

CONTENTS, ABSTRACTS AND KEYWORDS OF PAPERS

FIRST THEMATIC SECTION

SEVENTY YEARS OF TRAINING ENGINEERS IN ALTAI

V. D. Goncharov, O. Y. Sartakova

The stages of formation and development of engineering education in the Altai region are presented in the article. This process is inextricably linked to the Polzunov Altai state technical University.

Keywords: engineering education, Altai Krai, Altai state technical University, engineers.

INTENSIFICATION OF THE MOVEMENT FLOUR TAPS PNEV-TOTRANSPORT INSTALLATIONS

Tarasov V. P., Tarasov A. V.

The positive influence of local pulsed blowing air into the exhaust on the process parameters of the pneumatic (hydraulic-mechanical resistance, stability of the system) in laboratory conditions is high. The ways for further research.

Keywords: pneumatic transport, drainage, intensification, sustainability, pulsed positive pressure air.

ENERGY EFFICIENT AUTOMATIC REGULATION OF THE PROCESS OF HEATING THE GRAIN

M. V. Halin, E. I. Vostrikov, S. A. Huseynov, D. G. Chasovshikov

Energy-efficient model and algorithm control electric heating apparatus of grain for the operation of a unit when cooperatively regulate its performance and capacity multi-electrode composite heaters with variable feed grain material was determined.

Keywords: computational model of the heating apparatus of grain, multi-electrode composite heater, the heating power, the heating temperature, energy efficient heating system

DEVELOPMENT OF METHODOLOGY FOR THE CALCULATION OF STATIC ELECTRICITY

A.I. Sechin, O.S. Kirmakova

The method of calculation of static electricity neutralizer for cyclone devices to prevent the occurrence of electrostatic discharge in the cyclone of energy can ignite in the cyclone dust-air mixtures is proposed. The algorithm for determining the distance between the needle tip and the outer surface of the cyclone, the height of the corona needles, selecting their diameter, the calculation of their number and geometrical arrangement in the end zone presents. The method of calculating the zone of protection based on the provisions and requirements of electrostatic and intrinsic safety.

Keywords: static electricity neutralizer, minimum ignition energy, the cyclone, the corona needle, the zone of protection.

SELECTION OF SWITCHING EQUIPMENT FOR REACTIVE POWER COMPENSATION SYSTEMS

M.S. Balabanov

In terms of calculation, the most controversial and theoretically challenging task is selection of switching equipment for the reactive power compensation systems. This article presents results of the analysis of class C2 switching devices, suitable for the reactive power compensation systems, produced by global industry as of 2013. Excerpts from the normative documents of Russian Federation, reflecting requirements for circuit breakers of reactive power compensation systems, are presented. Selection of switching equipment based on the completed projects of LLC "International Energy Saving Corporation" (St. Petersburg) is described.

Keywords: switching equipment, reactive power compensation system, capacitive current.

INCREASE OF EFFICIENCY OF DUST EXTRACTION PLANT USING HIGH-INTENSITY ULTRASONIC INFLUENCE

V.N. Khmelev, A.V. Shalunov, R.N. Golykh, R.S. Dorovskikh, V.A. Nesterov

The article presents the results of research aimed at finding ways to increase the efficiency of dust-extraction plant (DEP) based on the Venturi tube with the ultrasonic impact. The theoretical analysis of DEP allowed to reveal the possibility of increasing the efficiency and reduction of gas dustiness of installation outlet using ultrasonic impact.

Key words: dust extraction plant, Venturi tube, ultrasonic impact, coagulation, dispersed particles

DESIGNING OF GAS DISTRIBUTION DEVICES AND GAS FLOW INTERRUPTERS FOR INDUSTRIAL EQUIPMENT WITH PULSED BED OF DISPERSED MATERIAL

A.N. Atyasov, M.S. Vasilishin

A comparative analysis has been performed for gas distribution devices, used for drying and mixing, etc., with slit and local supply of fluidizing agent and for those made as non-plunging perforated grids. Details on using separate constructions as applied to particular technological processes as well as on constructions, operation principle and technical parameters of industrial pulsator valves (inclusive of those developed by the authors), and recommendations for their use are provided.

Keywords: dispersed material pulsed bed, pulsator valve, non-plunging grids, gas distribution devices, device with local jet input, gas flow interrupters, fluidizing agent, fluidization

THE CHIP IS A MEMS REFERENCE OSCILLATOR BASED ON A TRANSIMPEDANCE AMPLIFIER

K. V. Murasov

The results of the development of the chip MEMS oscillator based on silicon germanium technology with the topological rules of 0.25 μm are presented. The oscillator circuit is based on a transimpedance amplifier with differential input and output covered by the loops of positive and negative feedbacks. The use of system of automatic adjustment of the magnitude of the output signal generator, allows optimum mode of operation of the amplifier. Active distortion compensation can solve the problem of contaminated higher harmonics of the feedback signal.

Keywords: transimpedance amplifier, MEMS resonator, comparator, phase noise, reference current, a reference voltage source, controlled resistance.

