

## ABSTRACTS

### Section of «Metallurgy»

UDC 669.162 Lebed' Yu., Kryachko G. SLAG OUTPUT INFLUENCE ON THE EFFICIENCY AND EFFECTIVENESS OF THE BLAST FURNACE SMELTING. In the blast furnace with a hearth diameter of 8.4 m the effect of slag output on coal-burning rate and furnace capacity was investigated. The relation between the relative slag ratio and productivity was not found. The dependences of the coke consumption, fuel and smelting rate defining by the total carbon is found out; all these components are defined by the slag amount, which depends on iron content change of melting furnace-charge. It is shown that under current conditions of smelting process the furnace can operate with the slag output up to 1150-1200 kg / t of pig iron.

*Keywords:* slag output, blast-furnace smelting, coal-burning rate, coke, fuel, intensity, productivity.

UDC 669.296 Tolok A., Romaniuk R. EXPERIMENTAL RESEARCH DISTRIBUTION OF TEMPERATURES IN MIX MATERIAL IN THE COURSE OF RECEPTION ZIRCONIUM OF NUCLEAR PURITY IN INDUCTION OVENS WITH THE COLD CRUCIBLE. In paper results an experimental research of agency an aerial input electromagnetic field of inductors ovens IPHT-200 with the cold crucible and a mutual bracing of its convolutions on preliminary heating of mix material (tetrafluoride zirconium and metal calcium), and also (zirconium) metallic yield in a bullion are resulted. It is shown, that mix material heating necessary to spend of 60-220 kW, and the magnitudes close to the maximum values at power, it is possible to use only for sweeping achievement of temperature a kickoff interacting of components. Concentrating convolutions of inductors in the overhead part at other stretched convolutions realization of process with completely constricted or stretched convolutions as in the first case at the expense of concentration convolutions the best preheating of the overhead charge banks occurs is the best, than.

*Keywords:* zirconium, mix material, heating, power, convolution, bullion

UDC 330.341.1 (447) Kaira L. INTENSIFICATION OF METALLURGICAL ENTERPRISE INNOVATIVE ACTIVITY. The article analyzes the structure of the category "innovative activity of an enterprise". It investigates tools and means of evaluation of an enterprise innovative activity level. The article determinates the ways of innovative activity intensification of metallurgical enterprises taking into consideration the contemporary demands.

*Keywords:* innovational activity, performance evaluation of innovative potential.

### Section of «Rolling production»

UDC 621.771.01 Ershov S., Kravchenko K., Romanyuha R., Fylyonenko A. STUDY OF THE STRESS-STRAIN STATE OF THE ROLLING CHANNEL IN A MODERN PRODUCTION CONDITIONS. The article contains the results of modeling the rolling process of the channel №8 in the rolling stand № 11 of the medium-grade wire mill 400/200 of PJSC "DMC". For performance of calculation used software package ESV-Deform, developed at the Department of OMT DSTU. The analysis of the obtained data revealed the details of the shaping process and the parameters of the stress-strain state of the metal. The obtained data can be used to improve the existing calibration of rolls on modern rolling mills.

*Keywords:* channel, roll calibration, velocity field, stress state, finite element method.

UDC 621.771.01 Maksimenko O., Prisiazhnyi A., Kuzmin E., Kostritsa A. THEORETICAL ANALYSIS OF THE MOMENT ROLLING WITH STRIP TENSION. In the article proposed the method of calculating the moment of rolling with strip tension. It determined based on the resultant normal pressure, angle of application of this force in the defor-

mation zone, and from the resulting longitudinal forces plastically deformable metal and a tension of the strip.

*Keywords:* tension, moment of rolling, resultant, methods

### **Section of «Engineering. Mechanics»**

UDC 539.374 Babeshko M., Savchenko V. THE MATHEMATICAL MODELING OF AXISYMMETRIC STRESS-STRAIN STATE OF COMPOUND BODIES UNDER THERMO-FORCE LOADING AND IRRADIATION. The procedure for the numerical investigation of the axisymmetric elastoplastic stress-strain state of compound bodies during the thermo-force loading and irradiation process is elaborated. The relationship of the theory of the straining along the small curvature trajectories are used. The numerical results are given.

