Physics

MEMRISTOR PROPERTIES OF THIN-FILM NANOCOMPOSITES $Co_x(TiO_2)_{100-x}$, $(Co_{41}Fe_{39}B_{20})_x(TiO_2)_{100-x}$

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Nanocomposite $Co_x(TiO_2)_{100-x}$ and $(Co_{40}Fe_{40}B_{20})_x(TiO_2)_{100-x}$ films with the thickness of 4-5 μm have been deposited by the method of ion-beam sputter deposition. The film deposition has been performed on the glassceramic substrates at the room temperature in the argon atmosphere with addition of oxygen with the partial pressure of 2.2 %. The metal/nanocomposite/metal structures for study of the film transport properties in strong electric fields (>10^4 V/cm) have been formed in transverse geometry using shadow masks. Reversible change of the sample resistance at the electric field action has been observed at the metal phase concentration bellow the percolation threshold. Addition of oxygen with the partial pressure of 2.2 % at the composite $Co_x(TiO_2)_{100-x}$ film deposition increases effect of resistive switching up to 4000% and shifts the metal phase concentration appropriate for the system maximum response to the region of grater x ≈60÷75 at. %

Key words: memristor, nanocomposite, electrical resistivity, strong electric field

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MODELING OF FORMING OF COMPOSITES BASED ON THERMOSETTING MATRICES

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The paper discusses the main causes of warpage and residual stresses in structural parts made of polymeric composite materials that occur during the manufacturing process.A comparative analysis of known mathematical models for the curing process is presented in the paper. The basic principles underlying the models under consideration are supplemented by assumptions about the beginning of accounting for non-mechanical deformations from the moment of the gelation of the binder, as well as about a mechanical contact between the part and the tooling, that changes its state in the solution process.On the basis of the mathematical model, a user code for a finite-element analysis system was developed. It allows to solve the thermomechanical problem and get the distorted shape of the product at the end of the forming process.Numerical simulations of

the curing processes were conducted for a number of U-shape samples using the two most known constitutive relations.As an example, the evolution of the temperature fieldand the degree of cure during the manufacturing process are given for one of the samples. The difference in the magnitude of the angular deviation obtained on the basis of two models under consideration was explained

Key words: composite, hardening, shape distortion, warpage

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CREATION OF Mg/NbO MULTILAYERED NANOSTRUCTURES

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The magnesium thin films, niobium oxide thin films, and multilayered $(Mg/NbO)_{82}$ thin films nanostructures containing 82 bilayer (Mg + NbO) have been prepared by ion beam sputtering of oxide (Nb-O) and metal (Mg) targets with subsequent deposition of the material on the substrate rotating around the targets. Based on the results obtained by small-angle X-ray reflectometry and x- ray diffractometry it has been shown that a layered structure where Mg layers are separated by the

magnesium oxide, formed during the time when the substrate is located outside of the condensable atoms flow, presence in the Mg thin films. The structure of the deposited magnesium films is crystalline with a pronounced texture, structure of niobium oxide films is amorphous and homogeneous. Using the V-shaped shield the $(Mg/NbO)_{82}$ multilayer nanostructures with varying thickness of the magnesium layer have been obtained. The dependence of the resistance of the multilayer structure on the nominal thickness of the bilayer, varying in the range of 2.2 - 6.2 nm has been investigated. It is assumed the presence of electrical percolation transition in the multilayer system with an increase of the bilayer thickness

Key words: ion beam deposition, small-angle X-ray reflectometry, multilayer nanostructure, electrotransport mechanism

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STRUCTURAL AND OPTICAL PROPERTIES OF FILMS OF CdS DOPED WITH COPPER IONS AND SODIUM