VORTICAL PULSE FLOW IN THE VAPOUR CHANNEL OF SHORT RANGE HEAT PIPES

A.V. Seryakov

The results of researches of pulsation vortex flows in the vapour channel, made in the form of the nozzle, close to Laval nozzle of short heat pipes are presented. In the condensation zone of the heat pipe installed capacitive sensors, which are served electromagnetic pulses from an external generator. When heated the heat pipe evaporator, starting from a certain boundary value of the thermal power electromagnetic pulses became modulated. It is connected with the beginning of boiling in the evaporator, and the formation of a large amount of vapour that leads to a occurrence of the pulsations in the vapour channel. We measured the frequency of pulsations, with its dependence on the magnitude of overheating of the evaporator.

Keywords: short range heat pipes, Laval nozzle, capacitive condensation sensor.

COMPUTER MODELLING OF THE PARTICLE'S CONTACT VIBRATIONAL MOVING PROCESS

I.Y. Fedorenko, A.S. Fedorenko

Results of computer modelling process of contact vibrational moving of the particle, concerning the plane located under some corner to the horizon, and vibrated in the plane are given in article. Dependences of average dimensionless speed of a particle by an axis Y and average effective (operating) speed value on an axis X from the parameter of cross vibration (ϵ) and intensity of vibration are defined.

Keywords: modeling, vibration, vibrational moving, particle, response surface.

SYNTHESIS OF FERULOILIROVANNYYH HYDROXYMETHYL COMPOUNDS

L.A. Bakholdina, E.S. Tereshkova, A.L. Vereshchagin, V.P. Sevodin

Reaction formation of the esters and the hydroxymethyl compounds of ferulic acid in the presence of dicyclohexylcarbodiimide in an acidic medium was investigated.

Keywords: ferulic acid, hydroxymethyl compound, dicyclohexylcarbodiimide.

COMPARATIVE ANALYSIS OF EXUDATION AND NITROESTERS VOLATILITY FROM HIGH-SAFETY INDUSTRIAL EXPLOSIVES

I.A. Borisova, A.A. Korchagina, V.V. Budaeva, Ye.A. Petrov

The possibility of application of uglenit E-6 of cellulose nitrates from fruit shells of oats in comparison with base sample (cotton cellulose) in the composition of nitroester-containing industrial explosive was studied. The samples behavior after 5 days keeping in laboratory conditions is shown. The introduction of cellulose nitrates from fruit shells of oats in composition gives the similar to the standard results and meets the documentation requirements.

Key Words: high-safety industrial explosives, volatility, exudation, cotton colloxylin, cellulose nitrates from fruit shells of oats.

SIMPLE MODEL FOR THE DYNAMICS OF THE AMINONITROSOFUZAZANE OBTAINING BY THE OXIDATION OF THE DIAMINOFUZAZANE

A.P. Wandel

A Simple Model is Submitted for the Analysis of the Dynamics of the Aminonitrososofurazane Formation via Diaminofurazane Oxidation. Computational Experiments Have Been Evaluated that for System with Dissolution and Chemical Reaction of the Solute in the Solution, a Sensitivity of the Process Velocity to the Particles Size is Determined by the Value of the Proposed B Criterion Complex, and is Remarkable only when $B > 0.1$.

Key words: Dissolution, Oxidation, Diaminofurazane, Aminonitrososofurazane, Criterion

CHEMICAL COMPOSITION OF PRECIPITATION THE CITY OF BARNAUL

O.V. Korobko, E.A. Ovcharenko A.N. Eirikh, T.G. Serykh,
E.Y. Dryupina, T.S. Papina

The study of the chemical composition of atmospheric precipitation in Barnaul during the cold season is presented in this paper. It was found that an inverse correlation between the amount of precipitation (separately for snow and rain) and the content of anions, nutrients, organic matter, determined by COD, and heavy metals is manifested in different ways. It is shown that the main sources of toxic metals in Barnaul precipitation may be enterprises of northeastern Kazakhstan (Zyryanovsk and Ust -Kamenogorsk) along with local emissions.

Keywords: snow, rain, pollutants, anions, heavy metals

MATHEMATICAL MODELING OF THE SOLIDPHASE CARBOXYMETHYLATION OF THE CELLULOSE IN HEAT-AND-MASS TRANSFER

A.I. Legaev, V.A. Kunichan, I.V. Makarova, N.N. Volkova

The paper deals with mathematical description of the solidphase carboxymethylation of the cellulose in heat-and-mass transfer. A system of equations involving empirical factors which are responsible for solidphase cellulose carboxymethylation kinetics has been worked out. Laboratory studies were performed proving the adequacy of the developed mathematical model.

Key words: carboxymethyl cellulose, heat-and-mass transfer, screw chamber (reactor).