*Keywords:* elastoplastic stress-strain state, thermo-force loading, irradiation.

UDC 669.013.002.5:531.3 Beygul O., Smirnov A., Beygul V., Lepetova A. THE BASIS OF CROSS STABILITY FOR ARTICULATED PORTAL CONTAINER TRUCK BY ASYMMETRICAL KINEMATIC DISTURBANCES. The mathematical model of articulated portal container truck disturbance motion by asymmetrical disturbances of uneven technological roads has been worked out. The condition of cross stability for articulated portal container truck under disturbance motion by methods of analytical mechanics has been received and based for selection conditions of such machines motion on the technological roads.

*Keywords:* mathematical model, disturbance motion, articulated portal container truck, cross stability, asymmetrical kinematic disturbance.

UDC 621.9.02 Belmas I., Bobyleva I., Soromitko I. FORM THE GENERATOR OF THE ROTATING PARTS WITH INTERSECTING AXES OF THE PART AND GRINDING WHEEL. The influence of the mutual location of the axes of the parts rotation of the grinding wheel and its diameter on the surface of a type of hyperboloid of rotation with a single cavity and close to its surface. An algorithm is proposed which allows to determine the mutual arrangement of the elements of the kinematical method of grinding a curved symmetrical profile with three geometric parameters of the grooves including grooves of inner ring of rolling bearings than to improve the accuracy of formation of these surfaces.

*Keywords:* grinding, kinematical method for forming the annular groove, the groove diameter, the diameter of the grinding wheel, the skew axis.

UDC 539.374 Volosova N., Suhomlin V., Voloh V. FORECASTING OF THE OPERABILITY OF CRANE WHEELS IN THE PROCESS OF OPERATION. The paper presents the results of studies of the control of crane wheels in terms of the coercive force  $H_c$  and the hardness HB. The obtained data on the ranges of safe operation of wheels made of steel 65G in the production process are given. A control procedure has been developed and formulas have been determined for the reliability interval with prediction of the remaining life of the wheel prior to failure.

*Keywords:* coercive force; hardness; crane wheel; dynamic hardness tester; stress-strain state.

UDC 671.791.5 Kamel G., Ivchenko P., Martovitskij L., Gasilo Yu., Savonov Yu., Kotlyarov N. THE STUDY EXPERIMENTAL CHARACTERISTICS OF THE DRIVE CONE INSTALLATION TRIBOSYSTEM SWEDISH COMPANY KAMYR. The influence on the reliability, service life and suitable for repair p-tutela conical tribological system the following operating and design parameters: the magnitude of the gap in the feeder at the compensation level solace in the feed pipe, the amplitude of the oscillations of the rotor by the action of water hammer, the amplitude of the axial movement of the rotor in the compensation

gap, especially wear of the mating parts of the feeder. Stated that 80% of the surface of the parts feeder conical tribosystem perform functions, as is the boot and shut-off devices. 20% provide rigidity and strength of frame of the feeder and provide Autonomous operation of the two conical sections of the tribological system. Define a rational and constructive process option, and operation of mating parts tapered tribosystem Swedish company Kamyr.

*Keywords:* conical tribosystem, rotary feeder, actuator, gap compensation, operating mode, the amplitude of the vibrations, hammering, pH alkali, wear, work offline, sections of the feeder, loading.

UDC 671.791.5 Kamel G., Gasilo Yu., Volkov G., Kosarev E., Kotlyarov N. THE STUDY HYDROTRANSPORT PIPELINE FOR TRANSPORTATION OF WOOD CHIPS IN THE DIGESTER. The features of the operation of the pipeline hydraulic transport systems for continuous pulp cooking Swedish company Kamyr where to download the crushed wood is used alkali, specific gravity, which is higher than the specific weight of the crushed wood. Stable download of chips the digester provides pipeline hydraulic transport system consists of the main road - move chips and two support ring of traces of alkali circulation high and low pressure. All three routes pass through the pockets of the rotating rotor, two auxiliary track insulated from each other and work in offline mode.

