

STUDIES OF THE FUNCTIONING OF THE SYSTEM OF INTERMODAL TRANSPORTATION OF BULK CARGO

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Annotation: The methodology of scientific research is a rather extensive mathematical apparatus and means of studying various logistics objects. In this regard, in this work, the theory of "Markov random processes" was adopted as the main methodology, which is a universal tool for scientific research.

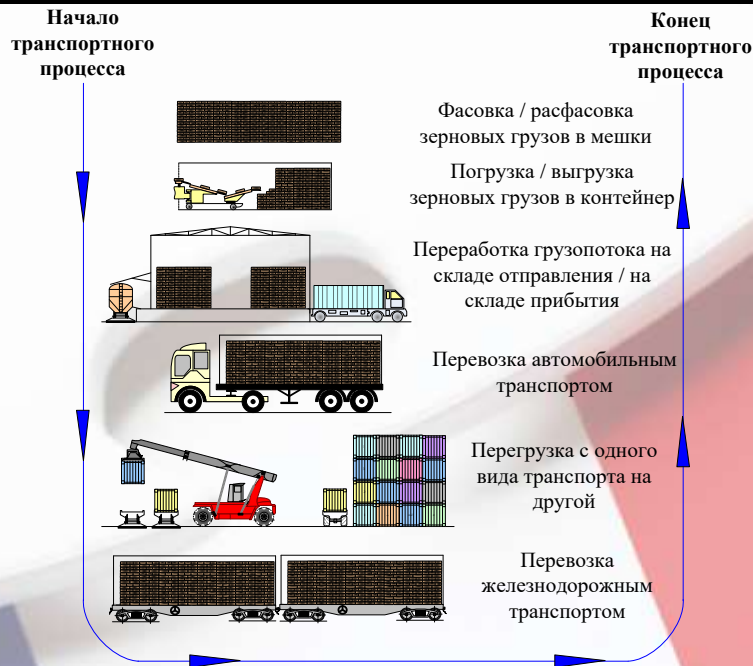
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Introduction . The operation of the system of intermodal transportation of bulk cargoes is based on the selected elements and the structure of this system and is aimed at achieving the set goal - the timely delivery of bulk cargoes. The main activities of the system of intermodal transportation of bulk cargoes can be the following:

- coordination of all types of transport at transshipment and transport hubs based on a single technology for the delivery of bulk cargo;
- rationalization of the work of hoisting-and-transport and loading-unloading machines during the delivery of bulk cargo;
- information and logistics support throughout the supply chain;
- improvement of technology and organization of work of cargo terminals and transshipment terminals;
- containerization of bulk cargo at the request of bulk cargo suppliers, cargo owners, consignors, consignees, freight forwarding, railway, motor transport and other transport companies;
- provision of consulting services to shippers on the delivery of bulk cargo in domestic and international traffic, as well as determining their technical and economic feasibility, etc.

On fig. 1 shows a diagram of the intermodal transportation of bulk cargo, pre-packaged in bags. The advantage of this intermodal technology lies in the absence of additional costs for bundling facilities and provides a denser load than transportation in larger units.

Let us consider intermodal technologies for the transportation of bulk cargo in transport packages formed from bags (see Fig. 2). The advantage of such delivery lies in the high level of mechanization. The use of batch transportation of bulk cargo ensures minimal downtime of vehicles under cargo operations in the initial and final floor warehouses for bulk cargo.

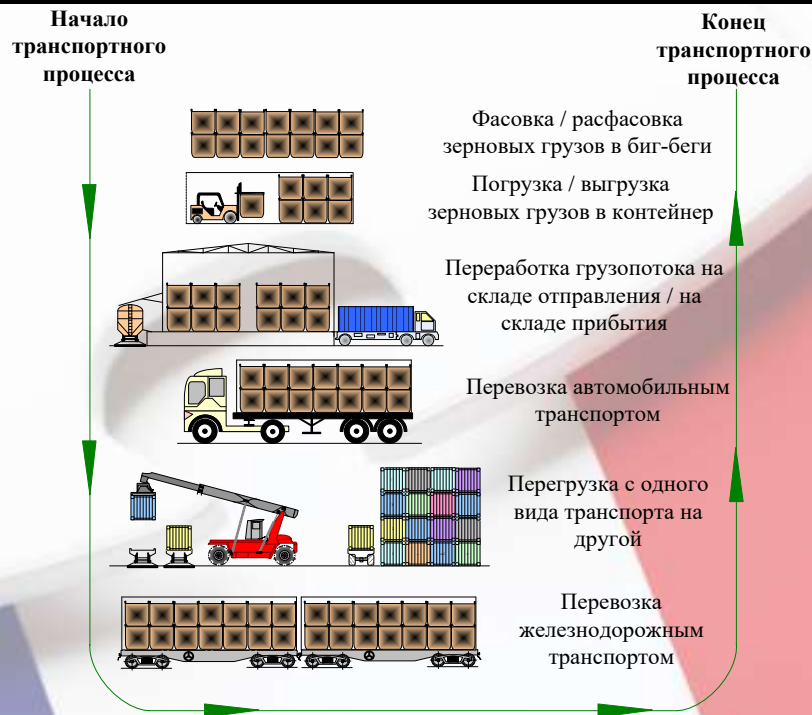


Rice. 1 - Scheme of intermodal transportation of bulk cargoes pre-packaged in bags



