

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

The main activities of Research Group for Analytical Forecasting and Development of the Industry and Publishing aimed at popularization of research results is the implementation of scientific and analytical activities and publication of research results on the construction, operation, upgrading of railway rolling stock. Some of the own scientific results are covered in the research report “Analysis of the state, trends and prospects of the industry development in the scientific and technical sector ‘Rolling stock of railways’”, state register. No. 0120U104020, 2024.

While performing this work, the research group obtained the following main scientific results, which ensured the achievement of impact through their publications:

1. The consequences of the COVID-19 pandemic on the activities of railway transport enterprises were determined.
2. The dynamics of the freight car fleet renovation in Ukraine was defined.
3. A study was carried out to analyze the current state of the inventory fleet of passenger cars of JSC “Ukrzaliznytsia”.
4. Through analytical analysis of information from various sources, promising areas for further development of railway rolling stock have been identified, in particular, it has been found that hybrid shunting locomotives with biofuel engines and powerful batteries and hydrogen systems have significant development prospects.
5. Prospects for the introduction of energy-saving and hydrogen technologies in railway transport based on the results of recent achievements and research, including those presented at the InnoTrans 2024 exhibition, are proved.
6. The importance of transition to carbon-neutral transport (especially for regions with partially electrified or non-electrified railway network) is determined.

Publication activity and publishing.

7. 3 monographs, 10 issues of the Collection of Scientific Papers “Railbound Rolling Stock”, and the Conference Proceedings were prepared for publication and published: II International scientific and practical conference “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”.

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