ABSTRACTS

TECHNICAL SCIENCES

Alieva L. I., Chuchin O. V. Analysis of the process of successive radial direct extrusion by the method of kinematic modules // Scientific Herald of the DSEA. – 2015. – № 3 (18E).

The upper bound method to determine power mode in combined radial-forward extrusion process for hollow parts with solid billet is investigated. The different kinematics modules are compared. The kinematics of velocity field and best kinematics modules such as triangular curved modules are defined. The common decision based on application modules blocks for areas with characteristic metal flow, possible changes in tool, die geometry and shaping of deformation are determined. The theoretical analysis to get relative pressure radial-forward extrusion process is defined. The comparison of theoretical and experimental results confirms the acceptability of received dependences for technological calculations.

Boyko I.A. The effect of surface roughness of a flux-cored wire on arc stability // Scientific Herald of the DSEA. – 2015. – № 3 (18E).

The paper considered the influence of shell material cored wire for its welding technological properties. It is investigated, that the manufacture of a flux-cored wire with shell made of steel 65G roughness surface decreases, so ripple current and voltage on the arc decreases, leading to more stable process of surfacing. Ripple arc voltage is reduced by 50% and the current by 30%, due to a more stable supply of the wire because of lower roughness compared to wire coated of steel 08kp. The application as a shell of a flux-cored wire steel 65G allows to extend the range of operating modes of surfacing, and increase resource supply tips of M1 copper and bronze БрХЦр 1,5–2,5 times, because of lesser roughness of shell of self-shielded flux cored wire for surfacing.

Bondarev S.V. Reduction of hydrophilic properties of electrode coatings // Scientific Herald of the DSEA. – 2015. – № 3 (18E).

The influence of a protective polymeric covering thickness of electrodes for manual arc welding on the diffusion hydrogen contents in a welded seam metal was investigated. It is established that, at thickness of a blanket more than 60 microns saturation of a seam metal by hydrogen occur and porousity arises. With the purpose of prevention of the hydrogen contents increase in the structure of a polymeric composition the eczothermal mix is entered. At the result of the study the composition and concentration of the mixture was chosen, wherein the introduction of the protective coating at the time of burning arc excitation provokes polymer layer burning corresponding to the onset of melting of the electrode coating portion. This allows to avoid the ingress of polymer degradation products into the zone of welding, contributing to saturation, and the weld metal hydrogens leads to the occurrence of porosity.

Vlasov A.F., Koshevoy A.D. Increased productivity of manual arc welding products, operating at high temperatures // Scientific Herald of the DSEA. – 2015. – № 3 (18E).

One of the challenges facing developers of welding and surfacing materials, is the search for new types of raw materials for their production and productivity of welding processes. One way to address this problem is to use the effect of exothermic reactions by the introduction of the used materials of exothermic mixtures in the form of corresponding oxidants and deoxidants, during heating and melting of which the exothermic process takes place up to the melting of the electrode rod. Experimental methods established that the introduction of electrodes of the coating exothermic mixture to 53,4 % increases the coefficients of the melting of the rod (8,7...11,4 g/A·h), weld output (0,93...1,10) and the metal yield (0,58...0,68). Increasing the thickness of the electrode coating containing an exothermic mixture of 44,4 % from 0,5 to 2,6 mm leads to the increase of the deposition rate (10,4...13,4 g/A·h), exothermic quantity of the mixture (3,9…27,4 g), reduced iron (0,05...0,28 g/s), the output of weld metal (K_H = 0,82...1,24).

Volkov D. A. The study of the main factors affecting the quality of the coating formed in the electrocontact surfacing of flux cored wire // Scientific Herald of the DSEA. – 2015. – № 3 (18E).

The article examines the impact of aggregate managed mode setting electric-welding flux cored wire: pressure on the electrodes, welding current and time of the current pulse on the quality of the coating formation. It is proved that these parameters determine the temperature in the contact area, the size and intensity of the plastic deformation of parts and the filler metal in the joint zone, and consequently have a significant impact on the strength of adhesion of the coating to the substrate, hardness and wear resistance. It is found that heating of the powder in the wire electric-surfacing is mainly carried out due to heat generated at the contact resistivity: at the first stage in the contact zone between the envelope and the workpiece, at the second – in the contacts between the particles of the particulate material.

Volchok I. P., Netrebko V. V. Effect of alloying and heat treatment on the distribution of the elements and properties of high chrome cast iron // Scientific Herald of the DSEA. – 2015. – № 3 (18E).

