Abstracts and keywords by № 2(46) 2015

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| Title  | **1. RELAY SYSTEMS WITH VARIABLE STRUCTURE AND PASSIVE ADAPTATION** |
| Author | ***A.S. Baklanov, V.E. Vokryshev*** |
| Place of employment address | Samara State Technical University244, Molodogvardeyskaya st., Samara, 443100, Russian Federation |
| Abstract | The following paper suggests and studies the algorithms to control the relay automatic oscillation systems with negative variable hysteresis in a static characteristics of controlling device and variable structure which provide the advanced rapidity of the system during transition period and full invariance of static mistakes under constant impact and nonsymmetrical control. The invariability effect of is reached by means of forming the compensating signals without active change of controlling device parameters. The paper shows the results of computer modeling |
| Keywords | Relay direction system, variable structure, self-adapting algorithm, static mistake. |
| Pages | 7-12 |
| Title  | **2. ASSESSMENT OF THE METHODOLOGICAL ERROR OF PARAMETERS MEASUREMENT DUE THE DEVIATION OF THE REAL SIGNALS FROM THE HARMONIC MODE** |
| Author | ***Ju.M. Ivanov*** |
| Place of employment address | Samara State Technical University244, Molodogvardeyskaya st., Samara, 443100, Russian Federation |
| Abstract | The paper studies a new method of measuring the parameters of harmonic signals: it is based on the formation of additional voltage and current signals and identification of points of zero transitions of input signals. During the implementation of the method there can be the multi-angle shifting of additional signals in the voltage and current channels, which allows to exclude the errors caused by the non-ideal structure of phase-shifting units used for formation of those additional signals. The paper gives the results of the analysis of the method error caused by the deviation of the real signal from the harmonic model. The obtained results allow to choose optimal values of phase angle of phase-shifting units in terms of parameter measurement accuracy |
| Keywords | harmonic signals, parameters, instant values, additional signals, phase-shifting units, an error, mode |
| Pages | 13-19 |
| Title  | **3. IMPROVING AN ACCURACY OF FREQUENCY MEASUREMENT BY CORRECTING THE INSTANTANEOUS VALUES OF HARMONIC SIGNALS** |
| Author | ***V.S. Melent’ev*** |
| Place of employment address | Samara State Technical University244, Molodogvardeyskaya st., Samara, 443100, Russian Federation |
| Abstract | The paper shows a new method of measuring the frequency of harmonic signals based on the formation of additional voltage signal and identification of zero transition moments. The block diagram of measurement tool for implementation of the method is provided. Implementation of the method provides exclusion of the error caused by the non-ideal structure of phase-shifting units which form the additional signals by correcting the instantaneous values of the additional signal. The paper gives the results of analysis of the method error caused by the deviation of the actual signal from the harmonic model. The results allow to choose the appropriate hardware and measurement process parameters depending on the requirements of accuracy and measurement time and the specified frequency range |
| Keywords | harmonic signals, frequency of signals, instant values, additional signals, phase-shifting units, an error, correction |
| Pages | 20-24 |
| Title  | **4. GAME THEORY MODEL OF TASKS DISTRIBUTION DURING PEER-TO-PEER INTERACTION BETWEEN THE PROGRAMMERS TEAMS** |
| Author | ***S.P. Orlov*** |
| Place of employment address | Samara State Technical University244, Molodogvardeyskaya st., Samara, 443100, Russian Federation |
| Abstract | The paper deals with the problem of managing a team of software projects developers. Most attention is paid to the matrix organizational structure in the form of P2P network in which actors form a virtual team of programmers. The paper shows that the model of interaction on the basis of outsourcing programming tasks is effective in terms of carrying out virtual auction for the redistribution of tasks. The paper describes the structural configuration of interaction in the P2P network and the basic ratios for the network settings. The paper proposes to use game-theoretic model to describe the strategy of auctions between actors in the information environment of a network. The bounding-minimization problem of the time spent on executing commands actors stream programming tasks is formulated. The game-theoretic model with a two-rank reflection which considers the awareness of actors of their performance is described. The paper also points out the application areas for the developed game theory model |
