

**Banny V. A., Tsarenko I. V. Radioabsorbing Materials Based on Loaded Polyethylene**

Radioabsorbing materials and electromagnetic screen based on these materials are one of the effective means of solving electromagnetic safety and electromagnetic compatibility problems of radioelectronic equipment. Among the variety of radioabsorbing materials loaded polyethylene based materials hold their own place.

For composite radioabsorbing materials based on polyethylene including various functional dispersed fillers and reinforced with conducting textiles optimum thickness values of the samples are specified and also the levels of filling at which the attenuation of microwave radiation reaches maximum. Radio physical parameters of polymer composite radioabsorbing materials in the range of frequencies of 2,0–27,0 GHz at normal incidence of electromagnetic wave on a sample are evaluated. Using raster electronic microscopy the structure of composite radioabsorbing materials have been studied.

Evaluated by technological and technical-economic parameters the most promising means of radioprotection are radioabsorbing materials based on functionally loaded thermoplastic materials.

Radioabsorbing materials are referred to as double-purpose materials and can be used for making barely visible objects such as flying apparatuses.

**Senko V. I., Goursky E. P. Simulating the Process of Building Up Required Car Stock**

Major line of Belarus railway development is dealing with increasing volume of transportation with ensuring train traffic safety and preservation of cargo transported. To satisfy these conditions it is necessary to supply up-to-date rolling stock for transportation. However this problem connected first of all with car stock ageing is rather urgent at Belarus Railway and needs immediate solution. To work out efficient strategy of reorganization and modernization of rolling stock a scientifically based prediction of car stock need is required. A mathematical model of long term forecast of quantitative characteristics of car stock has been developed and design values of the number of cars of rolling stock for preset forecasting horizon are obtained. The results of the study are taken into consideration and used in working out business-plan of Belarus railway to 2010.

**Scherbakov S. A., Koulgeiko M. P. Pre-Requisites for Automatic Selection of the Diagram of Part Positioning During Machining Operation**

The system of graphical designation and the classification of possible combinations of processing data is proposed as the basis of creating computer database for multiple parts positioning diagrams during machining operation. The methods of stepwise automatic analysis and selection of an optimum positioning diagram in the conditions of multivariant solution of the problem are considered.

**Ostricov O. M. Fields of Wedge Twin Deformation Located at the Surface of the Crystal**

A dislocation mesoscopic model is proposed enabling to analyze deformation of the wedge twin, located at the surface of the crystal. Based on the model a comparative analysis of configuration of field of deformation of the twin located at the surface of the crystal and the twin, located remote from the surface has been conducted.

**Popov V. B., Goloushko P. E., Ivanov A. A., Chaus V. P. The Analysis of Manufacturing Method of Plant Mowing with Rotary Mowing Machines**

Actual problem of selection and employing a definite type of cutting unit for the agricultural machine is considered. The analysis of the performance of two types of cutting units for

different crops is conducted. The advantages and disadvantages of the rotary type cutting unit are defined. The advantages of rotary cutting units operating in preset conditions are shown (for definite agricultural machine types and crop kinds).

**Kiselev M. G., Korzoun P. O., Pavich T. P. Defining the Type of Microrelief of Worked Surface Ensuring Its Largest Area and Volume when Contacting Liquid**

The optimum type of worked surface microrelief ensuring its largest area and volume when contacting liquid is defined. The method of pre-working of the surface is grounded enabling to form the surface microrelief of such a type.

**Pinchouk V. V. The Problem of Structural Synthesis of Modular Control Hydrobloks and the Ways of its Solution**

The absence of scientific principles of modular design of control hydrobloks limits potential possibilities of this priority line. As a result hydrobloks feature increased dimensions, high specific material consumption and power consumption figures, increased time period and costs of designing and bringing production of the articles to a commercial level.

Conventional designing based on such human features as intuition and imagination which haven't been described and analyzed yet can not enable to fundamentally reduce the time period of development and improve control hydroblock quality. Heuristic approach to developing control hydrobloks of technological machines results in their diversity and considerably reduces the efficiency of engineering developments.