It has been established that cast iron's hardness and distribution of chromium, manganese and nickel between structural components depends on the total chromium content in the cast iron, heat treatment type and amount of alloying elements. Segregation processes related to carbides' allocation from the solid solution are developed maximally in the near-carbide zones which are depleted mostly by chromium. Heat treatment of cast irons containing up to 18% Cr, in which the carbide phase had been represented by the carbides Me3C and Me7C3, promoted increasing of chromium content in the zones near carbides, due to homogenization. Carbides Me23C were formed in cast irons with high chromium content which lead to the chromium concentration decrease in the near-carbide zones. Maximum hardness 63…64 HRC was obtained for the cast irons containing 0.77% Mn, 3.1 % C and 2.1 % Ni at 30.7 % Cr after normalization from 1050 °C with holding time 4.5 hours; and the minimum hardness 29…30 HRC was obtained at 11.4 % Cr after annealing at 720 °C. Annealing at 720 °C increased the hardness when the chromium content was higher than 16% for the cast irons containing 2.5%C, 1.7% Mn and 1.6%Ni. The obtained results allow to recommend annealing at 720 °C for cast irons operating in conditions of corrosive medium environment. Normalization from 1050 °C with holding time 4.5 hours is recommended for high-chromium cast irons alloyed with Mn and Ni operating in conditions of abrasive wear.

Gavrjukov A. V. Determining the speed of the tape on the top and bottom branch of the conveyor with running and stopped drive when changing the length of transporting // Scientific Herald of the DSEA. – 2015. – № 3 (18E).

There are the researches concerning the theoretical dependences of the travel speed of the belt on the upper and lower branch of the conveyor at working and shut-down drive during the transporting length change. It was determined that in case of the conveyor extension the speed of the belt changes on the upper and lower branch depend on the conveyer operating regime and motion resistance forces. At shut-down conveyor extension the travel speed of the belt on empty branches is in two and more times higher than on loaded ones. At working conveyor extension the travel speed of the belt on loaded and empty branches do not differ significantly.

Goncharuk K. V., Aliyeva L. I., Grudkina N. S., Tahan L. V., Shkira A. V. Analysis of tool shape effect on energy and power options with combined precipitation // Scientific Herald of the DSEA. – 2015. – № 3 (18E).

At this stage, the development of main directions in metallurgy and mechanical engineering is related to the design of cold extrusion technology, ensuring the production of parts by applying lower deforming forces. It is advantageous to use precipitation by rings, which occurs as a result of the combined flow of metal, as well as for cold forming processes during the outgrowth of parts. One of the problems in the calculation of the combined extrusion process is the lack of recommendations for the definition of energy-power parameters of the process. The aim of this work is to determine the energy-power parameters of the combined precipitation process in various forms of the instrument. Using energy method allowed to obtain analytical and graphical dependences on the given pressure of different geometrical parameters, as well as to optimize the process of combined deformation. By method of power balance a mathematical model of combined precipitation with different tool geometry is developed. There are the dependences of the reduced pressure on the kinematic parameters of the process.

Gribkov E. P., Zavgorodnij A. V., Bortnik I. A. Finite element simulation of sheet metal forming process in beading machines // Scientific Herald of the DSEA. – 2015. – № 3 (18E).

There are various technological schemes of bending sheet metal. There is the analysis of forming sheet metal bending machine by finite element method. Finite element model of the stress-strain state of the metal for bending is worked out. As a software, programming environment ABAQUS was used. Distributions of equivalent voltage in graphical form are presented as a three-dimensional model, as well as the calculated power distribution of bending sheet metal. The comparison of the data with the existing numerical method was made. During the analysis of the results, there are the recommendations for improvement of technology and design parameters of the existing one and creation of new equipment for processes of bending sheet metal. These results confirm the need to establish an adequate calculation models, strict boundary conditions, and the use of finite element method.

Grin A. G. Conditions for recovery of REM from oxides in the flux cored wire surfacing // Scientific Herald of the DSEA. – 2015. – № 3 (18E).

The article describes the features of the recovery of rare earth metals (REM) from their oxides, including in the core of self-shielding cored wire. The effect of graphite and its location at the cross-section of the filler powder wire of reduced REM in the weld metal was explored. A variant of the optimal arrangement of oxide and deoxidizer over the cross section of the wire to increase the conversion coefficient of REM was proposed. It is shown that the design thickness of the mechanical mixture of REM oxide and graphite depends on the diameter of the electrode, whose the metal droplets, the size and nature are determined by the magnitude of transfer current welding. Use of a mixture of these components of the present method substantially improves the REM content in the composition of the weld metal.

Dyachenko I. O. Surfacing methods analysis // Scientific Herald of the DSEA. – 2015. – № 3 (18E).

The analysis is widely used in industrial welding methods. We find out the main variety of ways of surfacing, which are widely used in the practice of details: arc, electrocontact, vibrodugovaya, gas, plasma. It is proved that the best is the plasma welding, as this method provides a high quality surfacing weld metal, a shallow depth of penetration of the base metal at a high bond strength, the ability to welding of thin layers, high production standards. It was determined that the most widespread plasma powder surfacing is the most universal method. An important feature of plasma-powder surfacing is a great formation of beads, stability and good reproducibility of their size. We found that the use of plasma deposition provides a high performance parts, this method of surfacing is used in various fields.

