

عنوان مقاله:

A Detailed Study of Boost Pressure and Injection Timing on an RCCI Engine Map Fueled with Iso-Octane and N-Heptane Fuels

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خلاصه مقاله:

By using two types of different fuels and changing the ratios of these fuels, Reactivity Controlled Compression Ignition Engine (RCCI) is able to provide a more effective control over combustion phase at different loads and speeds. In a typical RCCI engine which could be considered as a type of homogeneous charge compression ignition (HCCI) engine, a low reactive fuel is injected into the intake port and a high reactive fuel is directly injected into the combustion chamber. In this study, a multi-dimensional model coupled with chemical mechanism is developed to simulate an RCCI engine operation fueled with iso-octane as the low reactive fuel and n-heptane as the high reactive one. Initially, the engine map was derived using different quantities of total above-mentioned fuels at different ratios and then engine inappropriate operating points were detected and improved by changing intake air pressure and injection timing strategies. The improved criteria to extend engine map are ringing intensity limit, NO_x formation standard and gross indicated efficiency. It was concluded that high ringing intensity and NO_x formation can be reduced by increasing intake air pressure; also badfire and misfire points can get improved by retarding the injection timing.

کلمات کلیدی:

RCCI engine, Iso, octane, N, heptane, Injection timing, Intake air pressure

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