COMBINEDSOLUBILITY SODIUM GLYCOLATE AND SODIUM CHLORIDEIN A WATER SOLUTION OF ISOPROPANOL

I.V. Makarova, A.I. Legaev, V.A. Kunichan, N.N. Volkova

This article is devoted to the investigation of combined solubility sodium glycolateand sodium chloride in a water solution of isopropanol. It is shown that when dissolved in the water solutions of isopropanol the mixture analyzed is separated into two layers. The experimental data and the equation for calculation of combined solubility of sodium glycolateand sodium chloride in a water solution of isopropanol are obtained.

Keywords: solubility, sodium glycolate, sodium chloride, isopropanol.

THE FORECASTING FUNCTION OF THE PERIODIC LAW. ORGANIC COMPOUNDS

E. K. Spirin, A. G. Mal'chik

It has been previously shown that a polynomial model of dependence of $f(x) - \varphi(P)$ where the first term represents some function of the atomic number, period number, dyads, etc., and corresponding ordinate $\varphi(P)$ is arbitrarily taken as the property in the selected sequence of atoms that gives reliable values for predictive estimation of properties and also complex or new substances, confirming, thus, both classic and modern formulation of the Periodic law Mendeleev [1]. Below describes how this manifests in homologous series of organic substances.

Keywords: Periodic law, forecast, organic homologues, polynomial approach.

BENARD - MARANGONI LINEAR CONVECTION UNDER QUADRATIC HEATING FROM ABOVE FLAT LAYER OF INCOMPRESSIBLE VISCOUS FLUID

S.N. Aristov, S.S. Vlasova, Eu. Yu. Prosviryakov

The steady exact solution of the Oberbeck-Boussinesq describing convective termokapillyarnoe flow of a viscous incompressible fluid in a plane layer with a quadratic heating the free surface. The analysis of convective flows, depending on the properties of the quadratic form of temperature. It is shown that the distribution of pressure and temperature depends on the type of heating, whereas the velocity shows the relationship between the types of heating.

Keywords: exact solution, thermocapillary convection, Routh-Hurwitz problem, contour, the system Oberbeck-Boussinesq

THE MODIFICATION OF 5-HYDRAZINO-TETRASOL BY ACETAL DERIVATIVES OF ALDEHYDES

A. V. Sysoev, Y. V. Moroshenko

The condensation of 5-hydrazino-tetrasol with a number of the substituted/non-substituted aliphatic aldehydes when using its stable acetal derivatives has been studied. It is shown that the effect of appending into the reaction of condensation with 5-hydrazino-tetrasol provides the increase a pureness of the final products. With NMR^1H based data it has been found that the condensation reaction leads to E-isomers formation.

Key words: condensation, 5-hydrazino-tetrasol, acetals, Z, E – isomers, azomethins.

PREPARATION OF COPPER NITRIDE POWDER BY THERMOLYSIS OF COMPLEX SALTS OF N,N'-DINITROUREA

S.G. Il'yasov, M.V. Til'zo, I.V. Kazantsev

A method was developed for the synthesis of nitride and copper oxide particles via thermolysis of the copper complex of N,N'-dinitrourea in an aprotic solvent.

Keywords: copper nitride, copper oxide, thermolysis, N,N'-dinitrourea, N,N'-dinitrourea copper complex.

ULTRASONIC CAVITATION PROCESSING OF VISCOUS AND DISPERSED MEDIUMS

V.N. Khmelev, S.S. Khmelev, R.N. Golykh, A.V. Shalunov

The paper presents results of researches aimed at finding of ways which may be applied for increasing of efficiency of ultrasonic influence on chemical engineering processes in dispersed systems with continuous high-viscous liquid phase. Theoretical analysis of cavitation area formation in dispersed systems with liquid phase allows to evaluate ultrasound intensities which are necessary for maximal energy capacity cavitation bubbles appearance and evaluate cavitation area sizes for mediums which have different viscosities. Developed ultrasonic radiators with increased power and surface area of radiation allow to increase efficiency of some technological processes based on ultrasound cavitation influence in liquid mediums.

Key words: ultrasound, cavitation, viscosity, dispersed medium, multi half-wave working instrument

SYNTHESIS OF LINEAR AZIDOMETHYL NITRAMINES FROM PRIMARY NITRAMINES

E.O. Shestakova, S.G. Il'yasov

An alternative method is suggested to synthesize the linear azidomethyl nitramines, 1,7-diazido-2,4,6-trinitro-2,4,6-triazaheptane and 1,9-diazido-2,4,6,8-tetranitro-2,4,6,8-tetraazanone, via azidation of the corresponding dichloro derivatives with excess sodium azide in a water-organic solvent system. The dichloro derivatives are prepared through chloromethylation of 1,3,5-trinitro-1,3,5-triazapentane and 1,3,5,7-tetranitro-1,3,5,7-tetraazaheptane with trioxymethylene (paraformaldehyde) and thionyl chloride over an acid catalyst.

