MODERNIZATION AS THE BEST WAY TO ORGANIZATION

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ABSTRACT

Modern transport infrastructure of Moscow is undergoing fundamental changes. Inside the city at large freight stations a frame made of terminal and logistics centers is created to optimize local work and to further increase the volume of cargo processed. The article examines challenges faced by metropolitan freight stations, and offers methods for solving issues relating to organization of local work, reconstruction of stations, an increase in the volume of cargo transportation, logistics activities of transportation companies

Keywords: transport, railway, terminal and storage complexes, reconstruction, freight stations, Moscow node, local work, terminal and logistics centers.

Background. *The development of terminal and storage system in the capital provides for formation of modern transport – logistics and storage infrastructure of JSC Russian Railways focused in the perspective on growing needs of the city with a full exception of transit cargo flows. At the same time the 2020 forecast volumes of freight operations is estimated as 9,0 million tons, and for 2025 – 11,0 million tons. And for such volumes it is expected to create «cargo frame» of terminal and logistics centers (hereinafter – TLC) at the stations Kuntsevo-II, Moscow-Tovarnaya-Yaroslavskaya, Lublino, Khovrino.*

Launched reconstruction promises to provide a wide range of logistics operations, including to use to a maximum extent technology of customer service «from door to door». But before it the stations, at which there are and will be located terminal and logistics centers have to cope with a variety of both common and unique problems.

Objective. *The objective of the author is to issues related to modernization of existing freight stations and consequences of these actions.*

Methods. *The authors use general scientific methods, comparative analysis, evaluation approach, modeling.*

Results.

Disposition of station Kuntsevo-II

Since 2009, at «Kuntsevo-II» station a tendency is observed to increase cargo traffic, the evidence of it is shown on a diagram in Pic. 1.

The increase in cargo traffic revealed specific problems of cargo area of the station:

1) Lack of length of receiving and departure tracks, due to which the downtime of trains in anticipation of cargo operations increases;

2) Absence of required number of cargo handling devices, which aggravates the downtime situation;

3) Lack of infrastructure – developed terminal and logistics center at the station;

4) Inability of the cargo area of the station for processing a large number of cars.

All these problems lead to an increase in processing time of trains arriving at the station. It is different, depending on local conditions, but as a resulting criterion remains decisive in many ways.

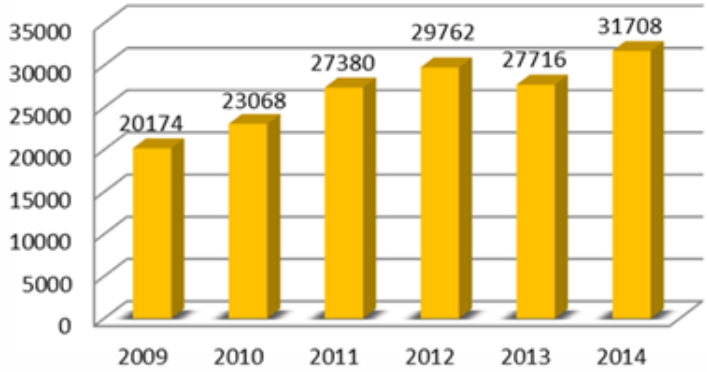
The time spent on processing one container train at the railway station Kuntsevo-II is displayed in Pic. 2.

In order to solve the outstanding problems in the territory of the cargo area of the station Kuntsevo-II construction of terminal and logistics center of PJSC TransContainer is planned. The terminal will perform the complex of works associated with receiving, departure, overloading and storage of containers, as well as carry out their repairs. The appearance of TLC will allow to extend receiving-departure tracks, facilitate processing of long trains. The project involves modernization of old and purchase of new cargo handling, through which will reduce time on the most time-consuming operation. Creation of comfortable and rational approach roads to the cargo area will provide minimal shunting movement. Due to these measures, the time to process one container train at the station Kuntsevo-II will be reduced (Pic. 3).