*Keywords:* conical tribosystem, rotary feeder, circulation of alkali, shredded wood, wood chips, download chips, download chips, sections of the feeder, operating mode, work offline.

UDC 621.922.02.001.5 Tantsura G., Belous M. STRESS STATE OF THE WHEEL FROM THE ACTION OF CONCENTRATED RADIAL PRESSURE ON THE ABRASIVE GRAINS. The grinding wheel is considered as an anisotropic body. To the point of the body located at a distance from the surface of the applied normal force and certain tension due to its impact. Distance equal to the height of the grinding of grain, and the forces – the normal force of cutting. Investigated the stress distribution. It is shown that the application of the material of the grinding wheel, the Poisson's ratio which is greater than zero leads to increase of maximum stress and to reduce the number of loading cycles of cutting grain before its separation from the body of the grinding wheel.

*Keywords:* grinding wheel, abrasive grain, normal force, tension, Poisson's ratio.

UDC 621.867.427 Chasov D., Korol M., Kraevskiy O. MATHEMATICAL MODEL OF EXPERIMENT PLANNING TO SCREW CONVEYORS SETTING WITH ADDITIONAL FACTOR. We describe the experimental design to determine the effective parameters of screw conveyor considering additional factors. A multifactor experimental studies that can determine the occupancy of the groove, the number and angle of attack of additional blades. The method of simultaneous variation, which defined functional relationship parameters of all investigated parameters. Grounded versions of coefficients for independent variables indicate the strength of influence factors. An estimated data which formed the basis of performance depending screw conveyors and classic blade design.

*Keywords:* planning experiment, many factors, the coefficient of performance.

UDC 629.02 + 629.463.6 Shulga A., Adamchuk S., Belmas I., Shulga A., Pavelko S., Parfenov T. DURABILITY EVALUATION METHOD ON DETAIL PARTS WEAR OF CENTER PLATE ARRANGEMENT. Durability evaluation method on detail parts wear of center plate arrangement is proposed on the basis of these studies. This method takes into account the main factors which arise in the operation and impact on the rate of wear, and allows to calculate, to take the necessary steps and predict the service life of center plate arrangements of transport facilities both at the design phase, and during railcar operation.

*Keywords:* centerplate, transport, durability.

UDC 669.136 Beigul O., Adamchuk S., Sereda D., Shulga A. OBTAINING OF WEAR-RESISTANT COATINGS ON DETAILS OF VEHICLES UNDER NON-STATIONARY TEMPERATURE CONDITIONS. In this work, we consider the production of protective coatings on the details of the crank mechanism. Steel 50 was used for the research. The coating was formed for 15-60 minutes at a temperature of 900-1050<sup>0</sup>C. The optimum compositions of SHS-charge containing 10% B, 7% Si, 20% Ti were obtained. It is established that with increasing hardness wear resistance increases. On the surface, a micro hardness of 15000-17500 MPa was obtained. Due to alloying of chromium-coating coatings with boron, silicon and titanium, obtaining an increase in wear resistance by 1.8-2.1 times than for coatings obtained under isothermal conditions and the term of chemical-thermal treatment decreased by 2.5-4 times. This allows you to reduce energy costs during the process of chemical-thermal treatment.

*Key words:* wear resistance, synthesis, steel, micro hardness, phase.

### **Section of «Radioelectronics»**

UDC 004.384 Zhuravskiy O., Zhulkovskiy O. THE MODERNIZATION OF INDUSTRIAL JIGGING MASHINS BY REPLACING THE PROGRAMMABLE LOGIC CONTROLLER. Recover and expand the functionality of jiggling machine Mimar DE2000 (Italy) by replacing the faulty base controller of the company Mimar with controller OWENPLC73 produced by Owen company. Base functionality of this device can be programmed in the CoDeSys system. In the process of testing, it was determined that the functionality of the machine fully complies with the requirements of the customers.

