

ENGINEERING

Usov A.G.*TORSO MODELS OF SHEETS BENDED BY GRIPPERS*

Some aspects of the technique of modeling the bends of heavy elastic thin sheets are considered. The modeling problem is solved by directly minimizing the objective function.

Keywords: *heavy elastic shell, developing surface of tangents, minimization of the objective function, geometric control.*

Rokotov N.V., Bepalova I.M.*STUDY OF UNIFORM DISTRIBUTION OF THE THREAD ALONG THE PACKING ROTATION AXIS DURING WILING*

The distribution of the thread mass in the package along the axis of its rotation is considered. The study was carried out separately for the middle part of the package and end sections. Simple design dependencies for determining mechanical seals are proposed.

Keywords: *packing, density, thread distribution.*

Chizhova E.P., Markovets A.V., Lugantseva T.A.*ANALYTICAL STUDY OF THE KINEMATIC CHARACTERISTICS OF THE FOUR-LINK THREE-LEAD STRUCTURAL GROUP WITH TRANSFERRING PARAMETERS IN THE MECHANISM OF TRANSPORTATION OF MATERIALS OF THE SEWING MACHINE*

We consider the problem of kinematic analysis of a four-link structural group of the third class, which includes a basic link forming kinematic pairs with three links, two links being attached to the basic one by translational kinematic pairs, and one link by a rotational pair. The outer kinematic pairs of the structural group are rotational. An analytical solution to the problem of the position of the links of the structural group is obtained. It is shown that, in the general case, a structural group can have up to four assembly options. Criteria and an algorithm for selecting options for assembling the links of the structural group are proposed. The problem is considered in relation to the mechanisms of transporting materials of sewing machines.

Keywords: *lever mechanism, structural group of the third class, kinematic analysis, assembly method, material transportation mechanism.*

Kostyuk I.V., Kyurya V.P.*COLOR CONTROL IN PACKAGING PRODUCTION BY DEEP PRINTING ON POLYMER MATERIALS WITH NON-STANDARD OPTICAL PROPERTIES*

The paper presents a theoretical analysis and experimental study of the problems associated with ensuring the reliability of color reproduction when reproducing information by intaglio printing. Based on the research results, a procedure for color management was developed when preparing original layouts for printing on multilayer polymer materials.

Keywords: *gravure printing, packaging, multilayer polymer material, optical properties, prepress, color management, digital proofing, color profile, color difference.*

Rokotov N.V., Babkina N.M., Molchanov K.I.*RESEARCH OF THE EFFICIENCY OF THE MECHANISMS OF ELIMINATION OF HYGLUTO FORMATION*

The influence of the mechanisms of elimination of rope formation on the uneven distribution of the thread is considered. The influence of the parameters of the law of variation of the angular velocity of the screw drum on the intensity of the process of rope formation has been studied.

Recommendations are given on the choice of the law of variation of this angular velocity.

Keywords: *packing, rope formation, mechanism for eliminating rope formation, frictional winding.*

T.V. cabbage*RESEARCH OF THE INFLUENCE OF THE COMPOSITION OF A MOISTURIZING SOLUTION ON ITS PERFORMANCE CHARACTERISTICS*

In this work, the choice of the composition of the dampening solution for various variants of the offset printing process has been made; a study of changes in the parameters of the dampening solution from the composition of its components was carried out, and their influence on the working properties of the dampening solution itself and the printing and technical characteristics of the ink was revealed.

Keywords: *dampening solution (ur), composition and parameters of ur, performance of ur, offset printing process, printing ink / paper / form, quality indicators ur.*

Kostyuk I.V.

METHODS FOR INCREASING THE REPRODUCTION POTENTIAL OF TONE COLOR PRINTING

The work systematizes various methods of expanding the reproductive capabilities of tone color printing; selected among them the most technologically advanced and relevant for the printing industry (printing using an arbitrary set of special colors of mixed paints and the use of irregular screening technology); the methods of determining the effectiveness of the application of the selected technologies were selected.

Keywords: *reproductive potential, tone color printing, color gamut, process colors, special colors, irregular screening.*

Rokotov N.V., Smelkova V.V., Bepalova I.M.

SIMULATION OF THE PROCESS OF STEAM FORMATION WHILE WINDING THREAD

A mathematical model is proposed that describes the process of rope formation during frictional winding. The results of modeling the process of rope formation are presented. The simulation results for the package with an increase in the radius of the winding are presented.

Keywords: *packing, frictional winding, rope formation, packing simulation.*

Tropets V.A.

