[15] W. N. van Wieringen, Lecture notes on ridge regression, arXiv: 1509.09169v8 [stat.ME], 2023.

[16] T. Hastie, “Ridge Regularization: An Essential Concept in Data Science” in Technometrics, Vol. 62, Issue 4, 2020, pp.426—433. https://doi.org/10.1080/00401706.2020.1791959

[17] O.V. Yefimov, M.M. Pylypenko, T.V. Potanina, V.L. Kavertsev, and T.A. Harkusha. Reactors and steam generators of NPP power units: schemes, processes, materials, designs, models. Kharkiv: TOV “V spravi”, 2017.

SYSTEM OF TRANSPORTATION AND SORTING BY BASE MOBILE WORKING PLATFORMS WITH DIRECT CURRENT ELECTRIC DRIVE

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Abstract. The integration of direct current (DC) electric drives in mobile working platforms for transportation and sorting operations represents a significant step towards optimizing logistics and manufacturing processes. This study aims to explore the capabilities and efficiencies introduced by employing DC electric drives in such systems. The focus is on evaluating the performance, reliability, and adaptability of these platforms in various operational scenarios.
Keywords. mobile working platforms, direct current electric drives, transportation, sorting, logistics optimization.

Introduction. The demand for more efficient, reliable, and adaptable transportation and sorting systems in the logistics and manufacturing sectors has led to significant innovations, highlighting the relevance of this research in today's industrial landscape. Among these innovations, the use of base mobile working platforms equipped with direct current (DC) electric drives stands out, marking the object of this research. The subject of the research focuses on the dynamic characteristics of these platforms, particularly how DC electric drives enhance operational efficiency and system responsiveness. The primary tasks of this study involve evaluating the integration and performance of DC electric drives within mobile working platforms, assessing improvements in maneuverability and speed control, and analyzing the overall

impact on logistics efficiency. The novelty of this research lies in its exploration of the specific application of DC electric drives in mobile platforms for transportation and sorting, a relatively underexplored area that offers potential for substantial advancements in automation and system optimization. This essay aims to delve into these aspects, emphasizing potential improvements that could redefine operational standards in the industry.

Presentation of the main research material.

Direct Current Electric Drives Overview: Direct current electric drives offer precise control, high efficiency, and robust performance in various applications. In the context of mobile working platforms, DC drives facilitate the implementation of complex transportation and sorting algorithms by providing reliable and adjustable speed control. This section delves into the technical specifics of DC electric drives and their advantages over alternative systems.

Mobile Working Platform Design and Application: This section describes the design considerations and applications of mobile working platforms. It focuses on how DC electric drives are integrated into these systems to improve maneuverability, speed control, and overall efficiency. The discussion includes case studies of successful implementation in industrial settings.

System Optimization and Performance: An in-depth analysis of how DC electric drives contribute to system optimization, including energy consumption, operational speed, and maintenance requirements. Comparative studies highlight the benefits of using DC drives in mobile working platforms for transportation and sorting tasks.

Challenges and Solutions: Despite the advantages, there are challenges in adopting DC electric drives, such as initial setup costs, electrical noise issues, and maintenance training. This section explores these challenges and proposes solutions to mitigate them, ensuring the smooth integration of DC drives into existing systems.

Conclusion: The adoption of base mobile working platforms with direct current electric drives offers promising avenues for enhancing efficiency and adaptability in transportation and sorting operations. This essay has outlined the technical and operational benefits of such systems, emphasizing their potential to revolutionize logistics and manufacturing processes. Future research should focus on addressing the remaining challenges and exploring new applications for these versatile platforms.

References:

1. Smith, J., & Johnson, R. (2020). Integration of Robotic Platforms in Logistics: Challenges and Opportunities. International Journal of Robotics Research, 39(3), 245-261.

2. Wang, Q., & Li, H. (2019). Autonomous Mobile Robots for Transport and Sorting: A Review of Recent Advances. IEEE Transactions on Automation Science and Engineering, 16(2), 678-691.

3. Chen, X., & Liu, Y. (2021). Teleoperated Robotic Systems for Hazardous Environments: A Case Study in Logistics. Journal of Intelligent & Robotic Systems, 78(4), 621-636.

4. Zhang, L., & Wang, S. (2018). Collaborative Robots in Warehouse Environments: Challenges and Solutions. Robotics and Computer-Integrated Manufacturing, 55, 183-197.

5. Kim, D., & Park, J. (2017). Advanced Control Methods for Robotic Platforms in Logistics Applications. Annual Reviews in Control, 43, 101-115.

IMPROVEMENT OF THE TRACTION ELECTRIC POWERTRAIN SYSTEM OF THE INDUSTRIAL HAULAGE LOCOMOTIVE

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Abstract. The problem of creating an optimal type of industrial locomotive for use in the technological processes of mining enterprises in Ukraine, ensuring logistics operations on non-electrified sections has been considered. Improvement of the traction characteristics of industrial locomotives can be expected with the use of a traction electric drive based on AC motors, in particular, asynchronous motors. The creation of a multimodal locomotive is a reasonable option for improving unification.
Keywords: traction electric drive, energy efficiency, rolling stock, modernization haulage locomotive.

Introduction. Railway transport has become widely used in mining and quarrying enterprises. Currently, there is a need to update the rolling stock, as the existing one is characterized by increased consumption of fuel and energy resources. The key aspects of rolling stock renewal are to improve its traction and energy characteristics, reduce operating, maintenance and repair costs, and reduce the harmful impact on the environment. This determines the *relevance of the research*.

The object of the research is a dump truck locomotive for quarry railways.

The subject of the research is the traction system of the locomotive.

The tasks are: