DEVELOPMENT OF THE MODEL OF THE CHANGE IN THE PASSENGER TRANSPORT FATIGUE WHEN APPROACHING STOPPING POINTS OF SUBURBAN BUS ROUTES (p. 4-9)

Tatyana Grigorova, Yuri Davidich, Victor Dolya

The analysis of the methods of passenger transportation organization on suburban routes was performed. It was found that the transportation parameters determine the passenger transport fatigue, which in turn affects the human labor productivity. To assess the level of passenger transport fatigue in suburban traffic, it was proposed to use the activity index of the passenger regulatory systems. The technique of a full-scale survey of parameters of passengers when approaching the stopping points of suburban routes was given. A statistical analysis of the change in the activity index of regulatory systems when approaching the stopping points of suburban routes was carried out. The influence of the passenger's age, speed, and duration of the approach to a stop on the value of the activity index of the passenger regulatory systems was determined. A regression model of the change in the activity index of the passenger regulatory systems when approaching a stop was developed. The evaluation of the statistical significance of the model was conducted and the conclusion on the admissibility of its use in solving problems of the passenger transportation organization on suburban routes was drawn.

Keywords: transport service, suburban traffic, transport fatigue, speed, duration of approach.

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DEVELOPMENT OF TECHNIQUES TO OPTIMIZE THE TECHNICAL PARAMETERS OF TRANSPORT CARGO COMPLEXES (p. 9-14)

Andiy Okorokov

Transition to a competitive environment and open service market in the transport sector has high requirements for all aspects of its functioning. To ensure an adequate level of competitiveness, rail transport should provide the customers with the most efficient and low-cost services in both transportation, and cargo handling, which is impossible without efficient technical equipment of cargo complexes.

As a result of the research, the dependences of the value of the admissible efficiency criterion - specific profit of TPC enterprises per unit of value of cargo complex fixed assets, on the amount of production resources - shunting locomotives, cargo handling machines and sizes of storage facilities were obtained.

The results have shown the presence of a complex polynomial dependence of the operating costs of the shunting locomotives and mechanisms in the sphere of cargo operations on the number of service units. Optimum size of storage facilities stepwise depends on the car traffic volume intensity.

Using the obtained dependences allows to optimize the technical equipment of existing cargo complexes and set their optimal process parameters at the design and equipping stage.

Keywords: costs, production resources, cargo complex, optimization, efficiency criterion, functional dependence, simulation model.

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OBJECT CONFIGURATION MANAGEMENT PROCESS (p. 15-25)

Sergiy Rudnitskyy

Most of the studies in the area of configuration management (CM) are aimed at processes that control the consistency of tangible objects in a particular subject area. However, in the project management practice, there are problems that require consistency support of intangible objects, such as management processes, risks, work, team, procurement, etc., as well as the whole project. To solve this problem, it is necessary to have a single consistent, conceptual framework, based on which, it is possible to develop and describe the CM process of any object, regardless of the subject area. An attempt to develop a conceptual framework, based on the aggregation of the CM processes of tangible objects of various subject areas and the CM process of the project was made in the paper. In particular, it was found that the justification for the existence of a generalized CM process is the need to avoid damage (of any nature) from the inconsistency of the controlled object. This inconsistency may occur only if there is the possibility of uncontrolled changes in the external or internal environment of the object. It was determined that all actions to support the object consistency are aimed at creating conditions for the cause-effect relation between the requirements (of any nature) to the object and the object itself. Also, the goal, objectives and structure of the generalized CM process were identified, and its optimization problem based on performance indicators such as the expected value and the expected damage was formulated.

