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**MODERN TRANSFORMATION OF TRANSPORT-  
TECHNOLOGICAL SYSTEMS OF UKRAINE**

**СОВРЕМЕННЫЕ ТРАНСФОРМАЦИИ ТРАНСПОРТНО-  
ТЕХНОЛОГИЧЕСКИХ СИСТЕМ УКРАИНЫ**

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*Представлена загальна характеристика основних підрозділів обслуговування вантажопотоків в Україні, які формують різноманітні транспортно-технологічні системи. Розкрито найбільшій проблеми їх розвитку та винайдено шляхи вирішення проблемних питань.*

The use of the most important areas of scientific and technological progress led to the achievement of the overall consistency of the transport complex needs of international economic relations and the relative stability of the global market.

In Ukraine, with an unproven structure of transport business management the task of commodity goods delivery acceleration is not solved. Domestic transport system is not consistent with the principle of complexity. The imbalance of major divisions on the basis of the criterion of timeliness traffic reduces the transit potential of the country. It is therefore necessary to plan effective technologies and encourage usage of transport capacity of interacting units of production infrastructure. [2]

In general case, transportation has become a condition for the economic independence of any country and one of the most efficient branches, which promotes the growth of industries, and promotes the growth of business and macroeconomic performance. Gross revenues from transport and other units operating activities due to higher volumes of work and due to the effective use of the potential in world trade routes, provides complete coverage of operating costs and the formation of necessary expanded reproduction of savings. [5]

The complexity of the selection, ordering, ranking and justification of adaptive development economic instruments of transport is determined by the increase of the principles of division and cooperation of labor in the internationalization of transport and technological systems.

Purpose of the article is to systematize approaches to priority optimization of transport and technological systems.

Management of the control of transport and technological systems parameters should be based on outcomes linked to the resources and real freight and capacity.

The selection of criteria for the of transport and technological systems operation and development evaluation with the general characteristics of the transport market and other environmental factors should be based on the data analysis of the

qualitative parameters of participation in transport and technological systems and their dependence on the implementation of an investment program.

Inclusion of Ukraine in the European economic relations and the global market requires the connection trans-Ukrainian areas of international transport corridors to other international corridors and transport centers. The best performance of such transport-interactions may be gained only when the quality and new technologies harmonious freight transshipment processes are incurred.

Ukraine is located in the geographical center of Europe, which drew attention to its foreign policy, economic associations, financial and industrial corporations, and individual companies.

Ukraine has a highly profitable manufactures in the chemical industry, metallurgy, it has rich lands, 18 seaports, developed network of railways and highways that are included in the European transport system, and provides links with the countries of the CIS. Nowadays there are a lot of joint ventures which already work with foreign partners-representatives of the world's leading manufacturers and marketers of fertilizers, metals, grains, and other industrial products. [1]

Providing investments, foreign partners often give us older technologies of transportation and cargo handling through dedicated terminals. The negative aspects of this situation are compounded by the high cost of specialized terminals and their total dependence on the market conditions of the goods.

Transport corridors in Western and Central Europe are joined together by organizations representing the coordination body of the Association of network traffic centers in Europe. The main objectives of such activities are the dissemination and practical implementation of the idea of transportation centers in Europe, the creation of reasonably located logistics centers in the European transport corridors, the development of combined transport, the creation and development of a network between public transport centers in Europe and beyond, to provide information and documentation concerning transport centers EEC governments, regional governments, interested organizations and so on, the development of proposals for the European transport policy, trade activity.

The central element in the European transport corridors are transportation centers that operate in several regions of Europe. Conceptions of their activities are different. Some centers are based on the basis of combining road and rail transport, and other associated marine and road transport, a number of centers designed for all four modes. Usually centers organize the delivery of goods by various modes of transport, using the handling complexes, depending on the type of cargo.

