

# **FUEL REQUIREMENTS FOR HCCI ENGINE OPERATION**

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Researchers at Southwest Research Institute (SwRI) have been working for the past several years on the fundamental and practical aspects of homogeneous charge compression ignition (HCCI) operation of reciprocating engines. Much of the work has focused on the use of diesel fuel. The work at SwRI has, however, demonstrated that there are fundamental limitations on the use of current diesel fuels in HCCI engine. Some of these fundamental limitations were discussed in a paper presented at the THIESEL 2000 Conference.

One of the most difficult aspects of fuel specification for HCCI engines is the characterization of the fuel characteristics that adequately defines the ignition or reactivity of the fuel. The results of the SwRI program are summarized in this paper and used to define the fuel requirements of HCCI engines. A newly defined fuel ignition property for HCCI fuels is introduced, and preliminary constant volume combustion bomb results are presented and discussed.