

A new piston referencing algorithm for qualitative assessment of free-piston engine generator performance

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ABSTRACT

Free-piston engine generator (FPEG) provides a novel method for electrical power generation in hybrid electric vehicle applications. This paper presents a new piston positioning method for assessing the performance of a dual-piston type FPEG. Numerical simulations were conducted to obtain motion profiles necessary for the algorithm development. A flowchart for the algorithm was produced. The new piston referencing is named cyclic position which illustrates similar crank-angle-based referencing employed for conventional crank slider engine applications. The results demonstrated cyclic position as qualitative tool for FPEG performance assessment which can be used for data-acquisition user interface in experimental investigations.

KEYWORDS

Free-piston engine generator; Piston position referencing; Motion control

ACKNOWLEDGEMENTS

The authors would like to thank Ministry of Higher Education Malaysia for providing research grant under reference code FRGS/1/2018/TK10/UMP/02/11 and Universiti Malaysia Pahang (<http://www.ump.edu.my/>) for grant RDU1903102 and providing laboratory facilities.