Zharikov S. V., Grin A. G., Bogutskiy A. A. Optimization of carbonates composition of a core of powder wire for surfacing// Scientific Herald of the DSEA. – 2015. – № 3 (18E).

The article investigated the influence of the ratio of carbonate composition used as gassing components of the core self-shielded exothermic powder wires, the solubility of nitrogen in the deposited metal. We investigated 15 compositions of the core powder wires with different ratios of composition of carbonates. Using the simplex- centroid plan an experiment with 4 factors and special cubic model, there is the mathematical model of the influence of the composition ratio of carbonates for the content of the nitrogen in the deposited metal was received. To analyze the results of the investigation and construction of a mathematical model, the program Statistica 6 is used.

Zelenska V. A. The features of organization of contemporary environmental workshop for students of welding specialties // Scientific Herald of the DSEA. – 2015. – № 3 (18E).

In the article there are directions of efficiency increase of educational process in conducting environmental workshops for students of welding specialties. Relevant fact is the use of modern IT-technologies. Ecological activity in an interactive form allows to combine theory with examples from practice. This gives you the opportunity to carry out the control of the acquired knowledge and skills successfully. Therefore, students demonstrate the ability to solve environmental problems, to prepare thematic reports, perform measurements of certain parameters, etc. It is extremely important to develop the actual workshop as a key component of the teaching materials of discipline. You take into account the peculiarities of the discipline "Fundamentals of ecology" and focus on the formation of professional skills. From a technical point of view of the virtual experimental laboratory work on ecology is a comprehensive resource that includes a computer program simulating the main stages of the laboratory work; a set of virtual hardware; HOWTO with the theoretical knowledge and the specific tasks and reporting requirements. Within the organization of electronic laboratory practical work it is appropriate douse frame structure which is common when creating html pages. The frame model of knowledge representation involves the systematization and structuring of information in the form of tables, matrices, etc.

Zakora V. V., Lisnyak A. G. Influence of further cementation on the structure and properties of electric-coating // Scientific Herald of the DSEA. – 2015. – № 3 (18E).

The paper studied the effect of cementation by the standard mode on the structure and properties of the surface of carbon steel, pre-treated by the electric method tungsten electrode. Comparison was made between the microstructural characteristics and the distribution of microhardness of the samples treated in three modes: electrospark alloying, cementation and grouting after the electrospark alloying.

It is found that after the carburizing with preliminary electrospark alloying surface hardness is increased by 1.4 times as compared to electrospark alloying and eutectoid layer depth in 1.5 times as compared to the carburizing.

Ivanov V. P., Lavrova O. V., Stepnova U. O. Study of the process of controlled mechanical transfer when welding by two strip electrodes // Scientific Herald of the DSEA. – 2015. – № 3 (18E).

The process of controlled mechanical transfer of electrode metal when welding under flux by strip electrodes is studied. Analytical dependences between parameters of the movement of strip electrodes as one of the ways of controlled forced impact of the process of transfer of electrode metal is determined. Alternate reciprocate end motion of strip electrodes with optimum frequency and amplitude is provided by the proposed device. Uniform melting of the ends of strip electrodes occurs upon application of forced mechanical vibrations due to a uniform distribution of heat across the width of stirps and controlled discharge of liquid metal droplets. The use of this technology can improve the quality of the deposited layer and reduce the specific consumption of electric energy per meter of the deposited bead.

Kvitnitskiy A. M., Korchak E. S. Research of stiffness effect on the performance of crank hot presses // Scientific Herald of the DSEA. – 2015. – № 3 (18E).

It has been found that the stiffness crank of hot presses has a significant impact their performance and on forged pieces quality. Processes and factors causing crank hot presses jamming are considered. Conditions of jamming and its influence of the frequency of stroke rate of press slider are analyzed. The optimal frequency of stroke rate the total stiffness and variations of specific and power consumption factors depending on the capacity of press for the

adopted size range of presses are determined. Justification of all the mentioned factors is given. The main requirements for selection of crank hot presses of necessary stiffness are listed.

Kovalevskiy S. V., Romanchenko S. P. Neural network modeling of the effect of high-voltage discharge on the stress state of parts of machine // Scientific Herald of the DSEA. – 2015. – № 3 (18E).

Based on the analysis of the physical effects of electric current of high-voltage on different materials a new technological way of its effect on the stress state of the material of parts of machines is proposed and considered. Experimental data and neural network modeling of the effect of high voltage electrical discharge is proposed. High voltage supplied via the arrester to an electrically conductive surface of samples of different chemical composition materials confirmed the effect of reducing the level of residual stresses in the processed samples. Recommended modes of processing by means of high-voltage discharge, such as magnitude, frequency and duration of exposure are shown.

