

OVDJE ĆE DOĆI LOGO

## POSSIBILITIES DETERMINATION OF THE OPTIMAL STRATEGY FOR PREVENTIVE MAINTENANCE OF THE CARDAN SHIFT VEHICLE USING POLYCRITERION OPTIMIZATION

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**Abstract:** *This work presents a possibility to find the optimum solution in the maintenance cardan shift when the criteria functions are maximal availability and minimal costs maintenance. These two criterions lead to several solutions of the maintenance of cardan shift therefore it was necessary to seek for a trade off solution.*

**Key words:** *Motor vehicle, Maintenance, Optimization, Reliability, Availability, Costs*

### 1. INTRODUCTION

In this paper are presented results of determination the reliability parameters of the cardan shift vehicles, based on which the optimal value of the cardan shift vehicles maintenance periodicity was determined, for the criteria of the maximal availability and the minimal maintenance costs. By correct forming of the maintenance model it is possible to perform the optimization, namely to select the most favorable maintenance system. Such a problem can be solved if all the important requirements and restrictions are precisely determined. As the optimal periodicity of the preventive maintenance procedure of the analyzed technical system, determined according to the criterion of the maximal availability differs from the optimal periodicity determined according to the criterion of the minimal costs, it is necessary to apply the multicriteria analysis methods and to determine the value of the required optimal periodicity, taking into account both mentioned optimization criteria. This actually is the basic goal of this work.

By the method of the compromise selection, the limits are determined of the optimal periodicity for the preventive maintenance procedure conducting, which correspond to extreme values of the adopted criterion functions. By applying the method of the multicriteria analysis, one determines the discrete value of this periodicity, whose exactness depends on selection of the discretization step of the analyzed time interval. Generally considering, the presented methodology of the multicriteria decision-making can be applied for obtaining the reliable value of the preventive maintenance procedure conducting periodicity of the technical systems.

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