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Presents results of a study of CdS thin films, doped together with copper ions and sodium concentration of 10^{-3} – 10^{-7} at. %. The synthesized samples were obtained at a temperature of 400 ^{0}C. X-ray analysis showed that the precipitated film formed as wurtzite structure and strong are textured in the direction (002). With increasing of impurity concentration the preferred orientation of the microchip is destroyed and the sample is textured in the direction (101). The introduction of a small concentration of impurity has no significant effect on the optical band gap of films. The change in the concentration of dopants leads to an increase of the photoluminescence intensity of the samples. This is due to the fact that with the introduction of new impurity defects lead to the formation of centers of radiative recombination, and also due to the reduction of the role of centers of nonradiative recombination. Active impurities Na^+ and Cu^{2+} at high concentrations can lead to the formation of inactive defects, so there is a reduction in the intensity of luminescence of samples of CdS. Also, the sodium ions block some of the competing recombination channels, which can be, for example, centres like V_{Cd}, resulting in a decrease in the number of own and impurity defects, in consequence of this, there is a decrease in the intensity of luminescence of the films in conjunction doped with ions Cu^{2+} and Na^+, compared with the separately doped with copper ions

Key words: method of aerosol pyrolysis, thin films, cadmium sulfide, x-ray diffraction, optical transmission spectra, the photoluminescence spectra

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MAGNETOSTATIC AND MAGNETODYNAMIC PROPERTIES OF MULTILAYER SYSTEMS BASED ON NANOCOMPOSITES $(Co_{40}Fe_{40}B_{20})_X(SiO_2)_{100-X}$

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The films of composites $(Co_{41}Fe_{39}B_{20})_{65}(SiO_2)_{35}$ were obtained by ion-beam sputtering method on the fiberglass, in an inert atmosphere and adding cyclic oxygen with different portsialnym pressure. Analysis of the magnetization films showed that the structure of the substrate determines the magnetostatic properties of the film. Particularly, a high value of magnetic anizatropy of films (~ 500 Oe) is given across the fabric fibers form glass fiber having a length of up to 500 microns in diameter yarns 7 microns. It was revealed that the frequency dependence of complex magnetic permeability of the fragmented glass on the surface of the film are a superposition of the characteristics of the anisotropic film fragments along and across the measurement of the magnetic field. Approved in the work approach allowed to have a significant amount $\mu^{//}$ samples up to a frequency of 6-7 GHz. The measured frequency dependence of the absorption of electromagnetic radiation fiberglass, with a sprayed on the surface of a heterogeneous film, showed a considerable amount of L in the frequency range from 15 to 37 GHz. It was revealed that the dependence of L (f) depends on the parameters of the deposited heterogeneous films

Key words: nanocomposites, electrical properties, heterogeneous multilayer structure, specific electrical resistance

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INFLUENCE OF Si, Zr AND Y DOPANTS ON STRUCTURE, ELECTRICAL AND GAS-SENSING PROPERTIES OF SnO_2 FILMS

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The work presents the study of the structure, electrical and gas-sensing properties of SnO_2 films doped by Si, Zr, and Y. The samples were obtained by reactive ion-beam sputtering. It is shown that the addition of Si, Zr, and Y leads to the formation of amorphous structure in the films. Heating the films up to 600 ^{0}C leads to the samples crystallization. The presence of the doped elements reduces crystallites size of the investigated films after crystallization down to a few nanometers. The highest value of the relative change of electrical resistance in hydrogen containing environment has been showed by the SnO_2 film containing more than 2 at. % of Y. The presence of solid solutions SnO_2 - ZrO_2 was the reason for the higher values of the activation energy of the charge carriers in the films of Sn - Zr - O after crystallization of samples studied in relation to other films (Sn - Si - O, 3,9 atomic % Si $E_a \approx 0.05$ eV, Sn. - Zr - O, 3,9 atomic % Zr $E_a \approx 0.5$ eV, and Sn - Y - O, 4,8 atomic% Y $E_a \approx$ 0.11eV). All the tin oxide film with the addition of silicon, zirconium and yttrium showed significant sensitivity to hydrogen gas

Key words: semiconductor, thin films, tin oxide, electrical properties, gas sensitivity

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Informatics, computer engineering and control

