Identification of features of a passenger car simulator and an analysis of its application in driver training

Summary

The subject of this paper was to identify selected elements of a passenger car simulator and to assess its use in the field of driver training. The topic was realized in two stages. The first stage of the research was the identification of selected features of the passenger vehicle simulation stand and their evaluation. The second part consisted of developing and conducting a research experiment. The main task was to support the teaching of issues related to the safety and ecology of road vehicle transport by means of simulation trainings. The experience was based on illustrating the differences between driving styles, such as introducing, economic and aggressive ride. The base tool for the work is the AS1200-6 AutoSim simulation set, which belongs to the Institute of Combustion Engines and Powertrains.

In the first part, the author tried to evaluate the test stand for simulation training and check how selected variable environmental parameters and safety systems affect the performance of the passenger vehicle model in the virtual world. The second stage of the work was aimed at developing tools supporting the assessment of the driver's driving style in terms of safety, ecology and operation of the vehicle on various types of roads. In order to achieve the goals of the work, group around 90 of students was involved, who played the role of virtual drivers, who also rated their skills and habits from the real world. They derived a virtual passenger vehicle on two routes of different lengths and characteristics, during which selected simulation parameters were registered for further analysis of a driver's driving style.

On the basis of the research results it has been shown that the use of the simulation station fulfils the adopted criterion of repeatability and that variable parameters may be useful during simulation training of road drivers. In addition, basic simulation testing methodology has been developed in terms of transport safety and ecology, which can be effectively used for the study and training of young or well experienced drivers. This also resulted in recommendations for more effective use of similar simulation stands for verifying the knowledge and skills of drivers and minimizing simulation sickness.

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