ABSTRACTS

TECHNICAL SCIENCES

Romanenko Iu. M., Loboda P. I., Stepanov O. V., Tkachuk V. P. Obtaining of iron powder from the grinding disperse waste products // Scientific Herald of the DSEA. – 2016. – № 3 (21E).

The experimental results on the grinding waste products reduction aimed at obtaining iron powder are presented. Ecological and economic reasonability of waste products returning in the industry is shown. It was determined that industrial grinding waste products reduction in the hydrogen medium makes it possible to obtain acceptable powder for the further use. The temperature interval and kinetics of reduction process are determined. It is shown that in the result of chemical material dispersion during reduction the powder particles with the coral shape are formed. Such particles, as opposed to powders from high temperature reduction or spraying, have increased formability features.

Zhbankov I. G., Chikota I. M., Samglyadov A. D. Improving the quality of power engineering billets through the combined deformation **by shaping and draft of ingots // Scientific Herald of the DSEA. – 2016. – № 3 (21E).**

Forging parts for power engineering is based on the use of combined deformation by shaping and the draft to improve the quality of the final product. It is determined that pre-shaping of ingot before the draft allow of increasing the level of deformational treatment of forgings. It is established that preliminary forging of workpiece before the draft, can increase the level of deformation of the ingot and get rid of the zones of difficult deformation. Several types of shaping of billets are considered such as with square cross sections by flat dies, with rhombic cross sections by carved dies and with triangular cross sections by combined dies. It is determined that the more rational scheme of forging ingots with the use of pre-shaped billet is the scheme that is based on formation the billet with square and rhombic cross sections. It is recommended that shaping by flat dies be applied for forging ductile materials and for low-plastic materials shaping by carved dies be applied.

Aliieva L. I. Process design of cold extrusion of parts with flanges // Scientific Herald of the DSEA. – 2016. – № 3 (21E).

Designing of technological processes of precision forging extrusion can be represented in the form of a set of complementary design steps performed in a particular sequence regardless the way of deformation and the size of the stamped parts.

The matter of stages of the design processes of cold extrusion, providing for a systematic approach and simulation modeling of processes of plastic forming is considered . Database models and the design program based on the energy method of upper assessment and increasing the possibility of process designing and cold extrusion are developed . Multiplicity of implementation of the basic design stage of the extrusion process – destination of transitions of forming of parts with flange is demonstrated. Routers of the technological options for manufacturing parts with flange from solid and hollow original workpieces are considered. The design of the stamp for a waste-free firmware of parts such as bushings is described.

Blokhina I. O. Analysis of filler materials at plasma-jet hard-facing // Scientific Herald of the DSEA. – 2016. – № 3 (21E).

The analysis of filler materials at plasma-jet hard-facing widely used in the industry is made. The main advantages of the plasma coating method over the others are revealed. It is also discovered that the most common methods of parts reduction are plasma welding by wire or by rods; surfacing of fixed additive attached to the welded surface; powder surfacing. It is proved that plasma welding using powder as a filler material is the most optimal one. With this method of welding high temperature of plasma flow allows of melting and applying the most refractory materials. Plasma welding using powder as a filler material does not cause any difficulties, and the plasma welding process is particularly effective in full-scale production. It is determined that the applying powder as a filler material improves the quality of the welded metal. It also reduces the consumption of coating materials and significantly improves labour productivity.

Sumets A. V. Basic directions of increase of efficiency of plasma cutting // Scientific Herald of the DSEA. – 2016. – № 3 (21E).

The analysis of the main trends and methods to increase the efficiency of plasma cutting is conducted. A number of problems that lead to limitation of plasma-arc cutting process associated with the complexity and materials consumption of plazma cutting equipment and reduce the efficiency of the cutting process is studied . Metallurgical

processes taking place in the metal adjacent the cutting surface are considered. The benefits of plasma torches with hollow "cold" and "hot" cathodes are studied.

Timoshenko B. O., Filatov S. Y., Klimchenkov A. G. Ways of improving electromechanical systems (EMS) of the overhead crane on the basis of increasing in extent of automation // Scientific Herald of the DSEA. – 2016. – № 3 (21E).

This paper describes a laboratory complex of the overhead crane intended for studying principles of modern asynchronous electric drive`s creation and control systems of a technological object, intended for solving lab exercises in electromechanical disciplines and approbation of scientific problems' solutions in the sphere of the crane electric drive, which is realized on the basis of embedded systems. The main objective of the article is to develop recommendations on enhancement of electromechanical systems of the overhead crane for the extension of its functional capabilities with the help of increasing automation degree.

