SIMULATIONS REGARDING THE STUDY OF CYCLIC DOSE FOR THE MULTIPOINT INJECTION

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The fundamental request for the burning process in the case of a spark ignition engine is the formation of an admixture air-combustible by soft atomization of liquid, fast evaporation, intimate mixture of the combustible with air and uniform distribution to all engine cylinders. The resolution of this request forced the adoption of various measures required in order to increase the relative velocity between air and combustible.

This paper reveals the results of experimental researches that allow the simulation of optimal functional dosage for each of the various conditions in which the engine can be found. The experimental results are aiming towards using a multipoint injection system in which the fuel atomization is created in each cylinder admission valve chamber.

Such an injection system uses electronic commands based on electromagnetic injectors triggered by electronic units and devices. Their purpose is to provide the commands needed to open the injectors at a specific momentum and to automatically adjust the opening duration. There are some major advantages of the new electronic triggered admission devices such as: precise timing for each of the engine functioning states, great flexibility for the dosage strategy, compatibility with turbochargers, means of recycling boiler gases, variable distribution control and ignition control.

In order to achieve the experimental results we use three modules: the fuel injection module, parameter measurement module Bosch kit KDJE-K 100 Jetronic Set and an electronic simulation module, conceived inside the laboratory, which allows modifying the injector opening momentum and their opening duration.

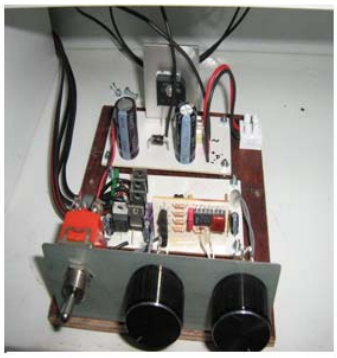

Figure 1: Multipoint injectors command module

The electronic module is presented in figure 1. The achieved results for the electrical-type injector try-outs allowed acquiring the minimum static and dynamic injector opening voltage [2, 3].

Figure 2: Picturing the fuel spray.

Figure 2 displays the fuel spray at one of the injectors. Such images (see figure 4) allow us to study the spray orientation, the uniformity of the fuel drops, the length of the fuel spray, the shape of the span etc. It also appeals to build such system combined with the assurance of injector head counter-pressure.

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