

## **Section I**

### **Waterways, ports and hydraulic engineering constructions**

**Strelnikov D.D.**

The rating of terminal logistics chains

Key words: *rating the logistics chain, the ratio of the predicted performance of the graph-model of a cargo area, the process-oriented approach.*

*This article considers the functioning of the cargo terminal in terms of a process-oriented approach. The proposed method of rating terminal logistics chains based on the factors of time and cost of execution of the terminal operations.*

## **Section II**

### **Informatics, management systems, telecommunications and radiolocation**

**Kogan D.I., Fedosenko Yu.S., Handurin D.A.**

Problem definition and solving algorithms for assignment problem applied to task of vehicle trains assembling

Keywords: *assignment problem, additive criterion, minimax criterion, maximin criterion, forbidden elements, incomplete assignment.*

*The modifications of the assignment problem defined by the logistical applications are considered, including the assignment problem with forbidden elements and the task where incomplete assignments are allowed. Methods for solving them are described.*

**Losev V.V., Kornilov A.V.**

A fusion of the measurement data from the inertial unit and the air data computer system being a part of the integrated standby instrument system

Key words: *integrated standby instrument system, integrated data processing, Kalman filter*

*This work outlines the integrated data processing procedure for integrated standby instrument system measurement data that allows enhancing the determination accuracy for the orientation parameters. The proposed algorithm and the modeling results that verify its efficiency are given.*

**Petrinin V.V., Neevin S.M., Dushev S.A., Malinovsky I.V., Bankrutenko V.V., Onishchuk I.N., Golubev A.Yu.**

Logistic support system for rp articles. Development of methods and technologies to improve its effectiveness

Key words: *integrated logistic support, product life cycle, maintenance and repair, PDM, PLM-systems*

*Experience of program product development and application is analyzed within information support of product life cycle (PLC) stages with emphasis on the maintenance and repair stage*

## **Section III**

### **Reliability and resource in transport engineering**

**Tarnopolskaya T.I., Sidorova O.V.**

The study of stationary motions of multi-link trucks, in nonlinear statement

Key words: *differential equations, method of continuation on a parameter, steady state, multi-link road train.*

*This article considers the dynamic behavior of multilink trucks with a large set of control parameters. The stationary states of a three-link vehicle modeled by a system of differential equations are found by means of a differential-geometric method. The solution corresponds to the special points in the phase space of control parameters at various angles of rotation of the drive wheels.*

**Yablokov A.S., Volkov A.I., Shishulin D.N.**

Evaluation of the stress-strain state and the fatigue life of metal floating crane KPL 16–30 on its actual , operational loading

Keywords: *metalwork, macrocrack, mechanic damaged the environment, floating crane, micro-defects, life, strength, cycle fatigue.*

*To predict a residual resource and determining the generated Welded beam metalworks boom floating crane, lifting capacity of 16 tonnes on the basis of methods of the theory of mechanics of the damaged environment, while strengthening the process degradate considered steel material on the mechanism of high-cycle fatigue, evaluated the kinetics of the stress-strain state hazardous areas considered jib metal floating and a forecast of its residual resource boom on his actual operational loading.*

## **Section IV**

### **Shipbuilding, ship repair, and ecological safety of the ship**

**Burmistrov E.G., Mikheyeva T.A.**

The question of the implementation of automated project management systems in the shipbuilding and ship repair enterprises

*Key words: shipbuilding and ship repair facilities (shipyards), automation systems management and planning, project management in enterprises, the effectiveness of project management systems, information technology.*

*In the article the questions of the feasibility of implementing automated control systems projects and production for domestic sudostroy-tional and ship-repair enterprises. Provides General guidelines for the introduction and adaptation of effective project management systems with specific companies.*

**Glebov V.V., Blinov V.M., Repin F.F.**

Mechanisms of structural hardening of nitrogen-containing austenitic steel of the type 05X22AГ14H7M

*Key words: high nitrogen steels, hardening mechanism, solid-solution hardening, strengthening grain boundaries, austenite.*

*The mechanisms of solid-solution and grain-boundary hardening of high-strength austenitic steels by nitrogen atoms are considered. The experimental and calculated values of the strength characteristics are compared with the nitrogen content. It is shown that solid-solution hardening is the main mechanism for increasing the strength of steel.*

**Gorbachenko E.O., Tsvetkov Yu.N.**

Prediction of the incubation period in cavitation wear of ship propeller blades using the surface profile measurements

*Key words: cavitation wear, screw propeller, incubation period, arithmetic mean deviation of the assessed profile.*

*The measurements of the height of asperities were carried out within the zone of cavitation wear on the ship propeller blades. It is shown that in moving from the center of the cavitation wear zone it is possible to find the point where the surface condition corresponds to incubation period termination. This point is situated on the boundary between the cold hardening zone and the zone of material removal. The procedure is developed to predict the incubation period duration, based on the use of the asperity height value corresponding to the end of the incubation period in cavitation attack on the surface.*