Kovalevskiy S. V. Hmelevaya J. A. Features of surface hardening of parts with the use of thermite mixtures // Scientific Herald of the DSEA. – 2015. – № 3 (18E).

The findings presented in the paper show that the impact point source of energy to the workpiece can improve the quality of the surface layer. The features of model of thermal processes in the reinforcement layer of propagation of thermal fluxes at the surface detail and predict the development of thermal processes in the surface layer is revealed. Particularly relevant is the numerical simulation of the process in which the interrelation between the thermal characteristics of thermite mixtures and the results achieved on different materials. Also, the possibility and feasibility of using thermite mixtures in conjunction with point sources of energy, such as low-temperature plasma is shown. The net effect of the source and burning thermite mixture allows to achieve the effect of hardening the working surface of the component with the lower consumption compared to the traditional energy.

Kovalevskiy S. V., Kovalevskaya E.S., Tulupova E. V. Comprehensive assessment of size and quality characteristics of the working surfaces of machine parts // Scientific Herald of the DSEA. – 2015. – № 3 (18E).

The article describes the basis for a new long-term approach to the assessment of size and quality characteristics of the working surfaces of machine parts. The system relationship of quality indicators surfaces and dimensional accuracy of parts are shown. Experimental study of the link between natural oscillations excited by the details and characteristics of dimensional accuracy and surface quality of the indicators such as the roughness and microhardness is presented. An original technique based on the analysis of the natural oscillations of the acoustic signals of parts and establish links between their amplitude-frequency characteristics and the sought parameters of accuracy and surface quality of parts is offered. The basis of the new methods is the use of mathematical formalism of neural networks, allowing to create samples of a hardware implementation of this approach.

Kovalevskiy S. V., Goncharova N. S. Development of additive technology based on layered growing parts of machines // Scientific Herald of the DSEA. – 2015. – № 3 (18E).

The principal possibility of further development of additive technology in the manufacture of parts by capacity is investigated. The conditions of the management process with stratified build experimental samples are determined experimentally. It is found that along with the current value of the process and the accumulated discharge crucial frequency and duration of contact in one period of vibration of the working electrode. The basic requirements for the composition and parameters of the process equipment are given. The recommendations on the proposed parameters of the process are presented.

Koshevoy A. D. The study of the mechanical properties of weld metal for hot-pressing tool // Scientific Herald of the DSEA. – 2015. – № 3 (18E).

Mechanical properties of the weld metal, such as heat resistance and wear at resistance high temperatures are very important factor determining the efficiency of press instrument for hot metal working. The studies of mechanical properties given in this article, have confirmed that the best mechanical properties of the weld metal were shown by 40H12G134FT. This metal provides the highest tensile strength and other characteristics. which are obtained through a rational combination of chromium, tungsten, carbon, having a great effect on the properties of materials at high temperatures. The results of heat and wear resistance tests given in the previous studies.

Kushchiy A. M., Vasiltsov V. I. Optimization of parameters of the melting process of electrodes with the exothermic mixture in the coating // Scientific Herald of the DSEA. – 2015. – № 3 (18E).

The article describes the results of the calculations of the heat effect of scale and its components when reacting with aluminum powder. They showed that a small difference in the heat dissipation, while using mill scale instead of the scale of forging and pressing production more iron is recovered. It has a positive effect not only on uniform melting of the electrode coating and the core, but also on the quality of the weld metal and it also enables us to select scale from rolling mills and aluminum powder as basic components for the exothermic reaction. Determining the optimal parameters of the melting process was conducted by a mathematical modeling method in which the selection and

preparation of experiment of plan, the organization and conduct of the experiment measuring the response of the object of research, analysis of the results of research, including the construction of mathematical models of the object of studies to determine the optimal conditions, the search of function of extremum (surface) of response in software system Statistica were carried out.

Lazarev I. V., Shevchenko V. G. Axial internal forces in power transformer active part elements under active part lifting and lowering with subsequent additional windings clamping // Scientific Herald of the DSEA. – 2015. – № 3 (18E).

The effect of dry friction upon windings clamping forces is of great importance for the transformers with the most widely used traditional active design in which the yoke beams are used both for clamping windings and for the magnetic core. With regard to the forces of friction between the yoke beams and magnetic system yoke, there were determined dependencies for calculating internal forces in the core-type transformer active part elements after repeated lifting and lowering of the active part with subsequent additional clamping of the windings. It was demonstrated that by means of the compensatory clamping of windings it is possible to decrease or completely prevent the reduction of their compressive internal forces. By the example of a set of 110kV series transformers, it was demonstrated that the forces of dry friction between the yoke beams and magnetic system yoke have a substantial effect upon the internal forces in windings in the traditional active part design.

Lebed V. T., Kvashnin V. O., Shapoval D. A. Modernization of the kinematic scheme stand static loads and determination of its parameters // Scientific Herald of the DSEA. – 2015. – № 3 (18E).

