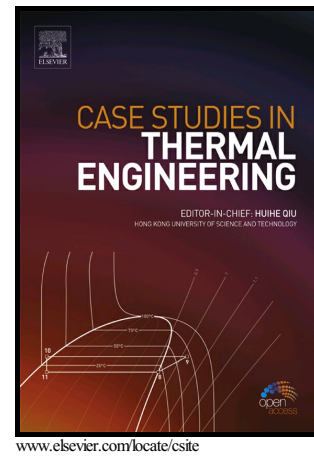


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## Exhaust noise, performance and emission characteristics of spark ignition engine fuelled with pure gasoline and hydrous ethanol gasoline blends

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### Abstract

The exhaust noise, performance and emission characteristics of a gasoline engine fuelled by hydrous ethanol gasoline with 10%, 20% hydrous ethanol by volume (E10W and E20W) and pure gasoline (E0) were experimentally investigated. The tests were performed at full load and different engine speeds varying from 1500 rpm to 5000 rpm. The results showed that compared with E0, E10W and E20W had much lower exhaust noise at low engine speeds. With the increase of engine speed, E0 showed an advantage in low exhaust noise. However, engine fuelled with three fuels displayed comparable noise emissions at high speed. In addition, better thermal efficiency, significantly decreased CO and HC emissions were achieved by hydrous ethanol gasoline at all tested operating conditions. However, significant NO<sub>x</sub> emission and slight BSFC were observed for E10W and E20W. Compared with E20W, E10W showed decreased BSFC, HC and NO<sub>x</sub> emissions with the increase of engine speed, while CO emission was only slightly increased. Hydrous ethanol gasoline was capable of realizing comparable torque and power with E0 at all operating conditions. From the results above, hydrous ethanol gasoline could be considered as a promising

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