РЕЗЮМЕ/ABSTRACTS

Rogachevsky N. I. Parameters of Singular Points of Involute Gearing Tooth Profile

Algorithms are proposed for exact calculation of rated and limiting values of the parameters of threshold point and the points of starting of modification of tooth point end profile by straight line as well as by arc of a circle. The formulas proposed enable to make more exact pattern of engagement and improve the performance of gearing.

Pashkevich M. F., Pashkevich V. M., Mironova M. N. The Study of Workpiece Displacement under the Action of Forces of Fixing When Basing over the Plane

Contact deformations in the joints «a workpiece – fixing elements» are considered occurring in the process of the workpiece fixing in the tool. The analysis of the works dealing with the study of contact deformations when fixing workpieces in the tools with mounting on various types of support elements is conducted. Design models for determining workpiece displacement under the forces of fixing are considered. Experimental check up and correction of the dependencies considered are conducted. The methods of conducting experimental study of the workpiece displacement under the action of fixing forces when basing over the plane are presented. Empirical relations of displacement in the joints «workpiece – support element of the tool» and fixing forces are presented enabling to determine displacement values and to compare them with theoretical values. They also enable to find respective error of the workpiece fixing in the tool. Design dependencies for correction factor are presented enabling to improve the accuracy of formulas given in technical literature.

Rogachevski S. N. Geometrical Friction in the Engagements of Roll Worm Gear

The algorithm is presented for defining elementary friction torque values on the elements of contact areas of engaging parts of roll worm gears, integral sums of which constituting geometrical torques of friction of working surfaces of the components contacting within areas described by ellipse or rectangle. Mathematical dependences are obtained enabling to evaluate variation of geometrical friction torque values for a pitch of pins (bearings) engagement with helical springs with different directions of turns and direction of rotation in the beginning, at the end and in intermediate position of engagement.

Zhylevich M. I., Aliakhnovich D. G., Yermilay S. V. Calculation Procedure and Computation Algorithm for Stability and Strength Analysis of Multistage Telescopic Hydraulic Cylinders

The problems of strength analysis for the telescopic hydraulic cylinders are considered. The calculation procedure with tension and deflection analysis algorithm adaptable for computerized analysis for every stage of telescopic hydraulic cylinders is presented. Using Delphi programming language a program is developed allowing the user to analyze strength and stability conditions of hydraulic telescopic cylinders in interactive mode.

Kotov A. V., Chaus V. P. Improving the System of Combine Harvester Cleaning during Grain Crops Harvesting on Hillsides

An improved design of the combine harvester cleaning system enabling to efficiently work in the field with longitudinal as well as lateral slope is considered in the paper. The description of drive mechanism of cleaning with automation longitudinal and crosswise leveling of screens is given. Based on KZS-1218 combine harvester taken as an example the results of the study of kinematic condition of the mechanism operation, dynamic imbalance and stress loading of link points are presented.

Musafirova G. Y., Verbishchouk Y. Y. Glues, Putties and Fillings Based on Secondary Polystyrene and Waste Products of Polystyrene Foam

Technological, physical-mechanical and waterproofing characteristics of the materials developed based on secondary polystyrene, polystyrene foam waste products and a mix of solvents such as acetone and hexane in the volumetric relation of 1:1.7 are studied.

The polymeric materials developed have high plasticity and depending on the viscosity obtained can be applied for decorative finishing and eliminating defects, sealing cracks, chippings on wood, concrete and ferroconcrete items. They can be used for making single-component putties, fillings, glues , and also for gluing linoleum, ruberoid, ceramic tile and other construction material to various bases.

Yakubovich A. I., Tarasenko V. E. On the Problem of Calculating Cooling Surface Area of Multi-Row Radiators of «BELARUS» Tractors

The procedure of calculating cooling surface area of the radiator are proposed allowing for heat emission variations by radiator core depth enabling to calculate radiator cooling surface area for the whole standard size line of «BELARUS» tractors. The results of calculating cooling surface area of tractor «BELARUS» radiators are presented and also the calculation of heat emission variation by the radiator core depth of «BELARUS-1523» tractor.

Grountovich N. V., Gorunova Y. O. The Analysis of Electric Power and Fuel Rates at Boiler Houses of Gomel Region

The analysis of electric power and fuel rates by boiler houses of Gomel region using residual oil, firewood, coal, boiler-furnace fuel and brick is conducted. The factors are established influencing the formation of the power and fuel rate values with the purpose of their further reduction.

The structures of boiler houses by Gomel region districts are presented depending on heat productivity and the kind of fuel used. The results obtained enable to define the major consumers of heat energy and the efficiency of using local kinds of fuel in the region.

