

Authors:

Mike Bassett, Adrian Cooper, Anthony Harrington, David Pates, Simon Reader and Martin Berger

Passive MAHLE Jet Ignition System Demonstrator

The MAHLE Jet Ignition® concept uses a pre-chamber to produce jets of partially combusted species that induce ignition in the main combustion chamber enabling rapid, stable combustion. This paper presents latest test results which demonstrate the capability of the passive MJJ system to enable whole map $\lambda=1$ operation, as well as idle operation and catalyst light-off capability, equivalent to those with a conventional spark plug. The passive MJJ system has been combined with a high geometric compression ratio, Miller cycle operation and exhaust gas recirculation to achieve high brake thermal efficiency. The system has been developed to function across the entire engine operating envelope, without the requirement for a second ignitor, and can be readily implemented into existing cylinder heads.