The problem of modular design of control hydrobloks can be solved based on a system approach including defining the structure of the system, type-design of connections, defining parameters and the analysis of external conditions.

For the solution of this problem a block diagram is proposed enabling to establish hierarchical sequence of its stages in which basic ideas and principles of block and unit-hierarchical approaches to designing complex engineering systems are used.

**Zakharov A. V., Lebeshkov M. E., Zakharova I. V. Determining Optimum Dynamic Levels during Well Sucker Rod Pumps Operation for Oil Production Based on Statistical Analysis of Oil Field Data**

Oil field data is processed based on which statistical relations for the coefficient of well sucker rod pump unit capacity for five oil bearing horizons are defined.

The relations obtained enable to define actual coefficients of well sucker rod pump capacity at the corresponding dynamic level.

**Solenkov V. V., Briel V. V. Major Relations and the Procedure of Slip Brake Designing in Asynchronous Motor with Built-In Brake Unit**

Major relations and the procedure of slip brake designing in asynchronous motor with built in braking unit are presented. The specific feature of the procedure of designing is its use for slip brakes (clutches) which are built in base asynchronous motor.

ния применительно к требованиям действующих в Республике Беларусь ПУЭ и ПТЭ.

**Sychev A. V., Evminov L. I., Kourganov V. V., Guminsky A. N. On Designing and Operating Microprocessor Units of Relay Protection Means**

The problems connected with introducing microprocessor units of various manufacturers into relay protection means are considered.

The main advantages of applying microprocessor units in relay protection means and also considerable disadvantages revealed in the process of operating microprocessor units of relay protection in the networks and systems of electric power supply area of Gomel are shown.

To ensure maximum technical – economic effect due to employing microprocessor units in relay protection means working out guidelines is proposed for use in designing and operating relay protection units and control relays of electric power stations, networks and electric power supply systems taking into account the requirements of currently effective in the Republic of Belarus Regulations on Electric Wiring and Operational Regulations.

**Poukhalskaya O. Y., Sychev A. V. On Improving the Reliability of Electric Power Supply of Consumers of Agricultural Sphere**

The materials on studying the reliability of power supply of agroindustrial complex consumers powered by electric networks of Gomel rural electric network area are presented. Using the methods developed the indicators of reliability – a number of abrupt de-energizations and average durability of a de-energization for existing patterns of agroindustrial consumers power supply are calculated.

Based on the studies conducted the measures on improving the reliability of consumer power supply are proposed and the evaluation of their efficiency is conducted.

**Grountovich N. V., Gorunova Y. O. The Analysis of Electric Power and Heat Rates at Boiler Houses of the Region**

The analysis of electric power and heat rates at the boiler houses of Gomel region operating on natural gas is conducted. The factor are defined influencing the formation of the rates for the purpose of studying the possibility of applying standards for boiling equipment established by the Department.

**Petoukhova R. V., Zelenskaya O. M. The Necessity of Introducing the Technology of Manufacturing Energy Saving Glasses in the Republic of Belarus**

Substantiation of the necessity of introducing the manufacture of energy saving glasses in the Republic of Belarus on the base of OAO «Gomelsteklo» is conducted. World trends of low emission glass production are considered, the characteristics of multiple glass units of major world manufacturers are presented and heat energy saving due to employing energy saving glass is evaluated

**Kourganov V. V. The Analysis of the Efficiency of Digital Protection with Dependent Response Characteristics**

The problems of improving fast action of maximum current protection of lines and transformers due to applying accelerating element with inversely related response characteristic for digital relays are considered.

**Selitsky V. S. Synergetics and Practical System Management**

A number of urgent problems is defined referred to synergetics domain and connected with the functioning of open social-economic systems. The organization (enterprise) as an economic unity is presented as the system. Synergetic approaches are considered being of dominating importance in the practice of system management. The examples of external disorganizing interference in the system internal environment and the causes of its self-regulating mechanism failure are presented. Practical recommendation are given enabling to organize system management allowing for multivariant nature of achieving the objects based on optimum use of possible synergetic effects.