| Keywords | organizational systems, game theory, reflexive games, matrix organization, a network of peer-to-peer interaction, team |
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| Title  | **5. COMPARISON OF INVESTMENT PORTFOLIO MANAGEMENT SYSTEMS AT THE MULTICRITERIA DESCRIPTION OF QUALITY** |
| Author | ***V.G. Sarkisov, G.A. Sarkisov*** |
| Place of employment address | Samara State Technical University244, Molodogvardeyskaya st., Samara, 443100, Russian Federation |
| Abstract | The authors continue to research the stability of quality of investment portfolio management systems on the financial market, started in previous paper. The following paper deals with the portfolio management systems optimized within a multi-criteria task. The paper proposes the method of retrospective cross-validation which allows us to estimate the decline in quality caused by the non-optimality of settings. This method also allows us to compare the efficiency of various systems during parametric optimization and testing using multiple series. The paper provides a number of variants of domination of reflections efficient frontiers of set of feasible portfolios for comparison between various optimized systems. The paper also describes the hierarchy of such domination variants |
| Keywords | cross-validation, multicriteria optimization, parametric optimization, investment portfolio, efficient frontier |
| Pages | 34-41 |
| Title  | **6. ESTIMATION OF RELIABILITY OF AUTOMATIC AND AUTOMATED CONTROL SYSTEMS** |
| Author | ***V.S. Semenov*** |
| Place of employment address | Samara State Technical University244, Molodogvardeyskaya st., Samara, 443100, Russian Federation |
| Abstract | This paper deals with the structure of automatic and automated control systems (AACS), importance of high reliability of such systems and emphasizes the idea that analysis and estimation of the AACS reliability is to be performed according to each function performed by the system. The paper proposes the classification of methods of estimation of control system reliability. The paper studies the order of estimation of control system reliability with consideration of operation modes and operation conditions according to every function performed by the system. If the analysis of estimation results shows insufficient system reliability, measures are to be taken to improve it. Results of calculations performed according to the given formulas will point out the aspects to pay attention to |
| Keywords | refuse; frequency of refuse; the methods of calculation of reliability; analysis of result of calculation reliability |
| Pages | 42-47 |
| Title  | **7. CALCULATION OF THE SPECTRUM AMPLITUDES BASED PROCESSING PSEUDOENSEMBLES SIGN-FUNCTION ANALOG-STOCHASTIC QUANTIZATION OF RANDOM PROCESS** |
| Author | ***V.N. Yakimov1, O.V. Gorbachev2*** |
| Place of employment address | 1 Samara State Technical University 244, Molodogvardeyskaya st., Samara, 443100, Russian Federation2 Open Code Ltd., Russia, 55, Yarmarochnaya st., Samara, 443001, Russian Federation  |
| Abstract | Fast digital algorithms for computing estimates of the Fourier coefficients are presented. They are based on the sign-function analog-stochastic quantization which is used as primary transformation of investigated random processes. We used the method of partitioning the process analyzed into individual segments to enhance the statistical stability of estimates calculating amplitude spectrum. In accordance with this method the final spectral amplitude estimation is performed by averaging of the processing results of individual segments. To test the metrological characteristics of the developed algorithms we carried out experimental research of estimates amplitude spectrum using the model of a random process. This model represents the sum of statistically independent harmonic components in the additive white noise. For exa mple we present the results of the calculation of spectral amplitude estimation for one, three, seven and ten segments. Processing segments was carried out with their half-overlapping |
| Keywords | Harmonic analysis, random process, amplitude spectrum, sign-function analog-stochastic quantization, fast algorithm, software for measuring system |
| Pages | 48-54 |
