EXPERIMENTAL CHARACTERIZATION OF A BLURRY INJECTOR FOR BIOFUELS

Azevedo, C.G.1, Costa, F.C.1, Couto, H.S2
1-National Institute for Space Research, Associated Laboratory of combustion and Propulsion, Brazil; 2-Vale Energy Solution, Brazil

The increasing costs of fossil fuels, environmental concerns and stringent regulations on fuel emissions have caused a significant interest on biofuels, especially ethanol and biodiesel. The combustion of liquid fuels in diesel engines, turbines, rocket engines and industrial furnaces depends on the effective atomization to increase the surface area of the fuel and thus to achieve high rates of mixing and evaporation. In order to promote combustion with maximum efficiency and minimum emissions, an injector must create a fuel spray that evaporates and disperses quickly to produce a homogeneous mixture of vaporized fuel and air. A blurry injector prototype was built for comparative testing with water, hydrous ethanol and B100 soy biodiesel. The present work aims to determine the average droplet diameters, mass flow rates, discharge coefficients and spray cone angles for different injection pressures.

Keywords: Blurry injector, Biofuels, droplet diameter

Supported by "Vale Energy Solution"