

THE EXPERIMENTAL VCR DIESEL ENGINE AND DETERMINATION OF DOUBLE VIBE FUNCTION PARAMETERS**Authors**

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Abstract

Compression ratio is a design parameter with highest influence on fuel economy, emission and engine characteristics. By application of variable mechanisms, the optimal regime fields are extended to the prime requirements: consumption, power, emission, noise, etc., and/or the possibility of the engine to operate with different fuels is extended. An experimental Diesel engine with variable compression ratio has been developed at the Faculty of Mechanical Engineering from Kragujevac. Detailed engine tests were performed at the Laboratory for IC engines. Special attention has been given to increase of economy and decrease of exhaust emissions. An optimal field of compression ratio variation has been determined depending on the given objectives: minimal fuel consumption, minimal NO_x emission, minimal particles emission, etc. Beside experimental research, modeling of operation process of Diesel engine with direct injection has been performed. The basic problem - selection of double Vibe function parameters used for modeling the engine operation process - has been solved after processing the indicator diagrams acquired on experimental engine using different compression ratios. Thus, the influence of the compression ratio on selection of double Vibe function parameters for mathematical model of real operating cycle of Diesel engine with direct injection has been determined.

Keywords

Diesel engine, emission, fuel economy, variable compression ratio, Vibe function