

## ABSTRACTS

## TECHNICAL SCIENCES

**Abdulov A. R., Zhbankov Ya. G. Analysis of the influence of geometric parameters of large forging ingots on their quality // Scientific bulletin of DSEA. – 2017. – № 1 (22E).**

Modeling of crystallization and solidification processes of large forging steel ingots was made. As models ordinary, shortened and elongated ingots were selected. The crystallization time of ingots was determined by studying of temperature fields changing in ingots body during solidification. It was established, that the highest time of crystallization corresponds to the shortened ingot. The penetration depth of shrinkage exposures to the formal part of ingots was determined. The minimal depth of penetration is corresponded for shortened ingot. This indicates on the best structure for this type of ingots.

**Zhbanova O. M., Saithareyev L. N., Bialik G. A. Effect of electrical action during crystallization on physical and mechanical properties of steel 110h13l // Scientific bulletin of DSEA. – 2017. – № 1 (22E).**

The dependence of physical and mechanical properties of manganese steel grade 110H13L on the effect of electrical activity during crystallization of the casting is considered.

Treatment of the melt by electric current increases the speed of dissolution of metallic impurities and other components in the melt many times, providing not only finely crystalline structure, but also improving the homogeneity of metal casting. Improvement of mechanical properties is a consequence of crushing those which constitute microstructure. Processing by electric current does a beneficial effect on the process of crystallization of metal melting during casting, which significantly improves the structure of the ingot and its mechanical properties.

**Efremenko V. G., Zurnadzy V. I., Gavrilova V. G. The technological schemes of low alloyed steel heat treatment based on the Q&P-principle // Scientific bulletin of DSEA. – 2017. – № 1 (22E).**

The article presents an overview of new technology of steel heat treatment named "Quenching and Partitioning" (Q&P). Literature data on the effect of chemical composition and parameters of this technology on the microstructure and complex of mechanical properties are analyzed and systematized. It is shown that Q&P treatment leads to a microstructure consisting of tempered martensite, fresh martensite and residual austenite which ensures improved complex of strength and ductility. The factors affecting the amount of residual austenite and its ability to deformation martensite transformation are analyzed. The classification of Q&P-process' modifications is presented, as well as its prospects in obtaining relatively cheap high-strength steels.

**Rudenko N. A. Investigation of basic characteristics for highly-porous powder materials // Scientific bulletin of DSEA. – 2017. – № 1 (22E).**

Microstructure of specimens manufactured using pore-former is considered and evaluated in the article. Analysis of porous samples structures showed that the use of pore-formers in the manufacture of highly porous material allows to obtain products with uniform porosity throughout the body volume and controlled porosity. Standard metallographic methods can determine the basic characteristics of these products without the use of expensive equipment and time-consuming calculations. It is shown that compaction pressure has no significant effect on the pores formed after removing the pore-former. But with increasing the pressure pores between particles of iron decreases slightly. Compaction pressure significantly affects on elongation of pores which is caused by method of pressing. With increasing compaction pressure pores stretch in the direction perpendicular to pressing direction.

**Semenov V. M., Kabatsky A. V., Malygina S. V. Researches of the weld joints of bottoms of the reactors produced with electroslag welding // Scientific bulletin of DSEA. – 2017. – № 1 (22E).**

The aim of work was to research the possibility of obtaining quality weld joints from position of deformations appeared after electroslag welding of petalous bottoms of bimetallic reactors. Also structure and properties of the bimetallic 12XMA + 0X18H10 steel weld joints were researched. It was found that mechanical properties of 12XMA steel electroslag welded and heat treated joints suit COY MIII 71.120-217:2009 standard. As a result of metallography researches of macro- and microstructures defects are not detected. The obtained results can be used for development of the technology of two-layer steel electroslag welding.

