

Study of engine performance, emission and combustion of reactivity controlled compression ignition (RCCI) mode engine

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ABSTRACT

Based on research and sufficient evidence, the International Agency for Research on Cancer (IARC), which is part of the World Health Organization (WHO), classified exhaust gas from diesel engines as carcinogenic to humans (Group 1), which has been a factor in the worldwide increase in cancer lung cases. According to the preceding remark, this will become an issue for all diesel transportation, from the smallest, such as a generator used in a night market, to the largest, such as trains. To address this issue, many researchers and scientists study the diesel engine in order to ensure that this internal combustion engine improves in terms of emissions while maintaining performance and fuel efficiency. The diesel engine is known as a combustion that has a thermal efficiency of more than 45%. The most recent technique to reducing gas emissions from diesel engines is to modify the injection system to use dual-fuel Reactivity Control Compression Ignition (RCCI) with main reference fuel (PRF). The study on the RCCI technique shows that it can achieve low NO_x and CO₂ emissions while retaining the high performance of a diesel engine. To minimise HC and CO emissions, the future proposal for this method is to regulate the combustion phasing by regulating the injection at the port injector.

KEYWORDS

Low Temperature Combustion (LTC); Primary Reference Fuel (PRF); Reactivity Controlled Compression Ignition (RCCI)

ACKNOWLEDGEMENTS

The authors would like to thank the Ministry of Higher Education for providing financial support under Research Acculturation of Early Career Researchers No. RACER/1/2019/TK08/UMP/1 and Universiti Malaysia Pahang for laboratory facilities as well as additional financial support under Internal Research grant RDU192617.