

THROTTLE-LESS OPERATION BY VARIABLE VALVE TIMING AND LIFT (VVTL)

Authors

Adrian CLENCI¹, Pierre PODEVIN², Georges DESCOMBES²,
Vasile HARA¹, Adrian BIZIAC³,

¹University of Pitesti, Romania,

²Conservatoire National des Arts et Métiers Paris, France,

³Automobile DACIA, Romania

Abstract

The inefficient running of the spark ignition engine at part loads due to the load control method, but mostly, their major weighting in vehicle's operation time justifies the interest for the technical solutions, which act in this particular operating range. These drawbacks encountered at low part loads are even more amplified when talking about bigger engines. For instance, it is well known the fact that at the same engine load, a bigger engine is more throttled than a smaller one, so here we can talk about a higher pumping work, a lower real compression ratio and these without mentioning the overall mechanical efficiency, which is also lower. One solution could be giving it up of the throttle plate as the load control organ and replacing it with some means of variable valve timing and lift (VVTL) able of achieving the load control. Actually, this is currently referred to as the throttle-less operation. Thus, the paper will present an attempt of obtaining the throttle-less operation by means of variable valve timing and lift (VVTL). In order to achieve this goal, the authors refer to a hydro-mechanical system featuring variable intake valve lift (ViVL), which is about to be patented, (7). The operating principle of the system will be described, as well as the current state of development, comprising an application on an in-line four cylinders engine featuring an electronic single point injection (SPI) system.

Keywords

fuel economy, load control, variable valve timing and lift, throttle-less



SCIENTIFIC BULLETIN



AUTOMOTIVE SERIES