Vasylieva L., Eroshenko E. Research of methods and information technologies of image analysis in scientific and technical documentation // Scientific Herald of the DSEA. – 2016. – № 3 (21E).

Methods of image processing, used in scientific literature, are analyzed in the paper. Peculiarities of the analysis of the images with technical charts are determined. The developed algorithm with morphological transformations is proposed. Functioning of the developed program and methodical complex for automatic recognition of the essential elements of images, their transformation and processing for automatically retrieving quantitative information is described. The created software contains a large set of functions to perform a wide range of processing tasks.

Vlasov A. F. Lukashevich A. A Study of the influence of the exothermic mixtures on manual arc welding and quality of welded metal // Scientific Herald of the DSEA. – 2016. – № 3 (21E).

One of the ways to solve the problem of increasing productivity of manual arc welding and the quality of the weld metal is the use of the effect of exothermic reactions (additional heat source) by introducing exothermic mixtures in the form of appropriate oxidizers and deoxidizers into the composition of the materials used. When heating and melting the mixtures an exothermic process takes place in coating electrodes till the electrode rod is melted . Experimental methods established that introduction exothermic mixture into the coating of electrodes increases to 53.4% the melting factor of the rod (8,7...11.4 g/A•h), output of welded metal (0,93 1,10...) and the metal yield (0,58...to 0.68). Increase of thickness of electrodes coating containing 44.4% of the exothermic mixture, from 0.5 to 2.6 mm, leads to an increase of the deposition rate factor (10,4 13,4...g/A•h),and then to the deposition rate factors (αn =10,4...1Z,4 g/A * h), to release of deposited metal (KN = 0,82 1,24...);to the mass melting rate (0,18..1.03 g/s)and to the decrease of the factors of molten rod (αR. St =...10,5 12,8 g/A * h).

Grin A. G., Zharikov S. V., Dudinskyi A. D. Analysis of the causes of the deforming tool failure, restoration technologies and durability enhancement // Scientific Herald of the DSEA. – 2016. – № 3 (21E).

The tool of hot straining on the basis of copper works under extreme loads and temperature conditions, but has insufficient strength, that leads to additional material costs. Analysis of the causes of the deforming tool failure and alloying elements capable to increase strength, ways of restoration and durability enhancement is conducted. Basic requirements to the deposited metal are designated. The most effective ways of restoration are presented. The prospect of the technological process of thermochemical treatment with the subsequent powder wire surfacing, which allows to improve hardening of the working surface of the metal deforming tool in hot state, is shown.

Kovalevsky S. V., Yemets V. V. The usage of the dynamic simulation package LMS IMAGINE.LAB AMESIM SE for studying the linear actuator with large travel range // Scientific Herald of the DSEA. – 2016. – № 3 (21E).

Modern production requires a variety of actuators and assemblies, in which hydraulic, pneumatic and electric actuators are used as sources of mechanical energy. The solution of urgent problems is the use of robots with parallel kinematics, in which all movements are interrelated design features, as in such works the principle of the triangle is involved. A key element of rod design of any mechanism with parallel kinematics is the shoulder. The paper focuses on the dynamic analysis of the linear actuator with large travel range. The analysis of the existing devices has allowed to eliminate shortcomings and create the most compact design of the linear actuator with a greater range of movement than in existing designs. The dynamic analysis has shown the efficiency and quality of the developed device and the feasibility of its further use in engineering.

Loveykin V. S., Pochka K. I. Realization of the combined mode of the roller forming installation movement for acceleration of the fourth order // Scientific Herald of the DSEA. – 2016. – № 3 (21E).

The combined mode of back and forth motion of the forming cart for acceleration of the fourth order with the purpose of increasing reliability and durability of the roller forming installation is calculated. Kinematic characteristics

of the forming cart under the combined back and forth motion mode for acceleration of the fourth order are determined. The design of the roller forming installation with the drive from the high-moment step engine which is built in the rolling rollers of the forming cart and provides the combined mode of back and forth motion of the forming cart for acceleration of the fourth order is offered.

Obukhov A. M., Palamarchuk V. O. Bulyga V. S. About the movement of the harpoon thrown vertically upwards // Scientific Herald of the DSEA. – 2016. – № 3 (21E).

The problems of the rectilinear motion of thread are of theoretical interest as problems, illustrating the general theorems of thread mechanics and practical interest in marine fisheries and weaving without shuttles. The authors set and solved the problem of vertical movement of the harpoon without account and taking into account resistance of the medium in proportion to the square of the speed. In both cases, the differential equations of motion were received, solving of which gave an opportunity to obtain dependences of the speed on movement, as well as formulas for calculating the maximum height and time of lifting the harpoon. In the case of the absence of the medium resistance, numerical studies were conducted and schedules of dependence of dimensionless coordinate of lifting height η and dimensionless time of lifting the harpoon τ* on the initial velocity V_0 at different values $\alpha = \frac{\rho_0}{m_0}$ were constructed.

