

Vereschaguin M. N., Agunovich I. V. Heat Transfer for Real Contact Area of Rough Surfaces in Two-Roller Fast Melt Hardening

It is shown that the problem of heat transfer between rough surfaces in the process of high-speed melt hardening plays a key role in achieving a required speed of melt quenching. In the process of interaction of rough solid bodies at the stage of melt crystallization frozen metal flows into narrowing cavities between ridges of roughness that in the general case improves heat contact of the bodies and increases heat transfer coefficient. It is established that the coefficient is substantially influenced by the force of roller pressing and rolling speed.

Shablovskii Y. O., Kiselevich V. V. Natural and Induced Gyrotropy of Polymorphous Crystal Dielectrics

Analytical description of natural and induced optical activity of polymorphous crystals is proposed, the expressions for its relation to temperature and external field strength are obtained. Interrelation between critical values of polymorphous gyrotropic crystals is determined.

Kashin Y. A., Zhadan M. I., Kashina R. E. Symmetrical Wing Section with Bifilar Suspension in Homogeneous Flow of Medium

The state of stationary equilibrium of symmetrical wing section flowed by homogeneous flow of liquid or gas and held by two tied together lengths of flexible thread of specified total length is considered. It is shown that generalized coordinates of this aerodynamic system are the angle of attack of the wing and attitude control angle of gravitation and aerodynamic forces resultant with horizon. Formulas are obtained for calculating the parameters of equilibrium state of the systems. The results of numerical experiment for wing section N.A.C.A. 0012 are presented.

Mikhailov M. I. Simulating the Accuracy of Positioning Accessory Multisided Plates in the Housing of a Tool Using Plane Method

The influence of shape, size, manufacturing error and dimensions of accessory multi-sided plates on the accuracy of positioning in the housing of prefabricated metal cutting tool has been studied. The method of datum planes taking end positions is used. The accuracy is determined through the position of the intersection point of datum planes.

Strickel N. I., Liskovich M. I. Manufacturing Radial and Radial Thrust Plain Bearing Parts by Drawing

Analytical dependence for calculating stresses and forces of drawing composite bushings of plain bearings without and with counterpressure is worked out, test check up of design dependence of force during co-drawing of composite bushings of plain bearings is conducted, recommendations on practical use of the work results are worked out.

The process of composite bushing drawing can be recommended for manufacturing radial and radial thrust plain bearing bushings.

Popov V. B., Parkhomenko V. N., Schetnikov A. S. On the Problem of Increasing the Capacity of Technological Path of Grain Harvesting Rotor System KZR-10

Urgent problem of increasing the capacity of technological path of grain harvesting rotor system KZR-10 is considered. The performance of the technological path of KZR-10 is analyzed, its operational advantages and disadvantages are revealed. The reasons preventing from further capacity increase are found, one of them being screw-beating device. Following the study the measures on increasing the capacity of threshing/separating unit and the capacity of transporting system for small size threshed heap are proposed.

Zakharenko V. S., Doroschenko I. V., Pohulyayev M. N. The Study of Harmonic Content of Consumption Current of Automation Electro Mechanical Test Stand Based on Asynchronous-Rectifier Valve Stage

The analysis of harmonic content of consumption current of automation electromechanical test stand based on asynchronous-rectifier stage is considered conducted with the use of simulation model of power part of the stand. Harmonic spectrum of current is presented obtained on the base of numerical analysis of the simulation model developed for the motor having power of 110 kW.

Kourganov V. V. The Method of Calculating Short Circuit Currents after the Transformer with Large Range of Voltage Control

It is shown that the proposed method of calculating short circuit currents after the transformer with voltage regulator $\Delta U_{PIH} = \pm 16\%$ reduces control range of changing the values of minimum and maximum short circuit currents due to more accurate determining transformer short circuit voltage on intermediate taps of the variable voltage regulator (PIH), corresponding to real range of operation voltage variation in 110 kV networks that eventually enables to improve the sensitivity of transformer relay protection means by approximately 10 %.

Zalznii D. I., Shyrovok O. G., Khodanovich N. M., Shoutov A. Y. Mathematical Simulating Thermal Processes in Power Cables with Plastic Insulation

The variant of base model of thermal processes in power cables is considered, necessary design relations for cables with optional number of conductors are derived. Based on experimental studies the adequacy of the model developed is proved. A conclusion is made that with further development the model can be used in software algorithms for devices for continuous diagnosing power cables that will improve operational reliability of power supply systems.

Dobrodei A. O., Poddenezhny E. N., Boiko A. A., Kudina E. F., Semkova G. I. Promising Developments in the Field of Light Emitting Diode Units for Lighting Systems

The review of the problems of solid state lighting with the use of light emitting diodes is presented. The methods of producing ultra-dispersion powders and ceramics in the system of $Y_2O_3-Al_2O_3$ are considered. New variants of the synthesis of luminescent materials for light emitting diodes with white luminescence are worked out and optimized. Spectral luminescent characteristics of powdery and ceramic material samples on the basis of YAG improved and co-improved with ions of cerium (3+), silicon (4+) and manganese (2+) are studied.

Karpenko E. M., Ivanovskaya I. V., Rodsevich N. G. Improving the Flexibility of Pricing Policy for Woodworking Enterprises Due to Applying Market Models of Price Formation

Formation and implementation of pricing policy of the enterprise is one of the most complicated components of activity which is difficult to formalize. Conventional methods of pricing employed in production and economic activity of an enterprise often prove to be unsuitable when it is necessary to predict price changes. Major barrier is a large number of factors determining the price and its dynamics and also the insufficiency of exact information about pricing policy of competitors. In this connection the significance of the studies resulting in not only the conclusions about positive and negative aspects of cost-is-no-object and market price formation methods but also in new proposals on their further improvement objectively increases.

Yegorenkov N. Y., Kazakova E. N., Starodubtsev I. E., Starodubtseva M. N. Topological dynamics of Market Economy

The macroscopic model of market economy as nonlinear dynamic system is suggested in article. It is formalized in the sixth, fifth, fourth, third, second and first power equations. The

equation takes into account the money supply (amount of currency in circulation), circular flow of money, price and amount of goods and of means of production and etc. It is shown that market economy may be consists in several stationary qualitatively different states of stable and unstable equilibrium. The equilibrium state with perfect competition is described by the first power equation.

Ischenko N. S. The Problems of Economic and Information Safety

The paper analyses the background of industrial espionage; the genesis of the system of economic safety, and present day problems of economic safety and also vividly shows that information is the only resource known to people which grows in time but not diminishes. The use of information as the resource opens new possibilities for people. The author draws a conclusion based on his own study that intelligence service concentrates its activity rather in the sphere of global business than in military-political sphere. In connection with this new specialists are required having experience of the operation in the world of business and finance. The attention is concentrated on inadmissibility of isolated consideration of national security problems without taking into account international programs and serious studies on a national level. A thesis is put forward about timely transformations of the national programs taking into consideration international programs available in the spheres of economic and information security.

Gromov V. I. Mathematical Model of Transforming Circulating Capital in the Process of Conducting Transaction

The formalization of dynamic processes of working capital circulation in the process of transaction is given in the paper. Modeling is based on wave representation of financial economic dynamics.