Keywords: 1,3,5-trinitro-1,3,5-triazapentane, 1,3,5,7-tetranitro-1,3,5,7-tetraazaheptane, chloromethylation, DATH, 1,7-diazido-2,4,6-trinitro-2,4,6-triazaheptane, DATN, 1,9-diazido-2,4,6,8-tetranitro-2,4,6,8-tetraazanone, azidoalkyl nitramines

KINETIC LAWS OF FORMATION NANOSIZE SYSTEMS Cu – Cu₂O RESEARCH

E.P. Surovoi, N.V. Borisova, T.J. Kozhuhova

It is established that kinetic curves extents of transformation are well described within linear, return logarithmic and parabolic laws, depending on initial thickness of copper films (3 – 168 nanometers) and heat treatment temperature.

Keywords: nanosize systems, copper, copper oxide

AROMATIC ALDEHYDES OF PLANT PRODUCT EXTRACTS THAT ARE USED IN LIQUEURS AND SPIRITS MANUFACTURE

E.Ju. Egorova, D.Ju. Sysoeva, E.D. Rozhnov, Ju.V. Morozhenko

Aromatic aldehydes are responsible to formation of individual flavoring «bouquets» of cognac distillates and other alcoholic drinks. The results studies of aromatic aldehydes such as vanilline, lilac, coniferous and sinapovo aldehydes in aqueous alcoholic extracts of Pinus sibirica nuts, Chamomilla recutita Rauschert and Hypéricum perforatum are provided in the paper. It is illustrated that the aqueous alcoholic extracts can be used specifically to change «bouquet» of alcoholic drinks.

Keywords: aromatic aldehydes, Pinus sibirica nuts, Chamomilla recutita Rauschert, Hypéricum perforatum, plant product extracts, liqueurs and spirits products.

STUDY OF THE COOLING PROCESS OF WHOLE TROUT FISHING CARBON DIOXIDE

E.N. Neverov

The results of studies on trout in cooling unit running on carbon dioxide as a result of which the temperature field obtained, the kinetics of the heat sink and cooling consumption CO₂ trout carcasses carbon dioxide gas with temperatures in the apparatus of -30 ° C, -50 ° C and -70 ° With a snow and CO₂. A comparison of the device and the snow-gaseous CO₂.

Keywords: fish, trout, carbon dioxide, sublimation, thermal field, the heat flux density, thermal conductivity, temperature isotherms, the heat, the unit consumption.

PRODUCTION AND PROPERTIES OF ALKALINE LIGNIN FROM MISCANTHUS SINENSIS

S.G. Il'yasov, V.A. Cherkashin

Alkaline lignin was derived from Miscanthus sinensis. The alkaline lignin properties were studied. Depolymerization was carried out to afford liquefied products. The optimum liquefaction coefficient was identified.

Keywords: Miscanthus sinensis, alkaline lignin, depolymerization, supercritical conditions

PREDICTION WAVINESS ON THE OPERATIONS OF MACHINING BY CUTTING TAKING INTO ACCOUNT TECHNOLOGICAL INHERITANCE

V.A. Homenko, M.K. Vitvinov

It is offered to use the device of transfer functions for the mathematical description of process of transformation of a profile of preparation to a detail profile. Transfer function allows to consider both the static, and dynamic phenomena when machining. For its receiving frequency characteristics of operation which are formed by excitement of the polyharmonic signal by means of a reference detail are used. On the basis of a technique of planning of experiments for operation of cylindrical milling dependences of coefficients of transfer function on cutting mode parameters – depth of cutting, giving and frequency of rotation of a mill are received. The developed model allows to predict a detail surface sinuosity at a known sinuosity of preparation, and also to estimate possibility of emergence of marriage in sinuosity parameters at various modes of cutting.

Keywords: technological inheritance, milling, sinuosity, transfer function, cutting mode.

THE EFFECT OF PRODUCTION CONDITIONS OF BASALTIC GLASSES ON THEIR STRUCTURE AND PROPERTIES

N.N. Khodakova, O.S. Tatarintseva, V.V. Samoilenko

The findings of experimental studies into the influence of the thermal history of the glasses on their structure, physicochemical properties, and temperature range of drawing continuous basalt fibers therefrom are reported.

Keywords: rocks, melt, glass, continuous basalt fibers, glass structure, viscosity, surface tension, crystallization

TEMPERATURE EFFECT ON THE STRENGTH OF BASALT FIBER- AND FIBERGLASS-REINFORCED PLASTICS

A.N. Blaznov, V.F. Savin, E.V. Atyasova, F.I. Babenko, Yu.Yu. Federov

Three types of composites were tested for longitudinal bending at different temperatures ranging from -70 °C to 60°C by two independent laboratories. The power-law dependence of the strength on temperature was derived. The strength and deformation of the materials were shown to increase with decreasing temperature, the Young's modulus remaining virtually unchanged.

Keywords: composites, basalt fiber-reinforced plastic, fiberglass-reinforced plastic, longitudinal bending, frost resistance, strength, Young's modulus, deformation

EFFECT OF MOLDING CONDITIONS ON DIAMETER AND STRENGTH CHARACTERISTICS OF BASALT CONTINUOUS FIBERS

N.N. Khodakova, O.S. Tatarintseva

The strength characteristics of basalt fibers were shown to be strongly influenced by their molding conditions, namely melting history, temperature, drawing rate, spinneret diameter, and so on. The disturbance of the fiber molding regime distorts the dependence of the fiber strength on the fiber diameter.

Keywords: melt, viscosity, basalt fibers, diameter, strength, molding conditions, crystallization

THE USE OF THE SYSTEM QUALITY MANAGEMENT IN DESIGN OF TECHNOLOGICAL PROCESSES GRINDING OF RAILS

V. A. Aksenov, A. S. Ilyin, A.V. Matafonov, M. S. Galay

The method of the Failure Mode and Effects Analysis in the implementation of technology grinding rails is given. The analyses of the result FMEA to the rail grinding technology in the railway track is made.

Key words: FMEA method, FMEA team, defect, risk level, probability, severity, detection, rail surface roughness, rail grinding technology.

GEOMETRIC MODEL CALCULATION METAL REMOVAL IN MAGNETIC-ABRASIVE MACHINING

A.M. Ikonnikov, S.L. Leonov, V.S. Silivakin, E.J. Tatarkin

Proposed a geometric model of the interaction of the abrasive particles with machining-roughness of the surface by magnetic abrasive machining. Are theoretically the Exploration of metal removal. The dependencies to determine the metal removal and the maximum depth of penetration of the particle.

Keywords: magnetic-abrasive machining, single interaction, eat metal.

INVESTIGATION OF CONTACT MOVES IN THE DYNAMICS USING THE METHOD OF HOLOGRAPHIC INTERFEROMETRY

V.A. Feroptov, N. V. Perfilyeva, S. S. Shmakov, S.M. Shandorov

Experimental method of estimating the contact displacements using holographic of the interferometer is given in the article. Comparison of engineering calculation and calculation of contact stresses on the sample cone connection held. The efficiencies of an integrated approach to assessing the strength of the proven.

Key words: strength calculation, surface tension, the tapered connection, holographic method

SIMULATED ANNEALING FOR UNCONSTRAINED CONTINUOUS OPTIMIZATION PROBLEMS

A.V. Lisin

The approach for using simulated annealing algorithm for unconstrained multidimensional continuous optimization is described in the article.

Key words: simulated annealing, continuous optimization

A METHOD TO ESTIMATE EMPIRICAL PARAMETERS OF THE DURABILITY EQUATION FOR COMPOSITE MATERIALS

V.F. Savin, M.G. Petrov, A.N. Blaznov, Yu.B. Zharinov, A.A. Krasnov

A method is suggested to determine parameters of the equation of durability (creep-rupture strength) of composite rods from the results of experimental studies. The method relies on the analysis of statistical data obtained from the ASTM D7337/D7337M creep rupture test and tensile strength test of the composite rod samples taken from the single batch.

Keywords: durability, fiberglass-reinforced plastic, creep-rupture strength, tension.

COMPUTATIONAL-EXPERIMENTAL STUDIES OF INTRABALLISTIC CHARACTERISTICS OF ITEMS WITH FILLERS

G.V. Sakovich, A.A. Trubnikov, G.N. Nesterov, B.V. Pevchenko, V.O. Popov

We report a non-stationary gas-dynamic model for the computation of intraballistic characteristics, numerical simulation results for the performance, and test firing results for items 36 mm in diameter with fillers. The fillers are made from an inert material, Wood's alloy, and APC-235P composition.

Keywords: item 36 mm in diameter, inserted elements, intraballistic characteristics, high-energy filler

CALCULATING OF THE ECONOMICAL EFFICIENT PRODUCTION RATES FOR HOBGING BY THROW-AWAY HOBS

V.A. Khomenko, P.O. Cherdantsev, A.O. Cherdantsev

Authors presents the method of calculating the economical efficient production rates for hobbing by throw-away hobs.

Keywords: throw-away hobs, progressive scheme of cutting, hobbing, production rates.

RESEARCH METHODOLOGY THE NORMALIZED STRENGTH OF THE CAP CHUTE TRUCK OF A FREIGHT CAR BY MEANS OF SOLID MODELING

A.V. Gabets, D. A. Gabets, A. V. Semenov, I. V. Levkin

The method of mechanical analysis of the cap chute truck of a freight car subject to the conditions considered. The method includes determining existing loads; three-dimensional solid modeling assembly side of the chute; modeling of the contact area formed in friction pairs; modeling of stress-strain state of the shell and the calculation of the equivalent stress, as well as the definition of the specific pressure acting on the cap of the chute.

Keywords: cap chute, strength analysis, solid modeling, 3D model, automated engineering analysis.

THE IMPACT OF TECHNOLOGY FOR PRODUCING POROUS COMPOSITE MATERIAL CATALYTIC CONVERTERS DIESEL ENGINES ON ITS MICROSTRUCTURE

M.A. Kolomeetc, A.A. Sitnikov, G.V. Medvedev, N.P. Tubalov, N.N. Gorlova

The results of the study of the influence of technology of composite porous catalytic converter diesel engines on its microstructure. Examined the microstructure of porous materials obtained by SVS- technology-based scale steel.

Keywords: porous permeable materials, the exhaust gases, catalytic converters, microstructure, oscillation frequency, vibration.

EESTIMATION OF INFLUENCE PHYSICO - MECHANICAL FEATURES SVS-CATALYTIC MATERIAL ON THEIR VIBRATORY STABILITY

M.A. Kolomeetc, A.A. Sitnikov, G.V. Medvedev, N.P. Tubalov, D.S. Pechennikova

Results of study of influence are brought In work physico - mechanical features SVS-catalytic material on their vibratory stability in converters of perfected gases of diesels.

New knowledges are Received about influence of frequencies of own fluctuations and striking viscosity of porous permeable catalytic material on base of dross become on frequency of destruction of material of filter.

Keywords: porous permeable material, perfected gases, catalytic converters, vibratory stability, striking viscosity, frequency of destruction.

THE DETERMINATION OF VELOCITY AND TEMPERATURE OF PARTICLES OF ALUMINUM MATRIX COMPOSITE MATERIAL IN TWO-PHASE DETONATION GAS STREAM

A. A. Sitnikov, A. V. Sobachkin, V. I. Yakovlev, M. V. Loginova,
M. A. Makarova, A. P. Sviridov

The work is devoted to determination of velocity and temperature of particles of aluminum matrix composite materials in two-phase flow in the detonation-gas spraying. The calculation of the speed and temperature had been previously performed in AnsysWorkbench. Verification of values, obtained by modeling, was carried out using an experimental diagnostic complex method of measuring particle tracking velocimetry (PTV). It was found that the optimum mode of deposition (high speed and relatively low temperature) are achieved with particle size of aluminum matrix composite composition of 40...63 micrometers.

Key words: composite material, detonation-gas spraying, modeling, high-speed shooting.

COMPLEX RESEARCHES ON TOWN PLANNING, ARCHITECTURE, DESIGN IN THE ALTAI REGION AS SCIENTIFIC DIRECTION

S.B. Pomorov

In article the project and scientific development in the field of architecture, town planning, design which are carried out for the Altai region for the last three decades by the faculty of Altai State Technical University are analyzed. The most considerable results of this scientific direction are given, ways of further development are marked.

Keywords: Altai region, architectural and town-planning design, design, scientific and technical programs, school of sciences.

ANALYSIS OF THE ENERGY EFFICIENCY INTERMITTENT MODE OF HEATING OF A BUILDING

A. S. Kutsenko, S. V. Kovalenko, V. I. Tovazhnyanskiy

In the article, a simplified mathematical model of the controlled process heat supply of the building. Based on the proposed model and the principle of L. S. Pontryagin maximum of the resulting optimal control law for intermittent heating. On the basis of numerical experiments substantiated recommendations for the efficient use of discontinuous heating mode.

Keywords: intermittent heating, supply management, a mathematical model of the thermal processes of the building.

THE FORMATION PRINCIPLES OF MODERN LOW-RISE STANDARDIZED HOUSING TYPOLOGICAL SYSTEM

E. Stadnik

The article describes the system-typological principles, based on analysis of modern unified typological series of low-rise residential buildings world-renowned companies such as AAH, Alvsbyhus, IKEA, Sekisui House, Toyota Home and others (for analysis ten companies producing standardized housing were selected). On the basis of the proposed principles typological system of modern unified low-rise housing in Russia can be formed.

Keywords: low-rise housing; unification; typological principles.

DEVELOPMENT OF STYLE OF ARCHITECTURE OF MULTIROOM BUILDINGS OF WESTERN SIBERIA IN 1928 — 1932

E.V. Khitsenko

In article on the basis of analysis of the archival documents, project development, as well as materials of inspections and photo identified characteristic stylistic features of residential development in Western Siberia 1928-1932 years. Examines the factors of occurrence and distribution of constructivism in architecture of multi-apartment housing. Identify the causes of crisis functionalist styles in Western Siberia.

Keywords: constructivism, architecture of Western Siberia, residential buildings of the first five years.

THE CHOICE OF THE OPTIMAL LOCATION OF TRANSFER STATIONS ON THE TERRITORY OF SEVERAL MUNICIPALITIES

V. I. Egorov, A. V. Mihaylov, A.A. Melbert

Recycling centre (RC) is a place of overload solid waste. Its application due to the need to reduce the volume for transport over long distances. Installation RC generates a number of organizational questions, the most important of which is the search for the location of the RC, in which transportation costs will be minimal.

Keywords: garbage-processing plant, transportation, and household wastes.