Klimchenkova N. V., Bereznichenko Z. A. Development of a dynamic model of lifting process // Scientific Herald of the DSEA. – 2016. – № 3 (21E).

This article discusses ways of modeling electromechanical system of the crane taking into account the technological stages of his work. There are calculated and block diagrams of the electric lifting mechanism, using both linear and rotary position, to facilitate understanding of the physical meaning of the ascension process. The article presents a mathematical model implementing features to the base of the lifting process by means of mathematical software package Simulink in Matlab software environment. The simulation of the process of lifting from the base was conducted. We obtained the schedule of transient torque of the engine and the elastic torque, speed on the drum surface and the load and displacements take into account the peculiarities of lifting operations.

Gribinnik N. D. Nalivaiko A. M. Development of the engine management system on the basis of the controller piccolo company texas instruments // Scientific Herald of the DSEA. – 2016. – № 3 (21E).

The construction and simulation of AC motor control system in an environment Matlab Simulink, also found the missing parameters of the engine by using various techniques and found the optimal was considered. These simulation results meet the requirements of the control system put in the development of the laboratory stand. Also there are the connection diagram of the stand to mains, the principal voltage converter circuit, PCB circuit, circuit of the lower layer and the layout of the elements.

Sheremet A. I., Soldatenko A. A. Software control of electric drives with DC motors based on the use of Texas Instruments C2000 series controllers // Scientific Herald of the DSEA. – 2016. – № 3 (21E).

Development of the functional diagram of the laboratory bench for research of digital management systems is executed by electric drives of a direct current, the principle of operation of this diagram with the description of the elements used in it is considered. The principle of operation of pulse width modulation is considered. The control algorithm for the engine of a direct current used in the experimental bench is offered. The description of the microcontroller of Texas Instruments firm of the TMS320f28335 C2000 series used in the project, its key parameters and characteristics is executed. There is a general information about a software integrated development environment for microcontrollers of Texas Instruments firm – Code Composer Studio in which development of the program of control of the laboratory bench is executed.

Gribinnik M. D., Sheremet A. I. Development of the simulation model for the analog prototype digital laboratory management system stand // Scientific Herald of the DSEA. – 2016. – № 3 (21E).

A simulation model for the analog prototype digital laboratory management system stand was designed. Laboratory stand is for engine operation research DC independent excitation with a digital control system with different mechanical loads. It is a block diagram of a linearized dual-actuator system constructed by the principle of the subordinate regulation. These simulation results meet the requirements of the control system put in the development of the laboratory stand.

Zherdev A. V., Zadorozhniy N. A. Analysis of the stability conditions of the two-mass mechanical subsystem of the electric drive under elastic vibrations and the action of variable frictional forces // Scientific Herald of the DSEA. – 2016. – № 3 (21E).

The phenomenon of self-excited oscillations arising in the mechanical subsystem of the drive on the example of the drive lift slab continuous casting machine was considered. We analyzed the characteristic equation of

electromechanical system for stability depending on the continuously varying ratio of viscous friction. EMC works waveform were obtained in the positive mode, negative and lack of viscous friction with load-on. The range of coefficient of viscous friction to perform EMC stability conditions was established.

Kutkovoj I. P., Ivchenkov N. V., Goma R. S. Labeling of terminals of three-phase transformers // Scientific Herald of the DSEA. – 2016. – № 3 (21E).

In the article the algorithm for determining the labeling terminals of three-phase transformers, consisting of six stages, allowing to define one of the twelve groups known transformers without an information plate was systemized. In each of the stages the most well-known methods for the determination of the markup phase transformer, pre-marking of the main winding, check the position of the primary and secondary windings of similar phases in the general web, defining a pair of outer and secondary windings, defined beginnings and ends of the primary and secondary windings were considered. The methods of determining the labeling of the transformer terminals with the minimum measuring equipment were proposed. All the arguments, based on theoretical knowledge of disciplines of high school were confirmed by experimental data on the example of a laboratory three-phase transformer.

Oleyarnyk A. I., Zadorozhnyaya I. N. Features motor control on the basis of modular programming techniques // Scientific Herald of the DSEA. – 2016. – № 3 (21E).

