

## Improving the Dependability Evaluation Technique of a Transport Vehicle

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**Abstract.** The safety of vehicles depends on the dependability of its elements, which should guarantee the trouble-free operation throughout the entire service life. The concepts of "safety" and "dependability" for the vehicle are inseparable. Therefore, all structural components throughout the entire service life before the onset of the limit state must guarantee trouble-free operation of rolling stock with the installed system of maintenance and repair, i.e. be in working condition as long as possible and perform all necessary functions.

Regarding the relevance in predicting the technical condition of a vehicle, authors present improving the dependability evaluation technique of its facility by the value of a safety factor. The impact of actual operating conditions of rolling stock on durability and operability (on the example of a pantograph) is taken into account. The nearest relation between the dependability of a structure and a safety factor and parameters of probability distributions of stresses is determined.

Improving the technique can be used to evaluate the dependability of the facility from the viewpoint in the individual prediction of operability and life of the structural elements for the vehicle based on observations over the process of their wear. This will increase the safety and dependability of operation for all complex structures.

**KEY WORDS:** *safety, technique, dependability, vehicle, life, wear, pantograph*

## Удосконалення методу оцінювання надійності об'єкта транспортного засобу

**Анотація.** Безпека руху транспортних засобів залежить від надійності його елементів, які протягом всього терміну служби повинні гарантувати безвідмовну роботу. У зв'язку з актуальністю прогнозування технічного стану транспортного засобу, представлено удосконалення методу оцінювання надійності його об'єкта за величиною коефіцієнта безпеки. Враховано вплив реальних умов експлуатації рухомого складу на довговічність і працездатність (на прикладі пантографа). Визначено найближче співвідношення між надійністю конструкції та коефіцієнтом безпеки і параметрами ймовірнісних розподілень напружень.

Удосконалення методу можна використовувати для оцінювання надійності об'єкта з точки зору індивідуального прогнозу працездатності та ресурсу елементів конструкції транспортного засобу на основі спостережень за процесом їх зношування. Це дозволить підвищити безпеку та надійність експлуатації всіх складових конструкцій.

**Ключові слова:** *безпека, метод, надійність, транспортний засіб, ресурс, знос, пантограф*

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