SEARCH INTERACTION MODEL ALTSTU AND EMPLOYERS: THE ASPECT OF FORMATION OF PROFESSIONAL COMPETENCES OF GRADUATES OF TECHNICAL SPECIALTIES

K. Mishin

One of the options of constructing a model of interaction between the University and employers to improve the process of formation of professional competences of graduates of technical specialties offered in the article. The urgency of solving this problem in the conditions of reforming of higher education and the growing demands of employers for graduates during the reconstruction and modernization of production is justified. The interaction model is designed for a particular institution - Altai state technical University. I. I. Polzunov.

Keywords: model of interaction between the University and employers, organizational structure model of professional competence of graduates of the University, adaptability graduate in production.

IMAGE OF ALTAI STATE TECHNICAL UNIVERSITY NAMED AFTER POLZUNOV IN THE CONTEXT OF REGIONAL IMAGE: ASPECTS OF INTERACTION

E.V. Antiufeeva, Y.A. Mavlyutova, T.V. Pashkevich

The article explores the relationship of image and image region student perceptions of the potential audience, estimated current and desired image AltSTU them. II Polzunova, Altai region and the city of Barnaul. Identifies critical issues shaping the image of the region and outlines solutions.

Keywords: image AltSTU, the region's image, marketing areas, the visual image of the brand, the verbal style.

PROJECT ORIENTED CDIO APPROACH AS THE INNOVATIVE DOMINANT OF ENGINEERING EDUCATION IN THE ALTAI REGION

M. A. Kaygorodova, O. Y. Sartakova

The article covers the topical problem of engineering education modernization in Russia. The authors study the basic principles, philosophy and standards of the project oriented approach to CDIO engineering training and suggest potential ways of adapting the CDIO concept for Altai State Technical University.

Keywords: engineering education, CDIO international project, Altai State Technical University, Altai region

THE RUSSIAN ELITE AT THE FEDERAL AND REGIONAL ASPECTS

A.V. Ponedelkov, S. Vorontsov, I.V. Gnidenko

The article is devoted to the disclosure of the relevant scientific issues of the formation of political elites in the Russian Federation with regard to the socio-economic situation in the country, integration processes in the modern world, the tasks of the development of civil society. The paper analyzes and summarizes the various scientific approaches to the study of political elites, influence the administrative-political and administrative decisions, directly directed on realization of tasks of state management at different levels of government. The ways practical measures and recommendations of the specialists dealing with the problems elitology, for improvement of this work taking into account the principles of administration and governance, such as the rule of law, the recognition of a person, his rights and freedoms as the highest value, openness, accessibility and equal access to the civil service, the implementation of which, ultimately, is aimed at modernization of the regional elites, constitute the basis for the formation of elites at the Federal level.

Keywords: Elite clans, teams, clubs, power, and the political class, and the criteria of elitism, corruption, public opinion poll, recruiting.

METHODOLOGY SUPPORT OF STUDY THE INNOVATIVE EUROPREDNISONE FOOD PRODUCTS

S. V. Novoselov, E. A. Mashenskay

Criteria for evaluation and selection of ideas from functional food product obtained on the basis of innovative technologies, methods and calculation algorithm based on the theory of operations and mathematical logic developed . Keywords: methodology, assessment, consumer, demand, innovative, functional, product, food.

THE PROBLEMS OF PLANNING OF DEVELOPMENT OF THE MARKET PRODUCTS OF GRAIN PROCESSING IN RUSSIA

P. A. Antsiferov

The problem of planning the development of the market of products of grain processing in Russia.

Work is devoted to comparison of methods and approaches of planning and forecasting of the market of grain and the market of production of a grainworks, justification of a priority of the second market in relation to the first becomes at the solution of regional and national questions of providing the population the food, problems arising in this regard are defined, the directions their solutions are proposed.

Keywords: grain market, the market for products of grain processing, planning, forecasting, state regulation.

ASSESSMENT OF CONSUMER DEMAND FOR INNOVATIVE FUNCTIONAL FOOD

S. V. Novoselov, E. A. Mashanskay

Assessment criteria the consumer demand for innovative functional food product, the method and algorithm of calculation based on the theory of operations and mathematical logic developed.

Key words: methods, evaluation, selection, idea, innovation, functional, product, food, criteria.

INDICATORS FOR ASSESSING ACTIVITIES OF SCIENTIFIC AND TEACHING STAFF OF THE UNIVERSITY

O.V. Askanova, S.K. Sevastyanova

The article describes the author's evaluation method of the academic staff of higher educational establishment, which includes quantitative indicators characterizing teachers' individual achievements in the context of three main activities: research and methodological work and research work with students outside the curriculum. The authors investigated the opinion of the leaders of Rubtsovsk industrial institute and the teachers' staff about the degree of importance of indicators to assess various activities of scientific and teaching staff.

Keywords: research and teaching staff, activities, of university teachers, research work, scientific and methodical work, research work with students, rating estimation

TRANSFORMATION OF THE ENTERPRISE BEHAVIORAL MODEL IN THE COURSE OF STRATEGY REALIZATION

E.I. Rogovski, I.V. Tsomayeva, A.A. Kiseleva

Strategy realization is provided by innovation projects and techniques improving the inner environment of the enterprise; it creates conditions for positive changes in its behavioral model and contributes to developing core products and key competences.

