

DIESEL HCCI DEVELOPMENT AT CATERPILLAR

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ABSTRACT

Implementation of a practical homogeneous charge compression ignition (HCCI) engine has numerous technical challenges. Among these are proper mixture preparation, controlling combustion phasing and cylinder-pressure rise rates, and expanding the operating range to higher loads and idle/light

loads. Methods to control combustion phasing include inlet manifold temperature and pressure, injection timing, valve timing and fuel properties. Recent progress on part-load HCCI operation using diesel fuel will be given.