عنوان مقاله:

Dual Fuelling of a Direct Injection Automotive Diesel Engine by Diesel and Compressed Natural Gas

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خلاصه مقاله:

Application of Compressed Natural Gas (CNG) in diesel engines has always been important, especially in the field of automotive engineering. This is due to easy accessibility, better mixing quality and good combustion characteristics of the CNG fuel. In this study the application of CNG fuel along with diesel oil in a heavy duty direct-injection automotive diesel engine is experimentally investigated. In order to convert a diesel engine into a diesel-gas one, the so called "mixed diesel-gas" approach has been used and for this purpose a carburetted CNG fuel system has been designed and manufactured. For controlling quantity of CNG, the gas valve is linked to the diesel fuel injection system by means of a set of rods. Then, the dual-fuel system is adjusted so that, at full load conditions, the quantity of diesel fuel is reduced to ۲۰% and ۸۰% of its equivalent energy is substituted by CNG fuel. Also injection pressure of pilot jet is increased by ۱۱.۴%. Performance and emission tests are conducted under variation of load and speed on both diesel and diesel-gas engines. Results show that, with equal power and torque, the diesel-gas engine has the potential to improve overall engine performance and emission. For example, at rated power and speed, fuel economy increases by ۵.۴۸%, the amount of smoke decreases by ۷۸%, amount of CO decreases by ۶۴.۳% and mean exhaust gas temperature decreases by ۶.۴%

کلمات کلیدی:

Dual, Fuel Engine, CNG, Automotive Diesel