NUMERICAL INVESTIGATIONS OF POSSIBILITIES OF MIXTURE FORMATION AND COMBUSTION PROCESSES IMPROVEMENT IN CYLINDER OF A HIGH-SPEED DIESEL ENGINE

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Abstract: The paper is devoted to numerical investigations of mixture formation and combustion processes in cylinder of a high-speed diesel engine at different values of the swirl number, spray cone angle, and number of the nozzle holes. Te goal of investigations is to define configurations which provide improvement in combustion efficiency with simultaneous reduction of soot and NOx emissions relative to the base configuration. A good correlation between engine efficiency indicators and the area under the air utilization curve for near-stoichiometric mixture is obtained. The possibility of predicting the best efficiency configurations on the base of "cold" simulations of fuel injection and mixture formation processes is investigated.

Keywords: soot; NOx; diesel; CFD

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