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RATIONAL WAYS OF DEVELOPMENT OF RAILWAY0020TRANSPORTATIONS BY INTERNATIONAL TRANSPORT CORRIDORS (REVIEW)

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Summary. In the articles the problem and rational ways of development of subsequent integration of Ukrainian railways to a transport internetwork are considered. For integration of railways of Ukraine to a transport internetwork and subsequent development of passenger and freight transportations by international transport corridors rational ways are:the change of technology of work of railways of Ukraine needs selection of international transit transportations to a separate priority category. It follows to accept as a priority development of interoperable and intermodal transportations.

Key words: technology of maintenance of freight carriage stream, international transport corridors, railway transportations.

INTRODUCTION

Integration processes in economics of the developed countries require transformation of a transport system. A priority role in these processes is given to a railway transport. Actuality of questions of the article is conditioned the necessity of perfection of the technical providing of railway transportations. International transportations of loads needs an improvement technology of organization of carriage stream. The problem of development of international transportations for today coincides with basic directives and ways of development of Ukrainian, corresponds Conception [Conception of restructuring on the railway transport of Ukraine, 1997] and Program of restructuring on a railway transport. Research is in-process [Levitskih 2004] executed on the improvement of technology of service of freight carriage stream in international connection.

One authors [Aleshinskiy 2007] suggest to improve technology of complex of international transportations due to introduction of resource saving on the boundary transmission and near port freight stations.

The second authors [Savchenko 2003] suggest to improve organization of carriage stream at international transportations of load taking into account priority in

service. The decision of problem of raising of a transport industry requires on the European level:

- an improvement of legislations for the improvement of terms of implementation of export-import operations;
- an improvement of procedures of custom passing operations on the boundary transmission stations;
- improvement of railway technique and technology of organization of transportations.

In process is the problem of reduction of time of delivery of loads due to:

- minimization of number of loads delays;
- reduction of time for custom operations;
- an improvement of technology of work of railway transport with other types of transport.

Author of work [Donchenko 2007] suggests, for the improvement of technology of delivery of loads to inculcate:

- flexible tariffs for transportation
- to carry out the concentration of freight work on less number of the stations.

In paper [Demin 2005] the dependence of basic high-quality index of work of the sorting stations is well-proven - will stand transit carriage from a basic quantitative index - average daily transit carriage stream. In papers of authors [Aleshinskiy 2007] are set basic factors which influence on the outage of transit carriage with processing on the sorting stations. To these indexes belong: power of average daily transit carriage stream, the number of plan settings of this sorting station, the number of approaching to the station.

RESEARCH OBJECT

An object of researches is a process of organization of freight and passenger transportations by international transport corridors.

The subject of researches is technology of organization of freight and passenger railway transportations by international transport corridors.

The purpose of this work is determination of rational ways and practical measures for development of passenger and freight transportations by international transport corridors.

For achievement of this purpose the advanced studies on questions of theoretical developments of technology of international transportations and work on determination of rational ways of development of railway transportations by international transport corridors were considered and analysed.

Due to an advantageous geographical location Ukraine executes out the role of connecting link between Western Europe, countries of the CIS, countries of Near East and Asia. The formed railway system of Ukraine answers the level of the developed European states.

Organization of external economic links in a great deal determines the future of Ukraine as a independent state. Therefore the problem of development and improvement of foreign economic activity of railway transport has a state value. Railroads highways of Ukraine directly border and co-operate with the railways of Poland, Slovakia, Hungary, Romania, Bulgaria (ferry connection), Moldova, Byelorussia and Russian Federation. Shortest railways lie at the territory of Ukraine from Europe to Caucasus, Central Asia, Iran, Afghanistan; from Poland, Scandinavia and Baltic countries – to the ports of the Black Sea, country Middle East.

One of strategic tasks of Ukraine there is conditioning for transportations with the help of transcontinental directions from Europe not only to Central Asia but also through Caucasus to Iran and India.

RESULTS OF ANALYTICAL RESEARCHES

The analysis of experience of foreign railways shows that for intensification of transportations in the International Report it is needed to enter in the turn of carriage trains of permanent composition. Introduction of such trains will bring to acceleration of deliveries of loads, reduction in turnover of platforms which are utillized for these transportations, will improve efficiency of transport services.

Development of international railway transportations on the Eurasian ground restrains by the features of technological realization of transportations of each countries, by existent technical and infrastructural differences.

A rolling stock, which would be exploited on the railways of both track 1520 mm and track 1435 mm., are absent in Ukraine and countries of the CIS. Traditional technologies are foreseen by the operations of overload; inflict the railway transport of losses through the damage of loads and rolling stock, result in the considerable charges of time and labour. Practice of construction of freight carriages for internal transportations can not be widespread on creation of carriages of new type. One of important tasks of railway transport is development, manufacturing and testing of carriages for freight transportations for directions «East-West» [Donchenko 2007].