**Razmyshlyayev A. D., Ahieieva M. V. The method of calculating the induction of a transverse magnetic field in the pool zone at arc welding // Scientific Herald of the DSEA. – 2017. – № 1 (22E).**

The article demonstrates that an input device (ID) in the form of an electromagnet with two coils placed on rods ID TMF is used for creating a transverse magnetic field (TMF) in the pool zone at arc welding. The method of

calculating the induction of TMF in the welding pool area, based on the analogy between the structure of a magnetic field and the generated ID TMF and the structure of the electrostatic field is suggested. Since the product is made of a ferromagnetic material, the reflection method is used in the calculating method. It is determined that the developed calculating method provides a satisfactory agreement between the calculated and experimental data on the magnitude of the TMF induction in the welding pool area, and can be used to optimize the design of the ID TMF as applied to arc welding of butt joints of plates made of ferromagnetic steels.

**Podlesny S. V., Yerfort Y. A., Zhuk Y. A. Dynamics of electromagnetic and electrostatic rotor suspensions // Scientific Herald of the DSEA. – 2017. – № 1 (22E).**

Application of electromagnetic and electrostatic suspensions is one of the promising technical areas, especially as far as concerns high-speeds, small disturbing moments, zero wear, noise, vibration, work in vacuum, aggressive environments, etc. Mathematical electrodynamic models of such suspensions were obtained in the article on the basis of the apparatus of analytical mechanics and Lagrange-Maxwell equations. The models include the equations of mechanical motion and the equations describing electromagnetic processes and allow to choose rational parameters of the considered devices, ensuring compliance to the required specifications when using computer equipment.

**Vasil'eva L. V., Granovsky A. Y., Aleksieieva K. H. Automated designing of shock stands based on the hydroelastic drive // Scientific Herald of the DSEA. – 2017. – № 1 (22E).**

The research relevance and sphere of its application have been determined. The main goal of the research is to obtain more accurate calculations of the shock stands used in the modern equipment with the help of the program and methodical complex. The main designing and strengthening computations used for projecting shock stands on the base of HD have been represented. Shock stands have been divided into groups according to the mass of a tested object and its structural features. Optimal design of shock stands and the procedure of designing and strengthening calculations have been chosen for each group of the tested objects. Structural-functional models of zero and first level of the system "Design of shock stands" on the basis of SADT technologies have been demonstrated. A Program and methodical complex for automated designing of shock stands on the basis of the hydro-elastic drive has been developed. Conclusions on the functionality, time consumption and spheres of application of the developed complex have been drawn.

**Loveykin V. S., Pochka K. I. Realization of the optimum mode of the reversal of a roller forming installation on acceleration of the fourth order // Scientific Herald of the DSEA. – 2017. – № 1 (22E).**

The optimum mode of reciprocal motion of the forming cart with the reversal on acceleration of the fourth order is calculated with the purpose of increasing reliability and durability of the roller forming installation. Kinematic characteristics of the forming cart under the optimum mode of the reversal on acceleration of the fourth order are calculated. The design of the roller forming installation with the drive from the high-moment step engine which is built in rolling rollers of the forming cart and which provides reciprocal movements of the forming cart with the optimum mode of the reversal on acceleration of the fourth order is offered.

**Gavryukov O. V. Determination of the belt loading during the non-uniformly accelerated changing of the transportation length // Scientific Herald of the DSEA. – 2017. – № 1 (22E).**

The article shows the final part of the theoretical research devoted to the determination of the belt loading during the non-uniformly accelerated changing of the conveyor length. It has been determined that changes in belt tension are always connected with the arising dynamic and quasi-static wave of elastic deformation depending on the belt speed. An example of the belt loading calculation during the lengthening of the conveyor with the stopped drive is given.

