ABSTRACTS

Section of «Metallurgy. Welding »

UDC.669.162 Kryachko G., Belyaev Yu., Lebed' Yu., Safina-Valuyeva L.A. INFLUENCE OF SLAG AND BLASTING REGIMES OF THE BLAST FURNACE OPERATION ON THE TAPPING PIG IRON TEMPERATURE. The influence of the parameters of the slag and blasting regimes on the temperature of blast-furnace tapping pig iron has been estimated. The obtained data confirm the existence of a reliable direct connection between the modules of slag basicity and the metal temperature at the tapping point. The positive impact on the overheating pig iron factor of lesser oxidative potential of tuyeres gases, which is caused by the increased consumption of natural gas, has not been found.

Keywords: slag and blasting regimes, pig iron temperature, basicity of slag, consumption of natural gas.

UDC 669.1.622 Rudenko M., Musienko K., Rudenko R., Kundirenko G. WAYS OF UPGRADING PREPARATION OF GUMBOILS IN THE CONDITIONS OF SINTERING WORKSHOP OF PRIVATE JOINT-STOCK COMPANY THE "DNEPR METALLURGICAL COMBINE". It is established, that the thin material makes a major part of structure sinter material. In work the technology of preparation of crude fluxes is investigated. It is certain screen structure of limestones at different stages of preparation an overall performance crushers and sifting surfaces. It is established, that because of poor quality of a wire sieve, the quantity of marriage grows in limestone which is allocated.

Precise compliance with repairs, sieve from chromic and chrome-nickel of steel of a wire of the direct and wave form is is offered. For sifting limestone it is offered modular a sieve with poliyurethane surfaces.

Keywords: crusher, vibrating roar, limestone, structure, quality poliyurethane.

UDC 669.184.244 Sigarev E. DESIGN SCORIFICATION LINING-UP OF CONVERTER WITH THE COMBINED BLOWING. The results of physical design process causing slag are presented on the lining-up of oxygen converter by the combined blowing slag bath from above and through ground lances. Influence location tip of overhead lance is set in relation to ground lances on the redistribution volumes of slag, taken away from bath in the direction of barrel lance and walls converter.

Keywords: oxygen converter, lining-up, eventual slag.

UDC 669.184.244 Sigarev E., Subbot G. ESTIMATION BLACKOUT FACTORS WEAR REFRACTORY'S OF OXYGEN CONVERTER. With the use methods of statistical, physical and chemical analyses explored influence chemical composition and properties of converter slag on intensity wear refractory's of converter. Predominating influence is set on the terms working refractory of correcting operations of the converter melting by comparison to technological outages. Possibility of locking action is shown with, refractory selected at the reaction of decarburization, to penetration of slag and the methods of diminishing speed wear refractory are grounded.

Keywords: oxygen converter, refractory's, activity, slag, repair refractory.

UDC 669.18:536.001 VOLOSHIN R. FEATURES OF MELTING ALFER INGOTS IN VOLUME OF THE MELTAND ON THE BORDER SLAG-METAL LADLE. Deoxidation is one of the basic operations of secondary treatment technology. This operation is normally carried out by introducing the molten metal of aluminum. The high cost of aluminum,

constantly forcing steelmakers to look for various ways to reduce its consumption. Objectives of the study of heat exchange processes in the melting of additives on the border of the slag-metal ladle or ladle-furnace at a secondary treatment technology relevant to metals practice.

Keywords: deoxidation metal, metal border slag, aluminum-alloy, ferroaluminum.

UDC 669.056.017:621.373.826 Kozina N. A STUDY OF THE INFLUENCE OF THERMAL HEATING ON STRUCTURAL EVOLUTION AND PROPERTIES OF LASER-BORATED SURFACE LAYERS MEDIUM CARBON STEELS. The work presented the results of studies of the influence of thermal heating on structure, phase, strength characteristics and stability of the structure of laser-borated layers of 45. It is shown, that after the furnace heating of laser-borated layers retain high strength characteristics up to T = 800-900°C. Pulse laser heating when $T_{heat}<T_{melt}$ accompanied by processes similar to the processes of aging, causing increased hardness almost 50%. The heat treatmented of laser-borated layers of medium carbon steel can be recommended for products, that work at high temperatures and high static load with a shock action.