A constructive development of individual elements of the kinematic scheme of the machine-tool static loads is given here. On the basis of experimentally revealed dependencies for speed and motor current during start-up, at idle and under load, and analytically determined by the method of successive iterations of a static mechanical characteristics, the main parameters of the stand were defined. Torque drive own losses were obtained, and certified value of the nameplate of the moment of inertia of engine was confirmed. Operating time at idle and during acceleration under load was determined. There was also developed a connecting scheme of peripheral devices (the current sensor using the Hall effect type and ACS712 and the encoder of type of E40S6-1000-3-T- 24) with analog-to- digital converter L-Card.

Lutaja A. V., Kartamyshev D. A. Assessing the adequacy of a mathematical model of the management system by the electrodes movement drive of the electric arc furnace (EAF) // Scientific Herald of the DSEA. – 2015. – № 3 (18E).

The adequacy of previously developed mathematical model of the management system by the electrodes movement drive of the electric arc furnace is assessed. It is described as a system of differential equations by comparing the transient processes of equations. These equations are the solutions of the system and the output values of the main components of the structural model based on the use of transfer functions. It is proved that the kind, the time of the transition process and the lack of static error confirm the compliance with the mathematical model of its structural description and the required output value – the length of the arc coincides with the technical specifications of the EAF.

Makarenko N. A. Improvement of rectifier designed for welding and surfacing among the active and inert gases // Scientific Herald of the DSEA. – 2015. – № 3 (18E).

A scheme of modernization of rectifier VS-600 was developed. Industrial tests have proved that an upgraded rectifier provides seamless remote adjustment of welding voltage over a wide range, which allows welding and surfacing works with fine (less than 1 mm) wire in carbon dioxide and argon; weld alloys based on copper. Stabilizer welding arc stability ensures a hundred-surfacing at low idle voltage straighten the middle. By upgrading rectifiers with step adjustment of the output voltage, it is advisable to apply the three-phase half-controlled bridge rectifying mitelnyh-block, which greatly simplifies and reduces the cost of the control circuit. The recommendations for the inclusion of the thyristors via optocouplers in auto anode B tem of thyristors are given, which significantly improves the reliability work of the system. Application of arc stabilizer allows welding and surfacing on modes with low voltage arc. Testing of advanced rectifier in a production environment provides high safety of welder.

Makarenko N. A. Restoration of parts of mining technics by method of wear-resistant alloys // Scientific Herald of the DSEA. – 2015. – № 3 (18E).

The analysis of the application of wear-resistant alloys in various industries is carried out. The structure of the thermite mixture for surfacing in the field of wear parts and mining equipment based alloys Fe-Cr-B is proposed. The possibility of increasing the wear resistance of the weld metal due to the introduction of the thermite mixture of tungsten-carbide, tungsten carbide is presented.

Makarenko N. A, Dyachenko I. O., Miroshnichenko A. S. Wear-resistant plasma surfacing with axial feed of the developed flux-cored wire. // Scientific Herald of the DSEA. – 2015. – № 3 (18E).

The powder wire for a plasma - MIG surfacing of the details working in conditions of friction of metal about metal is developed and investigated. Boric anhydrite and strontium that has allowed at the given process to raise factor surfacing, to lower losses on an intoxication and splashing, to reduce depth of profusion of the basic metal, to provide liquidation of defects: inflows and not malting with the basic metal. The composition of the charge consumable electrode is optimized. The study has shown when the content of boric anhydride less than 4% in the weld metal is non-metallic inclusions, when the content is more than 6% increased losses on the fumes and spatter. Recommendations on the use of regimes of plasma surfacing with axial feed of powder wire.

Markov O. E., Zligorev V. N., Rudenko N. A., Yachmen Yu. O. Change of form and stress-strain state of workpiece during forging by using of profiling of workpiece // Scientific Herald of the DSEA. – 2015. – № 3 (18E).

Influence of wedge angle and depth of the convex dies concave faces on the uneven distribution of strain in the body of the workpiece was considered in the article. It was established, that increasing wedge angle and depth of concavities dies faces increases the uniformity of strain distribution. Investigating schemes of deformation, 2 schemes, providing high and uniform strain distribution in a cross-section of forging were determined. According to study, zone with intensive plastic deformation was roundshaped with large cross-section. Uniform strain distribution can be obtained by using four-ray workpiece, which has a depth of concavity 25 ... 30 % from the diameter of the workpiece, the angle of the wedge dies was 160 ... 180 °, the dies for rounding were flat, the method placing of workpiece in the dies – «on edge». These results are confirmed by experimental studies.

Matuha S. O., Shevchenko N. Yu., Ostankova L. A. Creation of programmatic complex for a management by the technological process of the well-drilling // Scientific Herald of the DSEA. – 2015. – № 3 (18E).

