

EXPERIMENTAL CHARACTERIZATION OF AN ETHANOL SPRAY JET WITH PRESCRIBED INLET TEMPERATURE

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The increase in the importance of using renewable fuel, as alternative to common fossil fuels, induced the development of new technologies in spray application. As an important biofuel, ethanol has been used in fuel blends to maximize the combustion process and minimize pollutant emissions. In this work, Phase Doppler Interferometry (PDI) and Particle Image Velocimetry (PIV) were applied to analyze the distribution of ethanol droplet sizes and velocities due to different inlet temperature of the fuel. The ethanol spray, generated by a commercial air assisted atomizer, was analyzed in ambient pressure and temperature with no combustion. Preliminary results indicated significant dependence of the Mean Diameter (D_{10}) and the Sauter Mean Diameter (D_{32}) with inlet temperature of the fuel. No expressive differences on velocity distribution were observed between the analyzed cases.