

عنوان مقاله:

Multi-Dimensional Modeling of the Effects of Split Injection Scheme on Combustion and Emissions of Direct-Injection Diesel Engines at Full Load State

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خلاصه مقاله:

One of the important problems in reducing pollutant emission from diesel engines is trade-off between soot and NOx. Split injection is one of the most powerful tools that decrease soot and NOx emissions simultaneously. At the present work, the effect of split injection on the combustion process and emissions of a direct-injection diesel engine under full-load conditions is investigated by the commercial CFD code AVL-FIRE. The study of injection timing and split injection parameters, including the delay dwell and the fuel quantity injected between injection pulses is carried out. Three different split injection schemes, in which ۱۰-۲۰-۲۵ % of total fuel is injected in the second pulse, have been considered. The results show that ۲۵ % of total fuel injected in the second pulse, reduces the total soot and NOx emissions effectively in DI diesel engines. In addition, the optimum delay dwell between the pulses is about ۲۵°C.A. The predicted values of combustion process, emission and delay dwell by this CFD model show a good agreement with the corresponding data of multi-zone phenomenological combustion model in the literature.

کلمات کلیدی:

Split injection, Combustion, Emission, NOx, Soot

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