

Development of a dedicated Range Extender Unit and Demonstration Vehicle

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ABSTRACT

Over the past 3 years, MAHLE Powertrain has designed and developed an engine specifically for the use as a range extender. Key attributes for the engine have been identified and the appropriate engine technology selected. The resulting design highlights are presented and the development and optimisation of the engine to meet its performance targets is described, along with the resulting performance achieved.

A current production compact-class car was used as a donor vehicle for conversion into a range-extended electric vehicle (REEV) demonstrator to enable verification of the operation range extender unit. The resulting vehicle is intended to reflect likely, near to market, steps to further the wider adoption of electric vehicles in the compact-class passenger car segment. This paper presents details of the REEV demonstrator developed and the Range Extender system integration. Recent activities have focussed on refining the range extender operating strategy to minimise the fuel consumption and NVH performance of the vehicle, as well. The resulting operating strategy for the engine is described and results showing the measured fuel efficiency of the vehicle are presented.