

¹ACTIVE NUMERICAL VEHICLE ACCELERATION CONTROL ALONG ACCELERATION FUNCTION WITH MAXIMUM ENGINE TORQUE EFFICIENCY

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Summary

The paper explores ways to increase effectiveness of vehicle acceleration. New solution has been given, based on the numerical control of engine torque using acceleration function.

Natural engine torque is replaced by a curve of maximum efficiency of the engine torque, which passes through the torque maximums of partial engine charges.

To control vehicle acceleration by the acceleration function torque controller is designed and connected to the engine electronic control unit (ECU). Programming code is written for controller operation. The study, that was conducted on an experimental vehicle, confirmed the feasibility of the numerical control of vehicle acceleration by the acceleration function with maximum torque effectiveness. Principal objective of this paper is how to improve engine torque effectiveness while vehicle accelerates in order to save fuel. The scope of investigation is replacing natural engine torque curve by a curve of maximal efficiency of the engine torque. Methodology employed in this paper is physical – mathematical model, computer simulation and processing, controller programming and experimentation. Vehicle acceleration employs custom designed controller by the acceleration function torque controller. Programming code is written for controller numerical operation. Experimental results and principal conclusions are that the control of vehicle acceleration by acceleration function saves fuel

Key words: Controlled vehicle acceleration, the function of acceleration, engine torque efficiency

AKTIVNO UPRAVLJANJE UBRZANJEM VOZILA NUMERIČKOM KONTROLOM PO FUNKCIJI UBRZANJA SA MAKSIMALNOM EFEKTIVNOŠĆU MOMENTA MOTORA

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Rad istražuje načine za povećanje efektivnost ubrzanja vozila. Dato je novo rešenje, zasnovano na numeričkom upravljanja obrtnog momenta motora po funkciji ubrzanja. Prirodna kriva momenta motora zamenjena je krivom maksimalne efektivnosti momenta motora, koja prolazi kroz maksimume momenata delimičnih punjenja motora. Za upravljanje ubrzanjem vozila po funkciji ubrzanja napravljen je kontroler obrtnog momenta

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i povezan sa elektronskom upravljačkom jedinicom motora. Napisan je programski kod za rad kontrolera. Istraživanje sprovedeno na eksperimentalnom vozilu potvrdilo je ostvarivost numeričkog upravljanja ubrzanjem vozila po funkciji ubrzanja sa maksimalnom efektivnošću momenta motora.

Ključne reči: Upravljanje ubrzanje vozila, funkcija ubrzanja, efektivnost momenta motora