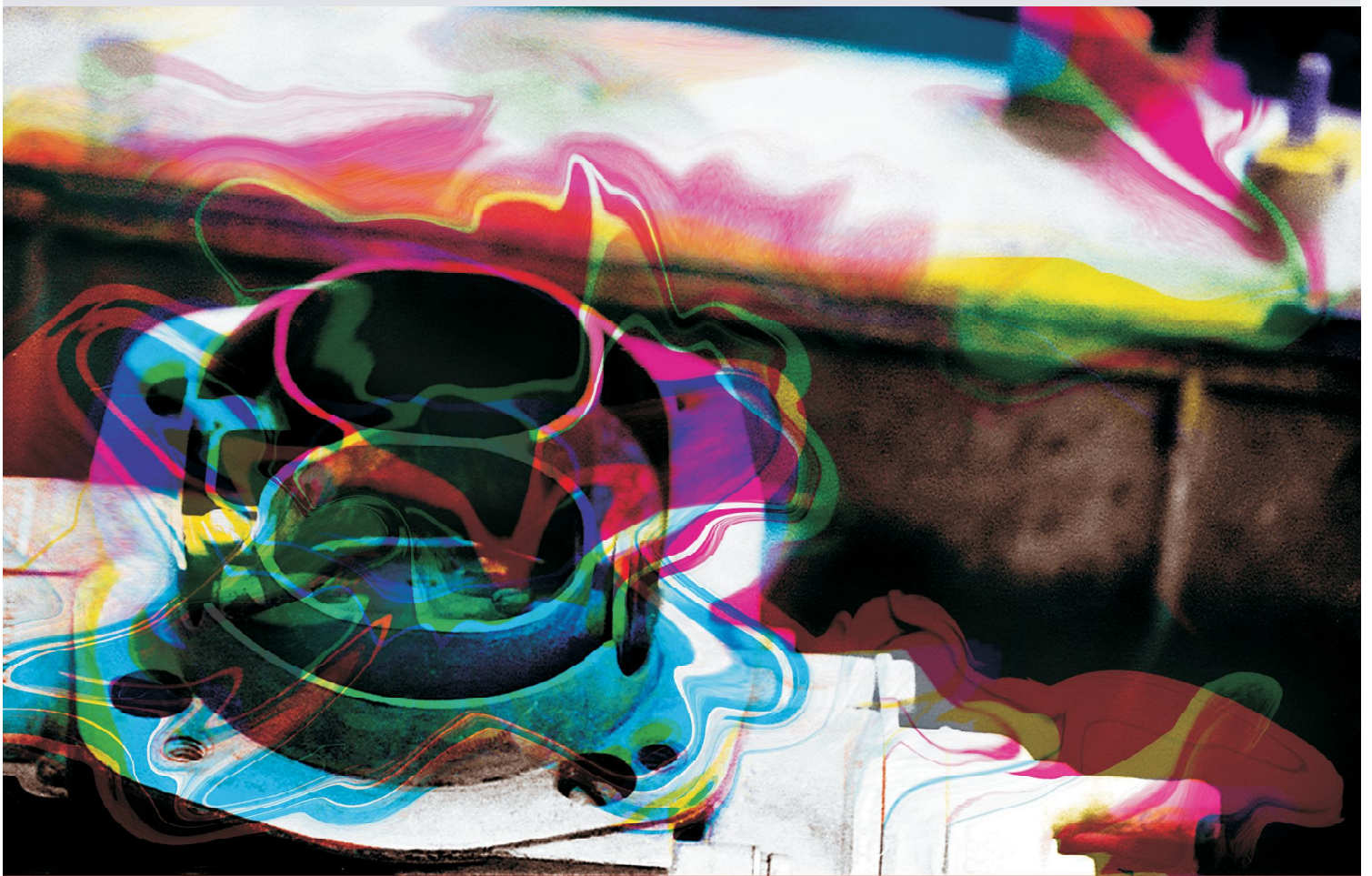


**International Congress
Motor Vehicles & Motors 2014**

**VEHICLE AS A SAFETY FACTOR
OF THE TRANSPORTATION ACTIVITY**

Proceedings of Papers



October 9th - 10th, 2014
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MATHEMATICAL MODEL FOR OPTIMAL TIME DETERMINATION FOR INTERVALS OPTIMIZATION OF UNUSED VEHICLE PARTS RESOURCES AT THEIR REPLACEMENT

ABSTRACT: Basic target for application of preventive vehicle maintenance technology is to eliminate or reduce the defects at its lowest level during the exploitation period. Procedures of the preventive vehicle maintenance technologies are carried out on the basis of maintenance plan including the presented moments of their performing. To a great extent the reliability and also life, readiness, economy as well as the whole vehicle efficiency depend on these timely procedures performing. It is basic reason why the problems regarding determination of moments for carrying out the preventive maintenance are specially paid attention. Mathematical model for optimal time determination, after which performing of preventive vehicle parts replacement is necessary, with the aim to reach minimal costs and maximally possible reliability, as well as safety of the vehicle use, has been applied on a concrete vehicle group, which behavior was studied in real exploitation condition from the aspect of defects appearing.

KEYWORDS: *optimization of unused vehicle parts resources motor vehicles, parts replacement*

INTRODUCTION

Determination of optimal periodical profiled over-hauling should not be carried out without taking into consideration the costs of unused part resources, which are replaced.

Increasing of the planned time for intermediate over-hauling makes costs of unused part resources reduced but probability for defects as well as for losses due to non-driving the vehicle are increased.

To determine the losses volume resulted from unused vehicle parts it is necessary to determine the parameters for reliability of the parts that are replaced.

This work presents the parameter results for reliability of the cardan transmission neutral bearing on the vehicle. These results were achieved solving the following tasks: Estimation of the reliability indicator; Determination of the theoretical distribution model; Testing of the reached distribution model. Optimal time value between consecutive planned replacement can be found in total minimal maintenance costs of the studied vital part of the vehicle. Aim of this work is just to specify the optimal moment for necessary replacement of the studied vehicle part. As a criteria the following was taken: the maintenance and use costs as well as its reliability and the vehicle reliability in the whole. To solve the task a long-term study of the vehicle was done in real exploitation conditions considering the defects appearance and maintenance costs cardan transmission neutral bearing on the vehicle.

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