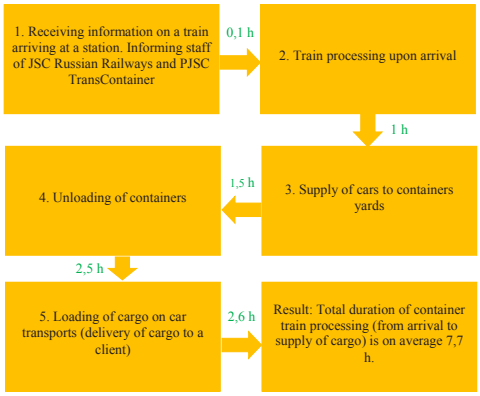
Reducing the duration of container trains processing will increase the number of trains handled through the station per day.

TLC at Khovrino station

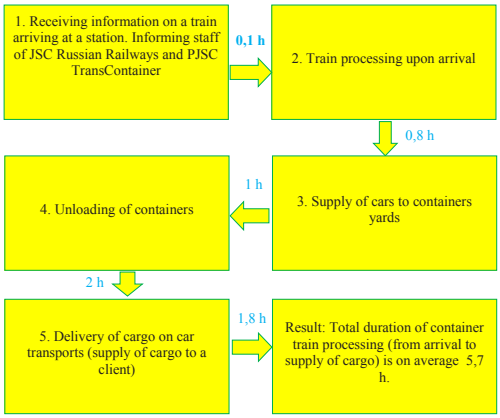
In 2014, at the station Khovrino was built a terminal and logistics center of LLC Logistik-KS. Its construction was conditioned with the increase in cargo traffic from the ports of the North-West region and the Baltic countries. The terminal allowed to carry out customs



Pic. 1. Diagram of unloading of cars at the station Kuntsevo-II.



Pic. 2. Time for processing of one container train, broken down into operation at the station Kuntsevo-II.



Pic. 3. Time for processing of one container train, broken down into operation at the station Kuntsevo-II after reconstruction.

clearance, warehousing, and provide logistics services, taking into account Moscow peculiarities – delivery of goods to retail outlets by low-tonnage transport.

The increase in cargo traffic helped to identify problems related to the terminal:

1) deficit of useful length of tracks, due to which increased the downtime of trains in anticipation of cargo operations;

2) absence of own trained personnel for production of shunting operations at railway tracks, which the station, serving more than 15 non-public tracks, is not always able to compensate;

3) at the station shunting locomotives are not rigidly tied to specific areas of service of non-public tracks, in this regard, occur downtime waiting for a locomotive for TLC, and hence despite the needs of the center timely supply, rearrangement and output of trains are absent;

4) failed to adapt to rapid and timely supply non-public track of TLC.

The ratio of time spent on production of cargo and shunting operations by TLC at Khovrino station is shown in Pic. 4.

In order to solve the existing problems at the station, it is necessary, we believe, to take the following steps:

1) lack of trained personnel, who are able to produce shunting movement on railway tracks of non-public use can be solved by hiring own staff of shunting masters, because it concerns only one or two experts;

2) lack of service traction rolling stock station is completely compensated by the station, if it zones tracks of uncommon use into shunting areas and link them to certain locomotives;

3) lack of useful length of tracks is eliminated during reconstruction of the territory of a container terminal;

4) inadaptability of tracks to fast and timely supply is neutralized by laying centralized arrows, united by a common neck and creation of a switch plant.

As a result we get:

1) reduction of downtime of trains while waiting for their output to departure yard;

2) reduction of downtime of trains waiting for their supply to TLC;

3) reduction of downtime of trains while waiting for shunting operations;

4) reduction of downtime of trains while waiting for cargo and commercial operations;

5) increase in cargo processing speed at the terminal.

Changes in the ratio of time spent on production of cargo and shunting operations at TLC at Khovrino station after reconstruction is illustrated by Pic. 5.

From private to general

At stations Khovrino and Kuntsevo-II we can observe general problems inherent in cargo stations, on which terminal and logistics centers are planned:

1) lack of useful length of railway tracks;

2) lack of required number of tracks to process trains, and also developed approach roads to the territory of the terminal for timely reception, rearrangement or output of freight cars;

3) lack of trained personnel at TLC for production of shunting operations at railway tracks of non-public use in the area of the terminal;

4) lack of modern cargo handling equipment;

5) absence of developed approach roads for vehicles;

6) shortage of places for proper storage of containers.