*Keywords:* jiggling machine, restoration of functionality, upgrading, programmable logic controller.

UDC 621.391 Syanov A., Ryazantsev O., Kulik M., Kulik J. EFFECT OF INTERFERENCE FOR OFDM CHANNEL COMMUNICATIONS IN THE FREQUENCY BAND 5 GHz. The influence of interference on the OFDM communication channel in the frequency range of 5 GHz is analysed. Calculate the required sensitivity of the receiver when the interference-of-presence and levels of interference in a predetermined pass-band of affecting the radio.

*Keywords:* OFDM, interference, the communication channel, the QAM, the noise levels of losses in the implementation, the error rate, spectral channel strip, allowed level AC.

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

UDC 62-83 Derets A., Sadovoy O. ADAPTATION ALGORITHM OF FOURTH-ORDER SLIDING MODE CONTROL SYSTEM, SYNTHESIZED WITH N-i SWITCHING METHOD, TO TRANSIENT TRAJECTORY FORM VARIATION. The article presents an algorithm of sliding mode submissive control system settings adaptation to various trajectory forms of transient with condition of intermediate coordinates limitation. Adaptation carries out according to master control magnitude by discerning of current mode with calculation of suitable magnitudes for canonic coordinates and further calculation of feedback gains. Extremely small capacity of calculations, realizing with N-i switches method, provides high processing speed for control system synthesis procedure.

*Keywords:* sliding mode control system, adaptation, trajectory form variation, N-i switching method.

UDC 621.313.33.003.13 Syanov O., Kosuhina O., Polyakov R. CALCULATION OF ECONOMIC EFFICIENCY OF NEW AND ADVANCED INDUCTION MOTORS. Methods of cost-effectiveness calculation of new and advanced induction motors are based on the fundamental provisions of the basic procedures, instructions, regulations and reference materials for instructions and other regulations of economic efficiency and annual economic

benefit determining obtained as a result of new technology introduction, agreed upon and approved by the public authorities.

*Keywords:* induction motor, economic efficiency, economic impact, investments.

UDC 658.26:621.316.1 Khmel'nitsky E., Kluyev O. DETERMINATION OF THE EFFECTIVENESS OF HARMONIC FILTERS IN THE 10 KV NETWORK OF THE METALLURGICAL PLANT. The paper deals with the analysis of work of filter-compensating device (FCD), installed in substations of 10 kV steel plant. Calculations on the efficiency of harmonic filters (f-3, f-5, f-7, f-11) are performed. Determined by the low efficiency of the filter of the 3rd harmonic, if it is indicated that an invalid combination of include filters f-3, f-7, f-11. The proposed changes in the structure of the device of FCD with filter replacement f-11 to a capacitor without protective reactor.

*Keywords:* parameters of power filter, the third harmonic, the structure of filter-compensating device.

UDC 621.313.322 Homenko V., Nizimov V. ENERGYEXCHANGE PROCESSES BETWEEN CONTOURS OF AUTONOMOUS SYNCHRONOUS GENERATOR. In the article influence of parameters is considered to the contour of excitation on energyexchange processes between the contours of synchronous generator. The brought mathematical models over to the contour of excitation. It is well-proven calculation and experimental researches, that parameters substantially influence the contour of excitation on firmness of synchronous generator and stabilizing of initial tension.

*Keywords:* synchronous generator, contour of excitation, energyexchange processes, mathematical models.

