[1]AN EVALUATION OF THE EFFICIENCY OF THE SYSTEM USED FOR AUTOMATIC CHANGE OF THE IC ENGINES COMPRESSION RATIO

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Abstract

A fulfillment of demands concerning the ICE as drive units of modern motor vehicles nowadays more frequently entails an application of the variable systems with electronic control. These types of systems have practically occurred with the ICE development, but the slight difference that is to be noted is the one regarding the mechanic and/or pneumatic governors (such as ignition systems within the spark ignition engines, the regulators of the modes of operation within the compression ignition engines) along with the gas and dynamic appearances of fuel metering and fuel atomization (the spark ignition engine carburetors). That is the reason why the first electronic engine control systems have been introduced within these particular systems.

An intensive development of the ICE has demanded an introduction of other variable systems such as: the valve gears with the variable valve timing and the variable lift of a valve, the intake – exhaust systems of a variable geometry, the engines with the variable compression ratio, the turbo compressors with variable turbine characteristics etc.

In the last few years, special attention has been devoted to the development of the engines with the variable compression ratio. There are various mechanisms enabling the engine running, that is, the engines with the variable compression ratio which also differ, among other things, as regards the law of the compression ratio change in the function of the engine modes of operation. What has been given throughout the work itself is a precise analysis of the characteristic mechanisms, done according to this criterion with the purpose of establishing the evaluation of their efficiency considering the optimal output parameters of the engine itself.

Key words: IC engines, variable systems, compression ratio.

OCENA EFIKASNOSTI SISTEMA ZA AUTOMATSKU PROMENU STEPENA KOMPRESIJE KOD MOTORA SUS

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Rezime: Ispunjavanje zahteva koji se postavljaju pred motore SUS kao pogonske agregate savremenih motornih vozila, sve češće podrazumeva primenu varijabilnih sistema sa elektronskim upravljanjem. Ovakvi sistemi su nastali praktično sa nastankom motora SUS,

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stom razlikom što su se za njihovo upravljanje koristili mehanički i/ili pneumatski regulatori (sistemi paljenja kod oto motora, regulatori režima rada kod dizel motora) i gasodinamičke pojave doziranja i raspršivanja goriva (karburatori oto motora). Zbog toga su i prvi elektronski sistemi upravljanja uvedeni baš kod ovih sistema.

Intenzivan razvoj motora SUS zahtevao je uvođenje i drugih varijabilnih sistema kao što su: razvodni mehanizmi sa promenljivom šemom razvoda i promenljivim hodom ventila, usisno-izduvni sistemi promenljive geometrije, motori sa promenljivim stepenom kompresije, turbo-kompresori sa promenljivim karakteristikama turbine i dr.

Zadnjih godina posebna pažnja se posvećuje razvoju motora sa promenljivim stepenom kompresije. Postoji više različitih mehanizama koji omogućavaju rad motora sa promenljivim stepenom kompresije koji se razlikuju, između ostalog, i u pogledu zakona promene stepena kompresije u funkciji režima rada motora. U radu su upravo analizirani karakteristični mehanizmi po ovom kriterijumu u cilju utvrđivanja ocene njihove efikasnosti s obzirom na optimalne izlazne parametre motora.

Ključne reči: motori SUS, varijabilni sistemi, stepen kompresije.