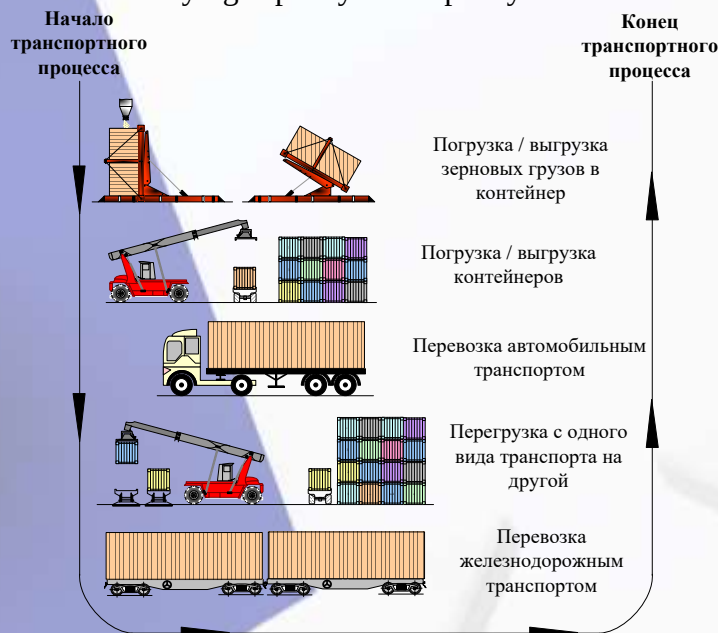
Rice. 2 - Scheme of intermodal transportation of bulk cargo in overpacks

On fig. 3 shows intermodal technologies for the transportation of bulk cargo in flexible containers (big -bags). Transportation in big bags increases the efficiency of reloading operations, taking into account the low cost of transport containers.

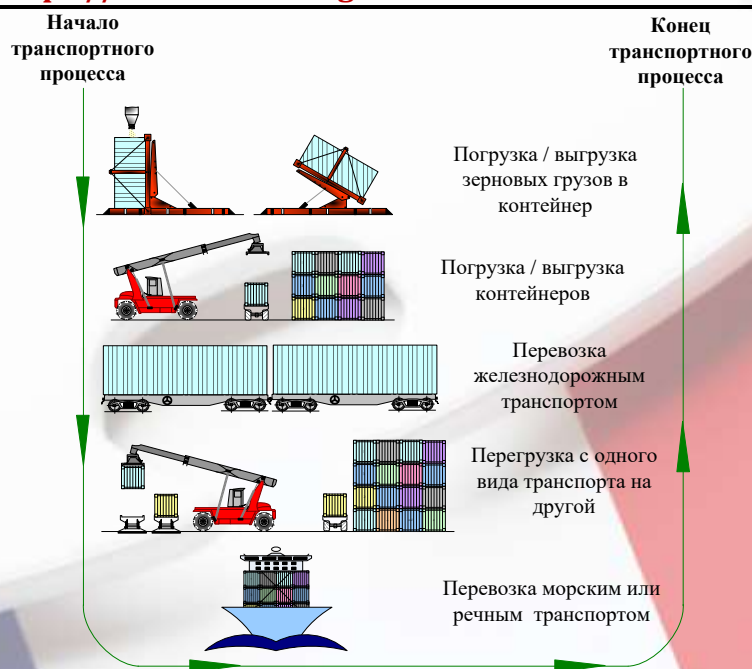


Rice. 3 – Scheme of intermodal transportation of bulk cargo prepackaged in big bags

The main disadvantages of existing technologies for the delivery of bulk cargo in containers are the inefficient use of the carrying capacity and capacity of universal containers.



Rice. 4 - Scheme of intermodal transportation of bulk cargo in containers, in bulk (by rail and road)



Rice. 5 - Scheme of intermodal transportation of bulk cargo in containers, in bulk (by rail and water transport)

The advantage of intermodal technologies for the transportation of bulk cargo in bulk lies in the efficient use of the internal volume of a universal container.



Rice. 6 - Scheme of intermodal transportation of bulk cargo in containers, in bulk (by road and water transport)

In the process of the impact of other complex systems on the system of intermodal transportation of bulk cargo, expressed in the transfer of bulk cargo traffic from one element to another, that is, the system passes from one state to another.

Conclusion _ In the course of the system functioning, the interrelation and mutual influence of the elements of the system of multimodal grain transportation was studied on the basis of abstract mathematical models. The probability of states and transitions of the system of multimodal transportation of grain will make it

possible to develop methods for predicting possible states and transitions from one state to another, which can be used in the organization of multimodal transportation.

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