

Fundamental Study of Dual Fuel on Exhaust Gas Recirculation (EGR) Operating with a Diesel Engine

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ABSTRACT

In this paper, an experimental study evaluating the effect of exhaust gas recirculation (EGR) and liquefied petroleum gas (LPG) onboard systems attached to a single cylinder DI diesel engine running with diesel is presented. Tests were performed at the minimum (1400 rpm) and maximum engine speeds (4100 rpm). The engine were tested under four different operating modes mainly; (a) standard test condition, (b) engine with EGR system, (c) engine with LPG system and (d) the engine with EGR and LPG onboard systems. Parameters that been measured during the tests are percentage of oxygen (O₂) content, carbon monoxide (CO) emissions, carbon dioxide (CO₂) and unburned hydrocarbon (UHC) emissions. Results show for the exhaust emissions, the engine with LPG onboard system emits higher CO and UHC emissions for both engine speeds. According to the experimental results it can be concluded that the use of EGR system increased the exhaust gas temperature and CO₂ emissions. While the engine with EGR and LPG onboard systems have influenced much on the increase in CO and UHC emissions for both engine speeds.

KEYWORDS: Ammonium Perchlorate, Composition, Solid Propellant

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