| Title  | **8. SIMULATION OF PARTICLE SEPARATION IN SUBMERSIBLE HYDROCYCLONES** |
| Author | ***N.A. Antipina1, S.N. Peshcherenko2*** |
| Place of employment address | 1 Novomet-Perm 395, Shosse Kosmonavtov, Perm, 614065, Russian Federation 2 Perm National Research Polytechnic University  29, Komsomolskiy prospect, Perm, 614990, Russian Federation  |
| Abstract | The paper deals with the development of the work process calculation method for submersible hydrocyclones. Fluid workflow is described by the Reynolds equation and k-ε turbulence model. Transportation of solid particles is described by the Lagrange model. Series of separation ratio calculations was carried out to verify the method. The research shows that nonmonotonic dependence between the separation ratio and Q supply can be explained by the competition of two processes: improvement of centrifugal separation in screw feeder when Q is increased and enhancement of the flow intermixing in large-scale vortices in the area where they turn 180 degrees. Geometrical parameters of hydrocyclon are identified; by changing these parameters the vortex formation during the stream turn can be eliminated and the separation ratio can be increased. The paper also proposes the criterion of hydrodynamic similarity of the submersible hydrocyclones |
| Keywords | oil industry, submersible hydro cyclones, separation ratio, computational fluid dynamics |
| Pages | 55-65 |
| Title  | **9. MODELLING OF PROCESSES OF HEAT EXCHANGE BETWEEN A GAS PIPELINE AND A ENVIRONMENT** |
| Author | ***A.A. Bazarov, A.I. Danilushkin*** |
| Place of employment address | Samara State Technical University244, Molodogvardeyskaya st., Samara, 443100, Russian Federation |
| Abstract | The paper deals with a number of problems considering the modelling of processes of heat exchange in the “gas stream-pipe-environment” system. The paper analyses the effect of seasonal air temperature changes on the heat flow from the pipe to the ground and pipe temperature. Great inertance of the heat exchange process in the ground is revealed. Numerical and analytical models of heat spread in the ground are developed, parameters of models for the stationary modes are defined. On the basis of the connected thermohydraulic model of a gas stream in the pipe with consideration of heat exchange with the environment the velocity profile is defined, as well as the wall layer thickness; it allows to pass to a thermal problem with the moving two-layer medium equivalent in terms of temperature distribution in the pipeline and magnitude of a thermal stream into the environment |
| Keywords | thermal processes, the hydraulics, the connected model, a turbulent regime |
| Pages | 66-75 |
| Title  | **10. OPTIMIZATION OF LOOP VARIABLES OF DRIVING GAS-TURBINE ENGINES** |
| Author | ***S.А. Gulina1, I.Y. Goryunova2*** |
| Place of employment address | 1 Samara State Technical University 244, Molodogvardeyskaya st., Samara, 443100, Russian Federation2Ural Federal State Technical University 19, Mira st., Yekaterinburg, 620000, Russian Federation  |
| Abstract | The following paper deals with the idea of combining the power method and the exergy method of determination of efficiency parameters of the gas-turbine engine (GTE) power system. Addition of the power method to the exergy method allows to estimate energy resources of GTE with consideration of environmental parameters. On the basis of the power method and the exergy method of research and by means of the developed algorithm effective and exergy efficiency of actual gas-turbine units are calculated and the area of optimum parameters of the gas-turbine engine used as the drive for specific conditions of operation is defined |
| Keywords | gas turbine drive, gas transmittal unit, natural gas, the calculation model, the thermodynamic analysis, the cycle work, exergy |
| Pages | 76-85 |
| Title  | **11.** **Automatic control system of heating agent temperature** |
| Author | ***I.A. Danilushkin, D.M. Kamilova*** |
| Place of employment address | Samara State Technical University244, Molodogvardeyskaya st., Samara, 443100, Russian Federation |
| Abstract | This paper deal with the problem of building an automatic system to control the temperature of water which is supplied to the consumer via a closed dependent heat supply system equipped with mixing pumps. The paper suggests a model of control object which considers the spatial distribution of heat transfer process as a nonlinear dynamic closed-loop system with variable feedback gain. The feedback gain works as a command variable. The model is identified on the basis of the results of active experiment. Automatic control system is synthesized and studied by means of numerical simulation of dynamic system. The paper lists the results of the control object identification and investigates the transition behavior of the automatic control system in terms of control and disturbance |
