

## **A list of the main scientific results that made it possible to achieve the impact**

### **1. Implementation of research projects funded by domestic enterprises.**

In the period from 2020 to 2024 the Institute received revenues in the engineering and technology area in the amount of more than UAH 95 million on completion of research work under economic contracts with domestic enterprises (more than 500 research works were executed). The key research projects in this area are: “ Estimation of the actual residual lifetime of solebars and bolster beams of freight car bogies manufactured in 1975-1983 on the basis of bench life tests”, customer: “NDKTI” Branch of JSC ‘Ukrzaliznytsia’, contract No. 4/74-19 dated December 24, 2019, state number RK 0120U104020, amount of funding received (year): UAH 975.00 thousand (2020); “Scientific and experimental studies of traction and braking characteristics of subway cars”, customer PJSC “Kryukovsky Railway Car Building Works”, Contract No. 53-21 of March 05, 2021, state registration No. 0121U113701, amount of funding received (year) is UAH 78.5 thousand (2021); “Scientific and experimental studies of the technical characteristics of the dump car model 33-7141 on three-axle bogies model 18-7142”, ordered by PJSC “Kryukovsky Railway Car Building Works”, contract No. 158-20 of June 25, 2020, state registration No. 0121U114037, amount of funding received (year): UAH 1712.5 thousand (2020-2021); “Assessment of the stability of the technology for the manufacture of cast solebars (drawing 7020.00.002-0) and bolster beams (drawing 7020.00.001-02) of freight car bogies manufactured by Kremenchuk Steel Works Stock Company in the first half of 2021”, ordering party is JSC “Kremenchuk Steel Plant”, Contract No. 243-20 of December 16, 2020, State registration No. 0122U000695, amount of funding received (year): UAH 993.9 thousand (2021); “Technical diagnostics of diesel locomotives owned by Mykolaiv Locomotive Repair Plant LLC, which have served their intended service life, in order to determine their technical condition and the possibility of further operation”, Customer is Mykolaiv Locomotive Repair Plant LLC, contract No. 62-21 dated March 19, 2021, state number: RK 0121U114433, amount of funding received (year): UAH 316.8 thousand (2021); “Technical diagnostics of metro cars that have served their intended service lifetime”, customer: KP “Kyiv Metro”, Contract No. 89-21 of April 23, 2021, state No. RK 0123U104402, amount of funding received (year): UAH 738.7 thousand (2021), etc.

### **2. Impact on the development of the research and experimental facilities and production.**

In the period from 2020 to 2024, the amount of funds for the renewal of scientific and laboratory equipment, including the book value of equipment obtained at own expense from the own production fund, were over UAH 800 thousand. At the same time, costs from the own production fund for the implementation of promising research and development work totaled UAH 1,824 thousand. Investments in scientific equipment and future research work allowed to expand the range of research work performed, in particular, as a result of this, it became possible to successfully pass the initial accreditation of the inspection body of SE “UkrNDIV” (NAAU Accreditation Certificate dated April 20, 2023 No. 70488, type A, valid until April 19, 2028) and obtaining appointment certificates of a conformity assessment body to perform certain conformity assessment tasks as a third party, as defined in the technical regulations on the safety of rolling stock of railway transport and the technical regulations on the safety of railway transport infrastructure (letters No. 3431-07/73; 3431-07/74 dated August 19, 2024. The link is <https://astr.me.gov.ua/CommonDocs/Docs/View/33003/50294/0/23>).

### **3. State recognition of scientific results.**

As of December 31, 2024, 35 researchers, including 6 PhDs (17.1%), among whom 3 (8.5%) have the academic title of senior scientist in the specialty 273 “Railway Transport”, are engaged in research activities in the Institute.

Over the past 10 years, the Institute has been awarded a number of diplomas and honors: victory in the All-Ukrainian competition for product quality and a diploma of the winner of the competition “100 Best

Products of Ukraine” at the regional and national stages of the competition, winner of the All-Ukrainian competitions “Choice of Ukraine 2017”, “Best Enterprise of Ukraine 2018”, “Choice of Ukraine 2021”. Honorary award of 2019 “Quality Star”.

