STUDY ON LENGTH OF THE UNDISTURBED LIQUID JET IN THE ATOMIZATION PROCESE

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Abstract: *This paper aims to study factors and phenomena that lead to the development of jet atomization spray a jet of air, as encountered in the operation process of internal combustion engines using fuel injection. The correlation study based on the undistorted length of the liquid jet spray nozzle orifice diameter of the liquid fuel, the temperature and pressure surrounding the liquid spray. After determining the parameters analytically and experimental practice their optimization is achieved through tests on test benches.*

Using bad spraying huge financial implications through increased fuel consumption and failure indices of quality products aimed hazards. These considerations justify the development of efficient models for practical application of fuel atomization. This can only be achieved by assisting computerized injection systems for engine operation.

Keywords: *Atomization, fuel, unperturbed liquid jet.*

1. Introduction

In order to ensure a uniform jet of liquid injection of the fuel is necessary to provide an atomization process. Spray patterns are described by various authors as: Wakuri et al [1], Dent et al [2] from the beginning, and then by working LES and DNS modeling by: Apte et al [3], De Villiers et al [4], Menards al [5], Fuster et al [6], Lebas et al [7]. In this paper aims on the one hand to present an overview of current modeling techniques jet fuel and bringing technical contributions in the atomization process. We focus our interest on the stages through which the liquid and liquid droplets under the influence of a jet of air (environmental).

The basic use of non-dimensional models and correlations for study the penetration of the spray jet, the spray jet angle, the jet length and the average diameter of the droplet.

2. Models for calculating the liquid length unperturbed jet

Most analytical investigations on liquid spray jets lead to dimensional values close to those of laws and empirical and semi-empirical equations that predict spray characteristics as a function comprising several parameters.

A spray jet can be described by at least four parameters: the length of penetration of the spray angle, the length of the liquid jet undisturbed and Sauter mean diameter of the liquid droplet spray devices (SMD), all of which are connected together in the atomization of the fuel.

Parameters can remember watching in Figure 1, noting however that there may be other parameters.