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192 Variable Compression Ratio Strategies for Low Emissions*

Hugh Blaxill, Grant Lumsden
MAHLE Powertrain Ltd (formerly Cosworth Technology Ltd)

ABSTRACT

The key requirements for a SULEV emissions start are high exhaust energy and low concomitant emissions flux. Variable compression ratio engines offer fuel economy advantages and an additional degree of freedom for optimisation of emissions. A variable compression ratio engine has been tested to develop comprehensive maps of emissions and fuel consumption under cold starting conditions. Several strategies have been investigated in an effort to optimise the cold start and emissions performance of the engine including maximising exhaust energy, minimising emissions flux and maintaining acceptable combustion stability. The effects of compression ratio, valve timing, spark and AFR have been studied and the implications for CR and cam range selection are discussed.