

ABSTRACTS

Ukraine and China: comparison of basic indicators of housing construction / V. Serdiuk, I. Huchok, Li Dan // Вісник Вінницького політехнічного інституту. — 2013. — № 5 (110). — P. 7—12: fig. 3. Tables 7. Refs.: 9 titles.

The dynamics of state building and provision of housing in Ukraine and China is analyzed. Factors that impede housing problems are identified and the ways solving the problem are suggested in the paper.

Construction of distribution of contaminants in the air of city applying geoinformation technologies / V. Mokin, I. Varchuk // Вісник Вінницького політехнічного інституту. — 2013. — № 5 (110). — P. 13—18: fig. 4. Tables . Refs.: 10 titles.

The known and commonly applied in Ukraine mathematical models of pollutants spreading in the air of emissions from both stationary and mobile sources are considered in the paper. A range of methods and approaches for more accurate determination of the necessary input data for modeling using GIS and spatial data analysis methods to be particularly effective in conditions of variable terrain and a small number of primary cases is suggested.

Complex environmental monitoring of the oil-contaminated territories on the example of the town Boryslav / O. Romaniuk, L. Shevchyk // Вісник Вінницького політехнічного інституту. — 2013. — № 5 (110). — P. 19—22: fig. 6. Tables 1. Refs.: 10 titles.

The results of environmental monitoring of the territories of Boryslav are suggested in the paper. The average, maximum and minimum concentrations of basic chemical ingredients and the most common contaminants in the wells, rivers, streams and soil are detected. The prospects of higher plants for the remediation of oil-contaminated soils are studied. The best results of cleaning oil contaminated soils with the application of *Hippophae rhamnoides* plants were obtained.

Estimation of the geometric characteristics of the aeration zone using a single-phase buoyant flow's models / O. Barybin // Вісник Вінницького політехнічного інституту. — 2013. — № 5 (110). — P. 23—25: fig. 4. Refs.: 7 titles.

The possibility of using a single-phase buoyant flow's models to determine the geometrical characteristics of the aeration zone using jet aerators is evaluated in the paper. Results of the comparison of the calculated and experimental data obtained by the author showed that the geometric characteristics of the aeration zone can be determined by calculating the models of buoyant single-phase jets, with the initial gas content being considered as 20 %.

Process for trichlorosilane (TCS) hydrogen recovery implementation / Yu. Rekov // Вісник Вінницького політехнічного інституту. — 2013. — № 5 (110). — P. 26—31: fig. 3. Tables 1. Refs.: 9 titles.

The results of theoretical studies on the pre-heated rod-substrates to generate their own carriers and provide the necessary conductivity of silicon in the production of high-purity polycrystalline silicon are suggested in the paper. The usage of alloy rod-substrates for the production of polycrystalline silicon with the given level of concentration of the dopant is considered.

The use of production functions in the research companies in the dairy industry / B. Grabovetskyi, N. Tarasiuk, O. Bezsmertna // Вісник Вінницького політехнічного інституту. — 2013. — № 5 (110). — P. 32—36: tables 1. Refs.: 11 titles.

The paper analyzes the equivalence of exchange in the economic relations of enterprises calculated optimal price level for milk and milk products at different stages of the production process and by projected profit sharing between different areas of dairy production agriculture

Conditions of optimal normal modes of electrical systems with long power lines / P. Lezhniuk, V. Kulyk, S. Vyshnevskyi // Вісник Вінницького політехнічного інституту. — 2013. — № 5 (110). — P. 37—43: fig. 5. Tables 1. Refs.: 9 titles.

This paper presents results of the research of improving the mathematical model of terms of the conditions of optimality of the normal modes of electrical systems, which includes long lines. These models are used to form the laws of optimal control of power flow and voltage in electrical systems. Adequacy of the

proposed approach is confirmed on the basis of physically-imitational modeling modes of simulation of electrical networks 110–750 kV Southwest Power System.

Power measurement of the unbalanced three-phase balanced system / M. Burbelo, V. Romanovskiy, S. Melnychuk // Вісник Вінницького політехнічного інституту. — 2013. — № 5 (110). — P. 44–47: fig. 3. Refs.: 7 titles.

Possibilities of increasement of fast-acting of powers of the asymmetrical modes of the three-phase balanced system measuring are analyzed with the use of orthogonal constituents of instantaneous powers.

Additional reduction of energy losses in electric networks caused by their interaction / P. Lezhniuk, A. Kylymchuk, A. Rubanenko // Вісник Вінницького політехнічного інституту. — 2013. — № 5 (110). — P. 48–52: fig. 4. Refs.: 6 titles.

The mathematical models and algorithms for determination of power losses in power networks caused by their interaction are suggested in the paper. The possibility of usage of linear regulators installed in the low voltage network to reduce these losses is shown. The method of determining the optimal location for these devices is offered in the article.

