

VTMS 11, 15-16 May 2013, Coventry Technocentre, Coventry, UK

Future Gasoline Engine Technology and The Effect on Thermal Management and Real World Fuel Consumption

James Miller
MAHLE Powertrain Ltd

ABSTRACT:

Emissions legislation, fleet CO₂ targets and customer demands are driving the requirements for reducing fuel consumption. This is being achieved in the gasoline market in the near term through the adoption of downsizing, increasing the specific power output and peak BMEP of the engine through pressure charging. This reduces fuel consumption through load point shifting, moving engine operation to higher loads where pumping losses are reduced. These fuel consumption benefits are most significant in the legislative drive cycle operating region. In order to reduce fuel consumption further and in the wider real world operating region complimentary technologies are being investigated and applied; for example integrated water cooled exhaust manifold, novel charge air cooling systems and cooled EGR. Although these technologies reduce fuel consumption, they place extra demand upon the vehicles thermal management system.

In this paper different future gasoline engine technology is applied to an extreme downsized engine and is assessed in terms of fuel consumption improvement and effect on the loading of the thermal management system, both over legislative drive cycles and using real world drive data.