

RELIABILITY PROPERTIES AND THEIR INDICATORS

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Changes in the performance properties of cars and their elements, given to them during design and manufacture, are due to their interaction with factors characterizing operating conditions: load, speed, climatic, etc. The action of these factors has a significant influence on vehicle reliability.

Reliability is understood as the property of a product, unit or mechanism to perform specified functions, maintaining established performance indicators over time within specified limits corresponding to specified modes and conditions of use, maintenance, repairs, storage and transportation [1].

The frequency of failures reflects the failure-free property of an object. Elimination of failures is associated with the exclusion of the vehicle from operation for a certain period of time (downtime), labor and material costs. Downtime and costs depend on the maintainability properties of the technical system. The operating time of a part before failure occurs is called its resource and characterizes its durability. For such a complex object as a car, the failure of an element (part, assembly unit, unit) does not, as a rule, determine the durability of the car as a whole. However, an increase in the number of failures leads to the need to remove this vehicle from service, which determines the durability of the vehicle as a whole.

The reliability of the car as a whole is characterized by the following basic properties.

Reliability is the ability of a car to continuously remain operational for a certain time or mileage.

Durability is the ability of a vehicle to remain operational until a limiting state occurs with an installed system for carrying out maintenance and repair work.

Maintainability (operational manufacturability) is a property of a car, which consists in its adaptability to preventing and detecting the causes of failures and damage, maintaining and restoring an operational state through maintenance and repair.

Storability is the ability of a car to maintain the values of reliability, durability and maintainability indicators during and after storage and transportation. In automobile transport, this indicator is used for cars - during long-term storage (preservation) and transportation; for materials (oils, liquids, paints) and some types of products (tires, batteries, etc.) - during their short-term and long-term storage [2,3].

The most important indicator of the durability property is the technical resource - the operating time of the machine from the start of operation or its resumption after a major overhaul until the onset of the limit state, i.e. unavoidable departure of the specified parameters beyond the established limits. Signs (criteria) of a limit state are established by the documentation for a given machine model.

References.

1. Журавель Д.П. Триботехніка: посібник до лабораторно-практичних робіт / Д.П.Журавель, О.Ю. Новік, А.М. Бондар, К.Г. Петренко. – Мелітополь: Видавничо-поліграфічний центр «Люкс», 2019. 136 с.

2. Журавель Д.П. Технічний сервіс мехатронних систем: навчально-методичний посібник до самостійної роботи / А.М. Бондар, Д.П. Журавель, О. Ю. Новік, К.Г. Петренко, О.В. В'юник. - Мелітополь: Видавничо-поліграфічний центр «Люкс», 2021. - 140 с.

3. Журавель Д. П. Обґрунтування діагностичних параметрів рульового керування транспортного засобу під час технічного обслуговування / Д. П. Журавель, А. М. Бондар, Г. І. Дашивець // Науковий вісник Таврійського державного агротехнологічного університету: електронне наукове фахове видання / ТДАТУ; гол. ред. д.т.н., проф. В. М. Кюрчев. Мелітополь: ТДАТУ, 2023. Вип. 13, том 2. 10 с. DOI: 10.31388/2220-8674-2023-2 -1.

Research supervisor: Bondar A., Ph.D., sin. teacher.