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

UDC 669.183.213.2 Glushchenko O. DEVELOPMENT OF MATHEMATICAL MODELS COLLABORATIONS GAS AND AIR REGENERATOR HEATING WELLS TO OPTIMIZE THEIR UTILIZATION CHARACTERISTICS (part 2). The design of regenerators nozzles ensures even distribution of the products of combustion through section and increases the efficiency of heating surface. Based on theoretical research established that the simultaneous operation of regenerative heat exchangers that are heated fuel and air, there is an optimal position of the separation wall, at which the maximum utilization of heat waste combustion products, also found that the speed of the flue gas in the nozzle should be 1,0-1,2 m/s.

*Keywords:* regenerators of sokers, utilization, optimization, dividing wall, cell, waste products of combustion, mathematical model.

UDC 658.26 Klimov R. THE IMPACT OF STRUCTURAL AND PHYSICAL PARAMETERS IN THE PREPARATION OF LIQUID FUELS. In the article the influence of different factors on the process of crushing large drops of dispersion phase emulsion is described. Regressive equalizations for the calculation of critical distance between drops, at which dynamic influence from the side of shallow drop can result in crushing of large particle, are brought over, and for timing flow line of the given process.

*Keywords:* emulsion, crushing, drop, dispersion phase.

UDC 622.41.012.2 Stasevich R., Stasevich D., Litvinenko A., Yurchenko A. RESEARCH JOINT WORK MAIN FANS OF OPERATING MINE. Shown the results of theoretical research joint work main fans of operating mine. Developing the method of determination of required modes of fans when changing parameters of ventilation network sites if there is information about the real parameters of the operating modes of the fan and the ventilation shaft. The methodology put theoretical principles of methods of industrial experiment.

*Keywords:* operating mine, main fans, determination of required modes of fans, industrial experiment.

### **Section of «Information Technology»**

UDC 519.218 Dranishnikov L. INFORMATION ANALYSIS OF EMERGENCY RISK OF INDUSTRIAL HAZARD. On the basis of a systematic approach to solving problems of ensuring safe operation of structurally complex systems conducted qualitative and quantitative analysis of the disaster risk of industrial hazard. Describe the procedure of risk analysis. The results of the risk analysis can be used in the Declaration of high risk, the examination of industrial safety.

*Keywords:* system analysis, risk, object, software.

UDC 004.432 Zhulkovska I., Zhulkovskyi O., Biljo V. TYPESIS OF MODERN PROGRAMMING LANGUAGES. A general analysis of modern PL is carried out. A study was made of the peculiarities of typing the most popular (rating) PL for the correct choice of the necessary software for solving a wide class of problems. The results of the studies showed a low interest of software developers in untyped languages.

*Keywords:* programming language, dynamic typing, static typing, explicit typing, implicit typing.

UDC 519.688 Pyshnyi M., Marchenko O., Kosuhina O., Guliesha O. INTELLECTUAL DATA PROCESSING METHODS: ANT ALGORITHMS. On example, the traveling salesman problem is considered as a discrete algorithm of solution optimization problems introduced components self-organization ant colony: accidental, multiple interaction, negative and positive components of communication. Compared to the exact methods of combinatorial optimization ant algorithms find positive salesman routes more quickly, the effectiveness of ant algorithms increases with increasing dimension optimization problems.

*Keywords:* ant algorithms, data processing, optimization tasks.

UDC 004.031.43 Yashyna K., Yalova K., Sugal E. SOFTWARE DEVELOPMENT AGILE METHODS OVERVIEW. Modern software development methods overview is given in the article. The popular flexible software development methods: SCRUM, Extreme Programming, Feature Driven Development are analyzed. Their basic principles, features of using and functioning are defined. Specific features of the Agile-methodols application in teaching the discipline «Group dynamics and communications» for students of specialty 121 – «Software Engineering» are defined.

*Keywords:* Agile, SCRUM, Extreme Programming, Feature Driven Development.

### **Section of «Chemical technology. Biotechnology»**

UDC 662.65 Barannik K., Voloshin N. ANALYSIS OF SUNFLOWER AS FUEL. The use of vegetable biological mass is examined in the article, namely sunflower husk on the enterprises of industry of processing of oil as an alternative source for the receipt of thermal and electric energy. Problems over of incineration of sunflower husk are brought. The aim of the real article is research of the use of vegetable biological mass, namely sunflower husk as alternative energy source in industries of processing of oil.