CREATION OF INDIRECT CONTROL MODELS IN INFORMATION COMPUTER SYSTEMS

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In this paper we examined general problems of creation of modeling for some quality parameters on the technological object output in typical variant: needed parameter is not automatic measured-but we have much ones which may to be measured in information and control system (ICS). We need to build the indirect model after preliminary reduction the space of measure as professional so formal computer methods. Statistics regression double filters are used for reduction. Also we use schemes of smooth integrate and delay for improving the model. Structure of the indirect model is introduce as additive sum on the systems of typical functions with unknown parameters. Additional identification task is a problem to solve a system of linear equations (for square criteria) or typical task of linear programming (for module criteria).The structure of estimation of indirect model was used in detail. At last the control system is build as linear digital scheme with adaptive correction in real time

Key words: indirect control, statistical model, regression matrix, dynamical estimations, identification

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THE TECHNOLOGY OF DEVELOPMENT OF COMPLEX SOFTWARE SYSTEMS OF MANAGEMENT, BASED ON METHODS OF MULTIVARIANT INTEGRATION

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The article deals with the problem of designing complex software systems for companies working in the field of farming and agriculture. Development of modern software systems related to the automation of various aspects of human activity, which, in turn, is connected with the solution of complex, non-standard tasks in building architectures and software development technologies. Modern directions of development of the software development methodologies in pursuit of quality objectives, in many cases, lead to significant labor redundancy. The use of technology in developing complex software enterprise management systems through the use of multivariate methods of integration allows you to make better design decisions, while ensuring an acceptable level of flexibility, functionality and performance of modern software applications. At the same time, methods of multivariate integration apply at the level of groups combining architectural, technological and organizational-oriented approaches, as well as in the framework of one of these approaches for the rationalization of decisions arising in the

process of building the IS. Implementation of the results obtained in the process of corporate development of IS for the crop sector enterprises has allowed to achieve significant results in comparison with the original data - estimates, forecasts, etc.

Key words: software engineering, multivariant integration, corporate systems, enterprise management

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ADAPTIVE INTELLIGENT DESIGN ELECTRONIC MEANS

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The approach to the creation of intelligent CAD (ISAPR) electronic means (ES), is to develop a model of the domain knowledge, based on the formation of a plurality of elements of the relationship and its graph representation. Also offered a semantic model that allows to systematize the knowledge of the object of design with the development of routes designing electronic means. The approach and its implementation in the form of prototypes of specialized expert systems (SES) to solve problems in construction engineering ES ISAPR - preliminary design options Search, providing ES protection against mechanical and thermal influences and learning design. This approach allows you to combine and organize well-known and to identify new knowledge, both in the individual components of the subject area, and the whole design methodology, to improve the efficiency of the design process and training design, and ultimately, improve the quality of the ES and reduce the cost of the design

Key words**:** Intelligent CAD, design, modeling, electronic means, expert systems

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VERIFICATION AND TESTING OF COMPLEX SOFTWARE PRODUCTS BASED ON NEURAL NETWORK MODEL

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Methods and acceptances of software testing should be exposed to continuous development and perfection on the score of incontestable importance of ensuring due quality control of the developed or supported program systems. In this article the main levels of software testing are represented to classify basic methods of testing on each of the provided levels. An analysis of the steps and methods of software testing is carried out.

This article describes in detail basic approaches of testing: manual and automated, and principal characteristic features of them. Levels of automatization are determined for automated testing. This article determines the advantages and disadvantages of automated testing in comparison with manual testing.

The article suggests an approach based on the use of artificial neural networks as a method of elimination of the existing shortcomings of application of automated testing. The structure of an artificial neural network and model of training are considered.