The carriages of the indicated type must carry out the free crossing of border on the joints of tracks 1520/1435 mm, and «cross-country» plying per of other states rail. New carriages must simultaneously answer the requirements of railways of track 1520 mm and tracks 1435 mm. Therefore to the carriages of type the «East-West» pull out additional requirements. Such requirements are already certain the proper Sights of UIS and Organization of Collaboration of Railways. Row of principle positions remain not decided [Norms for a calculation and planning of carriages 1996, Reminder of Organization of Collaboration of Railways № O+R 516 1998].

The first stage of project is forming of certain basis of creation of carriages for intermodal and interoperable transportations (without overload).

The analysis of construction of freight carriages for internal transportations show on considerable differences in the norms of planning, sizes, rigging, application of

various materials couplings and brake devices in the bearings elements of constructions, implementation of carriages after static axle loadings, constructions of workings parts.

Becomes important realization of measures on providing of technical compatibility of carriages at crossing by them state boundaries. The carriages for intermodal transportations are in winning position. Transportations of containers do not need transition of rolling stock from track of one width on other track. On boundary transitions at presence of the high-equipped terminals the overload of containers is carried out on the rolling stock of accepting sides. The construction of the specialized carriages-platforms for container-contrailer transportations testifies to the high enough technical level of domestic models of such carriages.

Creation of carriages for connection the «East-West» is determined: by the wide ground of rotation, providing of plying, considerably megascopic (not less than 1000 km for days) average daily runs and crossing of different climatic areas international transport corridors. Requirements to stored of loads in the process of transporting are grow.

At creation of domestic carriages for realization without shifting freight transportations in international railway connection by tracks 1435 and 1520 mm it is needed to follow introductions of approach for creation of carriages of new generation [Donchenko 2007]. Such rolling stock must be selected with economy, enhanceable operating reliability. It must answer to terms of maximal stored of loads and productivity during realization of freight-unloading operations, and also forming-disbandment of trains.

The technical decision of this problem has positive decision in-process [Donchenko 2007]. In this work intercarriage connection is offered to carry out by the combined couplings devices with the help of the automatic coupling of LAF and sliding buffers. Rigging of brake devices is offered to execute in two variants - with the use of the combined brake, or by establishment of brakes of two systems. To execute it in two variants - with the use of the combined brake, or by establishment of brakes of two systems.

International project of INTERGAUGE from the theme of «Interoperable», storage and unconcern of freight transportations on railway ways 1435 and got 1520/1524 mm got support of Comission of Europe [Shish 2006].

Technical requirements to the carriages for intermodal and interoperable transportations based on norms of UIS and Organization of Collaboration of Railways. Basical positions of norms are:

1. Providing of unity of norms of calculation and carriage designing.
2. Observance of overall limitations.
3. Transition from track 1520 mm on track 1435 mm and in reverse direction.
4. Providing of rolling stock of different tracks.
5. Compatibility of the brake systems.
6. Additional and optional terms.

Transition from track 1520 mm to track 1435 mm and in reverse direction. In obedience with the rules of using carriages of international connection freight carriages used on tracks 1520 and 1435 mm must have a truck construction only.

Technical compatibility in transition carriages from track to track provides the use of the followings technologies: replacement of trucks; replacement of wheel pairs; use of extensible wheel pairs.

Series of projects of providing of transition the carriages of joints of railway ways of different track it is based on the use of extensible wheel pairs.

From engineerings positions the most effective decision of problem is the use of the system of SUW 2000. However much it can't be the unique recommendation for the created rolling stock. These systems are enough expansive. It can be used only for the frequent crossing of scopes with tracks of different width. The use of such systems must contact with intensity of traffics of goods in both directions. The wide use of technology of extensible wheel pairs for freight transportations is problematic. This technology is let in on the ground above other at transportation of valuable and dangerous loads.

Replacement of light carts in carriages is not technically a perfect method, as devices of leaning baskets to standard for track 1435 mm light carts as U25 incompatible with the supporting devices of light carts models 18-100 [Demin 2001]. For the carriages of type the «East-West» acceptable is construction of new light cart with a joining knot. A construction provides leaning basket on resilient lateral skates of a superspring beam.

The prototype of the inculcated construction can be a light cart of domestic development as DK 2000 [Demin 2001]. A new construction abbreviates the loss of time for raising of carriages and their setting on the light carts of other type and size and joining of elements of mechanical part of brake. The tests of light cart of DK 200 rotined their excellent dynamic and operating descriptions [Demin 2001].

During exploitation of the special rolling stock and carriages with extensible wheelpairs was set that running expenses will be increased in 1.2 times due to additional charges of new equipment and review. Due to the use of bimodal devices it is possible to shorten time of loading-unloading and simplify technology of co-operating with other kinds of transport running expences decrease in 1.2 times. Use of new technology with a confiding transmission on the transmission-boundary stations allows the contiguous sides of trains to decrease running expenses in 3 times.

Passenger transport of Ukraine changes high-quality it is connected with its integration in the European unique railway system.

The department of «UZ» accepts urgent measures for a maintainance and modernization of passenger transport.