Lukovnikov V. I., Kozlov A. V., Saveliev V. A., Tolstenkov A. A. Engineering Procedure of Synthesizing Regulator Devices in Automatic Control Systems with Signal Modulation by Time - Multivariate Operational Method

Engineering approach is presented to synthesizing regulator devices in automatic control systems with signal modulation by the time – multivariate operational method. The main point of this approach is numerical simulation of the system with the use of the library of standard time-multivariate dynamic units in MATLAB SIMULINK 5 system. An example of regulator device synthesis for a standard servo system is considered.

Sobolev E. V., Poddenezhny E. N. Multi-Factor Method of Calculating Electric Lighting with the Application of Light-Emitting Diode Light Sources

Based on the existing methods of designing lighting systems a multi-factor method of calculating electric lighting with light-emitting diode light source application is proposed. The method proposed provides the possibility of conducting lighting technology analysis and also of determining economic advisability of the use of a given light emitting diode light source in designing the lighting system considered.

The results of the study contribute to more efficient designing of lighting systems based on light emitting diode light sources. Besides this the method proposed can be employed for optimizing lighting systems designing with the use of all existing light source.

Bolomchouk B. V., Dragun N. P. Quantitative Analysis of the Contents and the Efficiency of Realization of the Machine Building Enterprise Diversification Strategies

Quantitative analysis of the contents of the strategies of diversification and their influence on the efficiency of the performance of machine building enterprises of Gomel is presented in the paper.

A balanced panel is used including the data on 9 machine building enterprises for the period of the years 2004–2008. Major method of analysis is a regression analysis using panel data. The results obtained are original in several aspects. It is established that the implementation of efficient diversification strategy is a significant factor for increasing the returns on assets (by profit over products realization) and the rate of increase of the number of machine building enterprise employees. In addition the growth of efficiency is connected with the growth of manufacturing specialization and diversification of markets, and risks reduction (efficiency value variation) is connected with manufacturing diversification and specialization on a small number of markets. It is established that strategies of diversifications actually realized by the enterprises under study were aimed at optimizing the relation between performance efficiency improvement and risk level connected with this. It is established that higher social and economic efficiency of specialized enterprises in machine building in Belarus is cased by the difficulty of simultaneous increase of horizontal diversification and the degree of similarity of the kinds of activity due to insufficient capital, by vertical diversification increase accompanied by the reduction of efficiency of production resource use and profitability of operation and also by the necessity of performing social functions the enterprises are responsible for.

Karpenko E. M., Yelina N. M. Improving the Efficiency of Quality Control System

There is a current tendency in economy that such a factor as quality plays one of the leading roles in management of manufacturing products and their further realization. In developed countries quality control at the enterprises attracts special attention of all structural divisions which have an influence upon the quality of the products manufactured or services provided. For better interaction and consequently more efficient results various approaches of quality control are developed at the enterprises.

Bondar N. N. The Study of Transport Sector Performance Efficiency Level in the Countries of Europe

The results of the study of the transport sector performance efficiency in the countries of Europe including Belarus, Moldova, Russia and Ukraine based on cluster analysis is presented in the paper. The data obtained allows not only to find out the major factors determining the level of the sector performance efficiency but can be also used as the basis for working out governmental and regional programs of the sector development.

Lizakova R. A., Isaichikova N. I., Berdin A. Y. Control of Producer Price-Formation Policy When Operating with the Units of Commodity Distribution Networks

Organization of realization of goods through the units of the commodity distribution network in the regions is the main form of building trading networks all over the world and it is recognized by all the countries and leading world producers. The consumers should have the possibility of purchasing required products in their region and also the possibility of direct cooperation with producing enterprise. The units of commodity distribution network provide maximum efficient bringing the products of an enterprise to each target customer in each region. The problems connected with the price formation policy encountered in operation with the units of commodity distribution networks are considered in the paper. The pattern of the process of establishing relation between the producer and the unit of commodity distribution network is proposed enabling to accommodate the so called conflicting contractors' interests, this conflict being based on the intention of the producer to sell its products at the highest price and of the intention of the unit of commodity distribution network to gain maximum profit by selling the products to end customer.

The pattern proposed enables to eliminate double interpretation of the agreements reached and thus to avoid potential economic losses of the producer.

The mechanism of interrelation proposed is versatile and can be applied to any producer having a commodity distribution network of its own.

Lapitskaya O. V. Management as Necessary Element of Sustainable Development of the Branches of National Economy

The significance of the science of management is considered and also the forms of governing in different periods till present. Special attention is paid to the system of management in the present-day Belarus in the forestry complex taken as an example. System analysis of the processes of forestry complex management in Belarus and Russia with the use of conventional methods of economic, forestry and ecologic analysis is presented. Advantages and disadvantages of forestry complex management systems in Belarus and Russia are described.