عنوان مقاله:

Simulation of Laminar Burning Velocities for Alternative Fuels in SI Engines

محل انتشار:

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خلاصه مقاله:

In the simulation of the spark ignition engine cycles,modelling of the turbulent flame propagation presents particular problems.Generally,turbulent flame propagation models are based on laminar burning velocity,turbulent intensity and one or more scale parameters of turbulence.A empirical model is presented for laminar burning velocity as a function of mixture strength,unburned mixture temperature,pressure,and residual gas fraction.Fuels considered include methane,ethanol,methanol,alcohol/water blends,isooctane/alcohol blends,propane and isooctane.Published data of other workers and the predictions of theoretical thermo-kinetic models have also been considered.It was noticed that in a constant unburned mixture temperature and equivalence ratio,arrangement for burning velocity of isooctane-methanol blends is methanol,isooctane,90%isooctane/10%methanol and 80%isooctane/20%methanol.In isooctane-ethanol blends,results of simulation indicates which maximum burning velocity of ethanol is higher than 80%isooctane/20%ethanol,90%isooctane/10%ethanol and isooctane.In constant circumstances maximum laminar burning velocity for equivalence ratio of 0.7-1.1 belong to blend of 80%isooctane(gasoline)and 20%ethanol while in equivalence ratio of 1.1-1.4 it belongs to ethanol.

کلمات کلیدی:

laminar burning velocity-empirical model-alternative fuels

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