Keywords: medium carbon steel, boron, alloying, laser, thermal effects, phase composition, structure, hardness, strain of coatings.

UDC 669.187.004.18 YASHINA K., SADOVOY A. ON A METHOD OF INCREASING ENERGY EFFICIENCY ELECTRIC ARC FURNACE. This article provides a new way to control the operation of automated arc furnaces (EAF) to reduce energy costs and increse their productivity. The developed control law ADI AC, based on a comprehensive study of the electrical, thermal and chemical processes occurring in the working space of the furnace during melting, effectively applied in various steelmaking technologies and provides energy savings of 13-14% while maintaining the quality of cast products.

Keywords: electric arc furnace, law office, energy saving.

UDC 612.791 Nosov D., Peremit'ko V., Gusyatinska V. RESEARCH OF INFLUENCE OF THE MAGNETIC FIELDS ON THE MELTING COEFFICIENT OF WIRE AT ARC SURFACING UNDER A GUMBOIL (PART 1). Promoting the productivity of melting of electrode wire is possible by the management of transfer of molten metal character at the action of the external magnetic fields. Investigational influence of the magnetic fields on the coefficient of melting of wire at surfacing a ferromagnetic wire on ferromagnetic basis and ferromagnetic wire on unmagnetic basis.

Keywords: surfacing, magnetic field, coefficient of melting.

Section of «Mechanics. Engineering»

UDC 621.791.9(75) Reyderman J., Cherednik E., Nosov D., Taberko L. USING OF INDEX OF HARDNESS IS FOR THE DESIGN OF THE TENSELY DEFORMED STATE. Is developed and approved the method of the determination of the mechanical properties of welded connections in a nondestructive manner, are given the results of the comparison of hardness and physics-mechanical properties of welded connections and mathematical dependences between these indexes.

Keywords: hardness, design, tensely deformed state, welded connection.

UDC 621.643.412:539.04.001.24 Nikiforyak I., Richka T., Raiderman U., Makarenko P.P., Cherednik E. ABOUT THE CALCULATION OF FLANGE JUNCTION WITH THE CONTACT All OVER THE SURFACE. The most important terms of providing the effective work during the operation is the determination of the intensive and deformed state of

the cylindrical husk which has been made of the high-strength steel. The knowledge of the properties of husk material and some of the peculiarities of the deformation, during its making helps the constructor and technologist to create correctly the optimal construction according to the base.

Keywords: the intensive and deformed state, a cylindrical husk.

UDC 671.791 Kamel' G. MECHANISM of WEAR of ATTENDED SURFACES GROUNDS and MIDDLE BRIDGES of DETAILS of CONICAL TRIBOUNITS. In the article the mechanism of wear is specified on two attended characteristic areas of superficial interfaces of conical tribosystem and their connections with the operating parameters of a hydraulic transport system. The characteristic types of wear are exposed.

Keywords: conical interfaces, tribosystem, wear, middle bridges, hydroimpacts, feeders, critical gap.

UDC 671.791.927 Kamel' G. DISTRIBUTING of WEAR ON the ATTENDED DETAILS of CONICAL TRIBOSYSTEM. In-process conducted research about intercommunication of implementation of functional descriptions with the types of wear on the attended surfaces of conical tribosystem. Connection of influence the functional parameters of conical tribosystem is set on character and types of wear on the workings conical surfaces of the attended details.

Keywords: distributing of wear, feeder, conical tribosystem, rotor, corps, corrosion, hydroimpacts.

UDC 676.163.022 Kamel' G. PROVIDING of RELIABILITY And LONGEVITY of PIPE TRANSPORT-LOAD SYSTEM of SETTING of TYPE of KAMYUR. The list of structural is in-process given, operational, technological and general conformities to the law of wear of details of feeder of conical tribosystem. For the increase of reliability and longevity of the hydraulic transport-load system are recommendations the optimum parameters

Keywords: rotor, corps, conical tribosystem, level of lye, gap, feeder, pressure.