In the article the theoretical features of management are described by the technological process of well-drilling. Attention is accented on the necessity of account of preliminary analysis of descriptive data characterizing the material providing of process of the well-drilling, at the choice of the optimal mode of well-drilling. The features of the worked out programmatic complex consisting of two subsystems are described: browser application and mobile application on the platform of android os. It is suggested as technology of receipt of data from outsourcing to use three-level SCADA control system a boring complex. It is marked that the described SCADA system of boring complex ULTRA SINGL 150 T has the opportunity to send the data got from the sensors of boring complex, in the format of SQL-query on facilities of global network, forming to the same basis of making decision on a management by a well-drilling process.

Parusov V. V., Parusov E. V., Sahura L. V., Chuyko I. N., Sivak A. I., Klimenko A. P. Pearlite transformation model based on dislocation mechanism // Scientific Herald of the DSEA. – 2015. – № 3 (18E).

The mechanism of pearlitic transformation is proposed as follows: in the course of continuous cooling the undercooled austenite undergoes thermoplastic deformation which results in forming of flat polygonal walls in the austenite substructure. The walls are formed by dislocations of the same direction. Further elastic interaction of the dislocations with carbon atoms ensures forming of the plain nucleation centers of cementite and ferrite, i.e. the lateral crystallization front-line. At that, the distance between the pre-formed dislocation walls is the inter-lamellar spacing of the pearlite colony. The transformation of austenite into pearlite takes place by way of forming of ferrite nucleation centers on the nuclei of cementite lamellas, and further separate crystallization of these phases. The crystallization of cementite and ferrite lamellas occurs due to the carbon diffusion from austenite to cementite through the ferrite lamellas. The process can be explained as follows. The carbon diffusion ratio in ferrite is two scores higher than that in austenite; the difference of carbon concentration in the ferrite lamella on the border of ferrite/cementite and ferrite/austenite junctions is higher than that of the carbon emerging between the cementite/austenite and ferrite/austenite phases during the lateral growth of perlite.

Razmyshlyaev A. D., Ahieieva M. V. The frequency effect of the longitudinal magnetic field on the hardness and structure of weld metal by arc surfacing under flux// Scientific Herald of the DSEA. – 2015. – № 3 (18E).

The frequency effect of the longitudinal magnetic field (LMF) on hardness and structure of weld metal at arc surfacing under flux is researched. The weld metal hardness of upper layer increases with the LMF frequency increasing is showed and the most effective frequency of 5 Hz is stated. The use of LMF with frequency of 0.5-2.0 Hz by surfacing of steel reduces, it leads to the formation of hardening structures in the heat affected zone decreases hardness of this zone, and it leads to a reduction of propensity to the cold cracks formation. The LMF use by surfacing with flux of low-carbon steels leads to the formation for shallow disoriented and uniform structure throughout the whole section bead.

Rojanov V. O., Bobikov V. I., Zaharova I. V. Investigation of the effect of pulsating flow on the spray mass metal transfer in electric arc spraying // Scientific Herald of the DSEA. – 2015. – № 3 (18E).

It was found that the spray stream is pulsating in nature with time intervals between pulses. Depending on the shape of the passage section of the duct, nature pulsator pulse rise varies (at the rectangular cross section the rise time is significantly lower). It is also found that the use of pulse air by introducing the additional element in the spray head arc metallizer improves the chemical composition of the coating, increases the content of carbon, silicon, manganese, that the optimum frequency of enhancement of the content of alloying elements in the coating can be regarded 40-80 Gts.

Semenov V. M., Kabatsky A. V., Krasovskij S. S., Horoshajlo V. V. Technological features of electroslag welding of low-alloy steels weldments // Scientific Herald of the DSEA. – 2015. – № 3 (18E).

The aim of the work was the development of electroslag welding technology of steels 25ГС, 20ХНМФ, 20Х2МА and 35. The welding materials, allowing obtaining the mechanical properties of welded joints of these steels, similar to the mechanical properties of the base metal, were selected. The weldability of steel, including with the definition of the optimum welding speed, preventing the crystallization of crack formation, was investigated, the metallographic studies also were conducted. The developed technological process can be used for the manufacture and repair of constructions made of the studied steels using electroslag welding.

ECONOMIC SCIENCES

Bobrova L. S., Dobykina E. K. Rating of the cost management system of manufacturing enterprise // Scientific Herald of the DSEA. – 2015. – № 3 (18E).

The article accentuated the relevance of the theme of improving the system of cost management in the aspect of increasing the competitiveness of enterprise production. The main objectives are defined in the system of cost management. The "square potential" graphic method is demonstrated. Recommendations for improving the mechanism for cost management on the basis of the rating assessment are formulated. On the example of a bakery enterprise analytical evaluation of cost management system using graphic-analytical method is given.

Bolotina E. V., Kolodazhnaya A. E. Transformation of the system of economy of Ukraine in globalization conditions // Scientific Herald of the DSEA. – 2015. – № 3 (18E).