*Keywords:* wastes of production, vegetable biological mass, husk of sunflower, cogeneration, ash composition, biological fuel.

UDC 661.152.3 Byelyanska A., Klimenko I., Voloshin M. RESEARCH OF THE EFFECT OF PRE-TREATMENT OF THE FERMENTATION MIXTURE ON THE QUALITY OF THE METHANE FERMENTATION (for example t. KAMENSKIE). The work to establish that the use of municipal solid waste, such as chicken manure, wastes of the production of sunflower oil, wastes of bakeries, waste water as raw materials for the production of biogas and complex fertilizer is effective, allows of producing from 0,35 to 0,7 dm<sup>3</sup> of 1 kg

dry substance, have economic value. It was determined, that the most effective method for preparation of raw materials to the fermentation is milling mixing. Size of the particles after milling mixing decreases by 87,5%, while when using a gate-impeller mixer is 27,5%. Developed a general technological scheme for producing a complex fertilizer on the basis of industrial and municipal waste, in which first use for pre-treatment of fermented mixture of milling mixer, that speeds up 2 times the processes of decantation and methane fermentation. Discounted payback period of the developed technology does not exceed 1,2 year.

*Keywords:* milling mixer, industrial and municipal waste, complex fertilizer, methane fermentation.

UDC 621:658 Gulyaev V., Kornienko I., Rudakova K., Voloshina S. RESEARCH OF OBTAINING TECHNOLOGY OF BIOFUELS BY BIOTECHNOLOGICAL METHOD. The technology of biodegradation of vegetable waste (solvent cake wormwood, plantain, ambrosia) by means of lactic acid bacteria symbiosis and enzymes which stimulate the process of biomass degradation of plant biomass has been investigated. The process of biodegradation was successfully completed in 7 days at temperature of 45°C, maintaining a pH of 3,5-4,3. As a result of biodegradation process of plant waste, bioethanol in amount of 3,26-11,9 g/l and enzymes in amount of 1,86-7,12 g/l using symbiosis of lactic acid bacteria was obtained. Experiments have shown that the greatest amount of bioethanol can be obtained by using enzymes. It has been established that in the case of enzymes use and lactic acid bacteria there is a complete hydrolysis of plant material, which allows its further use in animal feeding.

*Keywords:* biofuels, biodegradation, waste, bioethanol, hydrolysis.

UDC 661.152.4 Ivanchenko A. INTENSIFICATION OF TECHNOLOGY FOR BIOMINERAL FERTILIZERS FROM THE WASTE. Noted the potential use of sustainable bioenergy in the the European Union. In Ukraine, one of the outstanding issues of implementation of biogas plants is that the average length of stay of raw materials in the reactor ranges from 30 to 55 days, which complicates the possibility of their mass implementation. Application of enzymes in technology biomineral fertilizer is a new scientific direction. It is shown that the addition of whey in optimum ratio of 1:30, you can reduce the length of stay of raw materials in the reactor anaerobic digestion of 1,5 times. Analyzed chemical composition of fermented biomineral fertilizers, it is determined that the contents of carbon (C) it is 41,8%, N<sub>tot.</sub> – 5,2%; CaO – 13,8%; K<sub>2</sub>O – 12,2%; P<sub>2</sub>O<sub>5</sub> – 11,5% in terms of dry substance. It is established that the maximum affinity of the enzyme to the substrate occurs on the 11 day of fermentation. The technological scheme of production of mineral fertilizers from wastes using enzymatic additives.

*Keywords:* biomineral fertilizer, enzyme, serum, waste, biogas, anaerobic digestion.

