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The Development of a Dedicated Range Extender Engine

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ABSTRACT
This paper forms the third of a series and presents results obtained during the testing and development phase of a dedicated range extender engine designed for use in a compact class vehicle. The first paper in this series used real world drive logs to identify usage patterns of such vehicles and a driveline model was used to determine the power output requirements of a range extender engine for this application. The second paper presented the results of a design study. Key attributes for the engine were identified, these being minimum package volume, low weight, low cost, and good NVH. A description of the selection process for identifying the appropriate engine technology to satisfy these attributes was given and the resulting design highlights were described. The paper concluded with a presentation of the resulting specification and design highlights of the engine.

This paper will present the resulting engine performance characteristics. The performance targets set for the engine during the initial phase of the study have been met. An initial package study of the integration of the engine into a vehicle will be presented, along with the results of a driveline modelling study, giving details of drive-cycle tailpipe CO_2 estimates for a range extended electric vehicle fitted with the MAHLE range extender engine.