Such problems should be solved prior to the moment when there will be an increase in cargo traffic for the stations together with TLC to work in a single technological direction that corresponds to the requirements of the day.

At the moment, at the station Kuntsevo-II the following reconstruction measures can be implemented:

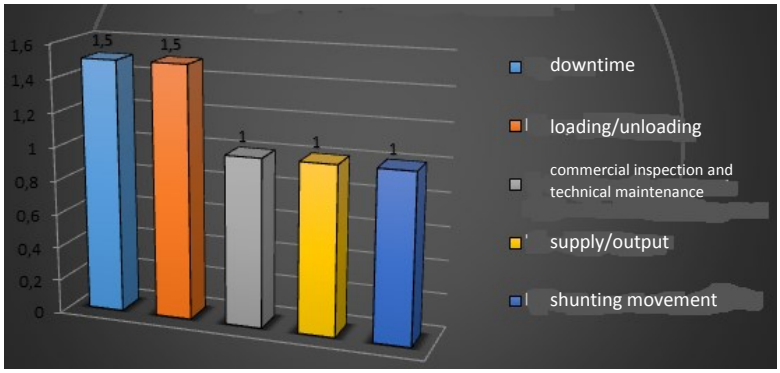
– Extension of existing receiving and departure tracks, which specialize in working with full-length container trains of TransContainer terminal;

– Laying of additional receiving and departure tracks;

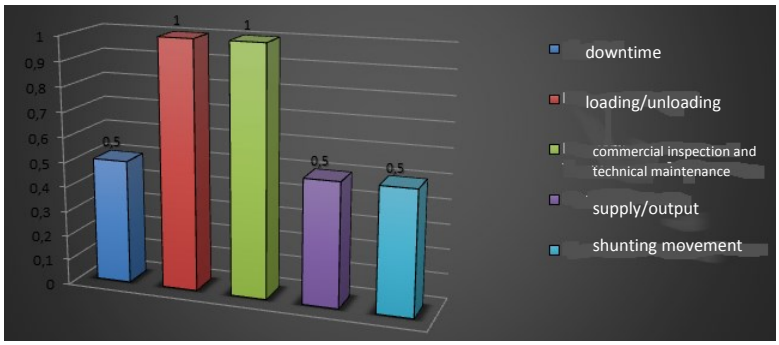
– Mounting of a neck between tracks of the terminal and receiving-departure tracks for container trains, which provide a direct supply of cars to the terminal and back, as well as access to the tracks of dead-end yard to exclude cars without transportation documents or subject to repair;

– Arrangement of cargo handling container park with installation of gantry cranes;

– Construction of dead-end tracks; tracks of marshalling yard of the station will be dismantled;



Pic. 4. Diagram of the ratio of time spent on cargo and shunting operations at TLC at Khovrino station in hours.



Pic. 5. Diagram of the ratio of time spent on cargo and shunting operations at TLC at Khovrino station in hours after reconstruction.

– Construction of point of uncoupling repair of cars at two positions with laying of one track specially for uncoupling repair;

– Reconstruction of existing adjacent tracks.

Similarly at Khovrino station such rearrangement option is possible, which provides for a step by step reconstruction of TLC and surrounding area:

– it is planned to lengthen tracks in the territory of the terminal itself, as well as to build a neck for easy and timely supply of trains at TLC with a centralized system of arrows and signal post;

– to rent fully the 6th station park and reconstruct it, including dismantling of all available tracks, laying in the middle of the park three tracks, where will be performed loading and unloading of goods on the direct variant, as well as construction of a highway on both sides of the gantry crane;

– to hire own staff, who will be able to produce shunting movement on railway tracks and ensure a significant reduction in downtime in anticipation of operations.

Conclusion. *As a result, implementation of these measures at the station Khovrino, as well as at the station Kuntsevo-II will create a network of modern container terminal and logistics centers capable of processing of arriving trains in view of significant growth in their volumes and retaining high quality of services for customers.*

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