| Keywords | heat supply system, automatic control, temperature of heating agent, plant with distributed parameters, heat-transfer process, identification, mixing pump |
| Pages | 86-92 |
| Title  | **12. DESIGN OF TRANSVERSE FIELD THREE PHASE INDUCTOR WITH A MAGNETIC CORE AS STATOR** |
| Author | ***N.N. Klochkova, A.V. Obuchova, A.N. Protsenko*** |
| Place of employment address | Samara State Technical University244, Molodogvardeyskaya st., Samara, 443100, Russian Federation |
| Abstract | The paper deals with the issues of designing the cross field three-phase inductor with stator-type magnetic core, namely the optimization of the inductor conductor thickness and the number of the magnetic core slots. This problem is solved by the example of the heating of the cylindrical aluminum workpiece. ‘Elcut’ software package was used to solve the problem. The overall inductor efficiency and overall energy consumption for heating to achieve the required temperature were adopted as the optimality criteria. Magnetic core with six slots and conductor thickness of 15 mm proved to be the best according to the results of study. Efficiency is 0.422 |
| Keywords | induction heating, magnetic, optimization, construction, energy consumption |
| Pages | 93-98 |
| Title  | **13. HEAT DISTRIBUTION IN DIFFERENTIAL SCANNING CALORIMETER FURNACE** |
| Author | ***Yu.V. Moschensky, A.S. Nechaev, I.V. Makarov*** |
| Place of employment address | Samara State Technical University244, Molodogvardeyskaya st., Samara, 443100, Russian Federation |
| Abstract | The paper deals with the issues of heat distribution in the DSC furnace with consideration of its basic operation modes and geometrical dimensions. The paper lists the results of experiments conducted for numerical determination of the influence of the radiation of the substrate on the process of heat transfer from the heater to the cells with the test substance through the effect of heat conduction. An equation of heat conduction of the substrate in the oven with consideration of change of the ratio of heat conduction of the air layer between the substrate and the oven cover with consideration of the influence of the thermal radiation of the substrate at high temperature operation modes. The resulting equation is fundamental for mathematical description of the object of the automatic substrate temperature control which allows to provide the best indices of heating quality of the test substance |
| Keywords | thermal conductivity, radiation, heat transfer, differential scanning calorimeter, a systematic approach |
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| Title  | **14. ANALYSIS OF SCHEMES OF CONNECTION OF THE INDUCTION INSTALLATION TO THE STATIC CONVERTER OF THE INCREASED FREQUENCY** |
| Author | ***V.S. Osipov, V.A. Golishev, A.S. Bazhutkin*** |
| Place of employment address | Samara State Technical University244, Molodogvardeyskaya st., Samara, 443100, Russian Federation |
| Abstract | The paper deals with the problem of determination of condenser batteries parameters for cold and hot modes of induction heating of steel cylindrical workpieces, for three ways of connecting the inductor to the industrial static converter of increased frequency. Formulas for calculation of capacity of the condenser batteries connected in series and in parallel are obtained, as well as for values of additional inductive resistance subject to full compensation of jet power and considering the voltage matching between the power supply and the inductor. The paper recommends proper ways of connection depending on the inductor parameters |
| Keywords | the inductor, the preheating, the battery of condenser, the increased frequency, active resistance, resistance inductive, power active, reactive power, compensation of jet power |
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| Title  | **15. DETERMINATION OF DISTANCE TO PLACES OF DAMAGES AT DOUBLE SHORT CIRCUITS TO EARTH OF ONE POWER LINE IN NETWORKS WITH SMALL CURRENTS OF SHORT CIRCUIT TO EARTH** |
| Author | ***E.F. Hakimzyanov1, R.G. Mustafin1, D.A. Gluhov2, V.S. Romanov3*** |