**Kesler A.A.**

About the form of identification of shipping characteristics

*Key words: Ship, propeller, main engine, calculation diagrams, running characteristics*

*The process of using the calculation diagrams for propeller screws and the possibility of simplifying it by means of auxiliary diagrams are considered. The possibility of decreasing calculations in determining the action curves of a screw is proved, as well as the possibility of graphically obtaining the boundary line of the working zone on the field of the screw action curves in terms of power and on the field of action curves by focusing*

**Kupaltseva E.V., Ronnov E.P.**

Mathematical model of optimization the inland passenger vessels

*Key words: passenger ship, mathematical model, optimization, criterion of economic efficiency.*

*The recent increased interest in «small» river passenger vessels. This is especially true of those areas into the country, where there are extensive inland waterways, where an important role in the development of passenger transport is water transport. Method optimization selection of key elements and characteristics for such vessels in the early stages of design is considered. Computer programming is applied, which greatly reduces the complexity of design work and provides a selection of the most efficient, practical option.*

**Mizgirev D.S., Kurnikov A.S.**

The design of the digester as part of the marine systems IWMS

*Keywords: the digester, biogas, biogas plant, renewable energy, marine structures, methods of calculation.*

*The article discusses the existing designs of digesters of biogas plants for anaerobic digestion of sewage sludge and food waste, the possibility of their use, test results, design features and use on vessels of complex processing of waste (IWMS).*

**Ronnov E.P., Kochnev Yu.A.**

Graphic method of representation of the optimal elements of the tanker of mixed (river-sea) navigation

Key words: *tanker, mathematical model, optimization.*

*The mathematical model of optimization of the main dimensions of the tanker of mixed (river-sea) navigation. A feature of the model is the direct calculation of the mass of the metal case, a detailed calculation of the propulsion of the vessel. Simplified graphic method of determining the main dimensions for conventional line operation.*

**Etin V.L., Vas'kin S.V., Dmitrieva M.S.**

The choice of the main characteristics of the ship ecological purpose as part of out-of-ship environmental technologies

Keywords: *out-of-ship treatment, prevention of water pollution, ship wastes, ship design for ecological purpose*

*One aspect of water pollution is the operation of ships. To prevent contamination of water bodies use different ways of treating ship generated waste. One of them is the use of out-of-ship environmental assets, including ships-collectors and the ships integrated waste. Currently there is no methods of designing such vessels, taking into account the features used in environmental equipment and technology, as well as the intensity of traffic in the area of operation.*

## **Section V**

### **Financial and accounting-analytical problems of the modern economy**

**Veselov G.V., Ivanov V.M., Mineev V.I.**

Problems and mechanism for realizing the introduction of gas engine fuel on an aqueous trans-port

Keywords: *natural gas, gas engine fuel, water transport, competitiveness, efficiency.*

*The article examines: the world experience in the use of natural gas on the trans-port, measures of state support and stimulation of the market of gas-powered fuel in the world, problems and prospects for its use in river transport.*

**Vorobyev A.V., Upadysheva E.V.**

The analysis of the nature and significance of budget planning and forecasting in the current economic conditions

Keywords: *plan, forecast, planning, forecasting, budget, budget planning, budget forecasting, social and economic development.*

*The article deals with the definitions of «plan» and «forecast», which had been given in domestic and foreign economic literature, the nuances and differences of this definitions have been issued, and new definitions of budget planning and budget forecasting, adapted to modern economic conditions, have been given, the importance of budget plans and forecasts accuracy for effective budget, social and economic policy has been justified.*

**Markova N.A., Popandopulo I.D.**

Analysis of the causes and management of accounts receivable: Russian and foreign experience

Key words: *accounts receivable, analysis, management of accounts receivable, structure, dynamics, regions, factoring operations, discounts.*

*The article deals with the structure and dynamics of the indebtedness indicator of Russian organizations; analysis of statistical data on the topic; determine the causes and problems of managing receivables in Russia and abroad*

## **Section VI**

### **Economics, logistics and transport management**

**Nichiporouk A.O.**

Experience and problems of creation of transport and logistic systems of cargo delivery

Keywords: *freight transportation, quality indicators.*

*The structure and elements of logistic systems, experience and features of their creation on transport are considered. The concept is formulated and the structural composition is offered, tasks and the directions of researches in the field of development of methodical quality assurance and efficiency of functioning of transport and logistic systems are designated.*

**Platov J.I., Nikulina M.V.**

Estimation of efficiency of information technologies on inland shipping

Keywords: *information technology, increase of efficiency of inland shipping, operative costs, total cost of ownership*

*The article discusses the problem of weak introduction of analytical information technologies in the practice of shipping companies, which optimize production processes and aimed at increasing the efficiency of shipping enterprises, outlines some innovative methodological approaches to assessing the efficiency of information technology at inland shipping.*

