

¹ INCREASE OF THE ENERGY EFFICIENCY OF PASSENGER CARS USING DIFFERENT TYPES OF TRANSMISSIONS

*Vanja Šušteršič, Dušan Gordić, Milan Despotović, Faculty of Mechanical Engineering
from Kragujevac, Kragujevac*

UDC: 621.43.018.3-63:620.92

Abstract

One of the main parameters to increase the energy efficiency is to reduce fuel consumption. For this purpose a number of vehicles fuel economy standards (FE) are introduced. They are being implemented all over the world in order to conserve energy and for reduction in carbon dioxide emissions.

In this paper, it has been discussed how different types of transmission technology could contribute on fuel economy and energy efficiency of passenger cars. Different types of transmission (automatic transmission, manual gear transmission or continuously variable transmission - CVT) differently influence fuel consumption. For examples, the CVT offers high fuel economy, presumably because it ensures a low brake specific fuel consumption (BSFC) driving condition with its continuously variable ratio characteristics. Also, it is shown that automatic transmissions are almost always less energy efficient than manual transmissions due mainly to viscous and pumping losses. The practical use of the increase of the energy efficiency of passenger cars using different types of transmissions is based on the comparison reviews investigating fuel consumption and acceleration characteristics of passenger cars with different type transmission concepts which show the significant advantages offered by new transmission concepts currently being launched as volume production models.

Key words: transmission, fuel consumption, energy efficiency.

POVEĆANJE ENERGETSKE EFIKASNOSTI PUTNIČKIH VOZILA PRIMENOM RAZLIČITIH TIPOVA TRANSMISIJA

UDC: 621.43.018.3-63:620.92

Rezime: Jedan od glavnih parametara za povećanje energetske efikasnosti je smanjenje potrošnje goriva. U tu svrhu uveden je veliki broj standarda koji definišu potrošnju goriva (FE). Oni se sprovode širom sveta u cilju uštede energije i smanjenje emisije ugljen-dioksida.

U ovom radu je analizirano kako različite vrste prenosnika snage mogu doprineti ekonomičnosti potrošnje goriva i energetske efikasnosti putničkih automobila. Različite

¹ Received: December 2010.

Accepted: December 2010.

Primljen: decembar, 2010.god.

Prihvaćen: decembar, 2010.god.

U ovom radu je analizirano kako različite vrste prenosnika snage mogu doprineti ekonomičnosti potrošnje goriva i energetske efikasnosti putničkih automobila. Različite vrste transmisija (kao na pr. automatski menjač, mehanički menjač ili kontinualno varijabilna transmisija - CVT) različito utiču na potrošnju goriva. Na primer, CVT ostvaruje visoku efikasnost pri potrošnji goriva, pre svega jer obezbeđuje nisku specifičnu potrošnju goriva (BSFC) u voznom stanju pri kontinualno promenljivim prenosnim odnosima. Takođe, pokazalo se da automatski prenosnici snage su skoro uvek manje energetske efikasne u odnosu na mehaničke prenosnike snage, uglavnom zbog gubitaka na trenje. Praktična primena povećanja energetske efikasnosti putničkih automobila ostvaruje se korišćenjem različitih vrsta transmisija i ona se zasniva na poređenju istraživanja potrošnje goriva i karakteristike ubrzanja putničkih vozila. Danas se primenjuju različiti tipovi prenosa snage koji pokazuju značajne prednosti koje nude novi koncepti trenutno lansirani na tržištu.

Ključne reči: transmisija, potrošnja goriva, energetska efikasnost