Conception of organization of speed motion of a trackage Ukraine is foresee the stage-by-stage increase of rates of movement of passenger trains at existent lines. Projects on creation of the specialized high speed highways are developed.

First prototypes of speed passenger trains become the permanent «Capital expresses». They execute trips on lines Kyiv-Kharkov and Kyiv-Dnepropetrovsk with the rates of movement to 140 km/h. Technical level of these trains is lower behind from speed trains which are widely utilized in the west. Our «Capital expresses» - are just speed-up trains. However their appearance signifies certain achievements on business of rev-up movement of passengers on the railways of Ukraine.

Following feet of increase of movement speed of trains - by 160 km/h. it is possible to attain by modernization of workings parts of passenger carriages. For this purpose is necessary to improve descriptions of a spring hanging by:

- introduction of the separate extinguishing of vibrations;
- replacements of spring complete sets of box-tree knots by gum-metallic elements;
- stabilizing of descriptions of resistance to the turns of light carts in relation to a basket;
- options of disk brakes.

The problem of the tired durability of spring hobs of type collets decided from 2007 year. The new construction of hob was tested by a firm RCC NOVA (Poland) with participation of the Ukraine for the mains of track 1435 mm (Poznan'- Warsaw) and tracks 1520 mm (Lvov-Kyiv). New hobs at tests rotined advantage at deformation tension.

For providing operating safety the equipment of carriages is needed to be equipped by the bort system of SEK SUW the automated control of blocking mechanisms.

It is suggested to equip carriages on light carts from extensible wheelpairs by the side system of current technical status of workings parts - ASTK [Demin 2005].

Mastering of movement speed up to 200 km/h. It is high quality new stage in passenger transportations on the railways of country. Realization of the program needs the use of high-tech. The carriages of speed trains must to answer international requirements on the level of comfort and on the indexes of safety of motion.

For providing of terms of safety of motion and comfort of ride in speed carriages are needed workings parts with high dynamic descriptions. They must be equipped a spring hanging of enhanceable flexibility, by the system of effective gidro extinguishing, by the dampers of KONI, by a disk and by magnetic brakes, by the devices of limitation of heel of basket at motion on the curvilinear areas of way. The example of workings parts, adapted to speed motion on the railways of track 1520 mm, is a light cart the type of 25an/s [Demin 2005]. This light cart behaves to family of workings parts for the fast movement 160, 200, 250 and 300 km/god. [Demin 2005]. During exploitation of light carts of 25 AS appeared the high dynamic qualities. Due to the rational choice of parameters of light carts, tearing down and surfaces of rolling of wheels of extensible wheelpairs falls to minimum.

For the increase of carrying capacity of passenger transport it is possible to utillize the followings variants:

- to increase frequency of motion that means to decrease an interval between every train;
- to utillize more long trains;
- to utillize two-storeyed trains.

At the decision of the first variant is necessary to utillize the difficult alarm systems and high-efficiency brakes. The use of the second variant requires buildings of long platforms of the stations. The use of the third variant requires more elaborate and more expensive design of vertebral beam and reconstruction of passenger platforms.

Projects of conduct of high speed motion with the use of appetences of «Pangolin» at speed 160 km/h. Specialists showed that their calculations ineffective [Korzhenevich 2007]. More rational on the view of authors [Korzhenevich 2007] is the use of facilities on the purchase of new locomotives and carriages for forming daily appetencies type «Capital express».

CONCLUSIONS

For integration of railways of Ukraine to a transport internetwork and subsequent development of passenger and freight transportations by international transport corridors rational ways are:

1. The change of technology of work of railways of Ukraine needs selection of international transit transportations to a separate priority category. It follows to accept as a priority development of interoperable and intermodal transportations.

2. Driving of infrastructure of international transportations to accordance with national and international standards. To carry out the increase of rates of movement - freight to 90 km/h (for empty carriages), 80 km/h (for the loaded carriages) and passenger - to 140 km/h. Primary decisions become a test and admitting to exploitation new and modernized rolling stock. Development of transition technology by trains of butt points of way 1520/1435 mm, creation specialized rolling stock for without shifting transportations in international railway connection by tracks of 1435mm and 1520mm.

3. Upgrade the quality of organization of transit transportations to the level of the European standard of quality of ISO.

4. Creation and use of hauling rolling stock of new generation for passenger transportations will allow substantially to promote the carrying capacity of lines, decrease the prime price of transportations, satisfy demand of passengers and provide high-quality service on a transport

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РАЦИОНАЛЬНЫЕ ПУТИ РАЗВИТИЯ ЖЕЛЕЗНОДОРОЖНЫХ ПЕРЕВОЗОК МЕЖДУНАРОДНЫМИ ТРАНСПОРТНЫМИ КОРИДОРАМИ (обзор)

Чернецкая Н.Б., Колодяжная Л.Г.

Аннотация. В статье рассмотрены проблемы и рациональные пути развития дальнейшей интеграции железных дорог Украины в международную транспортную сеть.

Ключевые слова: технология обслуживания грузовых вагонопотоков, международные транспортные коридоры, железнодорожные перевозки.