WORLDLY KNOWLEDGE
INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCHERS
ISSN : 3030-332X IMPACT FACTOR (Research bib) – 7,293

INFORMATION TECHNOLOGIES USED IN THE OPERATION OF WAGONS

Muzaffarov Shehrozxon Xusanxon o'gli
Djabbarov Shuxrat Batirovich
Maxmanazarov Bexruz
Tashkent state transport universitete
Boronenko Yuriy Pavlovich
St. Petersburg state university of railway engineering of emperor Alexander1

Abstract: Railways play a leading role in providing passenger transportation and this requires constant search for more modern operational management techniques in order to maintain sustainable operation in the transport services market while reducing operating costs and attracting additional revenue.
Keywords: wagon, railway, malfunctions, control, fault detection, informatization

In the strategic plan, an operational management mechanism has been created for the effective management of these shipments, which automates the collection, processing and issuance to the railway management of all the information they need to make operational decisions on regulating transportation, reducing costs and generating additional income. Such a mechanism is the automated control system of the automated control system "Express-3".

The Express-3 system reflects the entire dynamics of passenger traffic and changes in passenger flows: the population of wagons in real time (i.e. right during the flight), stations where additional passenger traffic begins to form, and places where there is a reserve rolling stock for the formation of additional trains or the destination of trailed wagons.

The automated control system "Express-3" is able to provide information about the profitability of a particular train.

In the context of a flexible tariff policy based on accounting for demand for services, this demand accounting is carried out within the framework of the system: It has the ability to promptly inform about changes in demand, which allows you to respond to it as quickly.

The Express-3 system works in an interactive mode. For the cashier's dialogue with the system, a single formalized language is used, which is based on a simple and accessible method of alternating characters:

- — Latin and Russian alphabets;
- — Arabic numerals;
- — graphic designations.

Latin letters are underlined on the display. Any order in the system begins with the letter P, followed by two digits indicating the types of work, divided into dozens:

P10—P19 — related to the sale and registration of travel documents;
P20—P29 — related to the return or cancellation of travel documents;
REZO—R39 — used for operational, operational and financial information;
P40—P49 — intended for registration of travel documents in international traffic;
P50—P59 — related to the clarification of the terminal status, the investigation of various misunderstandings and failures that may occur during the operation of the system;
P60—P69 — allocated for the Ekasis reference system;
P70—P79 — allocated for baggage handling;
P80—P89 — perform various passenger transportation management tasks;
P90—P97 — designed for automated accounting of strict reporting forms;
P98 — is used to enter information from the stubs of travel documents issued by cashiers using manual technology;
P99 — allows you to remove information from replaceable counters of a faulty terminal.

Such a control mechanism based on the new automated control system "Ex-press-3" was developed by VNIIZHT together with VNIIAS and the roads of the railway network.

In addition to the functions already performed by the Express-2 system, the Express-3 system assumed the functions of managing all major technological processes, including baggage, cargo, mail transportation, operation and repair of a fleet of passenger cars, operational planning of transportation based on dispatch centers with the issuance of necessary information on the purpose of trains and wagons, their efficiency of use (profitability), as well as with the issuance of all indicators, including support and analysis of marketing activities.

This strategy of the Russian Railways, which provides for the transition from ticket sales management to passenger transportation management in general, is justified, since it is based on a powerful complex of electronic Express-3 systems that collect and process information about passenger transportation and their requirements. This, in fact, is the difference between the Express-3 electronic systems on Russian railways and the currently operating railway systems in Western Europe.

Currently, there are more than 50 electronic reservation systems in operation on the railways of Europe and the CIS countries. There are 17 self-developed systems in Western Europe. All systems are integrated into a single passenger service network.

A distinctive feature of all these electronic reservation systems is the operation and inter-system interaction in real time with the participation of a large number of subscribers covering the entire territory of the railway network. The systems allow you to concentrate all the initial information about passenger transportation and their requirements. The functionality of these systems can evolve in different directions. They can turn into multifunctional systems with a scope that covers all railways of the world through communication networks, including interaction with systems of other modes of transport. All this suggests that electronic reservation systems today should be viewed not only as ticket sales systems, but as a tool with which roads can solve a wide variety of problems in the passenger economy.

