Influence of Intake Manifold Tuning on the Volumetric Efficiency of a Four-Stroke SI Engine

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ABSTRACT

Volumetric efficiency is an index of engine performance. Major factors that influence engine ’s volumetric efficiency are the geometric shape and dimensions of intake and exhaust system. The objectives of this study are to investigate the influence of intake system on the engine volumetric efficiency. Pressure wave in intake system is generated by the periodic movement of the piston. The peak value of volumetric efficiency appears when pressure resonance happens within the intake system. The period, amplitude, and shape of pressure wave are determined by the geometric shape and dimensions of the intake system of the engine. So in the study, the influence of those factors on volumetric efficiency were investigated. In previous works, numerical simulation were used to investigate the wave tuning in intake system. The results of previous works were examined in this study by experiments.

Keywords : volumetric efficiency ; pressure wave ; tuning

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