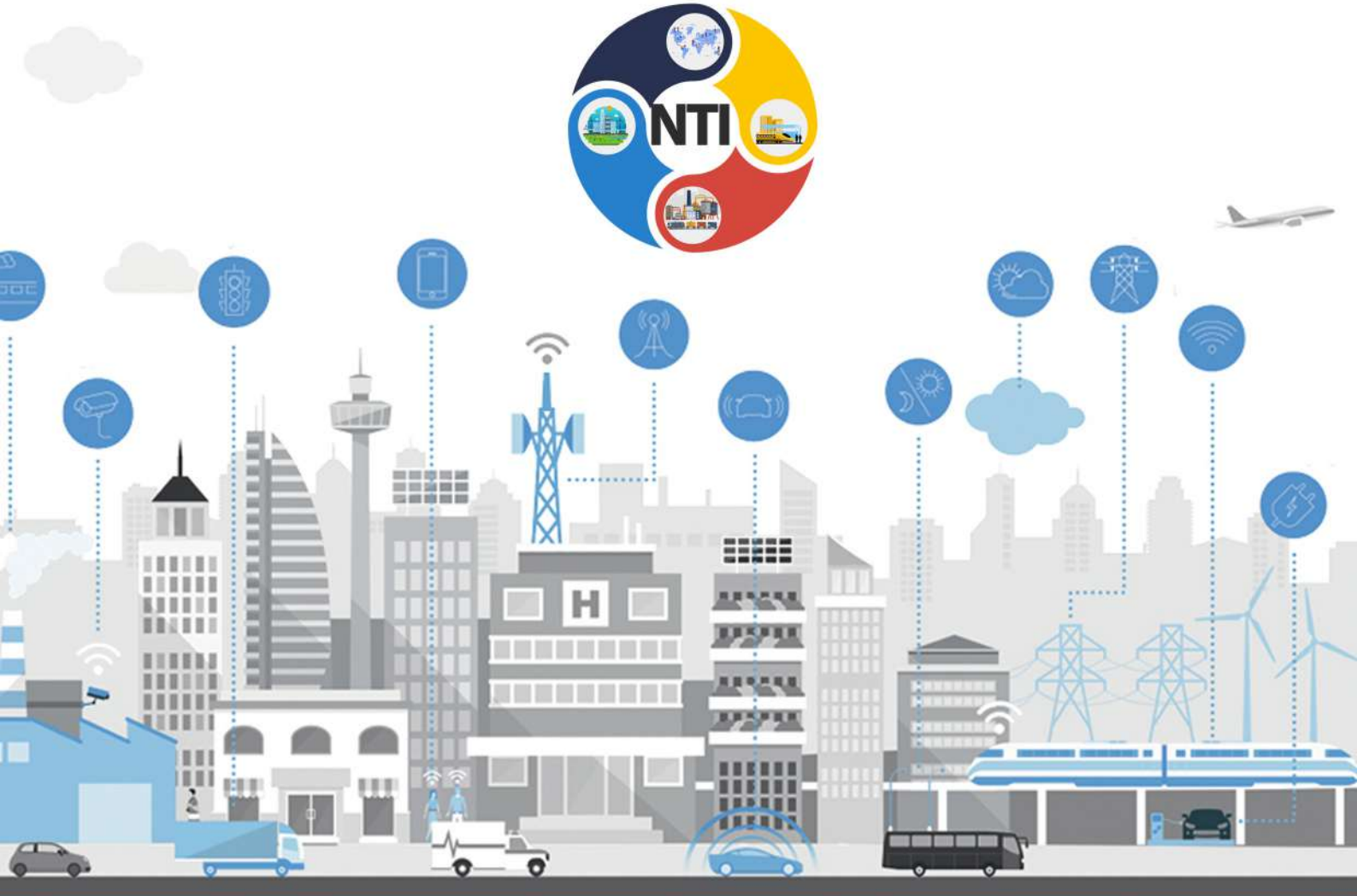
Міністерство освіти і науки України
Український державний університет залізничного транспорту

МАТЕРІАЛИ

двадцять першої науково-практичної міжнародної конференції

«Міжнародна транспортна інфраструктура, індустріальні центри та корпоративна логістика»

(5-6 червня 2025р. м. Харків, Україна)



МІНІСТЕРСТВО ОСВІТИ І НАУКИ УКРАЇНИ
МІНІСТЕРСТВО ІНФРАСТРУКТУРИ УКРАЇНИ
ТРАНСПОРТНА АКАДЕМІЯ УКРАЇНИ
АТ «УКРАЇНСЬКА ЗАЛІЗНИЦЯ»
CONSERVATOIRE NATIONAL DES ARTS ET MÉTIERS (FRANCE)
INSTITUTE OF AUTOMATIC CONTROL TELEMATICS OF TRANSPORT (POLAND)
УКРАЇНСЬКИЙ ДЕРЖАВНИЙ УНІВЕРСИТЕТ ЗАЛІЗНИЧНОГО ТРАНСПОРТУ
ІНСТИТУТ ЕКОНОМІКИ ПРОМИСЛОВОСТІ НАН УКРАЇНИ

Матеріали

Двадцять першої науково-практичної

міжнародної конференції

«МІЖНАРОДНА ТРАНСПОРТНА ІНФРАСТРУКТУРА, ІНДУСТРІАЛЬНІ ЦЕНТРИ ТА КОРПОРАТИВНА ЛОГІСТИКА»

(5 - 6 червня 2025р. м. Харків)

ОРГАНІЗАЦІЙНИЙ КОМІТЕТ

Голова: ***Панченко С.В.***, д.т.н., проф., ректор Українського державного університету залізничного транспорту (Харків).

