogorsk, alternative source, drinking water, spring and summer period, centralized system, bore hole.

UDC 662.749.62.776 Nagorny Y., Privarenko S., Nagornaya S., Kryukovska O. MEASURES IN RELATION TO IMPROVEMENT THE DISPERSION OF CHLORINE AND COAGULANT IN WATER DURING ITS PURIFICATION. The dependence of coagulant's and chlorine level in water of Dniper during its transferring by chute with reflected plates is established; for each stream of water it changes the direction of movement on 90°. Thus the quantity of reflected plates, the velocity of water movement in chute and conditions of putting chlorine and coagulant into water were changed.

*Keywords:* mix camera, reactionary camera, coagulant, tests of water.

UDC 628.3:519.6 Ivanchenko A., Voloshin N., Makarchenko N. MATHEMATICAL DESIGN AND APPLICATION OF COMPUTER IN TECHNOLOGY OF MOVING AWAY OF PHOSPHATES FROM MUNICIPAL SEWAGES BY BIOLOGICAL METHODS. In the work done by a computer data processing mathematic main parameters of the left bank of the aeration tank, the sewage treatment plant Dneprodzerzhinsk, on equation for finding the phosphate concentration at the exit from it and the major factors affecting the process of biological phosphate removal.

*Keywords:* mathematical design, biological treatment, waste water, phosphates.

UDC 628.345: 006.01 Ivanchenko A., Voloshin N., Dmutrienko G., Korogodin I. STANDARDIZATION AND CONTROL AFTER OBSERVANCE OF CONTENT OF PHOSPHATES IN MUNICIPAL SEWAGES. In the work highlights the importance of compliance with standards of Ukraine and Europe to the phosphates in the urban waste water.

For this purpose it is proposed to use the reagent and adsorption treatment of waste water before serving in the aeration tank, using peat, lime and iron sulphate (II). On the basis of experimental investigations have identified the doses of these substances to bring the content of phosphates to the European and Ukrainian regulatory requirements.

*Keywords:* sewer water, phosphates, Ukrainian and European standards.

UDC 66.92 Voloshin M., Kryukovska O. TECHNOLOGY APPLICATION OXIDANTS FOR WATER DISINFECTION. In the article the analysis of water treatment technologies research undertaken in the company "Aulsky sluice". Research aimed at studying the processes of water disinfection reagents that are effective and reliable means of drinking water, and provide practical recommendations for optimizing water treatment processes.

*Keywords:* water treatment, disinfection, reagents.

UDC 628.316.12:664.15 Ovechkina O., Shestozub A., Panchenko N., Olynyk N. TECHNOLOGY DEVELOPMENT OPTIONS FOR DESIGNING WASTE WATER TREATMENT PLANTS PRODUCTION OF APPLE JUICE. Food industry is one of the areas than now dynamic and that consumes a significant amount of water and sewage dumps (SD) in tanks and reservoirs without sufficient clearance. This applies especially to relatively small and more numerous factories for the production of concentrated juice. They are characterized by excess of maximum permissible concentration (MPC) for a number of substances in wastewater that are discharged into municipal sewer systems. The article offers methods of technology options for designing the installation of sewage treatment of apple juice.

*Keywords:* neutralization, calcium hydroxide, deferrization, is oxidization.

UDC 628.35:351.77.6 Avramenko S., Mykhailevska O. RECOMMENDATIONS TO REDUCE THE BURDEN ON MUNICIPAL WASTEWATER TREATMENT PLANTS ON THE EXAMPLE OF DNIPRODZERZHYN'SK ORIL'S POULTRY FARM. The article deals with the problems of sewage treatment and gas emissions on the poultry farm «Oril-Leader». Find the degree of purification of these elements and developed new technologies for improvement proposed measures. Due to the measures, proposed in the research, can be reduced environmental, water and air pollution.

*Keywords:* purification, wastewater, gas emission, technological scheme.

UDC 628.179 Avramenko S., Zoloyeva I. PROBLEMS ANTHROPOGENIC POLLUTION s.m.t. DNIPROVSKIY AND THE WAY OF SOLUTIONS. In the work the problems reduce air emissions of exhaust gases from road transport which comes into the territory of JSC "DKPK" and improve the environmental situation in the village s.m.t. Dniprovskiy. With the proposed measures reduced air pollution that contributes to improving the environment in the village s.m.t. Dniprovskiy.

*Keywords:* man-caused pollution, the atmosphere, pollutants, road transport, car exhaust fumes.

UDC 622.271.4+504.062 Smetana S. MINING WASTE DUMPING TECHNOLOGIES CHANGES FOR WASTE BANKS ENVIRONMENTAL SECURITY INCREASE WITHIN KRYVBASS. Mining technologies of waste rock dumping are proposed to be improved through anti-dust relief and plant cover formation. It is proposed to implement through completing waste rock dumping technologies with relief formation stage, which allows creation of anti-dust relief forms (ridges, hills) and dense plant cover. Cumulative effect of proposed schemes decreases up to 70...75% of dusting level within the waste banks surfaces of Kryvbass.

*Keywords:* formation of waste, without dust relief, vegetative cover, waste without dust.