As a result, the neural network model is provided for the task of automatic testing and verification of complex program systems. Approach of use of an artificial neural network for carrying out regression testing is offered. The need of use of neural networks for creation of test scripts for automatic testing is caused

Key words: software testing, software automation testing, neural networks, regression testing

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ALGORITHMIZATION SELECTION OF UNIVERSITY PERFORMANCE INDICATORS FOR CONTROL ITS POSITION IN THE RATING SYSTEM

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Currently relevant is the question of the competitiveness of Russian universities to determine their strengths and weaknesses in order to participate in the national and in the world rankings. In this regard, the article examines the approach to the formation of a multi-stage procedure, the choice of performance indicators for the management of universities by its position in the ranking list, based on integration of expert and formalized information, including: the expert assessment of the feasibility of increasing ranking positions; ranking the indicators included in the set, and the probabilistic interpretation of the ranks; the formation of the optimization model and its immersion in a randomized environment; integration and expert estimation of the probability of solving the problem in a random environment; the formulation of the set of dominant variants set of indicators that define the transition to a higher position in the ranking of the university, and an expert selection of the final version. Since these rankings aggregated information about specific values of an indicator of efficiency in different areas of the University's activities and its outcome are the grades assigned to universities for an integrated assessment, it becomes possible to analyze the situation of the considered educational organization in the rating scale and management decisions to create conditions rank values change in direction characterizing the promotion to a higher position. Comparison of the university, characterized by a certain rank, with universities having a higher rank is carried out on a certain set of parameters values

Key words: expert evaluation, ranking, rank, ranking, randomized environment

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METHODS OF MAINTENANCE OF STABILITY SYSTEMS OF EMERGENCY PROTECTION AND CONTROL LRE BY FAILURES OF GAUGES

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Stability of work of system of emergency protection and control of the fault measurement one of the most important characteristics that affect its effectiveness. Actions to improve sustainability are extremely versatile. Outside the article is a consideration of the formation of the technical requirements to the measurement channels, select the hardware part of the measurement system, sensors, algorithms of processing of signals from transducers before moving on to the physical dimensions

of the parameters, etc. Reviewed list software of the system of emergency protection and control to detect failures of the measuring instruments and General requirements for configuring algorithms that implement this task. The study also identified the main task of the redaction, including protection from spurious solutions at the independent failures of sensors (channels) parameter measurement in the case when as a result of previous failures of sensors (channels) of a redundancy of the measurement of this parameter have been exhausted. In addition, the censor performs the function of protection against false solutions for hardware failures, when there are simultaneous failures in all or most of the channels of the measurement of this parameter. Maximizing the sustainable operation of the system of emergency protection and control LRE to the failure of the means of measurement requires the use of comprehensive methods of protection

Key words: emergency protection and control, software, diagnostic algorithm, inaccurate measurement, liquid-propellant rocket engines

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Energetics

THE CONCEPT OF ACCIDENT-FREE CONTROL ON THE BASIS OF FORECASTING MODELS OF STATUSES POTENTIALLY DANGEROUS TECHNOLOGICAL PROCESSES

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In article the concept of accident-free control by potentially dangerous technological processes is explained. The concept realizes seven main stages: mathematical process description; algorithmization of process of accident-free control; development of a forecasting model of alert conditions; development of the system of routine preventive maintenance; formation of integral criterion of accident-free control; development of a technique of practical implementation of system of accident-free control; formation of requirements to the station of accident-free control. Within the mathematical description thermodynamic, productional and neural network approaches are considered. In a format of algorithmization of process of accident-free control the task of development of a global algorithm which separate components define the order of interaction of the functional procedures excluding origin of alert conditions is set. The forecasting model of alert conditions is provided by composition of three models: productional, neural network and thermodynamic that gives the chance to receive long-term and current forecasts. Development of the system of scheduled preventive service is based on optimum scheduling of operations. As integral criterion of accident-free control the functionality allowing to define a real limit of time based on the float time determined by system of prediction and time of coercion of system in the normal state taking into account the current resource determined by system of scheduled preventive service, which is available for preventing of an alert condition is provided. The technique of practical implementation is built proceeding from available hardware and the software at the moment. The station of accident-free control represents the top level of the integrated system of accident-free control

Key words: accident-free management, prediction, algorithmization, mathematical model operation, scheduling,

integral criterion, practical realization, station of accident-free management

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ANALYSIS OF SOLIDITY OF TEMPERATURE REGIMES OF MECHANOTRONIC EQUIPMENT IN AN UNSEALED ELECTRICAL COMPLEXES

