

- [1] Бауліна Г.С., Богомазова Г.Є, Мішков В.С. Розробка моделі формування ступінчастих маршрутів із зерновими вантажами на залізницях України. *Збірник наукових праць Українського державного університету залізничного транспорту*. 2019. Вип. 187. С. 42-52. URL: <http://lib.kart.edu.ua/handle/123456789/1799>
- [2] Baulina H., Bohomazova H., Prodashchuk S. Technological proposal for the attention of the risk in the management of the work of a railway station with a port. *Revista de la Universidad del Zulia*, 2023. 14 (39), P. 400-414. <http://dx.doi.org/10.46925/rdluz.39.22>

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## **INCREASING THE EFFICIENCY OF THE BORDER STATION BASED ON THE USE OF THE LOGISTICS INFRASTRUCTURE FACILITY**

### **ПІДВИЩЕННЯ ЕФЕКТИВНОСТІ РОБОТИ ПРИКОРДОННОЇ СТАНЦІЇ НА ОСНОВІ ВИКОРИСТАННЯ ОБ'ЄКТУ ЛОГІСТИЧНОЇ ІНФРАСТРУКТУРИ**

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In the conditions of the war and existing difficulties with international transportation, the railway remains the most stable, reliable and affordable mode of transport today. After the blocking of the ports, export-import transportation of goods takes place to a large extent through the European countries with which Ukraine borders, where border stations play a key role. Export transportation in this direction amounted to about 34 million tons in 2022, which is 10 million tons more than in 2021. For example, the capacity of railway border crossings between Ukraine and Poland is from 150 (Mostyska-2 – Medyka stations) up to 600 wagons per day (Izov – Hrubeshuv stations). Today, the issues of increasing the volume of transportation through border stations are being actively worked out, which should ensure the unhindered passage of railcar traffic thanks to the availability of rational technology for processing export-import railcar traffic, the transfer of goods from one country to another.

Against the background of limited throughput and processing capabilities of the border stations of Ukraine and neighboring countries, difficulties in processing growing cargo flows were revealed. Currently, there are queues of wagons for transfer to foreign carriers and restrictions on cargo transportation. In different periods, the queue for them can reach 8-16 days. That is, there are unproductive downtimes of wagons, which lead to an increase in their circulation, failure to meet the deadline for the delivery of goods and an increase in operating costs. Also, cargo transportation in international traffic is carried out unevenly. As a result of the non-agreed delivery of loaded wagons to the border stations on the 1520 mm track, the

wagons, due to the lack of empty ones, are forced to stand still waiting for the transshipment operation to the rolling stock on the 1435 mm track [1]. It is possible to prevent loaded wagons from stopping if they are unloaded into the warehouse and, after empty wagons are delivered to the warehouse along a 1435 mm track, loaded from the warehouse. The problem of limited capacities can be solved by forming a dry port on the basis of a border transshipment station, which will have the necessary devices for carrying out cargo operations and temporary storage of goods unloaded from 1520 mm gauge wagons [2].

The expediency of creating a dry port and its attractiveness for customers is due to the possibility of speeding up the delivery of goods to the destination station. The task of creating such an association can be implemented on the basis of container terminals of large border transshipment stations that can work with 20- and 40-foot international-class containers. The dry port will act as a regulator of cargo flows arriving and departing from the stations, in cooperation with the shunting dispatcher, who is entrusted with the functions of coordinating actions related to the selection, feeding and cleaning of rolling stock for the performance of relevant cargo operations. In addition, it is necessary to form a reliable system of information and logistics support for container transportation along the entire "door-to-door" route. It is very important for all large terminals to have container repair and exchange points, security services, 24-hour video surveillance and other forms of logistics service at the request of cargo owners.

The dry port will allow the reception, accumulation, sorting, consolidation of cargoes, the formation of transport batches of containers, their reloading, storage and processing of containers in a temporary storage warehouse, as well as the implementation of customs and other types of control, ensuring the fulfillment of logistical principles: delivery "just in time" , "in complete safety" and "from door to door". The temporary accumulation of cargo in such centers will allow to overcome the temporal, quantitative and qualitative discrepancies between the availability of empty fitting platforms and the need for them.

To determine the efficiency of the use of the dry port, technical and economic calculations were performed, which determine the operating costs when using the existing technology and when using the proposed logistics infrastructure object. During the calculations, it is taken into account that the optimal batch of large-tonnage containers for departure from the station is formed in the dry port. At the same time, the reduction of non-productive stoppages of wagons while waiting for technological operations and time spent on shunting work is taken into account. The economic efficiency of the implementation of the dry port in the conditions of the border station is confirmed by calculations of the economic effect for the estimated period of implementation of the proposed solutions.

[1] Бауліна Г.С., Дідух П.О., Карпаш А.М., Федорняк І.І. Удосконалення технології функціонування перевантажувального комплексу прикордонної перевантажувальної станції. Збірник наукових праць Українського державного університету залізничного транспорту. 2016. Вип. 162. С. 182-189. <https://doi.org/10.18664/1994-7852.162.2016.78448>

[2] Бауліна Г.С. Формування логістичної технології “прикордонний сухий порт” в умовах прикордонної перевантажувальної станції. Восточно-європейський журнал передових технологій. Харьков, 2010. Вып. 3/6 (45). С. 60 – 63.