**Kondratenko M. N. Condition analysis of belt conveyors roller bearings and drums on the basis of mathematical model of starting modes // Scientific Herald of the DSEA. – 2017. – № 1 (22E).**

Diagnostics method of the rollers and drums state is proposed in order to detect and replace worn roller bearings to reduce the repair and maintenance costs. It is based on the research of power costs and dynamic processes, which appear when rollers and drums are found to be defective. Evaluation of the conveyor dynamic characteristics is carried out by modeling of dependencies connecting the speed, the way of the belt traveling on the head and auxiliary drums and rollers. It connects the dynamic force in the tape with the size and nature of the change of the driving force, which is developed by the electric drive during the diagnostics and benchmarking. Diagnostics by the proposed method is made in the period of time when the rollers of the load branch of the conveyor are alternately involved in rotation. At the starting moment of the rotation the complete picture of the state of the rotating load branch elements will be obtained by the tail drum belt, and the possibility of diagnostics by this method will stop.

**Tarasov O. F., Vasylieva L. V., Morozov D. A. The use of combined statistical algorithms for generating abstracts and assessment of the relevance of scientific and technical publications // Scientific Herald of the DSEA. – 2017. – № 1 (22E).**

The existing methods of automated text processing on the basis of the combined statistical algorithms for generating abstracts and assessment of relevant articles are analyzed. The study was carried out to highlight the key words on the subject of the application of intensive plastic deformation. Articles' words processing articles in two languages was made - in English and Russian, which confirms the universality of the approach taken to the analysis and assessment of scientific texts. Algorithm for statistical processing the scientific and technical information was improved, taking into account the non-linear and hierarchical structure of the text. It allowed to receive short text documents in the selected language.

**Onischenko Y. S., Bogdanova L. M. A software-methodological complex for automation of data accounting concerning the work of the scientific and technical library at the machine-building enterprise // Scientific Herald of the DSEA. – 2017. – № 1 (22E).**

This article presents the development of a software-methodological complex. The program is intended for the scientific and technical library data accounting automation at a machine-building enterprise and is developed on the basis of an object-oriented approach. A software-methodological complex is developed using web-programming technology and is the site. Employees of the enterprises, who are readers of the library, have the opportunity to remote on-line viewing on the library's site, personal form, books catalog at convenient time. The librarian can get a list of debtors, a list of books for writing off. The system "Library of the machine-building enterprise" allows to automate the routine work of librarians and provides the enterprise with the necessary reporting. The introduction of the information system "Library of the machine-building enterprise", in addition to saving material resources, guarantees reliable data storage and processing.

**Plotnikov V. V., Saitgareev L. N. Prospects for utilization of industrial zinc-bearing wastes // Scientific Herald of the DSEA. – 2017. – № 1 (22E).**

The article describes the main ways of processing slurries containing zinc, which presents a serious environmental problem at the moment. The technology of obtaining an agglomerate with an increased content of slurries, using the reducing metallurgical processes and zinc extraction is proposed. It makes it possible to solve the complex resource-energy-saving problem of utilization of valuable production waste and to enhance the ecological safety of these industries.

**Fesenko A. M., Fesenko M. A., Fedorov M. M. Influence of humidity and granularity of quartz-based sand on the properties of sand-clay molding mixture // Scientific Herald of the DSEA. – 2017. – № 1 (22E).**

The grade of the investigated sand-clay quartz-based raw material 1T<sub>1</sub>O<sub>3</sub>016 (GOST 2138-91) is determined. It is shown that the most important physical and mechanical properties of quartz-based sand, as well as of sand and clay mixtures on their basis are gas permeability and compressive strength in wet state. Quantitatively, the indices of these properties are largely determined by moisture content of the mixture, graininess of the filler and the content of clay binder in the mixture. For each specific composition of the mixture there is an optimum value of moisture, at which the best combination of its basic physical, mechanical and technological properties is achieved. The optimum humidity depends on the type of molding sand, the content of clay substances and their quality, the presence of various impurities and additives, and, in most cases, it is determined experimentally. General regularities of the effect of moisture on gas permeability of sand-clay molding mixture at various grain size of its filler (quartz-based sand) were established experimentally, as well as the influence of sand granularity and the content of molding clay on the raw strength and gas permeability of sand-clay molding mixture was studied. It is shown that sand-clay raw material of the grade SPG-02 produced by the "Mineral" mining company can be effectively used as a refractory filler for raw sand-clay mixtures, provided that they have optimum moisture and mold clay content.