STUDY OF THE INFLUENCE OF THE OPTICAL PROPERTIES OF PAPER ON THE OCCURRENCE OF A DEFECT OF "CANDLING-PUNCHING OF PAINT" ON THE BACK SIDE OF THE INKJET PRINT

The article presents the results of a study of the influence of the optical properties of printing paper on the occurrence of the defect "through-penetration of ink" on the reverse side of an inkjet print.

Six samples of paper of the same weight, sealed by inkjet printing, were used as test objects.

Evaluation of paper inhomogeneity was carried out by reflectometry using reflection equipment.

The degree of "glow-penetration of paint" to the reverse side was assessed using standard methods.

Keywords: *paper, heterogeneity, optical density, transillumination-ink penetration, inkjet printing.*

Kostyuk I.V.

ASSESSMENT OF REPRODUCTION POSSIBILITIES OF OFFSET INTENSIVE PAINTS

The work is devoted to the study of the technology of printing with intensive colors, which is relevant for printing houses, ink suppliers and even publishers, as one of the simplest ways to expand the color gamut of printed synthesis.

Keywords: *offset printing, color gamut, intense colors, spectral color purity, achromaticity, color tone shift, prepress.*

Chizhova E.P., Markovets A.V., Anashkina E.V., Lugantseva T.A.

ANALYSIS OF THE KINEMATIC CHARACTERISTICS OF A TWO-LINK TWO-LEAD STRUCTURAL GROUP WITH A CURVILINEAR GUIDE OF THE KINEMATIC PAIR

The article considers the problem of determining the kinematic characteristics of a two-link two-flood structural group of class II of the second order with two rotational and one external translational kinematic pairs. A distinctive feature of the considered structural group is that the

guide of the translational kinematic pair is made in the form of a circular arc. Analytical expressions are obtained for solving the problem of the position of the links of the group and

determining the first and second transfer functions of the angular and linear coordinates of the links. A criterion for determining the methods of assembling the links of the structural group is

proposed. Using the example of a differential mechanism for transporting materials of a sewing machine, containing the indicated structural group, the problem of kinematic analysis is solved.

Shown

Keywords: *structural group, curvilinear guide, kinematic analysis, assembly method, differential*

mechanism for transporting materials, sewing machine.

ORGANIZATION OF PRODUCTION. STANDARDIZATION QUALITY MANAGEMENT

Nikitina L.N., Chunaev A.V., Shikov A.N.

PROBLEMS OF STAFFING AND TRAINING IN TEXTILE AND LIGHT INDUSTRIES

The article deals with the problems of staffing and advanced training at enterprises of the textile and light industry. The main stages of the creation of modern corporate personnel training systems have been investigated. An original concept of training and staffing based on individual learning trajectories based on a competency model is proposed.

Keywords: *personnel certification, individual training trajectory, staffing, corporate training, competence potential, professional development, industrial enterprise, personnel self-development.*

Ivakin Ya.A., Semenova E.G., Morozov S.A., Smirnova M.G.

HIERARCHY OF QUALITY ASSESSMENT INDICATORS OF SOFTWARE AND HARDWARE COMPLEXES OF DATA PROCESSING AND STORAGE CENTERS

The article considers the first stage of the method for assessing the quality of software and hardware complexes of data processing and storage centers - the synthesis of the hierarchy of quality assessment indicators. The article presents the aggregated indicators of the quality assessment network tree hierarchy. The mathematical form of summary and integral indicators in a hierarchical network for assessing the quality of software and hardware complexes of data processing and storage centers is presented.

Keywords: *quality assessment indicators, integral quality indicator, software and hardware systems, data processing and storage centers.*

Kasatkin B.P.

IMPLEMENTATION OF THE STRATEGY OF DIVERSIFICATION OF ENTREPRENEURIAL RISKS OF ENTERPRISES TAKING INTO ACCOUNT STATE SUPPORT PROGRAMS FOR INDUSTRIAL ENTREPRENEURIAL PROJECTS

The article is devoted to the issues of organizing and structuring the processes of diversification of entrepreneurial risks in the process of implementing industrial entrepreneurial projects. The article offers options for the concept and methodology for choosing strategies for optimizing the management of entrepreneurial risks in industry.

Keywords: *risk, risk management, risk diversification, technical risks, administrative risks, risk diversification strategy, public-private partnership.*

Treiman M.G.

RESEARCH OF ASPECTS OF PROCESSING OF WASTE WATER SEDIMENTS AT RESOURCE SUPPLYING ENTERPRISES

The article discusses the problem of wastewater sludge processing: prospects and directions in which further development of processing is possible, as well as author's proposals developed on the example of the enterprise SUE "Vodokanal of St. , screening, chemical processing, granulometry. The author's assessment of the proposed scheme is given from economic, environmental and social positions. The developments proposed by the author are new design and technical solutions. For a resource-supplying organization, the solution to this problem will allow: reducing the cost of depositing precipitation at landfills, gaining additional profit by processing precipitation and improving the environmental situation in the region.