The functionality of the Express-3 system has been repeatedly reported at international meetings of the Organization for Cooperation of Railways (OSJD) and the International Union of Railways (UIC). Foreign roads are showing increased interest in the technology of the Express-3 system. The Council for Railway Transport of the member States of the Commonwealth (CIS) at its meeting decided to implement the automated control system "Express-3" on the railway network of the CIS, Latvia, Lithuania and Estonia.

Today, it can be considered that in the field of information technology for passenger service and passenger transportation management, the Express-3 automated control system is the leading one on the railways of the world. In the automated control system "Express-3", all processes related to the sale of tickets and accounting for passenger traffic, the availability and deployment of a fleet of passenger cars, with financial settlements and services are combined in one system.

The process of passenger transportation management basically boils down to establishing an optimal ratio between the population's need for transportation and the available vehicles (fleet of wagons) at the roads in conditions of continuous fluctuations in passenger traffic, in order to have minimal operating costs and sufficient income. The presence of only one continuously formed passenger traffic, without taking into account the condition and location of the passenger car fleet, does not allow for the development of regulatory measures with instructions on the destination and cancellation of trains and wagons.

In the automated control system "Express-3", issues of economics, finance and marketing are solved using the information management subprogram of the automated control system-L. Its main task is to automate technological processes related to passenger transportation management. Within the framework of this subprogram, the following set of tasks is being solved:

- — collection of key indicators related to passenger transportation;
- — determination of passenger traffic correspondence;
- — control and accounting of passenger train population;
- — revenue from transportation, depending on the tariff used;
- — passenger demand for transportation;

• — statistical and financial statements, including settlements for passenger transportation;
• — marketing of the passenger transportation market;
• — passenger traffic forecasting;
• — operational tracking of the economic efficiency (profitability) of the destination, etc.

The system of regulatory, operational and economic indicators of the automated control system "Express-3" characterizes quantitatively and qualitatively the operation of trains and the entire process of passenger transportation management. These indicators include the amount of work performed and the use of rolling stock. Quantitative indicators include: the number of passengers sent, passenger traffic correspondence, passenger turnover, mileage in car-km and train-km, boarding and disembarkation volumes at stations, average train composition. Qualitative indicators include: the population of wagons, the degree of utilization of the capacity of wagons, the coefficients of seat turnover, the average range of passenger transportation.

Passenger traffic correspondence issued by the Automated Control System "Ex-press-3" to the command staff of the roads is the basis for building a train schedule and developing operational regulatory measures. Knowledge and forecasting of passenger traffic largely reflects the general level of culture of passenger transportation organization.

Correspondence is recorded in the automated control system "Express-3" at all stations conducting a survey on boarding and disembarking passengers. However, given the large number of such stations on the Russian railway network, at the request of the user of the system, it is possible to receive information about jet passenger flows in an aggregated form. Correspondence is calculated for long-distance and local trains, for specified train groups, railways and railway directions.

Operational management of train composition schemes is of great economic importance in market conditions, while its quality depends on the efficiency and reliability of the information received about the actual population of wagons in current operation. The specified indicator should be known to the commanding staff of the roads not only at the time of departure of the train or in the report for the completed flight, but also along the route of the train from the starting to the final station of the train route. In this regard, users of the automated control system "Express-3" receive online data:

• — the actual population of wagons by route sections;
• — passenger traffic correspondence;
• — indicators of "passenger-km" and "wagon-km" by sections and in general for the flight.

All the initial information is provided by the system on the display screen of a personal computer in the form of diagrams, figures and tables.