Section of «Radioelectronics. Measurement technique »

UDC 004.8+616.12 Trikilo A., Lucenko B. COMPUTER VISUALIZATION OF THE ADAPTIVE POTENTIAL OF THE CARDIOVASCULAR DISEASES. In the article on the basis of analysis of dependence of determination of adaptation potential and estimation of her factors a model is got for determination of adaptation potential of the cardiovascular system on the basic indexes of health with application of computer technologies.

Keywords: adaptation potential, indexes of health, cardiovascular system, visualization, computer technologies.

UDC 006.91-389.14 Ignatkin V., Litvinenko V., Belyi O. DECISION OF TASK OF CHOICE OF OPTIMUM PARAMETERS OF METROLOGICAL SERVICE OF FMT BY THE MONTE-CARLO METHOD. In work there are the considered questions of decision of task of optimization of parameters of metrological maintenance of facilities of measuring technique (MM FMT) on the basis of models of exploitation and metrological maintenance. For the numeral decision the set problem the algorithm of random search as the special case of method of the statistical tests Monte-Carlo is used. Can be on the go drawn on results metrological maintenance services of enterprises during automation of processes of MM FMT.

Keywords: facilities of measuring technique, metrological maintenance, optimization.

Section of « Electromechanics. Electrical engineering»

UDC 621.313.323 Snighko A., Kolytchev S., Nizimov V. DYNAMIC OF PARAMETRIC STARTING SYSTEM SYNCHRONOUS MOTOR WITH STEPPED ENERGY STORAGE. The dynamics of the start-up mode of the system ” thyristor voltage regulator – synchronous motor” with multi-stage energy storage was considered. It is established that the use of energy storage reduces the current load in the inrush coil.

Keywords: parametric start, synchronous electric drive, stepped capacitive energy storage, dynamic characteristics.

UDC 621.312.323 Chernoivan V., Karachunskiy P., Nizimov V., Musienko A. TO QUESTION ABOUT SELF-STARTING OF SYNCHRONOUS ENGINES AT QUIESCENT LOAD. In the article the results of research of transients of resynchronizations are presented and on the basis of the got results possibility of successful self-starting of synchronous electricdrive is examined.

A device, allowing to give tension of excitation of synchronous engine at resynchronizations in most favorable moment and preventing the abrupt end of continuous technological process, is offered.

Keywords: synchronous engine, resynchronizations, self-starting.

UDC 621.313.323 Snighko A., Stasevich D., Kolytchev S., Nizimov V. INFLUENCE OF TRANSVERSE EXCITATION WINDING ON STARTING CHARACTERISTICS OF SYNCHRONOUS MOTOR. By the developed mathematical model in d-q orthogonal coordinates in the system of relative units obtained the calculated starting characteristics of synchronous motor biaxial excitation with capacitive compensation of transverse starting winding inductance and uncompensated winding. From the obtained plots of the calculated dependencies we can see, that capacitive compensation can significantly increase the torque of the motor, with a relatively small increase of the stator current.

Keywords: capacitive compensation, biaxial excitation, synchronous motor, starting characteristics.

UDC 621.313.323 Nizimov V., Kolytchev S., Snighko A., Stasevich D. STARTING CHARACTERISTICS OF SYNCHRONOUS MOTOR WITH COMPENSATED DAMPER WINDING. On the basis of mathematical model in relative units in the d-q coordinate system, investigated the influence of capacitive compensation damper winding inductance of a synchronous motor at its starting characteristics. The analysis of the calculated curves, reflecting the process of starting the engine with an additional resistance in the circuit excitation and damper winding compensated, it may be concluded that the capacitive compensation improves the average electromagnetic torque developed by the motor.

Keywords: mathematical model, damper winding, capacitive compensation, synchronous motor, dynamic starting characteristics.

UDC 62-83 Derets A., Sadovoy A. ANALYSIS OF STEADINESS OF SLIDING MODE OF FIFTH ORDER CONTROL SYSTEM, TIME-OPTIMAL WITH CONDITIONS OF MOVING DOMAIN WALL. In this paper was carried out analytical verification of steadiness for fourth-order and fifth-order sliding mode control systems, optimized in time domain with “N-i switching” method with conditions of moving state-space domain wall, for case of electric servo-drive with elastic transmission.

