

Effects of Injector Nozzle Geometry on Spray Atomization Characteristics

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Abstract : Air and fuel must be mixed correctly so that there is perfect combustion, which calls for fuel atomization by injection. In this study, the effects of different parameters such as number of orifices, length and diameter of orifices, diameter of nozzle sac and the angle of needle seat in injectors were investigated with the use of rate of injection and sac pressure. The unit pump of the OM-457 diesel engine was modelled on Avl-Hydsim. The results illustrate that the sac pressure decreased by 46% when the number of holes were doubled, although the rate of injection had an immense change. Also, the sac pressure increased up to 60% when the diameter of orifices decreased by 40% in spite of the semi-constant injection rate.

Keywords : injection, OM-457 engine, nozzle geometry, atomization

Conference Title : ICAMAME 2014 : International Conference on Aerospace, Mechanical, Automotive and Materials Engineering

Conference Location : Istanbul, Türkiye

Conference Dates : March 24-25, 2014