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The specific features of heat transfer in unsealed electrotechnical complexes of mechanotronic performance with digital control, under aggression of deep vacuum and weightlessness, with the pulse modulation circuit "controller electronic unit - electric mechanism" at the carrier frequency is considered. Also the disparaging smallness of the convective component of the thermal conductivity with the advantage of "conductive-radiation" of cooling integrated mehanotronic design is shown. There is a justification of the optimized ratio of the internal heat flows along the contours of the flattened surface taking into account the factors of long-lasting and accelerated tests for rationality forms of the overall architecture of the intelligent unit and principles of protocol code informally, functional and technological completeness that is planned by program-algorithmic system of modules in part of the alternative concept of invariance. Substantiates that the analysis and synthesis of the density of thermal design is a mandatory component of the development mechanotronic equipment

Key words: electrical systems, digital mechanotronic, long-lasting, vacuum heat transfer, software algorithmic systems

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MANAGEMENT ROBOTIC SYSTEMS FUNCTIONING IN EXTREME CONDITIONS BASED ON FUZZY NEURAL NETWORKS

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Modern robotic system - a complex system exposed to a number of factors. Extreme environmental conditions can have a major negative impact on the robotic system control or disable it. Under extreme conditions refers to two types of factors: natural (temperature, pressure, air sparseness etc.) and anthropogenic (ionizing radiation, magnetic and electric fields, various overload). To overcome such negative factors of the control system must be highly adaptable. The most obvious output control system based on predictive model is not effective enough for the task. Another approach - RTC control system based on fuzzy neural networks.

For example, RTK UPTO "Roin-200" control system mathematical model, which is designed for fuzzy neural network, hidden layer which consists of several nested neural networks perform various management functions RTC (remote control, RTC boom and outriggers control unit) units. Developed on the basis of these ideas neural network implemented in Roin RTC-200 control system has achieved productivity gains, and seriously optimize the control system.

Based on the above it can be concluded that the fuzzy neural networks can significantly improve the efficiency of the control RTK systems

Key words: management, robotics, extreme conditions, fuzzy logic, neural networks, optimization

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Radio engineering and communication

OPTIMIZATION OF PROCESSES OF PROJECTION OF RADIO-ELECTRONIC MODULES OF THE THIRD LEVEL MEANS OF CREO PARAMETRIC 3.0

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In final and element models the element size – the major parameter which, on the one hand, determines the accuracy of results of modeling, on the other hand, determines the level of complexity of the model. Therefore the main problem in creation of final and element model consists in the choice of the optimum size of an element which will allow to receive adequate result and, at the same time, as much as possible to simplify model.

In work systematic researches of influence of the size and a form of finite elements on accuracy of results of a numerical analysis in program CAD the CREO Parametric 3.0 complex for the purpose of development of recommendations about the

choice of the optimum size at model operation of mechanical impacts on radio-electronic modules of the third level are presented. As objects of a research the main design components of a reference radio-electronic case are chosen: a rectangular steel plate of 200×300 mm^2 in size with a thickness of 3 mm and a steel equalpolochny corner 2,5 mm thick with a width of shelves of 30 mm and 500 mm long.

Also the static analysis for the same fixing is carried out modal the constructional elements fixed on the one hand. At the same time the free party of a plate the static force creating an angular momentum 0,9 Н·м and affected the free party of a corner – static force of 10 N. Low-frequency fashion of eigentones is defined, convergence of the received results is analysed and the relative deviations from the size received for the most shallow grid of finite elements are estimated.

