

ANALYSIS OF BASIC TENDENCIES IN THE PROCESS OF DONETSK RAILWAY MARSHALLING YARDS WORK

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Summary. The analysis of basic tendencies in-process of leading Donetsk railway marshalling yards work is given. It is shown that during crisis period there is falling of basic quantitative and high-quality indexes of their work. The complex of organizational and technological measures which can be realized by rail on the effective use of potential of marshalling yards is presented.

Key Words: Transport complex, marshalling yards, turnover of goods, turn of carriage, carrying capacity, technological line.

INTRODUCTION

The Donetsk railway occupies one of leading places in railway industry of Ukraine. Today it is a powerful transport complex which serves the most industrial region of Ukraine - Donbass. A railway in Donbass is the basic type of transport, serves more than 3 thousands of clients (94% - in Donetsk and Lugansk areas), in particular: coal mines, metallurgical, coke, chemical and pipe, machine-building and machine-tool factories, washeries, enterprises of chemical, light, food and other areas of industry. In grain freight work a highway is loading –unloading, and greatest part of volume of processed car traffic volume comes on marshalling yards.

RESEARCH OBJECT

The object of the presented research are most large marshalling yards of the Donetsk railway: Debal'tsevo, Yasinovataya, Krasnyi LIman, Krasnoarmeysk, Nikitovka, Ilovaysk, Volnovakha which execute operations on disbandment, accumulation, forming and conclusion of compositions from the parks of forming.

And also study of change dynamics of basic quantitative and high-quality indexes of marshalling yards work.

RESULTS OF RESEARCH

In a period from 2002 to 2006 leading marshalling yards of the Donetsk railway, such as Debal'tsevo, Yasinovataya, Krasnyi Liman, Krasnoarmeysk, Nikitovka, Ilovaysk, Volnovakha attained the high high-quality and quantitative indexes of work. However with the offensive of crisis period in an economy processing ability of marshalling yards grew short to 40 - 50 %, general, transit and local turnovers of goods fallen down considerably, Figure 1.

Falling of the resulted indexes was reflected and on the turn of freight carriage. Diminishing of loading resulted in the decline of this index, Figure 2. It is set that about 90 - 100 carriages in a month remained unclaimed under loading at deceleration of turn on 0,1 days.

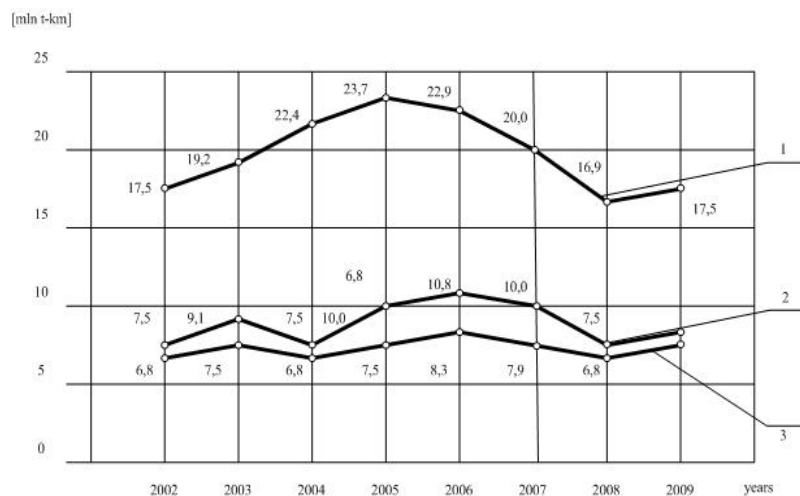


Fig. 1. Dynamics of goods turnover change of marshalling yards for period from the year of 2002 to 2009

1 – general turnover of goods; 2 – transit turnover of goods; 3 – local turnover of goods

The same dynamics is observed during the analysis of data, got on transit of carriages with processing and without processing, Table.1.

On the basis of information, resulted in Table 1, on formulas [Instruction 2000] the size of general middle outage of transit carriage t_{tr} on marshalling yards is calculated as:

$$t_{tr} = \sum nt_{tr} / \sum n_{tr}, \text{ (days)} \quad (1)$$

where: $\sum nt_{tr}$ - general time of outage of transit carriages at the station,

$\sum n_{tr}$ - general amount of transit carriages.

Amount

$$\sum nt_{tr} = \sum nt_{trp} + \sum nt_{trbp}, \text{ (days)} \quad (2)$$

where: $\sum nt_{trp}$ - time of outage of transit carriages with processing at the station,

$\sum nt_{trbp}$ - time of outage of transit carriages without processing at the station.

