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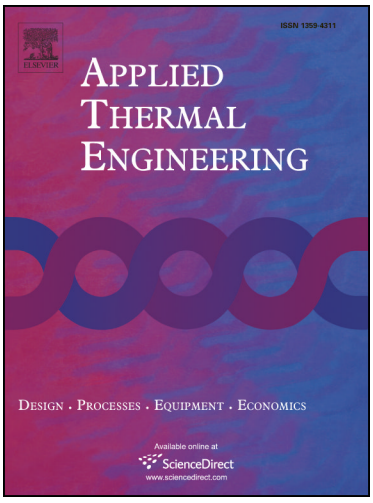

ETHANOL IN GASOLINE FUEL BLENDS: EFFECT ON FUEL CONSUMPTION AND ENGINE OUT EMISSIONS OF SI ENGINES IN COLD OPERATING CONDITIONS

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ETHANOL IN GASOLINE FUEL BLENDS: EFFECT ON FUEL CONSUMPTION AND ENGINE OUT EMISSIONS OF SI ENGINES IN COLD OPERATING CONDITIONS

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Highlights

- Ethanol/gasoline blended fuels were used to assess exhaust emissions and energy consumption of an SI engine
- Fuel consumption and emissions were measured during the cold transient phase while performing chassis–dynamometer tests
- Fuel consumption and emissions were calculated as a function of oxygen content of the ethanol/gasoline test fuels
- Reductions in cold emission factors were associated with well–defined percentages of ethanol content in gasoline fuel blends

ABSTRACT

Ethanol is considered a clean and renewable alternative fuel for SI engines when used in blends with gasoline in different fractions to increase oxygen content, thus decreasing exhaust emissions of incomplete combustion products and dependency on fossil fuels. However, the scientific literature on fuel consumption and exhaust emissions of last generation SI engines during cold operating conditions and using ethanol/gasoline blends is far from comprehensive. In this experimental investigation, ethanol obtained from grape pomace was used in fuels prepared by blending it in increasing ratios (10, 20 and 30 vol.%) with oxygen-free gasoline. These ethanol/gasoline blended fuels were used to assess emissions and energy consumption of a motorcycle equipped with a large displacement four–stroke SI engine. Fuel consumption and exhaust emissions were measured