CE_CERT SEMINAR SERIES

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“Performance, Emission and Particle distribution of Diesel Engines Fueled with Diesel-Dimethoxymethane (DMM) Blends”

Abstract: Combustion, performance and emission were studied for DI diesel engine fuelled with DMM/diesel fuel blends for DMM content from 0 to 50%. Results showed that, for diesel engine with fuel supply system and combustion system unchanged, with increased DMM percentage, thermal efficiency slightly increases; smoke and CO emissions decrease, NOx remains almost unchanged while HC increases a little; for combustion, peak pressure and pressure rise become slightly higher, ignition delay is longer meaning more and faster premixed combustion, the diffusion combustion is faster due to oxygenated fuel. NOx emission can be reduced remarkably with the increase of EGR ratio on the diesel-DMM blends fueled engine. However, smoke, CO and HC emissions increase with the increase of EGR ratio. Brake thermal efficiency shows fluctuation at small EGR ratio and a decreasing trend with further increase of EGR ratio. Compared with diesel fueled engine, DMM-diesel blend fueled engine has lower number of particles in the diameter range of 0.0392-1.2393 μm whereas relatively high number of particles at the smaller diameter.