

HYDRODYNAMIC EFFECTS IN COMMON RAIL FUEL SYSTEM IN CASE OF MULTIPLE INJECTION OF DIFFERENT FUELS

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ABSTRACT: Fuel injection by Common Rail type fuel system results in hydrodynamic effects presenting considerable interest in case of multiple injections. After injection, fuel pressure oscillations at the injector inlet originate which influence considerably the injection rate and characteristic of consequent injection in case of multiple injections. The article presents the results of various factors influence experimental research on pressure oscillations at the injector inlet in case of single and doubles injections of different fuels. With this, such factors as fuel pressure, injection rate value, interval between injections, physical properties of fuel and design features of the injector were taken into account. The aim of the research: to evaluate the influence of pressure oscillations caused by the preliminary injection of fuel to the main injection. Analysis of the experimental data obtained is useful for selection of main design solutions for Common Rail Injectors (CRI).

KEY WORDS: common rail type fuel system, common rail injector, hydrodynamic effects, pressure oscillations, fuel injection rate

HIDRODINAMIČKI EFEKTI KOD COMMON RAIL SISTEMA UBRIZGAVANJA GORIVA U SLUČAJU VIŠE UBRIZGIVAČA RAZLIČITIH GORIVA

REZIME: Ubrizgavanje goriva kod Common Rail sistema izaziva hidrodinamičke efekte koji predstavljaju značajan interes kada postoji više brizgača u sistemu. U slučaju kada postoji više brizgača, nakon ubrizgavanja, oscilacije pritiska goriva na ulazu znatno utiču na brzinu i karakteristike ubrizgavanja. U radu su predstavljeni rezultati uticaja različitih faktora eksperimentalnih istraživanja oscilacija pritiska na ulazu brizgača u slučaju jednog i dva brizgača različitih goriva. Parapmetri: pritisak goriva, brzina brizganja, interval između ubrizgavanja, fizičke osobine goriva i karakteristike brizgača uzeti su u obzir. Cilj istraživanja je bio proceniti uticaj oscilacija pritiska izazvanih prethodnim ubrizgivanjem goriva do glavnog brizgača. Analiza dobijenih eksperimentalnih podataka je korisna za izbor rešenja brizgača koji se koristi u Common Rail sistemu.

KLJUČNE REČI: common rail sistem ubrizgavanja goriva, common rail brizgač, hidrodinamički efekti, oscilacije pritiska, brzina ubrizgavanja goriva

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