Determining the Diesel fuel injection rate shaping requirements for emission control purposes

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Emission reduction is the key issue for modern engines engineering process. Therefore, fuel injection equipment development based on ecological legislations is important today. We performed modern diesel engine's combustion simulation to determine the fuel injection process requirements. The field of engine design parameters included the following values: number and diameter of the injector nozzles, the boot length and pressure of injection, EGR ratio, start of injection (SOI) timing. Simulations were carried out for modes according to ISO 8178-4 for the selected range of loads for marine engines. Based on the findings recommendations were introduced for injection rate shaping using an injector with an additional controlling section in the nozzle.

Keywords*: optimization, working process, emission level, injection rate shape, испытательные циклы, operation modes, EGR, modeling*

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