Theories of the control systems based on the concept of modular programming in the Code Composer Studio v4 feild. A digital control systems merits and modular programming, IDE Code Composer Studio and signal controllers has been analyzed. The TMDSHVMTRPFCKIT educational stand of Texas Instruments firm has been considered. The algorithm of the program vector control asynchronous motor and the main modules tables of the program were considered. The principles of functioning educational stand, algorithm implementation of vector control programs with six stages of debugging by building software modules has been considered. A mathematical model of the stand, has explored the possibility of damping on the basis of the compatibility principle electromechanical oscillations.

Povelitsa D. M., Ivchenkov N. V., Kutkovoy I. P. Study of voltage unbalance influence on induction motor operation in MATLAB Simulink software // Scientific Herald of the DSEA. – 2016. – № 3 (21E).

A mathematical model of non-symmetric modes of the induction motor is given for the educational purpose. The results of changes in the main variables of electromechanical motor at different degrees asymmetry and phase failure are given. The results were analyzed and the calculation of the asymmetry factor for each mode of operation is made. The amplitude values of stator's phase currents in four modes are shown and analyzed. The data obtained is proposed to further use as diagnostic signs of electrical machine's malfunction. The simulation results need to be checked for the adequacy by means of the experimental methods on the real object.

Nalivaiko A. M., Nesterenko N. S. The use of single-board computer raspberri pi to control electric drives // Scientific Herald of the DSEA. – 2016. – № 3 (21E).

The organization work in Matlab Simulink with a single-Board computer Raspberry Pi has been considered.. The research in the circuitry electrical control system on the basis of the single-Board computer raspberri pi has been made. The installation of Matlab support package for Raspberry Pi and connecttion to the computer system and adjustment work together has been studied. The model of the control system in Matlab Simulink with a follow-up run on the Raspberry Pi was developed . Considered separate units specifically for the RPi Support Package for Raspberry Pi Hardware. The process debugging Windows programs Matlab Simulink to work with a single-Board computer in the unlimited real-time mode simulation has been described.

Sheremet A. I., Perepelica V. V., Kirienko T. V. Overview of the possibility of establishing a system of control over industrial facilities on the basis of single-board computer Radxa Rock Pro // Scientific Herald of the DSEA. – 2016. – № 3 (21E).

The control system for industrial facilities on the basis of single-board computer Radxa Rock Prohas been offered. Dismantled the benefits of this system compared to existing analogues, where the small size of the system are easy to install and configure versatility in usage, versatility. The possibility of creating such a system, and the first prototype using a non-invasive current sensor that will monitor the changes of current and voltage of the electric plant has been described. The components tracking system schemes and an example of a library that will be developed to manage the system are shown in the article.

Kvashnin V. O., Babash A. V. Development of algorithms and software for dynamic speed characteristic obtaining // Scientific Herald of the DSEA. – 2016. – № 3 (21E).

The analysis of previously developed methods for determining dynamic speed characteristics is given here. The advantages and disadvantages of the considered methods for determining the angular velocity using a tachometer are identified. The developed algorithm is given here. On the basis of this algorithm specialized software for calculating the dynamic speed characteristics has been developed. The graphical illustration of the principle in the calculation and

construction of dynamic speed characteristic is given here. The developed application interface is given. The main features of the developed software product are considered. The diagrams of dynamic speed characteristics of the first and second masses stand for dynamic loads of research are given here.

Kholmovoy Yu. P., Avdeenko A. P. Microsystem of data collection m-DAQ14: problems and solutions // Scientific Herald of the DSEA. – 2016. – № 3 (21E).

«Configuring m-DAQ14» virtual device was created to test the m-DAQ14 microsystem data collection. It assisted to establish ,there are shortcomings in the system: generations of voltages are broken, with correspond to the values specified by the code of -1, 0 and 1; it is impossible to obtain a series of voltage steps of 1 mV; the microsystems software, which is delivered by the manufacturer, it does not contain tools to use the adapted ones to the programming in the LabVIEW environment and collect data in real time. If the first drawback can be resolved by software, the second one – by the instrumental means, the third shortcoming can be eliminated only by software developers of the Microsystem.

ECONOMIC SCIENCES

Voloshina E. A., Marinoshenko V. S. Features of the influence of inflation and deflation on the sectoral development of the economy of Ukraine // Scientific Herald of the DSEA. – 2016. – № 3 (21E).

The main components of the influence of inflation and deflation on the sectoral development of the Ukrainian economy are considered. The concept of inflation, as well as the history of the term, is considered. The causes of inflation in the domestic economy are studied. Statistical data of the State Statistics Service of Ukraine on exports of goods for the 2014-2015 years are analyzed. The influence of inflation on various sectors of Ukraine is defined. It is proved that tragetirization of inflation should be the aim of the governmental policy. It is concluded that Ukrainian exporters are unlikely to be able to support the country's economy without an active support of the Government.

