عنوان مقاله:

Derivation of Specific Heat Rejection Correlation in an SI Engine; Experimental and Numerical Study

محل انتشار:

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نویسندگان:

Ali Qasemian - *School of automotive engineering*

Pouria Azarikhah - *Faculty of Mechanical engineering*

Sina Jenabi Haqparast - *School of automotive engineering*

خلاصه مقاله:

The thermal balance analysis is a useful method to determine energy distribution and efficiency of internal combustion (IC) engines. In engines cooling concepts, estimation of heat transfer to brake power ratio, as one of the most significant performance characteristics, is highly demanded. In this paper, investigation of energy balance and derivation of specific heat rejection is carried out experimentally and numerically. Experiments are carried out on an air-cooled, single cylinder, four-stroke gasoline IC engine. The engine is simulated numerically and after validation with experimental data, the code is run to find out total and instantaneous thermal balance of engine. Results indicate that about one-third of fuel energy is converted to brake power and major part of energy is dissipated through exhaust and heat transfer. Experimental and numerical results show that by increasing engine speed, heat transfer to brake power ratio decreases. It is also observed that increasing engine speed leads to increase of exhaust power to brake power ratio. Finally two correlations for estimation of heat transfer and exhaust power to brake power ratios are obtained.

کلمات کلیدی:

Internal Combustion Engine, Total Thermal Balance, Heat Rejection Correlation, Instantaneous Energy Balance