UDC 548.736:546.562:541.49.677.21 Kovalenko A., Kizymishyna T. PECULIARITIES OF CO-ORDINARY COMPOUNDS OF BIOMETALLS WITH AMINOSPIRITS TO REACTIVATE CHOLINESTERASES AND MEMBRANE MECHANISMS OF ANTIDOTE-MEDICAL ACTION. The ability of coordination compounds of biometals with bio-ligands, and the ability to reactivate cholinesterase phosphorylated with 0,0-dimethyl-2,2-dichlorovinylphosphate have been studied. The reactivating effect of the compound has been established.

*Keywords:* coordination compounds of biometals, bio-ligands, cholinesterase.

UDC 548.736:546.562:541.49.677.21 Kovalenko A., Kizymishyna T., Shumylo K. RECEPTION MEDICINES BASED POLYETHYLENE GLYCOL AND COORDINATION COMPOUNDS OF CU (II) WITH 2-AMINO-2-OXSYMETYL-1,3-PROPANEDIOL. The method of medical ointment obtaining on the fat base - polyethylene glycol - with immobiliza-

tion of the complex compound of copper (II) with 2-amino-2-oksymety-1,3propandiol have been developed. The properties and composition of the compounds obtained have been defined.

*Keywords:* medical ointment, polyethylene-glycol, 2-amino-2-oksymety-1,3propandiol.

### **Section of «Life Safety»**

UDC 65.012.8.628 Kuris Y., Matyasheva O., Bielokon K., Kozhemyakin G. THE RESEARCH OF MOTOR TRANSPORT INFLUENCE ON CITY NOISES SAFETY OF STABLE URBANIZED TERRITORIES DEVELOPMENT. Motor transport influence on Zaporizhzhia city environment was investigated and results are proposed in this work. The gauge level of noise contamination and data of noise sources city contamination were conducted. It was determined that citizens of Zaporizhzhia city are greatly exposed to noise influence as its level exceeds admissible by 20-25 decibel nearby motorways and by 10-20 decibel close by railway territories at trains motion. All these negatively affect citizen's health. The cardinal ways of noise reducing are marked.

*Keywords:* motor transport, noise, noise contamination, sound level, population index, acoustic discomfort.

UDC 502.7 Levchuk K., Marchenko O. POLLUTION OF THE GROUNDWATER OF UKRAINE. The article describe the main sources of groundwater pollutions and harmful compounds that enter in the groundwater. The author illustrates by the example of the environmental situation in Kam'yanske. The territory of this town contains more than 75 million tons of industrial waste that disposed for decades directly near the Dnieper, increasing the danger of the river pollution. As supplementary toe there are 10 potentially hazardous tailing dumps with total area of 2.43 million sq. m, where 42 million tons of radioactive waste are accumulated. These tailings have no effective insulation and waterproofing. So there is a real threat of groundwater radioactive contamination and falling of poison water into the Dnieper. The author concludes that effluent quality in Ukraine is extremely low, the existing treatment plants even in the case of use the biological treatment removed only 10-40% inorganic substances and practically do not removed heavy metals. So use of ground water from sanitary and epidemiological point of view is dangerous.

*Keywords:* pollution, groundwater, environmental situation.

UDC 621.745:504.06 Milyutin V., Rozdobudko E. ENVIRONMENTAL AND ECONOMIC EFFICIENCY OF DUST COLLECTORS' RECONSTRUCTION AT THE STEEL PLANT. Installation on the arc steelmelting furnace-20 to clean the air and protect the environment of pollutants bag oksalon filters instead cyclone battery, reduces emissions of pollutants by 67% and loss, applied to the environment by 6272000 UAH/year, is reduced. The overall environmental and economic impact of the reconstruction is 7116661 UAH/year. General erhonomic and economic benefit of installing oksalon filters instead cyclone battery is not so much in technical, environmental and economic effect as in the social effect.

*Keywords:* steel plant, arc steelmelting furnace-20, battery cyclone, oksalon filters, pollutants, economy, ecology.