Заступники голови: ***Каграманян А.О.,*** к.т.н., доц., проректор з науково-педагогічної роботи .Українського державного університету залізничного транспорту (Харків);
Дикань В.Л., д.е.н., проф., завідувач кафедри економіки та управління виробничим і комерційним бізнесом Українського державного університету залізничного транспорту (Харків).

Секретаріат:

Толстова А.В. к.е.н., доц., доцент кафедри економіки та управління виробничим і комерційним бізнесом Українського державного університету залізничного транспорту (Харків).

Шаповал Г.В. к.т.н., доц., заступник декана з денної форми навчання Факультету УПП Українського державного університету залізничного транспорту (Харків).

Примаченко Г.О. к.т.н., доц., доцент кафедри транспортних систем та логістики Українського державного університету залізничного транспорту (Харків).

are urgent priorities for the railway sector.

[1] Railway Infrastructure of Ukraine: Recovery Paths and the Role of MSK Transbud. URL: https://www.railinsider.com.ua/zaliznychna-infrastruktura-ukrayiny-shlyahy-vidnovlennya-ta-rol-msk-transbud

[2] Ukraine to Spend Nearly €86 Million on Standard-Gauge Railway Development. URL: https://www.railinsider.com.ua/ukrayina-vytratyt-majzhe-86-mln-yevro-na-rozbudovu-yevrokoliyi/

[3] Standard Gauge to Lviv – A First Step Toward Improved Connectivity Between Poland and Ukraine: Study. URL: https://www.railinsider.com.ua/yevrokoliya-do-lvova-pershyj-krok-do-pokrashhennya-spoluchennya-mizh-polshheyu-ta-ukrayinoyu-doslidzhennya/

[4] Construction of Standard-Gauge Line on Mostyska–Sknyliv Section to Begin in 2024. URL: https://interfax.com.ua/news/economic/969682.htm

[5] Ukrzaliznytsia Advances Infrastructure Development for EU Integration: Standard Gauge to Be Built Between Chop and Uzhhorod. URL: https://www.uz.gov.ua/press_center/up_to_date_topic/626227/

УДК 656.212

IMPROVING RAILWAY INFRASTRUCTURE FOR HIGH-SPEED RAIL OPERATIONS

Ph.D (Tech.) G. V. Shapoval[1], postgraduate .), L. V. Lys[1]
[1]Ukrainian State University of Railway Transport (Kharkiv)

Rail transport is one of the foundational sectors of the national economy. Effective management of this sector is a key condition for ensuring spatial economic cohesion, protecting national economic interests, and enhancing the quality of life for the population. Passenger transportation plays a particularly important role in this regard, as it enables population mobility and the rapid movement of the labor force.

High-speed rail operations are based on the application of advanced technologies across multiple domains. The implementation of high-speed services requires significant capital investment. The growing demand for high-speed transport has underscored the relevance of studies assessing the feasibility of using existing railway infrastructure for this purpose. Upgrading the existing infrastructure can substantially reduce the cost of designing new high-speed lines, although it necessitates justification of new technical solutions.

Among the main factors constraining the implementation of high-speed rail in Ukraine are the geometric and operational characteristics of existing railway alignments. One key aspect is identifying specific sections where train speeds can be increased on active lines without full-scale reconstruction or with only minimal investment in infrastructure upgrades.

When preparing lines for high-speed operations, the bulk of capital expenditures is typically associated with the modernization of intermediate stations and junctions due to their large number. This raises the issue of

evaluating the investment required for their reconstruction. Enhancing the efficiency of railway infrastructure utilization necessitates an individual cost-benefit analysis for the modernization of each such facility as part of the overall assessment of high-speed rail implementation along a given section.

In parallel with the construction of new high-speed lines, existing lines are being actively upgraded to meet higher speed requirements. The initial phase typically involves increasing passenger train speeds to 160–200 km/h. Further speed increases up to 250 km/h may be achieved on existing alignments. In such cases, freight operations can only be maintained if there is sufficient residual capacity. However, for passenger train speeds of 250–350 km/h, the construction of a dedicated high-speed railway line is mandatory.

It is essential to address the issue of selecting which segments of railway infrastructure are to be modernized. The objective is to achieve maximum travel time reduction with the lowest possible capital outlay. When deciding on infrastructure reconstruction for high-speed train operations, particular attention must be paid to the target design speed that will be implemented.

A key criterion for selection is the cost per minute of travel time reduction on a given railway segment. Applying a comprehensive approach at the pre-feasibility stage to identify infrastructure components for inclusion in the high-speed modernization project enables decision-makers to maximize the cost-efficiency of allocated investments while ensuring the designed operational speeds are achieved.

[1] . Commission regulation (EU) 1299/2014 of 18 November 2014 on the technical specifications for interoperability relating to the «infrastructure» subsystem of the rail system in the European Union. – Access mode: http://data.europa.eu/eli/reg/2014/1299/oj.

[2] . Directive (EU) 2016/797 of the European Parliament and of the Council of 11 May 2016 on the interoperability of the rail system within the European Union. - Access mode: http://data.europa.eu/eli/dir/2016/797/oj.