

## **THE INFLUENCE OF WAVE PROCESSES IN THE INTAKE EXHAUST SYSTEM TO THE VOLUMETRIC EFFICIENCY OF ENGINES**

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**ABSTARCT:** The construction of intake-exhaust system i. e. dinamic phenomena occuring in pipes influence to volumetric efficiency of engines, and thus may also affect the engine power, the preparation of mixture and combustion, environmental characteristics of the engine and fuel efficiency.

Within this work it has been presented the research of the influence of system geometry at the single cylinder diesel engine on the volumetric efficiency. It has been observed the wave spreading of the pressure as well as of the gas flow in the ducts. It has been determined which wave parameters have the greatest influence on the degree of the volumetric efficiency. It has been particularly analyzed the quantity of the pressure wave at the moment of intake valve closing and in the period of valve overlap.ž

During experimental measurements, there was the problem of determining the volumetric efficiency of engine with variable intake / exhaust pipes with standard measurement installations (orifices, or hot wire) due to wave phenomena in pipes. This paper presents the possibility of determining the volumetric efficiency of engine with such an intake / exhaust system.

Given the known theoretical corelation of pressure at the end of compression and the volumetric efficiency of engine came to the conclusion that the measurements of pressure at the end of compression can determine the value of the volumetric efficiency of engine. There was a correlation between the volumetric efficiency and pressure at the end of compression for standard engines. After establishing these correlations it is possible to determine the volumetric efficiency at engine with variable intake - exhaust system.

The most important characteristics of the flow of low pressure in the intake pipe are the amplitude and angular position of the maximum pressure during the intake phase, namely, the position of maximum pressure in relation to the intake valve closing moment. Wave phenomena in the exhaust system does not significantly influence to volumetric efficiency at engines, and especially when the valve overlap small.

























