

Experimental Study of Water Injection into Manifold on Engine Performance and Emissions in Compression Ignition Engine

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Abstract : The performance of a diesel engine depends mainly on mixing of the fuel and air in the combustion chamber. The diesel engine suffers from significant generation of nitric oxide and particulate matter emission due to incomplete combustion. As the fuel is injected directly into the combustion chamber in conventional diesel engines, spatial distributions of air-fuel ratio vary widely from rich to lean in combustion chamber. The NO_x is formed in stoichiometric zone and smoke is generated during diffusion combustion period where the combustion rate becomes slower. One of the effective methods to reduce oxides of nitrogen and particulate matter emissions simultaneously is to reduce the intake charge temperature in diesel engines. Therefore, in the present study, the effect of water injection into intake air on performance and emission characteristic of single cylinder CI engine are carried out at different load and constant speed, with variable water to diesel ratio by mass. The water is injected into intake air by an elementary carburetor.

Keywords : engine emission control, oxides of nitrogen, diesel engine, ignition engine

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