The paper describes the transformation economy and globalization as a modern stage of development of world economic system characterized by: globalization and urbanization; the accelerating pace of scientific and technological progress; information processes; conversion of ecology in economic resource; the revaluation of old traditional resource and manufacturing technology; the changing functions of the state. The author recommends on the key areas of adaptation of Ukrainian economy to the world market. The essence of integration of Ukraine in the EU is presented in the article, the main advantages and shortcomings, geographical and geopolitical position of the country and also the factors influencing integration process are considered. The peculiarities of the modern economy of Ukraine dictate positive arguments of collaboration with the EU. European integration and the EU membership is a strategy aim of Ukraine, which realization interests by the nation about formation of the social-orientate economy a development democracy state. European integration consolidates the positions in the system of international relations. The main social and economic problems of integration are defined. The ways are offered of the problem solution.

Byvsheva L. A., Kondratenko O. A. Features of recruitment and selection of personnel in modern organizations // Scientific Herald of the DSEA. – 2015. – № 3 (18E). The problem of restructuring of enterprises in the conditions of transitive economy is considered. The stages of project implementation of enterprise restructuring are presented. The aims and aspirations of the reasons for companies to change are considered as well. The role of staff in the restructuring of the organization is shown. The essence of the methods of resistance to the introduction of organizational changes is demonstrated. It is proved that in taking the decision to start restructuring must take into account that the human potential of the enterprise is a major factor for success when making changes in the company. It was found that the effective work with the staff will depend on the success of organizational change and transformation, and the development of quality programs for restructuring is a key factor for success in the competition.

Getmanenko Y. A. The impact of globalization on the international labor market // Scientific Herald of the DSEA. – 2015. – № 3 (18E).

It was established that one of the main manifestations of the impact of globalization on the development of labor markets is in favor of migration. The possibilities of providing human needs in countries of different economic development are considered. It is proved that in a globalized labor migration is significant and controversial economic and social consequences for the country of emigration, which is the outflow of workers for the host country. It was found that the specificity of the present stage of international labor migration is largely determined by globalization processes occurring in the world economy. The basic directions of the impact of globalization on the development of the international labor market are defined.

Yeletskikh S. Ya. Staff as a strategic resource of innovative enterprise // Scientific Herald of the DSEA. – 2015. – № 3 (18E).

The article reviews the diversity of personnel management methods, as a strategical resource of an enterprise from the point of view of its innovative potential. A set of new enterprise management problems are defined, which stem from the lack of standard schemas for solving certain common problems as well as absence of specific approaches for different specific situations. In the paper, some typical for an enterprise organization inconsistencies are explored – between new demands for personnel development and the poor quality of personnel management service, between the levels of people skills and the levels of how they are motivated, between the top-level employees and the rest of personnel, between the existing enterprise organization and the actual strategy for development, which is put into practice. Aiming at diversification of the enterprise products and increasing the competitive power, the set of new approaches for motivating the creative work and searching for innovative ideas amongst personnel are suggested.

Yeletskikh S. Ya., Rad N. S. Rationality as a Factor for Development of Pension System in Ukraine // Scientific Herald of the DSEA. – 2015. – № 3 (18E).

The article deals with some urgent problems related to the development of pension system in Ukraine in the context of global transformation processes. Identified and specified are conditions for it to be improved. It is observed that the key element of the efficient concept of the national pension system is synthesis of social and economic components in the context of adhering to the principles of social welfare state. The research is based on a system approach using general scientific methods: generalization, pooling, analysis and synthesis. We used abstract-logical method for making conclusions. The lines for improvement of the concept of pension system in the context of the peculiarities of the national development and contemporary trends, risks and challenges of social development are proposed.

Zdereva H. S,., Shevchenko N. Yu., Ostankova L. A. Optimization of business processes of bank on the basis of monitoring and forecasting of economic indicators // Scientific Herald of the DSEA. – 2015. – № 3 (18E).

An actual problem of formation of long-term development of directions of the bank and the possibility of adjusting objectives on the basis of monitoring and forecasting of economic indicators is considered. The use of a multistage algorithm of analysis and prognostication is offered on the basis of temporal rows. Technology of pre-prognosis and post-prognosis analysis of data is used. It is marked that monitoring and forecasting of economic indicators will allow to form and correct the aims of the bank, set prospects and necessary proportions of its activity. It is offered to define efficiency of prognosis on the basis of estimation of "response" of resulting index (income) on the change of entry parameters (indicators) for shorting business process in the part of forming bank income. The estimation of efficiency is executed by means of design of income size at a change, other things being equal, influencing indicators. The design of size of income will be realized by means of regressive analysis.

Lisjak L. V., Get'man D. O. Strengthening financial potential as the basis of regional competitiveness of Ukraine // Scientific Herald of the DSEA. – 2015. – № 3 (18E).