Keywords: *organic component of sludge, sewage sludge treatment plant, utilization, resource-supplying enterprises, economic effect.*

Nikitina L.N., Salamatova A.N., Mkrtchyan R.V.

DEVELOPMENT OF OPTIMIZATION SOLUTIONS IN THE SYSTEM OF FUNCTIONING OF INDUSTRIAL ENTERPRISES

The article discusses methodological approaches to assessing the quality of the functioning of the main business processes of enterprises involved in the waste processing industry. The most important criteria for the quality of transportation of solid household waste are considered in order to determine the current and set the target level of efficiency of the routes performed, which ensures the optimal format for the functioning of an industrial enterprise.

Keywords: *optimization, quality of functioning, business process, efficiency, utilization enterprise,*

transportation, rhythm of routes, target level.

Pereborova N.V., Klimova N.S., Kobyakova Yu.V., Abramova I.V.

SIMULATION OF COMPLEX REGIMES OF DEFORMATION OF POLYMER TEXTILE MATERIALS AS A TOOL FOR ASSESSING AND IMPROVING THEIR FUNCTIONAL AND OPERATIONAL PROPERTIES

Original techniques for modeling complex operating modes of polymer textile materials are proposed. Computerization of the developed techniques makes it possible to simplify the subsequent prediction of the specified operating modes of these materials.

Keywords: *organization of production, polymers, textile materials, viscoelasticity, deformation processes, mathematical modeling, relaxation, computer forecasting.*

Kasatkin B.P.

APPLICATION OF MATHEMATICAL METHODS AND METHODS OF SYSTEM ANALYSIS .. IN THE RISK DIVERSIFICATION MANAGEMENT SYSTEM OF INDUSTRIAL ENTERPRISES

The risk management process consists of risk identification, analysis, assessment and treatment. An integral assessment of each risk is calculated, risks are ranked, and risk maps and diagrams are drawn up. Depending on the risk factors, risks can be divided into risks of the first, second, third and subsequent levels. Knowing the likelihood of risks occurring at a certain level, it is possible to calculate the likelihood of risks for the entire system. Risk situations develop according to certain scenarios with different probabilities. The choice of the scenario with the most preferred outcome is the goal of working on the risks of the risk management system. The article proposes an algorithm for creating a risk management system at an enterprise, taking into account the formation of a policy, the organization of the structure of risk management, the issue of creating expert groups and the preparation of regulatory documents, such as the risk management standard. The process of making decisions and influencing risks is also described, options for assessing and analyzing entrepreneurial risks are proposed.

Keywords: *risk, risk management, risk diversification, correlation and regression analysis, risk distribution, graphical interpretation of risks.*

Tamisanont Ch., Nikitina L.N.

ASSESSMENT OF THE CURRENT STATE OF THE TEXTILE AND SEWING INDUSTRY OF THAILAND

The purpose of this study, which describes the mechanism for increasing investment attractiveness and how to attract innovation to the textile and clothing industry in Thailand, is to study the external factors that influence these processes. The author takes the competitive rhombus model of Professor Michael Y. Porter as a theoretical basis. Taking into account the specifics of the development of the country's textile and clothing industry at the present stage, the key provisions of this model are as follows: 1. Factor conditions: lack of high-quality raw materials and extreme dependence on foreign raw materials; lack of engineers and other technical specialists; dependence on foreign equipment, 2. Related and supporting industries: low level of inter- and intra-industry interaction of enterprises for the production of textile and clothing products; low level of technological development of Thai companies in related and supporting industries, 3. Demand conditions: high domestic demand; not a wide range of products on the domestic market, with the exception of light summer casual clothing; high demand for silk fabrics, 4. Business strategy in a competitive environment: high competition between Thai manufacturers in the domestic market.

Keywords: *textile and clothing industry in thailand, competitive diamond theory.*

Ivakin Ya.A., Semenova E.G., Morozov S.A., Smirnova M.G.

WEIGHING THE HIERARCHY OF THE QUALITY ASSESSMENT INDICATORS OF THE SOFTWARE AND HARDWARE COMPLEXES

The article considers the second stage of the method for assessing the quality of software and hardware complexes of data processing and storage centers - weighing the hierarchy of quality assessment indicators. The article presents the structure of the hierarchical quality assessment network. The procedure of weighing elementary and summary indicators of the quality of software and hardware complexes of Data-centers is presented.

Keywords: *hierarchy of quality assessment indicators, a network of quality assessment indicators, software and hardware systems, data centers.*

Sirotnina L.K.

