

Numerical Investigation of the Electromagnetic Common Rail Injector Characteristics

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Abstract : The paper describes the modeling of a fuel injector for common rail systems. A one-dimensional model of a solenoid-valve-controlled injector with Valve Closes Orifice (VCO) spray was modelled in the AVL Hydsim. This model shows the dynamic phenomena that occur in the injector. The accuracy of the calibration, based on a regulation of the parameters of the control valve and the nozzle needle lift, was verified by comparing the numerical results of injector flow rate. Our model is capable of a precise simulation of injector operating parameters in relation to injection time and fuel pressure in a fuel rail. As a result, there were made characteristics of the injector flow rate and backflow.

Keywords : common rail, diesel engine, fuel injector, modeling

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