By results of the analysis recommendations about the choice of the size of finite elements for model operation of designs of radio-electronic modules of the third level are formulated. For the static analysis regarding the competition of accuracy of the received results and the COMPUTERS resources the maximal size of the L/30 element is optimum, in the modal analysis even more alligatoring with a size of the L/10 element where L – the lengthiest party of a structural element is enough

Key words: radio-electronic modules, projection, terminating and element model, static analysis, modal analysis

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AUTOMATED INSTALLATION TO DEFINE THERMAL REGIMES IN THE EXERCISE OF THERMOELECTRIC SEMICONDUCTOR DEVICES

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The article describes the features, characteristics, and applied methodologies and tools to develop an automated setup used to define thermal regimes in thermoelectric tre-mirovka semiconductor devices. Presented installation is an integral part of software-hardware complex for training of the thermoelectric semiconductor devices in packages of the type KT-99-1 and 4601.3-1. In article the description of the functional diagram of the installation described, the control system is based on a microcontroller, and process of solid modeling of the hull and kinematic mounting systems using the SolidWorks system. The description of the thermal-control subsystem is based on PID temperature controller TCN4S and used to set and maintain precise temperature operating area. Described the process of research of the temperature characteristics of the working zone of the installation with the use of flexible thermoelectric transducers TSP 9703 connected to multi-channel precision temperature meter MIT-8 with the function of the recorder with the PC. The results of studies of the temperature characteristics data indicating the optimal choice of materials and design of the working area. The description of the primary node installation – contact device, provided with a spring-loaded needle contacts the panel which is made of amorphous material with very high strength and stiffness of polyetherimide (PEI)

Key words: adjuster regimes, temperature PID controller, SolidWorks, contacting device

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ESTIMATE OF DEMANDED CONCENTRATION OF UGLERODISTO-FIBROUS MATERIALS IN AEROSOL FORMATION AT INTERRUPTION OF RADIO-FREQUENCY SPECTRAL LINE OF GUIDANCE IN MILLIMETRIC WAVE RANGE

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Radio link control (RLC) form a special class of radio communication systems. If the radio systems solve the problem of delivery to the recipient information with minimal distortion in the RLC is transferred to the command object to perform certain operations, control and solve the problem of signal detection, while it allowed a significant distortion. radio control have a number of features, in particular, they use statistical Neyman-Pearson criterion, according to which the first is provided by a given probability of false reception team (false alarm executive device), and then take all measures to maximize the probability of correct reception of the team.

The presence of aerosol formation on the radio link control can lead to distortion of the desired signal, and a weakening of its termination. The efficacy of aerosol masking noise missile control radio depends essentially on the characteristics of the attenuation control of radio waves in the millimeter range. Earlier, the technique of substantiation requirements for the attenuation of aerosol formation for radio control interruption in the millimeter range. However, the practical implementation of

airborne noise leading to an interruption of the control signals in the millimeter range not previously considered. One way of creating such interference is the use of carbon-fiber materials (CFM).

In connection with this problem posed in the article to substantiate claims CFM concentration along the radio control, provide management interrupt signal RLC is an important and urgent.

In solving this problem are obtained depending on the attenuation control signal to the RLC at half-wave dipoles made of carbon-fiber materials by their concentration in the aerosol formation. It was found that for the interrupt control signals it is advisable to carry out the formation of an aerosol formulation in which the concentration of CFM along the RLC is of the order $(2...3,7)\times10^{2}\cdot1/m^{3}$. This will ensure compliance with the requirements for aerosol interference on the basis of carbon-fiber materials on the effectiveness of the radio signals interrupt management

Key words: aerosol formation, concentration of carbon-fiber materials

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IMPROVING CYCLE LIFE OF THE NITRIDED TITANIUM

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An effective means of providing increasing resistance of titanium alloys high temperature deformation under creep conditions is their nitriding. However, formed on the surface of titanium nitride embrittlement and gas-saturated layers, lead to a decrease in durability when tested in cyclic fatigue by 30-40%.

This article describes the restoration of fatigue performance of titanium products from the gas-saturated layer by dissolving the oxide layer in the vacuum annealing, and by chemical etching-top-surface layers.

Studies were conducted on polished samples sized 2 × 5 × 10 mm sheet of the alloy VT6 that azo-ted at 800-950 °C for 5-60 minutes in a medium of the gas mixture Ar (99%) and N_2 (1,0%) at atmospheric pressure. As an indication of the state of the surface of the titanium used embrittled layer depth and microhardness of the surface. Testing of the samples on re-static stretching performed on the machine UMM-10 with a frequency of 0.7-0.8 Hz and asymmetry coefficient cycles R=+0,1 at σ_{max}=680 Mpa.