Grybkova S. N, Sheviakov D. V. Risks preventing the spread of the lease on industrial enterprises of Ukraine and ways to minimize them // Scientific Herald of the DSEA. – 2016. – № 3 (21E).

The article gives a thorough review of the risks arising from making lease transactions. Classification features are selected. All risks can be divided into two groups: general risks, which depend on the external environment and specific ones, which depend on the activity of the subjects of lease transactions.

Methods for minimizing risks are proposed for generalizing risk classification. Methods that reduce risks, for both lessor and lessee, were grouped. Insurance, hedging, diversification, prevention and minimization of the leasing portfolio are considered to be the most common ways. It was revealed that there is an urgent need to improve the legislation of Ukraine in the sphere of leasing operations.

Dobykina E., Ponomareva V. The urgency of social responsibility formation of labour potential // Scientific Herald of the DSEA. – 2016. – № 3 (21E).

The urgency of social responsibility of business in forming labour potential is accented. The essence of labour potential as well as social responsibility of business, as dominant attitude of any company toward the product or service, consumers, workers, partners are exposed. The essence of active social position of company, which consists in harmonious coexistence, co-operation and permanent dialogue with society and staff of the firm, participation in solving sharp social problems is picked out. Parallel between social responsibility of business and getting prospects for potentially greater income because of realization of social projects is drown.

Zaytcev V. S. Labour motivation based on the balanced metrics of enterprise // Scientific Herald of the DSEA. – 2016. – № 3 (21E).

Theoretical and practical approaches to the introduction of effective labour motivation to achieve strategic goals based on the balanced metrics (BM) of enterprise are presented. Methodological basis for selection of directions of labour motivation and implementation of balanced metrics is determined. Strategic goals, key indicators of BM aspects, which are interconnected with labour motivation system and can be used in practical activity of an enterprise, are formed.

Kargin B. B. Analysis of modern ERP program and prospects for their implementation in industrial enterprises // Scientific Herald of the DSEA. – 2016. – № 3 (21E).

The paper considers the influence of modern information technologies, namely of ERP systems, the performance of large metallurgical enterprises "Azovstal" and «MK name Ilyich» group «Metinvest». It is shown that «MK name Ilyich» successfully implemented the strategic management elements of foreign economic activity. The main business areas are revealed, which embedded in these enterprises. It was found that among the automated enterprise management systems, SAP ERP are of most interest and this system is one of the most common.

Mykhaylychenko N. M., Petrushak S. O. Problems of implementation of controlling system in the enterprise // Scientific Herald of the DSEA. – 2016. – № 3 (21E).

The article includes problematic implementation aspects of the introduction of controlling in the enterprise. Are identified the basic approaches and principles of organizations and implementation controlling. Is described the basic problem faced by enterprises in the during organization and implementation controlling. Are considered problems arising in case of implementing controlling service in the enterprise, and ways of solutions. Also is developed the scheme of implementing of mechanism for controlling in management system and are provided characteristics of the stages of implementation of this scheme. Today controlling system is not implemented in administrative practice of the Ukraine, so you should prioritize the direction of domestic enterprises, the possibility of their competition with foreign enterprises in the future and prospects of economic development, which allows the introduction of controlling system.

Serdiuk E. N., Piven N. Y. Assessment of the current monetary system of Ukraine // Scientific Herald of the DSEA. – 2016. – № 3 (21E).

The study of modern monetary system of Ukraine is necessary for understanding of the inflationary process. The article describes the characteristics of the monetary system of the state, the estimation of gold reserves and inflation in Ukraine at the present stage, and are discussed ways of solving the crisis of payments. The analysis made in the work, has shown reduction of bond reserves of the state and the growth of inflation. In the article also are discussed the main development directions of the monetary system of the state.

Shubnaya E. V., Moskot A. A. Features of personnel management: the experience of different countries // Scientific Herald of the DSEA. – 2016. – № 3 (21E).

Creation of effective human resources management system is one of the most important conditions for the successful functioning of any business. The different countries of the world are characterized by specifics of the work with the staff, which were formed under the influence of a variety of historical, cultural, ethnic, socio-economic, political, scientific, and other groups of factors. In the article is carried out the comparative analysis of the most common human resource management models: Western, Eastern, European and post-Soviet. It is made the conclusion that in the Ukraine the approach to personnel management is flexible, combining a variety of features specific control methods specific to other countries.