

عنوان مقاله:

Improving the Performance of a Six-Cylinder Diesel Engine with the Addition of Alumina Nanoparticles to Diesel and Biodiesel Fuel

محل انتشار:

پانزدهمین کنگره ملی و اولین کنگره بین المللی مهندسی مکانیک بیوسیستم و مکانیزاسیون کشاورزی (سال: 1402)

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خلاصه مقاله:

Due to the importance of using alternative fuels in internal combustion engines, this study was performed by adding alumina nanoparticles to two types of pure diesel fuel and biodiesel fuel to evaluate the performance of a diesel engine. In this study, alumina nanoparticles in different concentrations were added to two types of diesel and biodiesel fuels (۲۰% biodiesel and ۸۰% diesel: B۲۰). In this study, biodiesel fuel was prepared from cooking waste oil. Due to the importance of the effect of nano additive concentrations, two concentrations (۸۰ and ۱۲۰ ppm) were used for diesel fuel and four concentrations (۴۰, ۸۰, ۱۲۰ and ۱۶۰ ppm) were used for biodiesel fuel. Diesel engine performance was evaluated using alternative fuels at ۸۰۰, ۸۵۰, ۹۰۰, ۹۵۰, and ۱۰۰۰ Rpm engine speeds. The results showed that with increasing the concentration of nanoparticles in diesel fuel, the average power and average engine torque increased to ۱.۷۸ and ۲%, respectively, compared to pure diesel fuel. BSFC also decreased by ۶.۰۱% compared to pure diesel fuel. Using nanoparticles in biodiesel fuel, the maximum power and torque were recorded at ۴۲.۴۸ kw and ۴۰۲.۸ Nm respectively, and the lowest BSFC was recorded at ۲۰۷.۲۱ gr / kW.hr for biodiesel fuel with concentration of ۱۶۰ ppm at ۱۰۰۰ Rpm engine speed.

کلمات کلیدی:

Internal Combustion Engine, Performance, Diesel, Biodiesel, Alumina

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