The composition of the regional financial resources and the concept of «financial potential of the region» are described. Their role in the formation of specific competitive advantages and financial competitiveness as a whole is indicated. As an example, the structure of Dnipropetrovs'k region' budget with determining sources of financing regional development programs is considered. The authorial diagram of regional competitive advantages is constructed. Integrated system of indicators for the definition of the regional financial competitiveness is proposed. Comparative analysis of regional development strategies has been done, which is the basis for the authorial interpretation of the mechanism of formation and implementation strategies / programs for regional development to provide competitive advantages.

Nikita A. J. Cost management at the enterprise // Scientific Herald of the DSEA. – 2015. – № 3 (18E).

Cost management of the enterprise is an integral part of the management of the whole enterprise, and therefore there is a need for detailed study and improvement names of setting the level of costs, revenues and profits. Cost management is a purposeful impact on the costs to change their composition, structure, or behaviour in connection with the change of conditions of production and economic activity of the enterprise. The role of cost in economic activity of enterprises is undeniable. However, only a clearly established system of cost management will bring tangible results in financial and economic activity of the enterprise by ensuring a high level of profitability and competitiveness.

Serdjuk E. N., Belous'ko P. A. Organization of the funds account at the enterprises of Ukraine // Scientific Herald of the DSEA. – 2015. – № 3 (18E).

The article describes the organization of funds on the example of PSC «Slavyansk factory «Torelast». Attention is paid to the problems of document management. To improve funds accounting of PJSC « Slavyansk factory «Torelast» suggests to use « Client-Bank» program and corporate bank cards. Employees can open personal accounts that are tied to corporate card account, which makes the work much easier.

Serdiuk O. N., Brikova L. O. Organization of the material costs account at the enterprise // Scientific Herald of the DSEA. – 2015. – № 3 (18E).

The organization of the account material costs number of production plant is an example of PSC «Slavic factory «Torelast». Attention is paid to the problems of synthetic accounting and document management. It was established that the company has not used the account Class 8, accounting is not all-round automated. This problem is typical for most large industrial enterprises of Ukraine. To improve accounting, integrated automation of accounting processes and the application of Class 8 accounts to facilitate reporting and increase the analytical value of the accounting information is recommended to the enterprise.

Tarasov A. F., Dyachkova Y. N., Sagayida P. I. Features of the E-learning introduction in higher educational institutions of Ukraine // Scientific Herald of the DSEA. – 2015. – № 3 (18E).

The article deals with the introduction of distance learning in Ukraine. On the basis of domestic and foreign experience the conditions for effective use of E-learning systems are analyzed, their strengths and weaknesses are highlighted. The perspectives of distance learning using in embedded control systems based on the Remote Labs are considered. The basic directions of E-learning projects realization and improvement of its quality in higher educational institutions of Ukraine are proposed

Voloshina E. A., Shubnaya E. V. Macroeconomic analysis of the investment environment of large industrial enterprises in Ukraine in the conditions of political and economic crisis // Scientific Herald of the DSEA. – 2015. – № 3 (18E).

The urgency of the problem of finding the forms and methods of management of investment processes of the industrial sector in accordance to the trend of the national economy and taking into account macro-factors that are most closely affect the functioning and development of the Ukrainian enterprises are substantiated. The analysis of the macroeconomic situation in Ukraine is done. The basic tendencies and problems of functioning, the Ukrainian industrial enterprises on the basis on the sectoral analysis the priority sectors for investment are defined. An alternative to bank deposits for the diversification of assets of large industrial enterprises - to invest in "blue chips" of the domestic stock market is offered.

Shubnaya E. V., Trofimova Y. V. Theoretical aspects of the marketing policy of the modern enterprise // Scientific Herald of the DSEA. – 2015. – № 3 (18E).

The urgency of developing and implementing Ukrainian enterprises weighted marketing policy is proved. Various scientific approaches to the interpretation of the essence of the term "marketing" were studied and analyzed. On the basis of the conceptual approach, it was concluded that the marketing policy of the enterprise is advisable to understand as the totality of arbitrary decisions taken by management in the enterprise activity, which depends on the marketing strategy, reaction of customers and competitors. Management component of the marketing policy of the modern enterprise was defined. Sequence for control marketing policy of the enterprise was characterized.

Gudkova E. Yu. State and evaluation of innovative development of machine-building enterprises // Scientific Herald of the DSEA. – 2015. – № 3 (18E).

The essence of the «innovation» category under the current legislation of Ukraine is considered. Indicators of innovative activity of industrial and machine-building enterprises of Ukraine are considered and analyzed. The current state of innovation development of industry and machine-building enterprises are analyzed. The factors that have a negative impact on the dynamics of the development of innovative activity of the enterprises of machine-building industry of Ukraine are found out. The recommendations regarding the possibility of improving the situation are given.