

JSAE Annual Congress (Spring): 26th - 28th May 2021

Online
20215146

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Powertrain

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Passive Pre-Chamber Technology Applied to a Range of Engine Applications from High Performance to Dedicated Hybrid Engines

The pre-chamber-based jet ignition concept produces jets of partially combusted species that induce ignition in the main combustion chamber enabling rapid and stable combustion. The potential of passive jet-ignition, combined with a high compression ratio, Miller-cycle and EGR, to provide high engine efficiencies, has been presented previously. This study demonstrates the capability of the passive pre-chamber to be applied to a range of different engine specifications, covering high performance applications exceeding 30 bar BMEP and 120 kW/l, to highly efficient dedicated hybrid engines. The latest design updates that allow installation into existing engine designs, with minimal changes are also discussed.