Keywords: sliding mode control, servo-drive, “N-i switching” method.

UDC 621.316.72/088.8 Karachunskiy P., Chernoivan V. WITHOUT THE CONTACTS AUTOMATS OF EXTINGUISHING OF MAGNETIC PAUL SYNCHRONOUS ELEKTROPRIVODOV RATTLEJACKS. In the article the results of experimental researches of the modes of operations of without the contacts automat of extinguishing of magnetic-field are presented on the physical model of the electric drive of synchronous machine, and also experimentally-industrial tests of without the contacts automat of extinguishing of the field on the synchronous engine of SDSZ 2000-100 ball rattle jack of highway of preparation fuel on Krivorozhskoy GRES.

The offered device of without the contacts automat of extinguishing of the field is determined not only the parameters of elements but also schematic, providing the starting mode during the asynchronous acceleration of machine.

Keywords: synchronous engine, over-excitation, starting mode.

Section of «Heat-power Engineering. Heat Engineering»

UDK 669.046 Cherny O., Nagornaya S. THE INVERSE TERMOMECHANICAL PROBLEM OF SPEED HEATING OF THE CYLINDRICAL BILLET. The nonlinear task of applied thermomechanics on determination maximum of the possible mode of the speed heating of cylinder from the positions of thermostrength is decided by means of the method of equivalent sources. The assay and calculation of temperature and thermostressed mode of cylinder are compounded. It allows to analyze the heat part of process.

The key words: thermomechanic, thermostrength, inverse task, creep, relaxation.

UDC 621.314.21.002 Yakovleva I., Ilyin S. BOUNDARY CONDITIONS INFLUENCE ON THE TEMPERATURE DISTRIBUTION OF THE COOLING LIQUID IN THE TRANSFORMER WINDINGS. In article the mathematical model of the transformer winding is brought. Entry conditions and geometry of model are constant. Changing boundary conditions, temperatures distribution dependence in the transformer winding from boundary conditions has been shown. Boundary conditions which most of all approach for the decision of the created model have been selected.

Keywords: transformer oil, temperature distribution, boundary conditions.

UDC 532.5.072.15 Rakocha J., Pavlenko A. ASYMMETRICAL HEATING OF POROUS FLAT WALL. By means of method of eventual differences distribution of temperatures settles accounts on the thickness of porous flat wall from silicate material. Using the got results, an estimation is given to the closeness of thermal stream on the basis of method with one next step at times for that, to decide a reverse task the same and define the value of coefficient of heat-conducting depending on time of heating of wall from select material.

Keywords: coefficient of heat-conducting, thermal stream, temperature, time of heating, coefficient of heat emission, maximum terms.

UDC 664.2.032.1 Sokolovsky I. MATHEMATICAL MODEL OF GASDYNAMICS IN THE VORTEX APPLIANCE. The article provides a mathematical model of gas dynamics in a vortex apparatus for heat treatment. The parameters of gas flows in a vortex machine, identified the optimal ratio of the geometric dimensions of the vortex system, as well as the hydrodynamic parameters that allow to develop effective design solutions to this equipment. The data obtained can be used in the methods of calculating heat and mass exchange vortex devices.

Keywords: vortex apparatus, turbulence, the velocity field, heat treatment.

UDC 658.26 Klimov R. RELIABILITY OF ENERGY ISSUE HEAT AND POWER PLANT. In this work describes the method for determining the reliability of supply of heat and electricity from industrial combined heat and power in the combined energy installations using the theory of finding the system in working and disabled state.
Keywords: energy, heat, power, reliability, authenticity.

UDC 532.5.072.15 Koshlak A. INFLUENCE OF STRUCTURAL AND TECHNOLOGICAL PARAMETERS ON DURABILITY OF POROUS MATERIAL. To the article experimental data on the basis of that influence of different factors is studied on durability of new heat-insulation porous material are driven. A mathematical model over of influence of structural and thermophysical descriptions of new porous heat-insulation materials is brought on durability. The got regressive dependences can be used as managing functions of process of distention with the purpose of optimization of descriptions of durability of materials.
Keywords: porous materials, technologies of swelling, durability, mathematical model.

