ANALYSIS OF COOLANT TEMPERATURE AND SWIRL MOTION EFFECTS ON CYCLE TO CYCLE COMBUSTION VARIATIONS IN SI ENGINE USING REGRESSION AND CORRELATION TECHNIQUES

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ABSTRACT

The improvement of exhaust emission and engine performance in terms of fuel economy depends on the understanding of combustion process in IC Engines on cycle to cycle basis. It also helps to improve engine stability. Two port injected SI engines were analyzed for cycle to cycle variation in combustion to know the effect of initial combustion processes on the following combustion. For different equivalent ratios the correlation between IMEP and pressures almost showed same trends but with different mixture preparations indicated different tendency. With two engines for the given referenced angles the dependency of IMEP on pressure increases when mixture becomes leaner. By deactivating one intake valve and by varying the coolant temperature, mixture distribution in the combustion chamber was varied due to air motions and evaporation of fuel. With the Coolant temperature and air motion, correlation between pressures related parameters were done.

KEY WORDS: IMEP, Correlation, SI Engine, Cold Start, Swirl, Cycle to Cycle Variations & Coolant Temperature

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