

## **INFLUENCE OF THE TREND OF MODERN VEHICLES MAXIMAL SPEED AND ACCELERATION INCREASING ON THE TRAFFIC SAFETY**

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### **Summary**

Speed, definitely, represents one of the most important exploitation parameters of the vehicle, as with its increase, travel duration is shortened, thus increasing the vehicle efficiency as a mean of transportation. On the other hand, increase of speed and acceleration demands better driver reflexes, increases the braking time, inertial force, as well as movement energy, which all in all affects the risk occurrence and the severity of consequences of traffic accidents. Therefore, there are harsh regulations regarding speed limit of the vehicles on public roads.

Tendency to increase the maximum speed and acceleration is present for contemporary vehicle producers, although it demands the enhancement of many characteristics: the drive aggregate, (more power, torque and dynamics), aerodynamics of the chassis, durability and reliability of vital parts and joints, which drastically increases the production costs.

This study represents the grade results of effect of speed and acceleration on the safety of traffic in characteristic movement regimes; rapid halt, overtaking a vehicle, driving in a column, which are derived through the usage of simulation modules. Based on these results, results of statistical analysis of maximum speed and acceleration increase of contemporary vehicles, as well as speed limits in specific countries, there is a conclusion derived explaining the plausibility of such tendency and certain recommendations are provided.

**Key words:** maximum vehicle speed, acceleration, traffic safety

## **UTICAJ TREND A POVEĆANJA MAKSIMALNE BRZINE I UBRZANJA SAVREMENIH VOZILA NA BEZBEDNOST SAOBRAĆAJA**

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**Rezime:** Brzina predstavlja svakako, jedan od najznačajnih eksploatacionih parametara vozila čijim povećanjem se skraćuje vreme putovanja, a samim tim povećava efikasnost vozila kao saobraćajnog sredstva. S druge strane, povećanje brzine i ubrzanja vozila zahteva bržu reakciju vozača, povećava put kočenja, inercijalne sile, kao i energiju kretanja, što sve skupa utiče na povećanje rizika pojave i težinu posledica saobraćajnih nezgoda. Zbog toga

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su u svim zemljama sveta doneti oštri propisi o ograničenju maksimalne brzine kretanja vozila na javnim putevima.

Trend povećanja maksimalne brzine i ubrzanja je prisutan kod današnjih proizvođača vozila iako on zahteva poboljšanje mnogih karakteristika: pogonskog agregata (veća snaga, obrtni moment i dinamičnost), aerodinamičnosti školjke, čvrstoće i pouzdanosti vitalnih delova i sklopova, što bitno poskupljuje tehnološki proces.

U radu su prikazani rezultati ocene uticaja brzine kretanja i ubrzanja vozila na bezbednost saobraćaja u karakterističnim režimima kretanja: naglo zaustavljanje, preticanje, vožnja u koloni, koji su dobijeni korišćenjem simulacionih modela. Na bazi tih rezultata, rezultata statističke obrade trenda povećanja maksimalne brzine i ubrzanja savremenih vozila, kao i maksimalno dozvoljenih brzina u pojedinim zemljama, izveden je zaključak o opravdanosti takvog trenda i date određene preporuke.

**Ključne reči:** maksimalna brzina vozila, ubrzanje, bezbednost saobraćaja