## ECONOMIC SCIENCES

**Bersutska S. Ya., Zhukov S. A. The social role of the budgeting system in industrial enterprises // Scientific Herald of the DSEA. – 2017. – № 1 (22E).**

The article defines the role of labor in the industrial enterprise budgeting system. It proved that the spending level on social activities in the budgeting system at first depends on the enterprise policy support staff, enterprise positioning and available funding. The forming scheme for personnel costs in the budgeting system an industrial enterprise is proposed. It is revealed that the specific feature of the budgeting system for investment in human capital is the fact that almost all structural divisions of the enterprise are cost centers, on this basis, the establishment of correspondence between the costs development of human resources and specific functions of personnel management is a problem for most industrial enterprises. This is due to the fact that the costs formation and the implementation of

human resources management functions have differences, which do not correlate, cause-effect relationships. The solution to this problem is to disclose each function and identify its financial and economic content, and the directions of investment in human capital should be tied to personnel management functions, at the same time, it is necessary to regulate the boundaries financial responsibility of managers at all levels for the budgets implementation.

**Venzhega R. V. Theoretical aspects of the strategic development in industrial enterprises // Scientific Herald of the DSEA. – 2017. – № 1 (22E).**

The article deals with theoretical approaches to the basic concepts definition of the strategic development in industrial enterprises. Based on the generalization and approaches analysis, an author's definition of the development strategy and mechanism's for forming the strategy for the development is proposed. A detailed analysis of the concepts development and strategy made it possible to reveal the substantive features of the mechanism for forming the strategy for the development in the industrial enterprise. The results obtained in the process of research and reflected in this article can become a theoretical basis for conducting promising scientific research on the justification and formalization the scientific and methodological approaches to the formation of a mechanism for developing a strategy for the development in industrial enterprises.

**Galgash R. A Prerequisites for Cluster Boundaries and their Strategic Coordination in the Region // Scientific Herald of the DSEA. – 2017. – № 1 (22E).**

The article presents theoretical framework and methodological tools for determining real and rational edges of economic cluster and defining the cluster generation status and policy as the background for studies for establishment clusters' edges and their strategic coordination in the regions. The scientific approaches, conditions which are based on the concept of "cluster" as the main object study concerning analysis the regional economy state, have been examined. The types of coordination, which foresee setting balance within a system and between systems, have been shown. The strategic coordination correlation and industrial, commercial, investment and innovation processes and factors, which affect the coordination of the actions in regional clusters, have been defined.

**Grybkova S. N., Materniuk T. E. Overview condition for direct investment in Ukrainian industry // Scientific Herald of the DSEA. – 2017. – № 1 (22E).**

The article analyzes the current state of foreign direct investment (FDI) in Ukrainian industry. The dynamics FDI for the last ten years is considered, and the factors affecting it. Among there are global economic crisis, and the military-political crisis in Ukraine in particular. It was revealed the value of FDI is half of country's minimum investment needs. Among the investment flows, the income to Ukraine prevails, and, on the contrary, the Ukrainian business does not invest in other countries according to official data. The country that finances almost 38% of FDI is the Russian Federation.

Capital investment in the national economy by  $\frac{3}{4}$  consists of the enterprises' own resources, and the state and foreign investors invest least in industry. In addition, 95% of all funds go to purchase tangible assets: equipment, cars, etc.

**Drachuk Yu. Z., Snitko Ye. O., Zavgorodniy Ye. Y. To directions of improving efficiency for enterprises intellectual potential // Scientific Herald of the DSEA. – 2017. – № 1 (22E).**

The human factor role in the growth to the level of competitiveness in the particular enterprise is largely dependent on the effective implementation of processes related to the management of employees who, over a long period of time, accumulate the knowledge, skills, and skills necessary to carry out business processes; Examined on the strategically important oil and gas complex in Ukraine, scientific proposals aimed at solving economic and management problems, practical aspects of the functioning of industry enterprises as a socio-economic system, accumulating considerable intellectual potential over a long period of time.

