

## **OPTIMIZATION OF PRODUCTION FACILITIES FOR MAINTENANCE AND REPAIR OF HEAVY-DUTY TRUCKS IN MOTOR TRANSPORT ENTERPRISES**

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The efficiency of maintenance and repair (M&R) operations for heavy-duty trucks within motor transport enterprises (MTEs) significantly influences vehicle reliability, operational costs, and overall fleet performance. Recent studies emphasize the necessity of reorganizing production facilities to enhance the effectiveness of M&R processes. For instance, Mytko and Savin [1] highlight that the development of production units for routine maintenance and repair should be determined by the volume of work, considering the cost of execution. They suggest that centralized maintenance facilities serving multiple enterprises can optimize resource utilization and reduce downtime.

The integration of intelligent control systems into the repair processes of industrial facilities with distributed infrastructure has been explored by Kupin et al. [2]. Their research indicates that implementing cyber-physical systems (CPS) can lead to more efficient and adaptive maintenance strategies, particularly in complex operational environments. Such systems enable real-time monitoring and predictive maintenance, which are crucial for minimizing unexpected failures and optimizing maintenance schedules.

In the context of Ukraine, where MTEs often operate under challenging conditions, including economic constraints and infrastructural limitations, adopting these advanced approaches is particularly pertinent. The modernization of M&R facilities, coupled with the implementation of CPS, can significantly enhance the operational readiness of heavy-duty trucks, ensuring timely service delivery and improved safety standards.

In conclusion, optimizing production facilities for the maintenance and repair of heavy-duty trucks in MTEs involves a strategic combination of reorganizing existing structures and integrating advanced technological solutions. Such measures are essential for improving fleet reliability, reducing operational costs, and ensuring the sustainability of transport operations in demanding environments.

### **References:**

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