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REFINING THE MODELS OF PERFORMING SERVICE TESTS OF UPGRADED LOCOMOTIVES (p. 26-31)

Eduard Tartakovskyi, Anatoliy Falendysh, Artem Zinkivskyi, Sergey Mikheev

The paper analyzes the situation on updating the existing fleet of locomotives and start-traction rolling stock on the railways of Ukraine being modernized after the extension of its life in terms of reduction in finance industry. Solving the problem of operational tests of the modernized traction rolling stock makes it possible to reduce the cost of their implementation by reducing the range of control parameters and test personnel involved. The survey found that to identify a particular range of operating parameters modernized traction rolling stock which defines the purpose of testing it is necessary to check this list of operating parameters that will meet its objective. To be able to change the accuracy of test results and the value of them it is possible to change the number of control parameters. An improved method of operating tests makes it possible to more quickly perform testing with limited funding opportunities to accumulate funds for the purchase of modern rolling stock.

Keywords: locomotive fleet renewal, modernization of locomotives, operational testing, classification of tests.

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DEVELOPMENT OF THE DYNAMIC MODEL OF PRODUCTION QUALITY DURING MANUFACTURE (p. 32-37)

Elena Murahivska-Pechenegska, Nikolay Riabchykov

The study sets and solves the problem of finding out explicit dependencies of garment products quality on the production stage by means of developing algorithms for constructing a system of determiners of the overall quality of a batch of products. We have revealed the basic types of quality indicators distribution for various stages of production.

The paper describes a solution of the urgent task of developing a dynamic model that determines quality on the basis of expert research indicators of the quality of the light industry products by taking into account the actual distribution of these parameters at different stages of the process.

Furthermore, the study solves the problem of finding out explicit dependencies of garment products quality on the production stage by means of developing algorithms for constructing a system of determiners of the overall quality of a batch of products. We have revealed that production quality indicators may have different distributions depending on the level of production. Different stages of manufacturing have been found determinant for normal, gamma-type, and reverse gamma distribution. A conclusion has been made on the fundamental differences of processing the results of quality indicators for different levels of production stages while using different statistical distributions.

Keywords: products quality, production stage, distribution of parameters, dynamics of change, expert evaluation.

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ANALYSIS OF APPROACHES TO CONSTRUCTING BI-ADAPTIVE MANAGEMENT SYSTEMS OF PROJECT-ORIENTED ENTERPRISES (p. 38-42)

Yuriy Teslya, Alexander Timinsky

Approaches to constructing project management systems relatively used standards were investigated. Advantages and disadvantages of each approach were identified. The main principles, underlying the project management system operation were formulated. As a result of studies, it was found that the mutual adaptability of the project management system and the enterprise management system was underinvestigated. As one of the principles of constructing composite management systems, the adaptability principle was outlined. The concept of bi-adaptability was introduced. The definition of bi-adaptability as the property of adaptability implementation in two ways was given. The definition of the bi-adaptive management system of the project-oriented enterprise was presented. The methodological, information and organizational tools to ensure bi-adaptability were considered. As an element base of adaptability implementation, frames were proposed. The advantages of this approach were described. The definition of structurally-producing approach to constructing the bi-adaptive management system was given. The fundamental tasks of the bi-adaptive management system of the project-oriented enterprise were formulated. The scientific task of constructing the bi-adaptive management systems of the project-oriented enterprise was set. The proposed approach to constructing such systems based on frame models will allow to build a more effective management system of the project-oriented enterprise through introducing a better mechanism of its adaptation to changes in the internal and external environment.

Keywords: project management system, enterprise management system, adaptability, bi-adaptive systems.

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IMPROVED MODELS OF VALUE-ORIENTED MANAGING PORTFOLIOS OF PROJECTS FOR RECONSTRUCTION OF WATER SUPPLY (p. 43-49)

Tigran Grigorian, Vladimir Koshkin

The study has improved the models of making decisions while managing portfolios of projects for reconstructing municipal water supply systems. We have devised a functional model of the general decision-making process for managing portfolios of projects. The model fixes the main stages of the process, information flows, and the employed tools. We have suggested a mathematical model of a multi-criteria value-oriented project ranking that is based on the ENQUIRY method of verbal analysis of decisions. The formulated criteria system allows ranking of multiple projects on the basis of the ENQUIRY method. Thedevised information support of decision-facilitation systems consists in experts' knowledge and their assessments in the form of paired criteria comparison scales and a developed single ordinal scale.

The suggested model was used in the decision-facilitation system for managing portfolios of reconstruction projects for municipal water systems. The model implementation has confirmed the possibility of ranking a considerable multitude of projects on the basis of a preliminary survey of experts and formalization of the obtained knowledge. It also boosts performance indices of rapid assessment of multiple projects according to several criteria, including qualitative parameters and value characteristics. Application of the devised models considerably reduces the time for decision making and drastically increases the effectiveness of managing the portfolios of projects for reconstructing municipal water supply systems.

Keywords: managing projects/ projects management, value, decision making, verbal analysis of decisions, projects for reconstructing water supply systems.

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DEVELOPMENT OF SCENARIO CONTROL SYSTEM OF BREWING TECHNOLOGICAL PROCESSES (p. 49-55)

Mykola Romanov, Vasil Kishenko, Anatoliy Ladaniuk

The problem of control of basic brewing technological processes in terms of optimization scenarios of quality, efficiency of material and energy resources and productivity was formulated in the paper. A characteristic feature of the brewing process is uncertainty, which primarily can be seen in the analysis of quality indicators. The scenario approach can adequately express the expert opinion and use the pilot study results to predict the events in complex systems using multivariate analysis of the situational management facility. Each scenario connects changes in external conditions with parameters. The problem of optimizing brewing technological processes was solved within the scenario approach, taking into account situational change of the priority of criteria and restrictions that have a linguistic estimate. Linguistic approximation of key variables of brewing technological processes was performed, the factors that affect the brewing industry operation modes were determined. Based on the linguistic approximation of variables, according to the results of the expert survey, control scenarios of brewery technological complex were developed, and implementation of the A-control scenario of the brewery was given. Further, results will be used to build control scenarios of brewery technological processes to create a decision support system that will allow to improve the quality of the finished product and reduce material and energy costs.

Keywords: scenario approach, brewing process optimization, Petri net, cognitive modeling.

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PROJECT MANAGEMENT FOR DEVELOPMENT OF SCIENTIFIC ORGANIZATIONS IN THE FIELD OF NANOTECHNOLOGIES ON THE BASE OF COMMERCIAL STRATEGY (p. 55-60)

Viktor Morozov, Iuliia Liubyma

In the article is performed a research of aspects for development of science-based enterprises in the field of nanobiotechnologies with orientation and positioning on the national and international market. Also are shown specific peculiarities of company and project development in turbulent environment, seeing limited financial opportunities of state science-based innovative enterprise. It has been found out, that classic methods and models of project management of commercial projects cannot be fully implemented to science-based enterprises with innovative organization development and need to be transformed in accordance to field peculiarities. Studied in the article methods and models of innovative nanobiotechnologies project development, aim to rapid commercialization in the most perspective industries of economy.

Keywords: projects portfolio, innovative projects, nanobiotechnologies, trace elements, project management.

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IMPROVEMENT OF THE INDUSTRIAL STATIONDESIGN FOR BETTER PERFORMANCE (p. 61-67)

Vyacheslav Zhyravel, Irina Zhyravel

The paper presents a study of the inflow and outflow of railway rolling stock, particularly unloaded wagons as well as those ready to depart iron ore concentrate through the industrial station P of a mining and enrichment plant. The findings are occasional, which must be taken into account in modeling a station operation. A detail analysis of an interaction between two stations—P and A—during the outflow of concentrate-loaded groups of wagons laid the basis for an algorithm of performing key technological operations of routes accumulation. We simulated the station performance and determined the main causes of delays and complications.

To increase the station efficiency, we have suggested improving the construction of crossings, which is aimed at reducing the time of shunting operations. The station shunting movement time both for the current and the suggested designs was calculated with a program that accounts for restrictions on certain elements. The suggested track sectioning increases the station's operational reliability and, in case of a special loading plan for wagons of different operators, accumulates routes of different assignments at various track sections of the station, without impeding its habitual performance.

Keywords: industrial railway transport, rolling stock flow, station work simulation, crossings.

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