
Anipko O.B., Khaikov V.L.

METHOD TRAJECTORY ELEMENTS ASSESSMENT FOR ARTILLERY AMMUNITION WITH AGED GUNPOWDER FIRED FROM A WEAR GUN BARREL

The technique trajectory elements assessment for artillery ammunition with aged gunpowder and gun barrel wear was developed.

G. Khavin

THE PREDICTION OF DEPOSIT PROCESS ON THE SURFACE OF PLATE HEAT EXCHANGERS

The problem of crystallization fouling prediction for plate heat exchanger is considered. The mathematical model for calculation of deposits, which taking into account roughness delay time, behavior of stream carrier and plate's geometrical parameters of plate heat exchanger is presented. The comparison between theoretical and experimental results is made and it showed a good coincided of data.

Solovyov V.M., Papakitsia V.V., Shepelenko G.A., Vorobyov M.I.

THE NEW METHODS OF MANUFACTURING OF TORQUE CONVERTERS BLADE WHEELS

The article contains the description of basic technologies for serial manufacturing the blades wheels of modern torque converters. The results of development and practical applications of alternative method for the manufacture of casting torque converters blades wheels are showed.

Ogurtsov A.N., Bliznjuk O.N., Masalitina N.Yu.

MODELING OF MATRIX-ASSISTED ENERGY TRANSFER TO IMPURITIES IN TECHNOLOGY OF MATERIALS MODIFICATION BY ELECTRONIC EXCITATIONS

On the simple model systems of diatomic homo- (N_2) and heteroatomic (CO) impurity molecules the processes of matrix-assisted energy transfer to matrix-isolated centers in krypton and argon cryocrystals were studied. The energy ranges of most efficient photoexcitation of impurity molecules by electronic excitations of matrix were determined.

Bliznjuk O.N., Ogurtsov A.N.

THERMOLUMINESCENT DETERMINATION OF NONISOTHERMIC KINETIC PARAMETERS OF MATRIX-ISOLATED CENTERS EXCITATIONS IN RARE-GAS SOLIDS

The influence of electron traps thermoactivation on matrix-assisted energy transport to impurity centers was studied for matrix-isolated molecules in rare-gas solids. Basing on thermoluminescent spectra analysis the analytic method of determination of kinetic parameters of electron traps thermoactivation was proposed.

Morgunov V.V.

**NUMERICAL SIMULATION OF ELECTRON BEAM FLUE GAS TREATMENT.
SYSTEM $N_2-O_2-H_2O-NO$**

In the article the results of numerical modeling of radiation-chemical processes in electron beam treatment (ELO) flue gas system $N_2-O_2-H_2O-NO$ using the Gear method in Nordsieck representation for solving stiff systems of ordinary differential equations (ODE) are given. Received contributions of radiation, and chemical reactions in the formation and removal of the main chemicals involved in the simulation. The possibility of numerical simulation to study the radiation-chemical processes in terms of improving the efficiency of treatment.

Mazur E., Timchenko V.

THE INFLUENCE OF MATERIAL'S STRUCTURE ON THE EXTRACTION PROCESS

The results of the theoretical and practical researches of the influence of internal and external structure of oil seed material on the extraction process are given in the article.

Reznichenko V.V., Butenko A.N., Reznichenko A.M., Loboyko V.O., Yurchenko A.A.

KINETIC PARAMETERS OF THE METAL NICKEL PRODUCTION REACTION FROM ITS OXALATE

The article contains results of the research of degree of nickel oxalate decomposition subject to process's duration. The thermodynamic parameters of metal nickel production by thermal reduction NiC_2O_4 in an inert atmosphere were defined. Values of pre-exponential multiplier and apparent activating energy were estimated.

Kuzenko A.S., Tovagnyansky V.I., Kovalenko S.V.

**MATHEMATICAL MODELING OF THE CONTROLLED PROCESS HEAT SUPPLY
OF BUILDINGS**

A mathematical model of heat supply, which allows a qualitative analysis of the impact of various technological and external factors on the comfort and energy costs is proposed. In addition it is shown that the use of a simple system of automatic control of heat transfer agent can significantly reduce the transient stabilization of buildings indoor air temperature at a comfortable level for any ambient temperature changes or heat transfer agent.

Kravchenko O.V., Veligotskyi D.A., Poda V.B.

**ТЕПЛОМАСООБМЕН'S PHYSICAL MODELLING AT TO THERMOCHEMICAL HYDROGEN PROCESSING
OF A ZONE OF THE LAYER OF THE OIL OR GAS WELL BY PRIZABOYNA**

On basis of the results generalization of theoretical and experimental researches was made the method of calculation of heat and mass transfer processes in the hydrolysis of solid hydro-reactive substances in the form of high cylinder, which is immersed in a coaxial cylindrical reactor, dependence of heat and mass transfer from the kinetic characteristics of gas formation, the loading factor of the cross section of the hydrogen generator under the pressure up to 30 MPa in the reaction zone were obtained.

Kostyuk V.Ye., Kirilash Ye.I., Kravchyuk A.L.