| Place of employment address | 1 Kazansky State Power Engineering University  51, Krasnoselskaya st., Kazan, 4200662 Izhevsk State Agricultural Academy  11, Studencheskaya st., Izhevsk, 426069 3 Samara State Technical University44, Molodogvardeyskaya st., Samara, 443100, Russian Federation |
| Abstract | In article the way of determination of distances to places of double short circuits on the earth on one power line by measurement of emergency components of phase current and phase tension is offered. Results of theoretical calculations coincided with results of modeling in the program MatLab Simulink environment. |
| Keywords | a power line, single-phase short circuit on the earth, double short circuit on the earth of different phases of one line, the fixing body of resistance, a near and far place of damage |
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| Title  | **16. ANALYSIS METHODS FOR SOLVING PROBLEMS OF STRUCTURE FORMATION DURING NITRIDING** |
| Author | ***T.A. Bengina*** |
| Place of employment address | Samara State Technical University244, Molodogvardeyskaya st., Samara, 443100, Russian Federation |
| Abstract | The paper carries out the analysis of numerical methods for solving the problem of structure formation during gas nitriding. The paper highlights the advantages and disadvantages of the combined method based on the finite-difference time approximation and the use of finite element method by the spatial coordinate, and the method with coordinate transformation which transforms a time-varying part into stationary. It was found that the distribution of nitrogen throughout of the surface layer significantly affect the performance of the product and the technical and economic parameters of the process, so the use of numerical methods for solving the problem helps predict the structure of the nitrated layer at different technological modes |
| Keywords | gas nitriding, heatmass transfer, numeral decision, method of eventual elements, finite difference approximation,multiphase diffusion |
| Pages | 121-127 |
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| Author | ***A.I. Krestelev*** |
| Place of employment address | Samara State Technical University244, Molodogvardeyskaya st., Samara, 443100, Russian Federation |
| Abstract | The paper considers the interaction of a shock wave front with the powder particles used for the deposition of wear resistant coatings by the method of explosive spraying. Analyzed the algorithms for solving the problem in different settings explosive shock wave. Comparative analysis of various options for the approximation of the velocity of the shock wave in the air is done. By the method of quadratures numerically solved the integral equation describing the " entrainment" of the powder particles of the products of detonation (PD) explosives. Тhe nature of changes in the velocity of the particles in the wave front of the rarefaction PD is examined |
| Keywords | explosive shock wave, detonation products, the powder particles |
| Pages | 128-133 |
| Title  | **18. On the methods of determination of TNT RDX water-filled according to specified procedures** |
| Author | ***A.L. Krivchenko1, I.A. Klyuster2, O.M. Vasilieva2*** |
| Place of employment address | 1 Samara State Technical University 244, Molodogvardeyskaya st., Samara, 443100, Russian Federation2 Samara State University of Transport  18, 1 Bezimyanii per., Samara, 443066, Russian Federation  |
| Abstract | The issues of efficiency and dry water-filled explosives. Shows the change in the values of TNT equivalent water-filled RDX density of 1.43 g /  and a bulk density of RDX 1.03 g /, respectively in the whole area of expansion. It is shown that the maximum growth performance of condensed explosives occurs at the beginning of adiabatic expansion, namely the first 10% expansion of the detonation products, followed by a gradual decline in growth performance. Stipulates that the maximum value of TNT is necessary not to zero density expansion of the detonation products and to expand density  = 0,9. The values of TNT equivalent water-filled system. Based on the discussed methods for determining the health and TNT, proposed a formula for determining the TNT equivalent of condensed explosives |
| Keywords | RDX, explosives, water-system, the work of the explosion, the heat of the explosion of TNT |
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| Author | ***E.M. Fomicheva*** |
| Place of employment address | Samara State Technical University244, Molodogvardeyskaya st., Samara, 443100, Russian Federation |
