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SOLUTIONS FOR REDUCING FUEL CONSUMPTION AND POLLUTION POTENTIAL OF AUTOMOTIVE SPARK IGNITION ENGINES

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Abstract

This paper presents a combined solution for improving the performances of the automotive spark ignition engine. The first approach develops a sequential variable compression ratio throughout its functioning thermodynamic cycle. By the means of this process, we are trying to obtain a closer approach to the ideal constant volume combustion cycle, specific to the spark ignition engine, thus improving the engine efficiency. The second approach concerns the architecture of the compression ring. The theoretical model which was developed allowed the design of a new transversal profile of the compression ring, in order to obtain better lubrication conditions, for lowering the friction wear and increasing the mechanical efficiency of the piston ring – cylinder line coupling. The paper contains a study regarding the modification of both of these parameters, for different working conditions, aiming to the optimization of the engine’s constructive solution and to the lowering of the fuel consumption and pollution level.

Key words: automotive, engine, fuel consumption, pollution level

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