

Hydrogen Combustion for Commercial Engine Applications

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Abstract:

One challenge for the development of commercial vehicles is the reduction of CO₂ greenhouse, where hydrogen can reduce the fleet CO₂. Another challenge is EURO VII or ultra-low NO_x in USA, also for hydrogen combustion. Based on a roadmap for emission regulation and scenarios for future heavy-duty engines, the requirements for the combustion system and after-treatment system are defined. Advantages of hydrogen fuel as well as challenges will be addressed using HD single-cylinder and validated simulation models. The effects of a combustion and thermal management on EAT system to fulfil future regulations are discussed. Additionally, the use of a H₂-DeNO_x and a possible EAT system for HD H₂-ICE are evaluated and using test data of PM, the need of DPF for future emission concepts will be addressed.