GENERIC MATHEMATICAL MODEL OF GAS-TURBINE ENCLOSURE HEAT STATE

General statement of the problem of the gas-turbine enclosure heat state and appropriate generic mathematical model are developed. Enclosure heat state numerical calculation is performed using mathematical model adapted to the particular problem. Numerical calculation results qualitatively correspond to the experimental data.

Klimov V.F., Mikhailov V.V., Kudrevatykh D.N., Shipulin A.A.

DESIGN MODULE METHOD OF AIR CLEANING SYSTEMS FOR ARMoured VEHICLE OBJECTS

In the article, the criterion functions have been deduced on the basis of studies of the armoured vehicle objects having been upgraded and designed in SOE KMDB. Their use makes it possible to design air cleaning systems for power packs with engines of any power.

Zagrebelnaj L.I., Kobets E.V., Chasovski A.S.

**THE POSSIBILITY RESEARCH OF USING REACTIVE BURNERS
TO CLEAN GRANULAR MATERIALS IS CONSIDERED**

The use of reactive burners for cleaning of railway wagons from frozen cargo is considered.

Zhuchenko O.A.

FUZZY CONTROL SYSTEM FOR START-UP PHASE OF POLYMERIC EXTRUSION

In this paper, a fuzzy control system is proposed to improve the start-up procedure of a polymeric extrusion process generally based on the principle of the inverse relation between the screw speed and the torque.

The proposed control structure consists of Takagi–Sugeno (TS) fuzzy controller, which monitor the screw speed, such as the start-up is performed quickly and without screw blockage. Efficiency of developed fuzzy control system was carried out through experiments.

Golub N.B.

**THE CULTIVATION TECHNOLOGY OF MICROALGAE IN WHICH GAS EMISSIONS ARE USED TO
PRODUCE FUELS**

The technology of cultivation of microalgae for future fuels production has been suggested. In this technology gassing from factories are used for intensification of biomass grown. Gas emissions contain the elevated concentration of CO₂ in 3–6 % and are the source of the main nutrient component - carbon. The increase of biomass growth is derived under permanent injection of these gases into culture medium. Also, under usage of gas emissions the temperature regime of photoreactor in 30±2 °C is maintained, and the mass-transfer processes and the absorption of light energy are improved. Gas emissions must be treated from solid fractions, and nitrogen oxides and oxides of sulfur are applied as nutrients. After lipid extraction biomass residues and culture liquid are used to produce biogas.

Ul'yanov V.P., Bulavin V.I., Ul'yanova I.V., Artamonov A.P.

**ECONOMIC EVALUATION OF TECHNOLOGICAL PROCESS OF COMPLEX PROCESSING
OF DUSTS AND SHLAMS OF METALLURGICAL REDISTRIBUTIONS WITH RECEIPT
OF PREREDUCED PELLETS**

The new technology for various kinds processing of a ferruginous waste of water gas purifying of metallurgical combines is developed and tested. The yielded technology provides: main product reception (prereduced pellets) extraction a zinc and lead from waste; recovery of other productions

of metallurgical combines. The estimation of efficiency of an investment of investments and economic benefit calculation had shown the positive tendency of introduction of new technology of processing of a ferruginous waste with reception prerduced pellets.

Bolukh V.F., Oleksenko S.V.

CORE IMPACT ON THE PARAMETERS FEROMAGNITNOGO ELECTRIC PARAMETERS INDUCTION-DYNAMIC ENGINE

A mathematical model of induction-dynamic the motor with a ferromagnetic core with no restriction of movement of electro-conducting anchor. The mathematical modeling of the engine for different parameters of the ferromagnetic core and identified major dependence of power, weight and size, environmental parameters. It is shown that the use of the geometric dimensions of the core increases the efficiency of induction-dynamic engine of 20–25 %. Set geometric parameters of the core, at which efficiency is maximal.

Bashinskiy V.G.

GENERALS OF COMPLEX METHOD OF ESTIMATION AND COMPARISON OF SYSTEMS OF DEFENCE OF AIRCRAFT FROM THE GUIDED ROCKETS WITH INFRA-RED HEADS OF HOMING

The method of calculation of coefficient of complex increase of protected of aircraft is In-process offered from the guided rockets with the infra-red heads of homing. This method allows to compare the different systems of defence and estimate general protected of LA.

Arsenyeva O.P.

SEMI-EMPIRICAL MODEL OF TURBULENT HEAT TRANSFER FOR FLUID FLOW IN THE CHANNELS OF CRISS-CROSS FLOW TYPE

This paper proposes a semi-empirical model of turbulent heat transfer for fluid flow in channels of plate heat exchangers. This model is based on the Karman analogy and predicts the parameters of heat transfer for turbulent flow, basing on data for the friction factor on the main corrugated field of the channel in a wide range of Reynolds and Prandtl numbers. The analysis of the adequacy of the model is done by comparison with experimental data and data from the literature.

Anipko O.B., Bol'shich A.A.

**EFFECT OF CHANGES GERONTOLOGICAL POWDER CHARGE A JET DEPTH CHARGES
ON THEIR BALLISTIC AND COMBAT PERFORMANCE**

A method of assessing the impact of changing the definition of the ballistic characteristics to combat efficiency of RSL by sharing the results of theoretical research and passive experiment – the data available about the shooting RSL different periods of storage.