| Abstract | Influence of the modes of heat treatment on obtaining qualitative mechanical properties and microstructure in the details from casting aluminum alloy АК7ч conforming to requirements of the production instruction on heat treatment is investigated. Methods of the metalgraphic analysis studied the microstructure of details and explosive samples and their mechanical properties on two different modes (with natural aging and without natural aging). The choice of the further heat treatment modes of material is described. Due to the research of technological details production the time of their production is reduced without loss of quality of their properties |
| Keywords | quenching, casting aluminium alloy, microstructure, natural ageing, mechanical properties |
| Pages | 139-145 |
| Title  | **20. DEVELOPMENT OF A BASIS OF THE POWER LOADED COMPRESSOR OIL OF THE REGULATED HYDROCARBONIC COMPOSITION USUNG HYDROGENATION AT HIGH PRESSURE** |
| Author | ***M.A. Sheikina1,V.A. Tyshchenko2, S.N. Volgin3*** |
| Place of employment address | 1 Samara State Technical University244, Molodogvardeyskaya st., Samara, 443100, Russian Federation2 JSC «Mid Volga Oil Refining Research Institute»1, Nauchnaya st., Novokuibyshevsk, 446200, Russian Federation3 25th State Scientific Research Inctitute of Chemmotology10, Molodogvardeyskaya st., Moscow, 121467, Russian Federation |
| Abstract | The paper presents the development of a new compressor oil and was proved the need of application of the hydrogenated basis of the regulated hydrocarbonic composition. The use of hydrogenation processes allowed to provide of oil base with the required content of aromatic hydrocarbons and resinous substances. The results of studies of group hydrocarbonic composition of samples of oil base with the use of liquid adsorption chromatography on the «Gradient – M» installation are presented. The influence of the main technological parameters of the hydrogenation process on the group hydrocarbon composition of the desired fractions is studied and their optimal values are defined |
| Keywords | base compressor oil, hydrocarbon composition, structural group composition, hydrogenation, residual component |
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| Title  | **21. EXPERIMENTAL ASSESSMENT OF DEPENDENCE VIBRATIONAL AND DIAGNOSTIC PARAMETERS OF SPINDLE ON THE PRELOADOF BEARINGS** |
| Author | ***E.S. Gasparov, A.F. Denisenko, L.B. Gasparova*** |
| Place of employment address | Samara State Technical University244, Molodogvardeyskaya st., Samara, 443100, Russian Federation |
| Abstract | The method of rating the forcing of bearing assembly spindle unit preload. A test-bench has been developed to quantify vibroacoustics, featuring the dimension of the identified preload forcing. Amplitude-frequency response characteristics of vibration acceleration of spindle unit during short-term forcing directly on the spindle became available by experiments. The frequency range of a signal of vibration acceleration was selected from 3200 Hz to 4200 Hz. The frequency content of amplitude spectra has been analyzed to determine eigen frequency peaks of spindle unit at various preload values |
| Keywords | high speed spindle, bearings, the temperature sensor, the acceleration sensor, preload force, amplitude-frequency characteristic, no-load conditions, peak frequency, relative power |
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| Title  | **22. PROSPECTS OF APPLICATION THE CAST IRON OF DETAILS WITH A DIFFERENTIATED CAST STRUCTURE ON THE EXAMPLE OF THE GLASS-FORMING TECHNOLOGICAL EQUIPMENT** |
| Author | ***I.O. Leushin1,D.G. Chistyakov1, V.A. Volodin2*** |
| Place of employment address | 1Nizhny Novgorod state technical University n.a. R. Y. Alexeev 24, Minin st., Nizhny Novgorod, 603650, Russian Federation  2OJSC "Normal"  74, Litvinov st., Nizhny Novgorod, 603002, Russian Federation  |
| Abstract | The paper describes the materials are used for the manufacture of glass forming equipment. The differentiated structure of cast iron, which allows to increase the wear resistance of the details glass-press-molds is presented. The technological chain of details production is described. The advantages of using the heterogeneous (the cross-section of the workpiece) and differentiated by structural-free cementite and graphite form–structures fordetails of mechanical engineering are highlighted |
| Keywords | differentiated structure, cast iron, casting, glass-press-mold |
| Pages | 159-165 |
