

Experimental Investigation on Variable Compression Ratio of Single Cylinder Four Stroke SI Engine Working under Ethanol - Gasoline Blend

Authors : B. V. Lande, Suhas Kongare

Abstract : Fuel blend of alcohol and conventional hydrocarbon fuels for a spark ignition engine can increase the fuel octane rating and the power for a given engine displacement and compression ratio. The greatest advantage of ethanol as a fuel in SI Engines is its high octane number. The efficiency of an SI engine that is the ability to convert fuel energy to mechanical energy, mainly depends on the compression ratio. It is, therefore, an advantage to increase this as much as possible. The major restraint is the fuel octane number - high octane fuels can be used with high compression ratios, thus yielding higher energy efficiency. This work investigates to suggest suitable ethanol gasoline blend and compression ratio for single cylinder four strokes SI Engine on the basis of performance and exhaust emissions. A single cylinder four stroke SI Engine was tested with different blend of ethanol - gasoline like E5 (5% ethanol +95% gasoline), E10 (10% ethanol + 90% gasoline) E15 (15% ethanol + 85% petrol) and E20 (20% + 80% gasoline) with Variable compression ratio. The performance parameter evaluated BSFC, Brake thermal efficiency and also exhaust emission CO₂, CO & HC%. The result showed that higher compression ratio improved engine Performance and reduction in exhaust emission.

Keywords : blend, compression ratio, ethanol, performance, blend

Conference Title : ICAMAME 2016 : International Conference on Aerospace, Mechanical, Automotive and Materials Engineering

Conference Location : Rome, Italy

Conference Dates : March 21-22, 2016