**Drachuk Yu. Z., Trushkina N. V. Implementation of the mechanism of the public-private partnership in the sphere of innovative industrial development: world practice // Scientific Herald of the DSEA. – 2017. – № 1 (22E).**

The global experience in the implementation of public-private partnership in the industry, which provides for expansion of cooperation between the government, business sector and civil society through the establishment of partnerships as a public-private (PPP) and / or public-private partnerships (PPP) as an effective mechanism of development infrastructure and public services is given. The wide spread of PPP in the world is connected with the desire of the state to mobilize financial resources from the private sector to address socially important problems of socio-economic development, the need to use complex organizational, managerial and production technologies. From the international experience, the creation of favorable conditions for the development and increase of efficiency of scientific-technical and innovative activity is a priority task of the state innovation policy based on public-private partnerships.

**Zahrebelniy S. L., Brus M. V. Adaptive testing as a way to test students' knowledge in technical colleges // Scientific Herald of the DSEA. – 2017. – № 1 (22E).**

The test computer control of students' knowledge and skills is a mandatory component of the learning process, the objective of which is to provide feedback between a teacher and a student, the teacher's getting objective information about the degree of students' mastering academic material and the timely identification of weak points and gaps in their knowledge. The authors have brought about the advantages of computer adaptive testing over routine one, considered mathematical model of adaptive testing, developed an algorithm for creating adaptive computer test (in the form of flowcharts). But the implementation of this method in the learning process must be balanced for knowledge assessment procedure to be well integrated into the learning process to maximize its effectiveness. In the authors' opinion adaptive testing contributes to the development of modern trends of education and opens new opportunities of improving the efficiency of learning processes.

**Maltsev M. M. Influence of privatization processes on the innovative development of the sea transport enterprises // Scientific Herald of the DSEA. – 2017. – № 1 (22E).**

Privatization in different branches of industry in Ukraine was studied. The estimation of modern processes of privatization of Ukrainian enterprises of sea transport was given. The investment analysis of the main sea ports of Ukraine has shown that there has been a growth of investments at all the enterprises. It is proved that the existence of a statistically significant correlation dependency between innovation growth and investment growth is typical, which indicates the direction of investment activity at enterprises with high innovative activity. The actions that will ensure the preservation of the Ukrainian seaport complex potential and the effective entry of the ports into the European transport networks are recommended.

**Mints A. Y. The choice of software to solve economic problems using the fuzzy logic // Scientific Herald of the DSEA. – 2017. – № 1 (22E).**

To effectively solve modern economic problems, it is necessary to use specialized software that implements sophisticated mathematical methods. The use of fuzzy computations for the selection of such software is substantiated in the article. The approaches to the formation of evaluation criteria and determining their significance are formulated. The procedures for fuzzification and defuzzification of fuzzy variables have been developed. The procedure for determining a fuzzy rating is defined. The proposed model provides an integral rating of software properties and can be used with a large number of analyzed products and criteria.

**Mykhaylychenko N. M., Tokareva A. O. To achieve balance of liquidity and profitability is the main task of financial controlling // Scientific Herald of the DSEA. – 2017. – № 1 (22E).**

The problematic aspects of the introduction of controlling system at the enterprise were considered in the article. The basic approaches and principles of controlling introduction and organizing are determined. The basic problems which the enterprises face in the course of controlling introduction and organizing are described. The problems arising in conditions of controlling introduction in the enterprise and the ways of their solutions are considered. Also developed The introduction scheme of controlling mechanism into management system is developed and the stages of implementation of this scheme are characterized. Today controlling system is not completely introduced into the administrative practice of the Ukrainian enterprises, so you should prioritize the direction of domestic enterprises activity, the possibility of their competition with foreign enterprises in the future and the prospects of economic development, which allow the introduction of controlling.