Any shipment process (first of all – the cargo loose) is labor-intensive, costly-full and polluting operation. The major drawback of the most specialized systems for bulk goods includes: acting, built and planned port highly mechanized bulk cargo handling complexes (in particular - carbamide, phosphorus, potassium) in the Ukrainian ports of Yuzhniy and Illichivsk is characterized by high unit capacity, lack of environmental reliability and high cost, technically complex, uniquely equipped (which requires high expenditure on maintenance and high-level staff). [4]

One of the Dutch consulting firm that performs research on the assessment of the possible environmental impact of the terminal on an shipment of potassium chloride, came to the following conclusion: each process step of the terminal is the source of the dust, and a mechanical method of transferring large amounts of fertilizer

creates dust indoors, one way to reduce this dust is to keep all transport communications in buildings and to provide vacuum storage space, as well as air filtration and its release into the atmosphere from the dust concentration of 10 mg per cubic meter. Effectiveness of the fight for the clean environment is defined by performance requirements of maintenance of the filters.

The main drawback of the known transshipment facilities is conservative technology of their work, which does not allow improving of the related systems in the first place - the chemical industry and transportation. Thus, manufacturers are forced to produce potassium chloride energy-intensive drying and disposed of in dumping millions of tons of salt, nitrogen fertilizer use granulation and processing of the final product anti-conglomerating agent. Fertilizer delivery in the hoppers makes the return journey back many kilometers of transport. Thus, in practice, to preserve the existing system of storage and use of fertilizers, wherein the energy-material and labor-intensive process, high losses of fertilizers and, in fact, are environmentally hazardous.

Similar lacks are the feature of rail trans-shipment complexes, which provide hoppers processing services, box cars and open-wagons with chemical goods transportation in bulk. These complexes have a high environmental risk and permanent repair of cars is caused by their discharge technology. Packing of bulk cargo in bags and big bags, except increasing complexity shipment, causes very complex problem and dispose of container.

How to solve these problems? Obviously, for the creation of highly efficient and environmentally safe handling complexes to apply a new technology of shipment, consistent with the production technologies, environmental services, transportation and use of goods, that is, to apply harmonized technology [7]. Harmonious material handling technology provides:

- Delivery of materials in process containers in bulk, hydro-resistant, monolithic, or liquid form;
- Environmentally safe transport of the material in a "capacity - pipeline - tank" by means of gravity, pneumatic or hydraulic powers;
- Shipment of containers with the use of rolling method.

These technologies are implemented through the following types of technological containers:

- Flexible containers, trays, which allow the use of existing vehicles (box cars, open-wagons, coppers, rigid containers, vessels of various types), and to develop a new universal design vehicles that provide the possibility of organizing shuttles bulk, liquid and general cargo;
- Specialized containers that provide an environmentally safe material discharge as a handling system, and the consumer, with the discharge of soluble materials may be in the form of solutions of given concentration;
- Containers convector designed for comprehensive delivery of various chemicals and metals.

The use of technological-containers allows to provide shipments with the use of the existing container berths, ro-ro berths, rail handling complexes. The railway container platforms and ramps are also can be used for the service to the domestic demand. In this case, the problem is solved by wagon delivery of chemical goods,

excluding the need for large storage areas, the loss of material and the freezing of funds.

The distinguished interest forms the creation of universal hydro-resistant port complexes. The multichannel shipment provides the use of high performance systems, and flexible buffer tanks and piping systems allow to minimize the cost. Implementation of these systems in block-modular design will significantly reduce the time of construction and installation work. The application of these systems can upgrade the hydro-shipment highly specialized handling complexes. These complexes can be set to the current terminal. Unlike modernization based on traditional technologies, require a solid investment funds, setting of hydro-shipment complex can be made with minimal effort.

Side-by-side with stationary handling system, floating systems can also be created, that (together with the multi-purpose vessels) can significantly improve the efficiency of water transport. Floating handling complexes provide a significant increase in the intensity of treatment ships; the replacement of a ballast with cargo for ships (which will increase the safety of navigation). Development and implementation of block floating processing containers allows to create a system of safe transportation of bulk and liquid cargo by sea.