| Title  | **23. DETERMINATION OF RESIDUAL STRESSES BY FINITE ELEMENT METHOD RING ROLLER BEARING RACEWAY IN GRINDING** |
| Author | ***V.G. Fokin, V.A. Dmitriev*** |
| Place of employment address | Samara State Technical University244, Molodogvardeyskaya st., Samara, 443100, Russian Federation |
| Abstract | The method of calculating of residual stress ring roller bearing formed in a circular plunge grinding outer raceway using the finite element method was developed. It is assumed that the main influence have temperature deformations. Initially solved the corresponding plane problem of unsteady heat conduction, with a movable source of heat in the cutting zone. In the second stage sequentially solved plane nonlinear deformation problems for each step transient thermal analysis, which was discussed above. The dependence of physical properties on temperature is considered. Compiled computer programs, which allows to determine the temperature field and residual stress in rings of different sizes with different modes of grinding. Results of calculation of residual stresses in typical rings are set |
| Keywords | bearing ring, plunge grinding, heating process, computer modeling, finite element method |
| Pages | 166-171 |
| Title  | **24. THE MODELING OF REVERS-WATER-OIL EMULSIONS BREAKING BY COLD STACK** |
| Author | ***Y.P. Borisevich, N.Y. Khokhlova*** |
| Place of employment address | Samara State Technical University244, Molodogvardeyskaya st., Samara, 443100, Russian Federation |
| Abstract | In this work, we developed four options of the algorithm for modeling the process for reverse water-oil emulsions destruction by cold stack incoming to a horizontal settler under a water pad.We made a model considering property of vector velocity sedimentation of dispersed particles in a moving fluid; with considering the summands of velocity vectors modular values; with considering the regime sedimentation of dispersed particles; with considering the replacement of the disperse phase on real emulsion/ This approach allows you to choose a reasonably standard sizes settling equipment |
| Keywords | emulsion, the algorithm of calculation, globule, settling vessel, the disperse phase |
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| Title  | **25. ESTIMATION OF POLIMERIC AND VARNISH AND PAINT COVERS WORKING CAPACITY** |
| Author | ***N. G. Kats*** |
| Place of employment address | Samara State Technical University244, Molodogvardeyskaya st., Samara, 443100, Russian Federation  |
| Abstract | Questions of quality control of polymeric and varnish-and-point covers are considered. Dependences that allow to determine a moment when the medium has penetrated through the cover are offered. Characteristics of polymeric cover with and without induced defect are presented. Experiments in which penetration moment was measured are carried. Recommendations for cover lifetime determining are considered. Method of penetration moment registration are considered. Method of penetration moment registration are presented.  |
| Keywords | diffusion, working capacity, electrochemical potential |
| Pages | 180-183 |
| Title  | **26. FEATURES DIELECTRIC PROPERTIES CONDENSED SYSTEMS** |
| Author | N.A. Kirshenkova1, T.N. Iskhakov1, V.Y. Bazotov1, V.G. Dzhangiryan2, D.V. Fadeev2 |
| Place of employment address | 1 Kazan National Research Technological University 68, Karl Marx st., Kazan, 420015, RT2 AO “MPZ” 7, Leningradskaya st., Murom, Vladimirski region, 602205, Russian Federation  |
| Abstract | Method of broadband dielectric spectroscopy is investigated di-electrical properties of condensed matter systems in a wide range of frequencies and temperatures. Quantitative analysis of dielectric spectra of condensed systems carried out using a model function Havriliak – negatives (HN) c thermal conductivity and established significant differences in the parameters |
| Keywords | condensed systems, dielectric spectroscopy, dielectric constant, dielectric loss, relaxation time, activation energy |
| Pages | 184-187 |
| Title  | **27. RESEARCH OF THE DEPENDENCE BETWEEN DISSOLVING SPEED AND DISTANCE FROM THE PROTECTOR** |
| Author | ***S.B. Konygin, D.V. Konovalenko*** |
| Place of employment address | Samara State Technical University 244, Molodogvardeyskaya st., Samara, 443100, Russian Federation  |
