

عنوان مقاله:

Simulation of Combustion Process in Dual Fuel Engines at Part Loads Using Detailed Chemical Kinetics Mechanism

محل انتشار:

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خلاصه مقاله:

This work is carried out to investigate combustion characteristics of a dual fuel (diesel- gas) engine at part loads, using a quasi-dimensional multi zone combustion model (MZCM) for combustion of diesel fuel and a single zone model with detailed chemical kinetics for combustion of natural gas fuel. Chemical kinetics mechanism is consisted of 184 reactions with 50 species. This combustion model is able to establish the development of the combustion process with time and the associated important operating parameters, such as pressure, temperature and heat release rate (H.R.R). The dual fuel engines at part loads inevitably suffers from lower thermal efficiency and higher carbon monoxide and unburned fuel. Therefore this paper is an attempt to investigate the combustion phenomena at part loads and using methods such increasing pilot fuel quantity, intake air throttling to improve the mentioned problems. It is found that proposed methods promoted better combustion. Predicted values show good agreement with corresponding previous experimental values over whole range of engine operating conditions. Implications will be discussed in details.

کلمات کلیدی:

Multi Zone Combustion Model- Chemical Kinetics-Natural Gas-Dual Fuel Engines

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