Recovery annealing was performed in an argon atmosphere. Established range of the annealing parameters, providing clean surface samples from the embrittled portion of gas-saturated layer. For example, for a layer thickness of 4 to 20 microns, the required annealing time at 950 ° C is from 1 to 30 hours.

For the regulated removal of the surface layer to different depths samples were etched in a mixture of nitric and hydrofluoric acids to the metal removal rate of up to 1 m / min. To restore to the level of cyclic endurance is sufficient to remove the base material surface layer having a thickness of approximately 2.2 saturated layer thickness, and to achieve the level of re-static endurance, exceeding the level of the base metal endurance on the (15-20)%, it is necessary to remove the layer thickness about 3 gas-saturated layer thickness

Key words: titanium alloys, embrittlement, cyclic endurance, annealing, chemical etching

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FEATURES OF ACCOUNTING AND EVALUATION OF THE COST OF QUALITY AN ENTERPRISE ENGINEERING

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The effectiveness of cost management on quality determines the degree of effectiveness of the quality management system in the enterprise. In accordance with GOST R ISO 9001 - 2000 at the enterprises of machine-building, the cost of the accounting mechanism should be presented to provide a set of measurements for the establishment of the algorithm and methods of data collection, processing, storage cost information, and bringing it to the management of all the control units for further processing and analysis and taking corrective action if it is necessary.

However, this problem remains unresolved in several enterprises. And even where the accounting mechanism on the cost quality functions - it is not always effective. The article attempts to systematize the main problems in the organization of accounting and cost estimates on the quality of machine-building enterprises. It presents the responsibility matrix for cost management on the quality of the enterprises of machine-building. It is presented the essence of the cost-accounting mechanism on the quality and arrangements which is necessary for its organization. Analyzed data collection methods are currently used in the quality costs: The traditional method based on the use of financial documents and records made in the current accounting system of existence enterprises; defects documentation method is focused about obtaining information on the cost of the quality from the records and reports of the quality exclusively; method of "time and attendance" is being built thorough fixation and documentation of working time on the part of the workers.

It defines the basic methods of cost accounting for quality, representing the system of techniques and methods of organizing the collection, documentation, compilation and recording of expenses, providing the necessary information for the calculation of the cost of quality. Submitted information base is needed to take account of the quality in accordance with the accounting method costs: calculation on the quality costs; cost calculation processes; determining losses due to poor quality.

It shows the features of forming a cost quality report and mechanism-built enterprises

Key words: quality management system, taking into account the quality, cost accounting mechanism, cost report

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THE ASSESSMENT OF THE EFFICIENCY OF THE PROCESSES FUNCTIONING AT MACHINE-BUILDING ENTERPRISES

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In the draft Federal budget until 2017 and the planning period until 2019. provided the long-awaited GDP growth. Existing economic methods can provide us a maximum of 1-1.5% GDP growth per year, which is clearly insufficient for a real economic recovery. Expenditures of the budget must commensurate with the financial reserves. Therefore, the problem of effective and efficient economy has taken on great importance in connection with the implementation of economic policy in the conditions of financial constraints is particularly relevant.

This article attempts to examine the effectiveness of the enterprise engineering (PM) through the model using Markov and semi-Markov stationary processes. The theory of stochastic processes to calculate the performance indicators of the functioning of engineering enterprises allowed to establish the dependence of the performance indicator of functioning of PM from the process characteristics, control variables and state parameters.

Analysis of processes of functioning of PM at different levels of hierarchy allowed us to assess the effectiveness of interventions to increase or decrease exposure factors. Scope reviewed-tion of the method of computation of the performance indicator of the process of functioning of PM is determined by the specific task of the study

Key words: efficiency, effectiveness, deterministic processes, functioning of engineering enterprises

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