ENSURING RHYTHMIC AND ECONOMIC PRODUCTION IN THE SYSTEM OF OPERATIONAL SUPPLY AND STOCK MANAGEMENT

The article is devoted to the problem of ensuring the flexibility of operational production management and control through the implementation of the principles of rhythm and efficiency of production processes. The key concepts for solving the problem are stated. Practical recommendations are offered. Conclusions are formulated.

Keywords: *production capacity, inventory management, rhythm of processes, process reengineering, relationship reengineering, production integration.*

Tamisanont Ch., Nikitina L.N.

DIRECTIONS OF DEVELOPMENT OF THE TEXTILE AND SEWING INDUSTRY OF THAILAND

The purpose of this study is to study external factors that influence the mechanism of increasing investment attractiveness and ways to attract innovation to the textile and clothing industry in Thailand. As a theoretical basis, the author takes the model of a competitive diamond by Professor Michael Y. Porter [1], which includes factor conditions, conditions of inter-industry interaction, demand conditions and business strategy in a competitive environment. Brief description of the specifics of the development of the textile and clothing industry in Thailand at the present stage in according to this model will look like this: 1. Factor conditions: lack of high-quality raw materials and extreme dependence on foreign raw materials; lack of engineers and other technical specialists; dependence on foreign equipment 2. Related and supporting industries: low level of inter- and intra-industry interaction of enterprises for the production of textile and clothing products; low level of technological development of Thai companies in related and supporting industries. 3. Demand conditions: strong domestic demand; insufficiently wide range of products on the domestic market, with the exception of light summer casual clothing; high demand for silk fabrics. 4. Business strategy in a competitive environment: high competition between Thai manufacturers in the domestic market [2]. presented on the domestic market, with the exception of light summer casual clothing; high demand for silk fabrics. 4. Business strategy in a competitive environment: high competition between Thai manufacturers in the domestic market [2]. presented on the domestic market, with the exception of light summer casual clothing; high demand for silk fabrics. 4. Business strategy in a competitive environment: high competition between Thai manufacturers in the domestic market [2].

Keywords: *textile, clothing industry in thailand, theory of the competitive diamond, related and supporting industries, business strategy.*

Pereborova N.V., Klimova N.S., Kobyakova Yu.V., Abramova I.V.

STUDY OF DEFORMATION PROPERTIES OF ARAMIDE TEXTILE MATERIALS WITH THE PURPOSE OF IMPROVING THEIR FUNCTIONAL AND OPERATIONAL CHARACTERISTICS

The application of the methods of system analysis and mathematical modeling to study the deformation properties of aramid textile materials of complex structure in order to improve their functional and operational characteristics. Computerization of predicting the deformation processes of these materials allows for a qualitative comparative analysis and optimal technological selection of aramid materials of complex macrostructure in terms of qualitative performance characteristics.

Keywords: *organization of production, aramid materials, viscoelasticity, deformation processes, mathematical modeling, system analysis, computer forecasting.*

Kasatkin B.P.

RISK DIVERSIFICATION MANAGEMENT METHOD FOR INDUSTRIAL ENTREPRENEURIAL PROJECTS BASED ON THE "RISK PYRAMID" METHOD AND THE "RISK LADDER" METHOD

The article proposes an algorithm for creating a risk diversification management system at an enterprise, taking into account the formation of policy, the organization of the structure of risk management, issues of management methodology and diversification of risks, such as the risk pyramid and the risk ladder. It also describes the decision-making process itself and the degree of influence on the risks of the enterprise, offers options for assessing and analyzing business risks.

Keywords: *risk, risk management, risk diversification, risk pyramid, risk ladder, risk distribution, graphical interpretation of risks.*

Silantyeva E.G.

OPTIMIZATION OF INNOVATIVE PRODUCTION PROCESSES BY TECHNOLOGY TYPES

The article presents the results of a study of the optimization of production processes based on the property complex by types of technologies.

Keywords: *production process, life cycle, property complex, investments, technology.*

CHEMICAL SCIENCES

Lipin V.A., Sustavova T.A., Gorkina T.E., Grebennikov S.F., Mikhailovskaya A.P.

INCREASING THE EFFICIENCY OF FLOCCULANTS IN Pulp and Paper

The effect of strong electrolyte additives on the conformational state of macromolecules of flocculants of various nature has been studied. It was found that the addition of NaCl has a positive effect on the efficiency of anionic and non-ionic flocculants, while the efficiency of anionic flocculants is influenced by a salt-free solution. Principles of scientifically grounded choice of flocculants for the pulp and paper industry are proposed.

Keywords: *flocculant, dispersion medium, viscosity, macromolecule, polyelectrolyte swelli*