Key words: Enterprise strategy, strategy realization, enterprise behavioral model, core products, key competences, supporting competences, identification of competences.

HUMAN ECOLOGY: THE IMPORTANCE OF DIALOGIC APPROACH

A.G. Ingovatova

The article highlights the problem of human nature preservation, in other words the problem of human "ecology". The principles which dominate the modern society are devastating and inhuman by its nature. The human nature preservation and development is the problem to be solved only with the help of dialogic approach and understanding.

Key words: human ecology, human nature, humanity, activity, personal fulfillment, dialogue.

ABOUT THE PUBLICATION OF SCIENTIFIC RESULTS IN ENGLISH-LANGUAGE SCIENTIFIC JOURNALS

A.V. Kremneva, T.A. Golovina

The article presents some aspects that hinder the publication of Russian scientists' research findings in English-language scientific journals. The specificity of scientific articles translation is touched.

Key words: scientific text, scientific journal, the translation of terms in English.

ПРАВИЛА ОФОРМЛЕНИЯ СТАТЬИ

Статья объёмом 5 страниц (по согласованию с редакцией, допускаются статьи объёмом от 3 до 10 страниц), имеющая индекс УДК, аннотацию из 3-5 предложений и ключевые слова на русском языке (в начале текста статьи) с приложением в отдельном файле перевода названия, аннотации, ФИО авторов и ключевых слов на английском языке, а также сведений об авторах (учёной степени, звания и места работы, E-mail) и\или контактного телефона) должна отвечать следующим требованиям:

Работы принимаются в текстовом редакторе Microsoft Word 2003.

Во вкладке «Разметка страницы»: используется *размер бумаги формата А4, ориентация листа книжная. Поля: верхнее — 3,5 см; нижнее — 2,5 см; левое — 2,5 см; правое — 2,5 см; переплет — 0 см*; В диалоге «Колонки» - «Другие колонки» выбирается расположение текста в "две" колонки, устанавливается *ширина колонок — 7,65 см, промежуток между ними — 0,7 см*.

Во вкладке «Вставка» выбираем «Верхний колонтитул» - «Пустой», далее появляется вкладка «Конструктор», включить «Различать колонтитулы» - *первой страницы и чётных и нечётных страниц. Колонтитулы от края: верхний — 1,25 см; нижний — 2,3 см*.

В верхнем колонтитуле указывается: на титульной странице – «особый колонтитул»; на чётных страницах - название статьи (главы) (Arial, 10 пунктов, прописные); на нечётных страницах - фамилия и инициалы автора (Arial, 10 пунктов, прописные). Нумерация страниц производится шрифтом размером «Arial», 12 пунктов, наклонный. Расположение нумерации — внизу страницы в нижнем колонтитуле, для четных страниц выравнивание по левому краю, для нечетных по правому.

Структура статьи в обязательном порядке должна содержать:

- УДК (размещение в левом верхнем углу документа);
- Названия статей набираются прописными буквами (шрифт «Arial», размер шрифта текста — 14 пунктов, полужирный) по центру документа;
- Инициалы и фамилии авторов размещаются под названием статьи (шрифт «Arial», размер шрифта текста — 12 пунктов);
- аннотация (шрифт «Arial», размер шрифта - 10 пунктов, красная строка — 0,8 см, интервал между строками «одинарный») 3-5 предложений, отражающие актуальность, цель, методы исследования, полученные результаты;
- ключевые слова (не менее 5);
- основной текст (для основной части текста используется шрифт под названием «Arial», размер шрифта основного текста — 10 пунктов, красная строка — 0,8 см, интервал между строками «одинарный»);
- список литературы (шрифт «Arial», размер - 9 пунктов) оформляется в соответствии с ГОСТ Р 7.0.5-2008 «Библиографическая запись. Библиографическое описание»;
- сведения об авторах (Фамилия, инициалы, учёная степень, звание, место работы, E-mail и\или контактный телефон).

Для создания формул и таблиц используются встроенные возможности Word. Рисунки цифрового формата (в электронном виде) создаются средствами Word или другими программами в черно-белом виде и вставляются в нужное место документа.

Размеры рисунков не должны превышать границы полей страницы основного текста документа с учетом подрисовочной подписи. Рисунки издательством не редактируются. Если рисунок по ширине превышает размер колонки, то необходимо ставить перед ним и после него разрыв раздела на текущей странице и располагать рисунок в начале или в конце страницы.

Рисунки, надписи и объекты Word 2003 должны перемещаться вместе с текстом, т.е. быть не поверх текста!

При приеме работы в печать обязательно наличие твердой копии и экспертного заключения!

К публикации принимаются статьи, ранее нигде не опубликованные и не представленные к печати в других изданиях. Статьи, отбираемые для публикации в журнале, проходят закрытое рецензирование. Автор статьи имеет право предложить двух рецензентов по научному направлению своего исследования.

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