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«ЛОГІСТИЧНІ ТЕХНОЛОГІЇ НА ПІДПРИЄМСТВАХ ТРАНСПОРТУ І ПРОМИСЛОВОСТІ»
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APPROACHES TO THE DEVELOPMENT OF AUTOMATED TECHNOLOGY FOR MANAGEMENT OF FREIGHT FLOWS IN INTERNATIONAL TRANSPORT CORRIDORS

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International transport corridors are key arteries of the global economy, ensuring the efficient movement of goods between countries. Given the growing volumes of traffic, the complexity of logistics chains and the need to increase the competitiveness of transport systems, the introduction of automated technologies for managing cargo flows is becoming especially relevant.

The main problems of cargo flow management in international transport corridors are identified:

- limited capacity of transport hubs;
- imbalance of transportation volumes;
- complexity of coordination between different modes of transport in multimodal transportation;
- delays associated with customs and border procedures.

These problems can be solved through the introduction of automated control systems that can provide real-time monitoring and dispatching of freight cars, optimization of routes based on capacity and current delays. In addition, they will facilitate the integration of information flows between all participants in the transportation process (carriers, customers, customs, logistics operators).

The development of an automated cargo flow management technology can be based on methods of system analysis and modeling of complex transport systems, mathematical models of queuing theory, network and matrix models of transportation optimization. In addition, simulation modeling can be used to forecast the operation of transport hubs and checkpoints. The key components of automated technology can include information systems, automated terminals, vehicle and container identification systems, which can reduce cargo handling time and minimize the human factor. In addition, artificial intelligence and machine learning can be used to forecast demand, optimize the distribution of cargo and wagons, manage inventory, and plan routes.

From a practical point of view, automation of cargo flow management will increase the capacity of international transport corridors, reduce the downtime of wagons; reduce operating costs; and improve the safety and environmental friendliness of transportation operations. Thus, the development and implementation of automated technology for managing cargo flows in international transport corridors is a strategically important area for improving logistics efficiency, integration into the global transport network, and ensuring sustainable development of the transport industry.

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INTELLIGENT LOGISTICS SYSTEM FOR THE SUPPLY OF CONSTRUCTION MATERIALS BY RAIL TO RESTORE THE DESTROYED INFRASTRUCTURE

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The total amount of direct damage to Ukraine's infrastructure as a result of the full-scale invasion is about $170 billion, which is $12.6 billion more than in early 2024. The housing stock, energy, and transportation sectors have suffered the most. The amount of damage to the transport infrastructure reaches USD 38.5 billion, including more than 26 thousand kilometers of roads, bridges and road structures. The losses of the railroad industry are separately estimated at $4.3 billion [1]. This has led to a decrease in the capacity of railways and roads, increased downtime of rolling stock and vehicles, disruption of cargo delivery schedules, and, accordingly, more difficulties in supplying materials to reconstruction sites.

Given the scale of the task of restoring damaged facilities, one of the key issues is ensuring massive and uninterrupted transportation of construction materials. Given the need to transport significant volumes of cargo over long and medium distances at minimal cost, rail transport is the most efficient and rational solution. However, the current logistics system of rail transportation in Ukraine is not flexible and efficient enough in the face of damaged infrastructure, unstable freight flows and limited rolling stock resources. Therefore, there is an urgent need to apply modern intelligent technologies that can adapt logistics processes to the current conditions of the railway network.

A promising area is the introduction of an intelligent logistics system for the supply of construction materials by rail, which uses digital technologies for analysis, monitoring and forecasting. The use of artificial intelligence algorithms allows for the simultaneous formation of optimal delivery routes and prompt