| Abstract | The paper studies the protective effect of the protectors on the dissolution of metals in the environment of the electrolyte. An experimental setup with which to study the distribution of the metal dissolution rate as a function of the distance from the tread. A model process to represent dissolving of the fiberglass with copper film in ferric chloride solution. It was found that as the distance from the tread increases the rate of dissolution of the metal and from a certain distance, it becomes practically constant. Dissolving speed distributions was obtained for different solution concentrations. Results of experiments allow determining the protection radius |
| Keywords | *cathodic protection, protection radius, metal dissolving* |
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| Title  | **28. THE DEVICE FOR CONTROLLING THE WORK OF SUCKER ROD IN OILWELLS** |
| Author | ***V.A. Kuznetsov, O.V. Matveev*** |
| Place of employment address | Samara State Technical University244, Molodogvardeyskaya st., Samara, 443100, Russian Federation |
| Abstract | Here was considered the principle of building a device for controlling the work of sucker rod pump in oil wells. Also the structural diagram of the device and the construction of the depth converter moving of plunger`s pump into electrical signal were shown . Reed contacts used as sensors are triggered with the magnetic field, which is created with a ring magnet, installed on lower end of the rod of the pump. The magnetic field was studied experimentally and the optimal sampling step was determined. The method of forming a magnetic field for improving the reliability of depth transducer was proposed |
| Keywords | sucker rod pump, plunger moving, converter moving, the converter design |
| Pages | 191-195 |
| Title  | **29. CONTROL OF TELECOMMUNICATION CABLE ISOLATION PROCESS BY MEANS OF THE SYSTEM APPROACH** |
| Author | ***V.N. Mitroshin, E.O. Prokudina*** |
| Place of employment address | Samara State Technical University,244, Molodogvardeyskaya str., Samara, 443100, Russian Federation |
| Abstract | The paper is about the automation of telecommunication cable isolation processes: describes the role of a system approach to the automation of complex systems with distributed parameters, presented the main technological steps of applying an insulating coating on a conductor, formed the main local and global parameters of telecommunication cable as the channels of communication in the isolation process |
| Keywords | cable manufacture, automation, system approach, isolation |
| Pages | 196-199 |
| Title  | **30. A COMPREHENSIVE SYSTEM APPROACH TO ASSESSING THE EFFICIENCY AND EFFECTIVENESS OF THE UNIVERSITY** |
| Author | ***E.Yu. Chekotilo1, O.Yu. Kichigina2*** |
| Place of employment address | 1 Samara State Technical University 244, Molodogvardeyskaya st., Samara, 443100, Russian Federation2 OOO “Relevant media” 192, Karla Marksa st., Samara, 443080, Russian Federation |
| Abstract | The article presents the principles of a comprehensive system approach to the analysis activities of the University. Presents a variant analysis work of the University in the three ways: sphere of the University activities; basic scientific direction of the specialists training; methods of data processing and calculation indicators of the University activities. Presents the criteria that must be correspond the system indicators of the efficiency and effectiveness of the University. Applying of the developed system of indicators will allow to optimize process of the management decision of the University |
| Keywords | comprehensive approach; analysis of the University activities; indicators of the efficiency of the University activities |
| Pages | 200-203 |
| Title  | **31. NOMOGRAMS FOR THE ANALISIS OF THE INGOTS SOLIDIFICATION MODES IN CONTINUOUS CASTING PROCESS** |
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| Abstract | The paper deals with the nomograms reflecting the relationship of basic parameters of the technological mode of formation of aluminum alloy ingots for continuous casting in an electromagnetic mold. Design analysis is made on the basis of previously synthesized approximate models such as regression on the results of a numerical study of the temperature field of the ingot. It is shown that by lowering the maximum technologically permissible cooling intensity at the corresponding adjustment of the casting speed can reduce the size of the two-phase region in the central zone of the ingot. The application of this approach, it is advisable to the stage of development of ingots production with regulated quality requirements |
| Keywords | nomorgams, approximate models, continuous ingot, solidification modes, aluminium alloys |
| Pages | 204-207 |