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Faculty of Mechanical Engineering
Faculty of Electrical Engineering



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THE USE OF MODERN FUELS IN DIESEL ENGINES OF THE OLDER GENERATION

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Summary: *Intensive development of diesel engines over the past 25 years, has significantly improved their operating and environmental characteristics. The application of advanced diesel technology has set specific requirements in terms of the characteristics of diesel fuel. Both market requirements and legislation introduced new formulated diesel fuel. However, in our country is still in use a large number of outdated engine, particularly in the areas of agricultural and non road vehicles, military techniques ... This paper discusses the effect of changing the essential characteristics of the fuel on the working process and lifetime of these diesel engines. The results of the experimental research of working process diesel engine DMB 3DA450 with diesel fuel according to EN 590 (2005) are presented.*

Key words: *diesel fuel, fuel properties, diesel working process*

1. INTRODUCTION

Starting from early 1990's EU introduced number of more and more stringent regulations regarding emission from diesel engine powered vehicles. In the table 1 is presented decrease of limit values of emission in actual EURO VI, compared to reference EURO I (1992-94) regulations. In 1999 is introduced regulations regarding emission from out-of-road diesel engines (Stage I-IV). Fulfillment of this requirements was achieved by application of advanced diesel technologies and fuel characteristics improvement.

First step toward harmonisation of standards was made by introduction of quality norm for diesel fuel SRPS EN 590:2005 (level EURO 4). Intending to bridge technological obsolescence of the road fleet, Serbia's government restricted import and first registration to vehicles fulfilling requirements defined by EURO 3 at least.

Accordingg to official data for 2013 year, in Serbia was 1 920 000 registered vehicles for public transportation (without motorcycles) [1]. There are no available data about age structure of those vehicles, but estimation is that 30% is older than 15 years. Also, there are a lot of agricultural machines (40 000 tractors, 20 years old in average)

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