

عنوان مقاله:

Multi-Dimensional Simulation of Heat Transfer in SI Engine Combustion Chamber

محل انتشار:

سومین همایش موتورهای درونسوز (سال: 1382)

تعداد صفحات اصل مقاله: 9

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خلاصه مقاله:

D cycle simulation of SI engine combustion chamber was carried out using VECTIS CFD software. The temperature-3 boundary conditions on the walls were obtained from the 1-D engine simulation, using WAVE software. The flow boundary conditions at the inlet and outlet ports were extracted from experimental results which satisfied the engine volumetric efficiency. In order to simulate the combustion process, the Ricardo Two-Zone Flamelet (RTZF) model was employed. The results of the investigation reported in this paper show the time variation of heat flux and heat transfer coefficient on the face of the piston, the cylinder head and the cylinder liner in the combustion chamber. Also, the heat transfer coefficient and heat flux distribution are shown on the combustion chamber surface. Furthermore for a few locations in the combustion chamber, the temperature variations as a function of crank angle are presented. The above results show that the sudden increase of temperature and heat transfer coefficient at each position is related to the arrival time of the flame at that position. The cylinder pressure results from CFD simulation show a good agreement with experimental data.

کلمات کلیدی:

CFD, heat Transfer, Heat Flux, IC Engine, Combustion Chamber

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