Mathematical model of functioning of the power supply system of the electric drill / M. Fedoriv, U. Nikolyn, A. Potochnyi // Вісник Вінницького політехнічного інституту. — 2013. — № 5 (110). — P. 53–58: fig. 7. Refs.: 8 titles.

The paper presents the mathematical model of functioning of the power supply system of the electric drill in a virtual environment Programming Laboratory Virtual Instrumentation Engineering Workbench (LabVIEW). This mathematical model allows to simulate complex electrical modes of electric drill depending on the depth of the hole. The method of the mathematical model creating its main features and capabilities that can be used in practical studies of electrodrills on the territory of the Carpathian region is presented in the paper.

The ways of increase of reliability of the electro technical personnel to modern conditions / E. Bondarenko // Вісник Вінницького політехнічного інституту. — 2013. — № 5 (110). — P. 59–66: fig. 2. Refs.: 22 titles.

The current state of industrial safety and labor safety at the enterprises which are in sphere of management of Minenergougol of Ukraine is considered. Utility of methodology of the system analysis and risk for increase of reliability of the electro technical personnel is defined. Taking into account system and risk - the rough approach the resulted ways of increase of reliability of the electro technical personnel to modern conditions are suggested in the paper.

Game approach to decision-making for the development of information systems / V. Dubovoi, G. Derman // Вісник Вінницького політехнічного інституту. — 2013. — № 5 (110). — P. 67–73: fig. 5. Tables 1. Refs.: 16 titles.

The game approach for decision-making to the development of information systems is developed in the article. The model of the problem of decision-making considering prediction based on multivariable regression method is presented. The example of base of knowledge for predicting the impact of development of information system on the state of the environment was shown. For estimating the performance of the functions of information systems multiplicative criterion was used, for estimating the level of developing an additive criterion was used. The activity diagram to calculate the elements of the payment matrix that is used to solve the game by dynamic programming is suggested in the paper.

The simulation of ranking processing of discriminant functions / T. Martyniuk, A. Medvid, O. Gutsol // Вісник Вінницького політехнічного інституту. — 2013. — № 5 (110). — P. 74–80: fig. 2. Tables 2. Refs.: 16 titles.

The time dependences of ranking processing of values of discriminant functions (DF) are investigated. The features of processing by method of difference cuts for elements of DF as matrix for rank DF determination are considered. The results of imitating simulation with using biomedical data for diseases diagnosis are analyzed in the paper.

Information technology of design of BPT wave digital filters / V. Rovinskyi, O. Fufalko, Yu. Striletskyi, O. Evchuk // Вісник Вінницького політехнічного інституту. — 2013. — № 5 (110). — P. 81—84: fig. 5. Refs.: 11 titles.

Using wave digital filters for bipolar transistor modeling was complicated until recently due to stability problems of such circuits caused by small input voltage range of bipolar transistors (0.6—0.7 V) for standard sampling rates. In this work the simplified Gummel–Poon model of bipolar transistor was used which allowed solving this problem.

Generating artificial structures testing of digital devices based on the device hypergraphs / V. Ozeranskyi // Вісник Вінницького політехнічного інституту. — 2013. — № 5 (110). — P. 85—90: fig. 6. Tables 2. Refs.: 4 titles.

This paper analyzes the features of the formation of artificial structures schemes for digital devices (DD), using the apparatus of hypergraphs. Additional properties of hypergraphs to effectively describe the simulation of artificial structures partitioning schemes DD are considered. The basic operators restructuring scheme DD, with which the search for the optimal partition structures is suggested in the paper.

Possibility of forming and checking the digital signature based on recurrent sequences / Yu. Yaremchuk // Вісник Вінницького політехнічного інституту. — 2013. — № 5 (110). — P. 91—95: fig. 1. Refs.: 7 titles.

We have suggested a possibility of forming and checking the digital signature based on the mathematical apparatus of recurrent V_k sequences. The analysis has demonstrated that, on the whole, this possibility provides approximately the same amount of cryptographic reliability and computational complexity as the known analogues; however, it allows changing the method of reliability depending on the sequence, and has a simpler parameters' procedure. Under certain conditions, the suggested possibility can ensure a significant increase of the velocity of the signature checking, as well as increase in reliability of the whole digital signature process.

Design of characteristics of parallel methods of comparison of images based on KVP-transformation / V. Kozhemiako, V. Malinovskyi, R. Novitskyi // Вісник Вінницького політехнічного інституту. — 2013. — № 5 (110). — P. 96—101: fig. 3. Refs.: 7 titles.

The paper studied method of parallel comparison of images based on the KVP-transformation, namely a computer modeling of the process of comparison among MATLAB, which showed the high efficiency of the proposed method and model, and allowed us to estimate the parameters of accuracy percentage of overlap and noise influence on the process of comparison.