Scientists of SE “UkrNDIV” were repeatedly involved as official opponents in the defense of theses for the degree of PhD in engineering, which indicates that the Ukrainian community in the field of railway transport recognizes their scientific authority and professional level. One of the specialists is the acting secretary of Section 13 “Aerospace Engineering and Transport”, who has examined 41 scientific papers during the Competitive Selection of Basic Scientific Research, Applied Scientific Research, Scientific and Technical (Experimental) Developments. The Institute's specialists are also members of the working group on the legislative regulation of conformity assessment in the railway industry, established by the order of the Ministry of Infrastructure.

Recognizing the high competence and level of qualification of the Institute's personnel, the Cabinet of Ministers of Ukraine by its Resolution No. 703 of October 11, 1994 appointed SE “UkrNDIV” as the main scientific organization of passenger railcar building in Ukraine.

In accordance with the Resolution of the Cabinet of Ministers of Ukraine No. 83 dated March 04, 2015 “On Approval of the List of State Property Objects of Strategic Importance for the Economy and Security of the State”, SE “UkrNDIV” is an object of strategic importance in the area of scientific activity.

The national significance of the Institute lies in performing unique scientific research in the field of freight and passenger railcar building, high-speed passenger railway vehicles, electric and diesel trains, rail buses, metro cars and other types of rolling stock, technical diagnostics of transport engineering products to extend their service lifetime beyond the designated period.

#### **4. Performing research and development studies paid for by foreign companies.**

In the period from 2020 to 2024, based on the results of research and development work under economic contracts with foreign companies, the Institute received revenues in the amount of UAH 10.8 million in the engineering and technology area (50 research projects were completed in total). The key research projects in this area are as follows: “Study of technical characteristics of intermediate rail fasteners during testing for compliance with harmonized European standards”, Customer: LLC “G.S.I. Group”, Contract No. 100-20 of February 02, 2020, State Reg. No.: RK 0122U001071, amount of funding received (year): UAH 138.2 thousand (2020); “Inspection of the technical condition of 8 cars of electric rolling stock and 1 compartment passenger car that have served their designated service lifetime in order to determine the possibility of their further operation (final)”, Customer: TRANSPORTTEST LLC, contract No. 54-23 dated 03.04.2023, State Reg. No: RK 0123U103427, amount of funding received (year): UAH 332.0 thousand (2023); “Inspection of the technical condition of ten cars of electric rolling stock that have served their intended service life in order to determine the possibility of their further operation (final)”, customer: TRANSPORTTEST LLC, Contract No. 13-24 dated January 30, 2024, State Reg. No: RK 0124U003008, amount of funding received (year): UAH 321.9 thousand (2024).

#### **5. International acknowledgment of research achievements.**

The obtained results of scientific research correspond to the world level, which enables SE “UkrNDIV” to work and involve both domestic and foreign partners. The recognition of research achievements at the international level is evidenced by long-term cooperation with many well-known companies and institutions of the CIS countries, Georgia, the Baltic States, France, Germany, Czech Republic, Slovakia, Poland, USA, China, India, Canada, international institutions in the field of railway transport - the International Union of Railways (UIC), and railway administrations of friendly countries.

In 2020-2024, research and development work was carried out under contractual terms with foreign companies from Azerbaijan, Georgia, Estonia, Kazakhstan, Latvia, Lithuania, Moldova, Poland, Slovakia, the Czech Republic, the United States of America, and France.

The results of the Institute's research have been approved and tested at numerous international scientific conferences, including those co-founded by the Institute: “Actual Problems and Prospects of Innovative Development of Economy and Technology in the Context of Ukraine's Integration into the European Research and Production Area”. Based on the results of the work of international experts, the Institute received a 4\* certificate of recognition of excellence in Europe.

The achievements of the testing center in the field of testing of railway transport equipment are recognized by European research centers: “Baltic Testing Center” LLC, ‘HUTA BANKOWA Sp. z’ LLC. UkrNDIV, the certification body for railway products, has joint research and development activities on conformity assessment with Aktobe Rail and Structural Plant LLP (Kazakhstan) and Amsted Rail Company, Inc (USA).

The activities of the Institute's conformity assessment bodies, accredited by the National Accreditation Agency of Ukraine within the framework of ILAC MRA, are recognized not only at the European but also at the international level.

The further activities of the Institute are aimed at enhancing the stronger image of the Enterprise and its authority as a European level institution within Ukraine and worldwide.