

The Study of Tire Pyrolysis Fuel in CI Diesel Engine for Spray Combustion Character and Performance

Authors : Chun Pao Kuo, Chi Tong Lin

Abstract : The study explored atomization characteristics of tire pyrolysis fuel and its impacts on using three types of fuel: diesel oil mixed with 10% of tire pyrolysis fuel (called T10), diesel oil mixed with 20% tire pyrolysis (called T20), and consumer-grade diesel oil (D100). The investigators used the fuel for simulation and tests at various fuel injection timing, engine speed, and fuel injection speed to inspect impacts from fuel type on oil droplet atomization speed and output power. Actual vehicle tests were conducted using a 5-ton sedan (Hino) with 3660 cc displacement and a front-end inline four-cylinder diesel engine, and this type of vehicle is easily available from the market. A dynamometer was used to set up three engine speeds for the dynamometer testing at different injection timing and pressure. Next, an exhaust analyzer was used to measure exhaust pollution at different conditions to explore the effect of fuel types and injection speeds on output power in order to establish the best operation conditions for tire pyrolysis fuel.

Keywords : diesel engine, exhaust pollution, fuel injection timing, tire pyrolysis oil

Conference Title : ICMCE 2015 : International Conference on Mechanical and Control Engineering

Conference Location : Zurich, Switzerland

Conference Dates : July 29-30, 2015