**Telegin A.I., Frolova E.V.**

The concept of ensuring delivery to consumers of the standard river sand extracted and transported by the volga ports

Keywords: *freight transportation, river transport, nonmetallic construction materials.*

*The main stages of preparation for production and production of nonmetallic building materials on river transport are considered, the scheme considering production and receipt of materials, the corresponding TU-212 and GOST 8736 is formulated. Analytical delivery patterns of nonmetallic building materials taking into account the quality required by consumers, structures of the delivered standard sand and gravel are offered.*

**Tsverov V.V., Saharova V.V.**

The ensuring the reliability of fulfilment the liability in order management in organization

Keywords: *order management, logistics process, flexibility, period order fulfilment of order.*

*This article considers the possibility of applying the methods used in flexible manufacturing systems to managing order in design and construction organizations. There have been revealed the factors of divergent influences in order management and the proposed a tool for ensuring observation of the deadlines*

## **Section VII**

### **Operation of water transport, navigation and safety of navigation**

**Tokarev P.N.**

Method of determination hydrodynamic efforts on the ships hull with indirect flat traffic

Keywords: *ship's hull angles of drift, radius of curvature, positional and damping hydrodynamic coefficients, method of determination*

*This article shows the existing methods of determine the hydrodynamic forces on the ship's hull of the maneuvering vessel. It is shown that at the present time there is no method allowing calculation of hydrodynamic forces on the hull of the vessel with arbitrary plane motion. Based on the analysis and studies carried out, a method has been developed that makes it possible to calculate the indicated forces in the entire range of changes in the angles of drift and the radius of rotation of the center of mass of the vessel, including rotation in place.*

**Churin M.U.**

Amendment of the dynamical squats calculation method of ships in shalow water conditions on currents

Keyword: *method of calculation, dynamic squat, shallow water, ship's speed, current, amendment*

*In this article it's considered the question of squat of river fleet ships, when proceeding in shallow water on current. It's carry out analysis of existing method of dynamic squat's calculation and it's offered amendment for dynamic squat's calculation of river ships on current.*

## **Section VIII**

### **Operation of ship power equipment**

**Arefyev N.N.**

Justification of parameters choice for the dredging system pump of the dredge

Key words: *dredging, hydromechanization, dredger, soil acceptor, hydraulic loosening, flooded jet.*

*The article considers the results of theoretical studies of a flooded jet flowing in the loosening of soil. There are given recommendations for pump pressure and capacity choosing to increase the efficiency of hydro-loosening system.*

**Sugakov V.G., Malyshev Y.S., Yagzhov I.I.**

Three-Channel sensor with the function of reconstructive diagnostic

Keywords: *digital relay, integrity and correction of the output information, reconstructive diagnostic.*

*The article describes a three-channel speed transducer which permits to increase high-speed performance, generator frequency control accuracy and output information validity by including reconstructive diagnostic operations into a scheme. It also describes a digital sensor scheme and signals representations on the main scheme elements.*

## **Section IX**

### **Actual problems of law and state**

**Kravets I.P.**

Legal regulation of the state migration policy

Key words: *migration legislation, threat to national security, non-legal migration, problems of state migration policy.*

*The article examines the issues of the state of the national security of the Russian Federation in the migration sphere, as well as the problems of the state migration policy and the counteraction to illegal migration.*

**Telegus A.V., Butchenko V.N.**

Taxation of incomes of subjects of a transport infrastructure, derived from the sale of shipping vehicles

Keywords: *the tax to incomes of physical persons, selling shipping vehicles*

*From 2016 in the Russian Federation has substantially changed the rules for the taxation the tax to incomes of physical persons of the income (the personal income tax) received by the owners of the property when it is sold. Explanations official authorities dealt with the taxation of personal income tax only residential property or land, but not sea or river transport. To fill the specified legal gap designed the study.*

**Chih N.V., Ermakov A.E.**

Problems of legal regulation of activity of federal treasury

Key words: *Federal Treasury, legal regulation, problems.*

*The article touches upon theoretical and practical problems associated with the activities of the Federal Treasury and the problems of its legal regulation.*

## **Section X**

### **Philosophy. Society/. Culture**

**Ngoma-Lokhuolo J.G., Kosheleva A.E.**

Political-philosophical dimension of foreign policy China in Africa

Key words: *political and philosophical understanding, foreign policy, Maoism, China, «soft power»*

*The article is devoted to political and philosophical aspects of China's foreign policy in Africa. Identified the main features of the policy of «soft power» of China. Analyzed a number of manifestations of the penetration of China into the African continent.*

**Pakhomova E.A., Silchuk O.Y., Fomenkova E.P.**

The experience of the organization of aesthetic education in GRU I.P. Kulibina (the choir)

Key words: *L.N. Morenova, teacher, Gorky river College I.P. Kulibin, choral conducting, Patriotic education, aesthetic education.*

*The article is devoted to experience of organization of extracurricular work with students in the GRU them. I. P. Kulibin, for example, the activities of the choir.*