### **Section of «Education»**

UDC 378.14 Valuyeva N. THE STUDY OF BILINGUAL PECULIARITIES OF FOREIGN LANGUAGES LEARNING IN HIGHER EDUCATION INSTITUTES IN THE CONTEXT OF MODERN EDUCATION CONCEPTIONS. The article is devoted to the analysis of bilingual studies of modern educational programs of Ukraine. Technical students acquire more easily the native fluency in one of the foreign languages when studying on the bilingual basis. We examine the advantages of bilingual learning in higher education institutes



of Ukraine, the peculiarities of educational process organization, some forms and methods of two foreign languages learning on bilingual basis at the "Translation" department of DSTU.

*Keywords:* bilingual education, foreign language competence, integration, learning methods and forms.

UDC 378. Leshchenko O. THE USE OF INTERNET WEBSITES IN FOREIGN LANGUAGE PROFESSIONAL COMPETENCE DEVELOPMENT OF TECHNICAL STUDENTS IN DISTANCE EDUCATION. The article deals with the problem of the effectiveness of information technology in foreign languages teaching. The benefits of electronic learning are demonstrated, and also some disadvantages are revealed. Author focuses on expanding opportunities to introduce much more theoretical material than usually in traditional classes, changing the paradigm of relations between participants of educational process. Methods and peculiarities of websites use, which are one of the easiest and most powerful means of forming foreign language professional competence in distance education is elucidated.

*Keywords:* web-sites, information technology, Internet resources, electronic devices, educational process, interaction, distance education.

UDC 378.147:372.8 Taran V., Kalinina T., Kharitonova O., Hryhoryeva O.I. FORMATION OF PROFESSIONAL COMPETENCE IN GIVING A COURSE OF ELECTRODYNAMICS FOR STUDENTS OF ELECTRICAL SPECIALTIES. The principle of professional competence formation of students on the methodical system basis of fundamental properties application of electromagnetic fields containing four cause and facts stages of interrelated facts and processes generated by them have been studied.

*Keywords:* electrodynamics, professional competence, electrical specialties.

UDC 378.147.31 Taran V.H., Hubarev S.V., Trusyeyeva N.A., Hurin I.V. WAVE NATURE OF LIGHT AS THE FUNDAMENTAL CONCEPT OF LEARNING GEOMETRIC, WAVE AND QUANTUM OPTICS SECTIONS IN PHYSICS COURSES OF UNIVERSITIES. Methodical peculiarities of teaching the section "Optics" in general physics course for engineering students based on a single concept of the light wave nature have been studied. The variants of visual identification of the light properties to the properties of electromagnetic radiation have been suggested.

*Keywords:* optics, light, , wave nature, wave train, photon.

UDC 378.147:31 Truseeva N. TEACHING OF THE TOPIC «OSCILLATION AND WAVES» IN THE COURSE OF GENERAL PHYSICS FOR STUDENTS OF ENGINEERING SPECIALTY. When teaching «General Physics» course it seems reasonable to consider two topics. «Mechanical Oscillations and Waves» and «Electromagnetical Oscillations and Waves». Simultaneously employing the electromechanical analogy instead of discussing these topics separately while considering «Mechanics» and «Electromagnetism» respectively. It gives an opportunity to optimize lecture time as well as deepen student's understanding of physical processes taking place in oscillation systems of different nature.

*Keywords:* oscillations, waves, oscillating systems, electromechanical analogy.

UDC 378.147.31 Chasov D., Korol M. METHODS OF IMPROVING THE PERCEPTION AND MASTERING THE MATERIAL DURING LECTURES. The methods enhance perception and mastering the material presented during lectures. Investigated the characteristic features of the current conditions of technology development and innovative teaching methods. Highlighted features and described new learning technologies. The necessity of replacing outdated and inefficient methods, techniques and tools of the material in new and more effective. Established promote disclosure of internal preferences and creative expressions audience through the use of techniques to interest audiences in obtaining information.

*Keywords:* information, audience, research activities, dialogue.