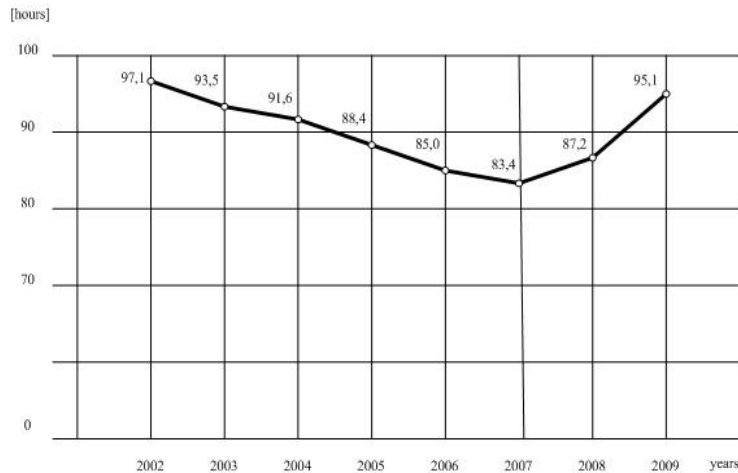


Fig. 1. Dynamics of change of turn of carriage for the years of 2002 - 2009

Table 1. Information about transit and simple transit carriage with processing and without processing

Marshalling yards	Changes from 2007 to 2009 years			
	Transit, carriages per days		Outage of transit carriage, hours	
	with processing ΔU_{II}	without processing ΔU_{BII}	with processing Δt_{II}	without processing Δt_{BII}
Debal'tsevo	217	68	-1,04	-0,28
Krasnyi Liman	26,4	-2364	-0,15	-0,13
Volnovakha	-62	456	-0,72	-0,2
Ilovaysk	19	-358	-0,71	-0,34
Yasinovataya	462	228	-1,5	-0,1
Krasnoarmeysk	28,1	524	-1,08	-0,1
Nikitovka	118	2054	-0,69	-0,12

Amount:

$$\sum n_{tr} = \sum n_{trp} + \sum n_{trbp}, \text{ (carriages)}, \quad (3)$$

where: $\sum n_{trp}$ – semisum of amount of transit carriages with processing,
 $\sum n_{trbp}$ – amount of transit carriages without processing.

The received amount of $t_{tr} = 1.6$ days exceeds average one $t_{tr} = 0,7$ days at the normal indexes of work of marshalling yards [Official web-site].

The search of ways of work stabilization of marshalling yards is related to the improvement of all basic indexes, considered higher due to an increase, foremost of the carrying capacity of lines:

- forming of fullcomponent trains, which influence with possibility on large distances at small time of accumulation and transmission of carriages, and minimum charges of railway;

- introduction of the system on a line with out branches, because in this case it is possible to eliminate mobile works on everything or most marshalling yards, located between the stations of forming and setting;
- creation of the special devices for the second technological line, allowing a car traffic volume between supporting marshalling yards in group trains [Tikhomirov 1977];
- equipping stations with new, modernized and technologically improved devices of type of ACKO ПБ, allowing to shorten execution of commercial examination, promoting reduction in turnover of carriage time, fastening of advancement of car traffic volumes and, consequently, providing of the assured urgency of delivery of loads;
- introduction of the system of digital videosupervision which provides: reduction of time and upgrading of commercial examination and safety of motion of trains, operative exposure and jiggling of cases of unsafe transportations and violation of technical requirements of loading, increase of prevention of personal accident of workers and removal of terms, promoting the theft of loads.

CONCLUSION

Marshalling yards are complicates technological complexes the basic task of which is admission and processing of car traffic volumes. In a period from 2002 to 2006 the leading marshalling yards of the Donetsk railway attained the high high-quality and quantitative indexes of work. However, a crisis situation, which is going on presently in an economy, reduced these indexes.

For the improvement of organization and technology of vehicular process the row of measures, directed on the increase of processing and **carrying capacity** of marshalling yards is offered

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АНАЛИЗ ОСНОВНЫХ ТЕНДЕНЦИЙ В РАБОТЕ СОРТИРОВОЧНЫХ СТАНЦИЙ ДОНЕЦКОЙ ЖЕЛЕЗНОЙ ДОРОГИ

Лысак Е.В., Жданова М.Н.

Аннотация. Дан анализ основных тенденций в работе ведущих сортировочных станций Донецкой железной дороги. Показано, что в кризисный период наблюдается падение основных количественных и качественных показателей их работы. Представлен комплекс организационных и технологических мер по эффективному использованию потенциала сортировочных станций, которые могут быть реализованы железной дорогой.

Ключевые слова: транспортный комплекс, сортировочные станции, грузооборот, оборот вагона, транзит, пропускная способность, технологическая линия.