UDC 532.5.072.15 Pavlenko A., Osennyaya O. DESIGN OF PROCESSES OF EMULSIONS OF FUELS IN VORTEX VEHICLES. In the article the mathematical model of the hydrothermal crushing of discrete liquid phase and the results of solving the equations of model is proposed. On the basis of the obtained results is developed the procedure of the estimation of the basic design parameters of the vortex cameras, in which occurs the homogenization of liquid propellants by complex hydrodynamic and thermodynamic action on the structure of the primary emulsified media.
Keywords: emulsification of fuel, vortex apparatuses, methods of calculation.

UDC 621.1.016.7 Nazarenko I. THERMODYNAMIC ANALYSIS OF THERMAL TECHNOLOGICAl PATTERNS OF PITCH MANAGEMENT. This paper presents a thermodynamic analysis of the effectiveness of teplotechnological circuits and systems. The main indicator of the degree of thermodynamic perfection is the exergy efficiency η_{eks}. Calculation of the exergy efficiency allowed us to determine the absolute value of the degree of thermodynamic perfection of the process. In addition, the value of η_{eks} indicated the usefulness of finding ways to reduce energy costs and improve performance thermal technological scheme.
Keywords: exergy efficiency, pitch management, steam condensate mixture.

UDC 658.567.1 Yakovleva I., Mnih I., Barishenko E. TO THE QUESTION OF IMPROVEMENT CHAMBER THERMAL STOVE CONSTRUCTION. In the article the reconstruction scheme of chamber thermal stove with the return serve nozzles is offered. The way of heat carrier driving into the stove is described. The offered stove construction provides the continuous fuel-air mixture driving in the heating period and impulsive-reversible heat-carrier driving in the exposure-time period that helps to intensify heat-exchange in the working space of the stove.
Keywords: thermal stove, recirculation, reconstruction, return**,** driving.

Section of «Chemistry. Chemical Technology. Ecology»

UDC 541. 64: 536.7 Goloborodko V. PECULIARITIES OF PHASE STATE OF HIGH-MOLECULAR COMPOUND SOLUTIONS. The article provides an overview of issues pertaining to the properties of polymer solutions, particularly, the phase equilibrium in polymer-solvent systems. The author reviewed the existing old and new theories of this phenomenon, considering the specific features of polymer macromolecules structures and their effect on the overall behavior in solutions.
Keywords: polymer macromolecule solutions, structure.

UDC 662.762 Gulyaev V., Barsky V. HOMOGENEITY OF COAL CHARGE OF LOADING AS A FACTOR INFLUENCING THE QUALITY OF COKE. Shows that an increased level of sharing components of the charge in the amount of load significantly and positively influences the rate of friability testers, but not manifests itself in relation to the crushing that is associated with the different mechanisms of the degradation of coke chunks.

Keywords: class size, uniformity, mixing, quality, coke.

UDC 662.762 Gulyaev V., Barsky V. GRINDING COMPONENTS OF COAL CHARGE AS A FACTOR INFLUENCING THE QUALITY OF COKE. Theoretically and experimentally proved, shows that changing the degree of crushing of coal of different technology groups while the branded and sediment grain size composition has a major impact on key indicators of the quality of coke.

Keywords: brands, shredding, class size, density, strength.

UDC 661.474:541.13 Antonov V., Voloshin M., Ovchinnikov A. INFLUENCE OF $K_2Cr_2O_7$-CONCENTRATION UPON THE PROCESS OF ELECTROLYSIS OF IODIDE-IODATE SOLUTION DURING THE PRODUCTION OF POTASSIUM IODATE. The article considers the influence of the concentration of potassium dichromate on the electrolysis in the process of potassium iodate. The influence of dichromate on the volt-ampere characteristic of the titanium cathode and the current output of potassium iodate. Prove the possibility of a periodic cell without potassium dichromate in the electrolyte.

Keywords: electrolysis, potassium iodate, potassium bichromate.