Referens:

1. Analysis of the stresses resulting from vertical and horizontal forces acting on the wheel in solidworks software Shokuchkorov K., Rakhimov R., Ruzmetov Ya., Djabbarov Sh., Yuldoshov R. Universum: технические науки. 2023. № 2-6 (107). С. 18-22.
2. НАУКА, ОБЩЕСТВО, ОБРАЗОВАНИЕ В СОВРЕМЕННЫХ УСЛОВИЯХ
3. Абдуллаев Б.А., Алиев М.М., Алиев Р.М., Афанасенкова Е.Л., Давыдова С.С., Джаббаров Ш.Б., Иванова З.С., Кириллов Д.С., Левина В.А., Мансуров Ю.Н., Меркулов М.М., Морозова Ю.А., Некрасов С.Н., Рахимов Р.В., Тарасова Л.В., Тохиров Э.Т., Челак С.В., Юткина Л.Р. Пенза, 2022.
4. Совершенствование системы вентиляция крытых вагонов
5. Хайдаров О.У., Хурматов Я.А., Джаббаров Ш.Б. В сборнике: Транспорт и логистика: актуальные проблемы стратегического развития и оперативного управления. VI международная научно-практическая конференция. Ростов-на-Дону, 2022. С. 255-257.
6. Анализ повреждаемости и технического состояния ударно-тяговых устройств грузовых вагонов в эксплуатации Абдирахманов Ж.А., Джаббаров Ш.Б.
7. В сборнике: Наука и молодежь: проблемы, поиски, решения. Труды Всероссийской научной конференции студентов, аспирантов и молодых ученых. Новокузнецк, 2022. С. 32-36.

8. the method of modeling the structural strength of a material using a solid-rolled railway wheel Shokuchkarov K.S., Ruzmetov Ja.O., Rahimov R.V., Abdullaev B.A., Dzhabbarov Sh.B., Otazhonov H.H.U., Abdurahmonov P.K.U., Zafarov D.Sh.U.
9. Молодой ученый. 2022. № 45 (440). С. 49-54.
10. Расчет передаточного числа тормозной рычажной передачи четырехосной платформы для цистерн модели 13-149 Хайдаров О.У., Эргашева В.В., Абдурахмонов Ж., Абдуллаев Б.А., Джаббаров Ш.Б., Абдуллоев М.К.У.
11. Молодой ученый. 2022. № 15 (410). С. 56-59.
12. Анализ распределения тепловых напряжений в трехсекционных тормозных колодках грузовых вагонов при движении Инагамов С.Г., Джаббаров Ш.Б., Абдуллаев Б.А. Известия Транссиба. 2022. № 3 (51). С. 63-71.6. L. G. Loitsyansky and A. I. Lur'e, Course of Theoretical Mechanics. T. II. Dynamics. – M.: Nauka, 1983. – 640 p. – P. 63–67, 81–97.
13. Turanov Kh.T., Cherepov O.V. Generalized model of a spring-friction set of a freight car bogie / Transport: Science, Technology and Management, 2009, No. 12.
14. Turanov Kh.T., Cherepov O.V. Numerical modeling of a spring-friction set of a freight car bogie / Transport: science, technology and management, 2010, No. 1.
15. K. Turanov, A. Gordienko, S. Saidivaliev, S. Djabborov. Designing the height of the first profile of the marshalling hump. E3S Web of Conferences, Vol. 164, 03038 (2020). Https://doi.org/10.1051/e3sconf/202016403038
16. K. Turanov, A. Gordienko, S. Saidivaliev, S. Djabborov. Movement of the wagon on the marshalling hump under the impact of air environment and tailwind. E3S Web of Conferences, Vol. 164, 03041 (2020). Https://doi.org/10.1051/e3sconf/202016403041
17. Turanov K., Gordienko A., Saidivaliev S., Djabborov S., Djalilov K. (2021) Kinematic Characteristics of the Car Movement from the Top to the Calculation Point of the Marshalling Hump. In: Murgul V., Pukhkal V. (eds) International Scientific Conference Energy Management of Municipal Facilities and Sustainable Energy Tech-nologies EMMFT 2019. Advances in Intelligent Sys-tems and Computing, vol 1258. Springer, Cham. Https://doi.org/10.1007/978-3-030-57450-529