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Faculty of Mechanical Engineering
Faculty of Electrical Engineering



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COATED AL PISTON AS TECHNOLOGICAL SOLUTION TO LOWERING OF FRICTION LOSSES INSIDE IC ENGINE

Saša Milojević¹, Radivoje Pešić², Aleksandar Davinić³, Dragan Taranović⁴

Summary: Engine technologies whose application can reduce the impact of friction and wear are surface coatings and the lubricants low-viscosity or with appropriate additives. As a contribution, we applied the eco-tribological knowledge during construction of IC engines and their spare parts. The result of the researches was patented prototype of the aluminium piston coated or modified with tribo-material in area of skirt. Modification of the piston was realized by inserting two removable pads (plates) of graphite. Another option is the piston with tribological pads of brass into which are inserted tribo inserts of graphite in the form of a sphere (nodules). The main task of the tribo-pads is to decrease friction between piston and cylinder, especially at engine-starting regime. This is confirmed during researches whose the results are presented inside of manuscript.

Key words: IC Engine, AL Piston, Coating, Friction.

1. INTRODUCTION

The global climate change is due to the excessive use of fossil fuels such as coal, petroleum products, and natural gas in electric power generation, transportation, buildings, and manufacturing. Major sources of greenhouse gas emissions are industrial sector and transportation. Each kilowatt-hour of electricity produced by a fossil-fuelled power plant produces 0.6 to 1.0 kg carbon dioxide (CO₂). Each litre of gasoline burned by a vehicle produces about 2.5 kg of CO₂. This and other emissions can be reduced significantly by buying an energy-efficient car that burns less fuel over the same distance. Saving fuel also saves money and the environment.

The EU has set out an ambitious strategy to reduce CO₂ emissions from road vehicles. According to European Commission Directive 93/116/EC, total CO₂ output in Europe must aim to reach an average of 130 g·km⁻¹ for all new passenger cars by 2015 and 95 g·km⁻¹ by 2020 [1].

An impression of the range of measures and technologies, which are available for handling future requirements is presented on the Fig.1 [1,2].

¹ Mr Saša Milojević, assis. Faculty of Engineering, University of Kragujevac, Republic of Serbia, tiv@kg.ac.rs

² Dr Radivoje Pešić, prof. Faculty of Engineering, University of Kragujevac, Rep. of Serbia, pesicr@kg.ac.rs

³ Dr Aleksandar Davinić, doc. Faculty of Engineering, Univ. of Kragujevac, Rep. of Serbia, davinic@kg.ac.rs

⁴ Dr Dragan Taranović, doc. Faculty of Engineering, Univ. of Kragujevac, Rep. of Serbia, tara@kg.ac.rs