UDC 661.872.23-13 Vasilenko I. RESEARCH OF A STAGE OF RECEPTION PRIMING CRYSTALS YELLOW PIGMENT. By means of laboratory researches the comparative analysis of methods of reception priming crystals yellow pigment is carried out, is shown, how changes pH a reactionary mix in the course of synthesis, dispersion of the synthesized deposits, morphology of crystals of a priming, color purity of a deposit and structure of the received deposits

Keywords: pigment, hydrolysis, dispersion.

UDC 678.5 Vasilenko I. RESEARCH OF PROCESS OF POLYCONDENSATION OF A CARBAMIDE AND FORMALDEHYDE IN THE FULFILLED ETCHING SOLUTIONS. By means of laboratory researches optimum conditions of reception highly disperse deposits carbamideformaldehyde polymer in the sour environment without formation of sewage polluted by formaldehyde are defined and perspectivity of the offered technology of recycling of the fulfilled etching solutions with reception modified black iron oxide pigment is shown.

Keywords: sewage, pigment, polymer, polycondensation, dispersion.

UDC 628.163 Ivanchenko A., Fishbein O., Voloshin N. RESEARCH OF TECHNOLOGY OF CLEANING OF SEWAGES IS JOINT STOCK COMPANY «DNIPROAZOT». In the work investigational technology of bioscrubbing of flow waters JOINT STOCK COMPANY «DNIPROAZOT», dependences of concentration of nitrogen ammoniacal, that is ostensible to quality of the cleared flows, are got, from time and specific expense of air. It is shown that with the increase of time and intensity of serve of air the concentration of soluble oxygen grows in sewer water.

Keywords: bioscrubbing, industrial flow waters, specific expense of air, nitrogen ammoniacal, soluble oxygen.

UDC 57.04:579.64 Kryukovska O., Voloshin M. EFFICIENCY AND HYGIENE REQUIREMENTS FOR A METHOD ELECTROCHEMICAL WATER DISINFECTION. The article contains analysis of studies of modern technologies of disinfection of drinking water. Objectively assessed with hygienic position advantages and disadvantages of chlorination and the electrochemical method of water disinfection, defined the prospects for further research in this direction.

Keywords: technology, disinfection, chlorination, electrolysis.

Section of «The Information Technology»

UDC 519.6 Karmazina V., Khuda Z. FOR RESTORATION WITH SPLINE CURVES-SOLVING DIFFERENTIAL EQUATIONS. In this paper we present an algorithm of high accuracy recovery curves that are solutions of differential equations. The algorithm is based on splines and implemented by means of Microsoft Excel. The example. The results of numerical implementation.

Keywords: spline, accuracy, algorithm, the differential equation, spreadsheets.

UDC 004.031.43:681.5:658.5(078) Lytvyn A. CREATION IS HUMAN-MACHINE INTERFACE FOR RUN-TIME TRAINERS. Questions of creation human - machine interfaces (HMI), dynamic simulators of technological processes sold at creation and devices are considered. The examples of realization executed on the basis of tool system of development TRACE MODE 6 and T-FACTORY are resulted.

Keywords: interface, trainer, SCADA system.

UDC 004.031.43:681.5:658.5(078) Lytvyn A. PRINCIPLE of CONSTRUCTION of RUN-TIME TRAINERS of DIFFICULT INFORMATIVE SYSTEMS ON BASE of the OBJECT-ORIENTED SYSTEMS PLANNING. The general questions of construction of complex modelling information control systems (dynamic simulators) by various technological processes of manufacture on the basis of object-oriented tool systems of class SCADA are considered.

Keywords: informative system, model, object-oriented planning, SCADA system.

Section of «Discussions»

UDC 621.313.1 Sheviakov V., Podolian S., Rudenco V. TO THE QUESTION ABOUT THE RECEIPT OF ENERGY FROM EXTERNAL SPACE WITHOUT CONTAMINATION OF ENVIRONMENT. The method of useful energy reception from the surrounding space, several times reducing consumption of traditional energy carriers is practical realized and tested. The scientific hypothesis leaning against numerous scientific workings out and opening of last decade and explaining both the phenomenon of nontraditional power supply, and other physical effects accompanying this phenomenon, for example, effect of "a cold current" is offered.

Keywords: nontraditional power supply, electron stream, the effect “cold current”.