The analysis of the efficiency of the basic systems of the existing transport routes arrived to the following conclusions:

**Conclusions.** Logistical principles of industrial and transport subsystems interaction as the form of communications integration take a special place in the course of an intensification of economic processes. The intensification of any economic relations in the transport system is aimed toward concentration of resources; importance of processing acceleration of goods and transport traffics therefore increases. Interaction of the enterprises entering into various organizational-legal structures goes deep. Complication of communications, expansion of labor co-operation scales causes expediency of the reserves realization lying on joints of economic interests.

At a substantiation of development strategy of port stabilization directions in transport market system the major criterion, except profitableness level, it is considered intensity of productions. The criterion of time minimization of an exit on new or desirable level of harmonious technology provides purpose achievement on competitiveness parameters.

Already at the first stage of harmonious technologies introduction in system "Transport", matching devices will allow to modernize existing vehicles on the basis of technological containers-insert application, and also to modernize existing and to create new highly effective and ecologically safe reloading complexes. Thus there is a possibility to reduce idle times and "unload" run of vehicles by increasing the mechanization level of cargo handling works and the organization of shuttle transportations, to pass from raw export to high technology, and to reduce transportation costs.

Introduction of harmonic technologies will allow to modernize warehouses and installations in order to minimize the loose of materials unloading, mechanisms for application of bulk materials and to create the system of consumers service maintenance of technological materials.

To exclude loosing of millions of tons of the materials polluting atmosphere, water, soil.

Introduction of harmonious technologies is expedient for beginning with stage-by-stage creation on the base of demonstration and production technological service lines for industrial and agricultural consumers.

Creation of industrial&technological lines base will allow to solve technical, technological and organizational problems of harmonious technologies introduction, their advertising, typification and duplicating.

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### **Аннотация**

Представлена общая характеристика основных подразделений обслуживания грузопотоков в Украине, которые формируют основные транспортно-технологические системы. Раскрыты наибольшие проблемы их развития и найдены пути решения проблемных вопросов.

Логистические принципы взаимодействия производственных и транспортных подсистем как форма интеграционных связей занимают особое место в процессе интенсификации хозяйственных процессов. Интенсификация любых хозяйственных отношений в системе транспортных отношений нацелена на концентрацию ресурсов, поэтому возрастает значение ускорения обработки грузовых и транспортных потоков. Углубляется взаимодействие предприятий, входящих в различные организационно-правовые структуры. Усложнение связей, расширение масштабов кооперации труда обуславливает целесообразность реализации резервов, лежащих на стыках хозяйственных интересов.

При обосновании стратегии развития направлений стабилизации порта в транспортной рыночной системе важнейшим критерием, кроме уровня прибыльности, считается интенсивность производственных процессов. Критерий минимизации времени выхода на новый или желаемый уровень гармоничной технологии обеспечивает достижение цели по параметрам конкурентоспособности.

Уже на первом этапе внедрения гармоничных технологий в системе "Транспорт" согласующие устройства позволят модернизировать существующие транспортные средства на основе применения технологических контейнеров-вкладышей, а также модернизировать существующие и создать новые высокоэффективные и экологически безопасные перегрузочные комплексы. При этом появляется возможность сократить простои и "холостые" пробеги транспортных средств путем повышения уровня механизации погрузочно-разгрузочных работ и организации челночных перевозок, перейти от сырьевого экспорта к наукоемкому и уменьшить транспортные расходы.

Внедрение гармоничных технологий позволит модернизировать склады и установки разгрузки сыпучих материалов, механизмы для внесения удобрений и создать систему сервисного обеспечения потребителей технологическими материалами.

Исключить потерю миллионов тонн сыпучих материалов, загрязняющих атмосферу, воду, почву.

Внедрение гармоничных технологий целесообразно начинать с поэтапного создания базовых демонстрационно-производственных технологических линий сервисного обеспечения промышленных и сельскохозяйственных потребителей.

Создание базовых производственно-технологических линий позволит решить технические, технологические и организационные проблемы внедрения гармоничных технологий, их рекламы, типизации и тиражирования.