Research of distribution of power streams on the parallel branches of two stream transmission / I. Taran // Вісник Вінницького політехнічного інституту. — 2013. — № 5 (110). — P. 102—107: fig. 5. Refs.: 5 titles.

By means of technology of analysis of transmissions, that is a construction of arbitrary flow diagrams of transmissions with the menu of their elementary base elements with the parallel automated generation of their mathematical models, the two stream transmission of mine diesel locomotive is considered and angular rates, moments, parameters of structural elements that are included in its composition, are defined. Correlations of power capacity in the parallel branches of transmission are investigated. It is suggested to substitute a planetary row by an ordinary symmetric differential with the transmission relation of $k = -1$, with introduction of that the value of relation of the indicated powers is maximal; here greater part of engine power will pass through the mechanical branch of transmission, that will positively affect general performance coefficient transmissions. The imitation design is executed and rational structural parameters of two stream hydro mechanical transmission transmissions for mine diesel locomotive on the criterion of maximum general performance coefficient are substantiated in the paper.

Imitation design of electro-hydraulic watching drive with management by effort on an executive branch / O. Deribo, Zh. Dusaniuk, S. Repinskyi // Вісник Вінницького політехнічного інституту. — 2013. — № 5 (110). — P. 108—114: fig. 5. Refs.: 4 titles.

A mathematical model and flow diagram of electro-hydraulic watching drive is developed with a management of the effort towards the executive branch, suitable for the imitation design in the environment of MATLAB Simulink. A corresponding computing structure(flow-chart) is constructed. Testing of this structure confirmed its capacity.

Evaluation of the switch parameters of the memory cell based on the amorphous semiconductor material / V. Kychak, I. Slobodian // Вісник Вінницького політехнічного інституту. — 2013. — № 5 (110). — P. 115—117: fig. 2. Refs.: 5 titles.

The problems of calculating and qualitative assessment of switch delay time of memory cell based on amorphous semiconductor depended on temperature and traps capture concentration are discussed. Based on the obtained formulas the graphs of delay time on temperature for different values of the ionization threshold and graphs of the delay time on the traps capture concentration for different values of hole mobility are constructed and analyzed.

Features of use of gas discharge visualization of the results to determine the degree of purity of the liquid-phase objects / Y. Bilynskyi, O. Pavliuk // Вісник Вінницького політехнічного інституту. — 2013. — № 5 (110). — P. 118—124: fig. 7. Tables 4. Refs.: 6 titles.

The purity liquid-phase object images using geometric parameters of streamers are offered for investigating to determine their center region of similarity, which enables to increase accuracy. A method for determining the center region of similarity is suggested, the results of experimental studies that confirm the possibility of this approach are given in the paper.

Reasons of low level of the use of SCM at the study of higher mathematics / V. Mykhalevych, M. Chukhno // Вісник Вінницького політехнічного інституту. — 2013. — № 5 (110). — P. 125—128: refs.: 7 titles.

It says that the problem is "spoofing learning the basics of mathematics to teaching basics of the system of computer mathematics SCM" is the main way to find examples of successful use of powerful intellectual capacities of modern SCM learning higher mathematics students nonmathematical specialties. It is noted that the search for effective ways of solution of this problem is complicated by a number of negative trends, such as: reducing rates of Mathematics, deterioration of mathematical knowledge students, decrease of interest to students of higher mathematics. Definitely a promising direction specified search that is to build from SCM educational test systems, including fitness equipment for automated playback incremental progress solving typical problems of higher mathematics.

Assessment results analysis of vocational school leader's achievement motivation / L. Petrenko // Вісник Вінницького політехнічного інституту. — 2013. — № 5 (110). — P. 129—133: refs.: 7 titles.

Transformation trends in vocational education predetermine activation of human potentialities that drives the necessity of consideration of regularities of behaviour and related to it achievement motivation as a reliable predictor of efficient information and analytical activity and life-long personal development of vocational school leaders. The article examines the structure and content of components of achievement motivation, its assessment outcomes have been analyzed. The obtained data can be used in further research of this issue. They also indicate the advisability of specific recommendations for vocational school leaders on development of favourable environment for achievement motivation of vocational educational establishment managerial staff.

Realization of information technology for automated translation from inflectional languages to sign language / O. Barmak, S. Romanyshyn // Вісник Вінницького політехнічного інституту. — 2013. № 5 (110). — P. 134—142: fig. 5. Refs.: 10 titles.

The article describes the algorithmic implementation of information technology for translation from verbal inflectional languages to sign language. For example infological model of Ukrainian dictionary and sign language, related generalized grammatical constructions for automatic translation are built. The experimental results to verify the effectiveness of the proposed information technology are represented.