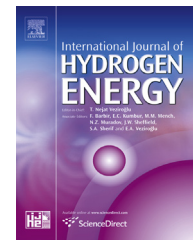




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An experimental study on performance, emission and combustion parameters of hydrogen fueled spark ignition engine with the timed manifold injection system

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ABSTRACT

In the present study, a single cylinder spark ignition (SI) engine is modified to operate with hydrogen gas with ECU (Electronic Controlled Unit) operated timely manifold injection system. Performance, emission and combustion parameters are studied at MBT (Maximum Brake Torque) spark timing with WOT (Wide Open Throttle) position. All trials are performed in the speed range of 1100 rpm–1800 rpm. Baseline observations are recorded with gasoline for comparison purpose. Results have shown that maximum brake power is reduced by 19.06% and peak brake thermal efficiency is increased by 3.16% in the case of hydrogen operation. Reduction in NO_x emission is observed for hydrogen at higher engine speed. The maximum net heat release rate is two times higher and the peak cylinder pressure is 1.36 times higher for hydrogen as compared to gasoline at the engine speed of 1400 rpm.

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