**Popova A. Yu. Improvement of teaching economic disciplines: practical processing of creative ideas based on interdisciplinary competence communications // Scientific Herald of the DSEA. – 2017. – № 1 (22E).**

Are developed proposals for improving the teaching of economic disciplines in terms of practical study of creative ideas based on interdisciplinary competencies. The competence approach provides for a transition from the assimilation of information to the formation of qualities necessary for creative activity and the constant assimilation of new information, the creation of creative potential that is realized situationally.

Are generalized directions of formation of methodological bases of creative thinking in the process, business ideas, ensuring creative is a versatile understanding of the situation, creating conditions to develop ideas «on the edge» of scientific and practical directions.

The example is used of cross-situational examples - business cases.

**Serdyuk E. N., Pilipenko E. E. Comparative analysis of accounting models used in the world practice // Scientific Herald of the DSEA. – 2017. – № 1 (22E).**

In the modern world there is a wide variation of accounting models due to economic, historical, political, socio-cultural and other aspects. Different classifications of accounting models are considered in this work, and schematic model bringing together various classifications of accounting systems is formed. The work is dedicated also

to the analysis of accounting models of the developed countries of the world, that showed they share the desire to unify the standards, as well as the coincidence of the accounting principles' majority. Analysis of corporate taxation indicators revealed that the transparency of economic activity and the responsibility of accountants is at the highest level in Japan. The work included also the most suitable accounting system for Ukraine.

**Filipishina L. M. Directions for developing the strategy of interaction between the state and business // Scientific Herald of the DSEA. – 2017. – № 1 (22E).**

Are presented changes in basic social-economic indicators, characterizing the level of effectiveness of reform realization. It is shown that the main limiting factors of development in the country is bureaucracy reform, political instability, high specific part of the monopolies. The proposed activities aimed at improvement of the mechanism of interaction between government and business: creating the conditions for investment of the population in its economy, expansion of public demand, the reform of the banking system, a balanced monetary policy, control and improvement of the privatization process.

**Chernata T. N. Application of economic analysis methods in the situational management system of economic processes // Scientific Herald of the DSEA. – 2017. – № 1 (22E).**

The necessity of situational management applying in the modern economic conditions, which are characterized by increased instability, uncertainty and variability of factors affecting the efficiency of enterprises, is shown. A transformation of traditional economic analysis methods with the aim of conducting situational analysis, is proposed, which will allow the formation of a portfolio of informed and flexible management decisions. The application of economic analysis methods for situational management of commodity output using the example of accounting for the effect of forecast prices on products is shown.

**Yashchyshyna Yu. M., Myronenko E. V. Development features of the value-semantic sphere of future managers // Scientific Herald of the DSEA. – 2017. – № 1 (22E).**

In the article are showed the results of development features of value-semantic orientations of future managers. The made study points out that the indicators of value-semantic sphere significantly affect at all areas of a person's life, determine quantitative and qualitative changes of personal and social identity in the areas during of the study in higher educational institution. Therefore, the main development condition of value-semantic orientations of future managers in a higher education institution is creation of optimal development conditions their potential spiritual values aimed at meanings, existential values, moral motives that play a key role in the further personal and professional development and self-realization.

**Gladysheva O. V. Analysis of the global english-language publications in the field of press-forging equipment and the application of advanced technologies of metal working by pressure // Scientific Herald of the DSEA. – 2017. – № 1 (22E).**

The article is dedicated to analysis of the global English-language publications in the field of press-forging equipment and the application of advanced technologies of metal working by pressure. To increase the competitiveness of the modern press-forging equipment at the international market was made the analysis of leading publications in the field of technology of metals processing by pressure. Analysis of essays by leading Japanese, German, Chinese, Korean and American scientists and the Internet-editions of the industrial enterprises showed the main areas of work in the development of new press-forging equipment and modern technologies for processing metals by pressure in foreign countries.