CORRELATION MODELS FOR PULVERIZED FUEL JET ANGLE TO INTERNAL COMBUSTION ENGINES

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Abstract: *The paper presents models for fuel spray angle spray nozzle injector. Since fuel nozzles wear while changing its diameter, it was considered appropriate to make an analysis of the behavior of fuel through nozzles with different dimensional values. The study changing the total angle of jet fuel based on certain parameters such as the diameter of the spray nozzle, outlet fuel injection pressure liquid, and so on. They analyze the factors that contribute to the development of jet fuel and influencing the fuel mixture formation and combustion quality. To date, the majority of internal combustion engines using indirect injection of fuel, and correlations developed models of specific sizes of the main fuel jet sprayed by direct numerical simulation. The graphs obtained knowledge helps in burning and ultimately help reduce pollutants in the flue gas components. Adequate modeling of the injection process helps to increase energy efficiency, fuel atomization process is still unclear total. For these reasons, the article presents an overview of existing models and propose some ways of improvement.*

Keywords: *Fuel, atomization, spray angle.*

1. Introduction

Applications and atomization spraying process varies widely from the dispersion of surface coverage with insecticide protective substances, surface coating in the chemical industry, etc. by injecting fuel into internal combustion engines. What these processes have in common, consists of a continuous phase transformation from a liquid to a dispersed fluid phase in a number of drops of the atomic state, set up a particular type sprayer.

In order to characterize the fluid jet spray parameters are the most frequently used distribution of the number of drops, the force of penetration and spray angle. These parameters characterize the quality of the jet.

Technologies underlying phenomenon atomizers are based on a set of principles by which it means "collapse" a liquid jet by means of surface and volume forces.

Table 1 presents the main phenomena that underlie the process of atomization and spray type corresponding thereto.

Phenomenon:	**Sprayer:**
Inertial	Atomization fluid pressure with and without airflow, centrifugal, vibration, etc.
Aerodynamic resistance	The flow of air under pressure, vortex, etc.
Cavitation	Atomizing fluid under pressure, ultrasonic, etc.

Table 1: *Phenomena that generate appropriate spray atomization and type them.*

In the following the models and correlations to determine the penetration of the spray jet, the spray jet angle, the length of the liquid jet spraying, and for finding the characteristic of the liquid droplet size (Sauter Mean Diameter - SMD).