

Abstract Submitted
for the DFD11 Meeting of
The American Physical Society

Large-eddy simulation of a three-stream MILD combustion system JIAN ZHANG, Institute of Mechanics, CAS, MATTHIAS IHME, Department of Aerospace, University of Michigan, Ann Arbor, GUOWEI HE, Institute of Mechanics, CAS — Large-eddy simulations (LES) of a three-stream burner system are performed. This burner is operated in the so-called moderate and intense low-oxygen dilution (MILD) combustion regime. An extended flamelet/progress variable (FPV) model is utilized, in which an additional scalar is introduced in order to account for the mixing between the three reactant streams. LES-calculations of three different operating conditions are performed, corresponding to increased levels of oxygen-dilution in the vitiating coflow. The extended FPV model accurately predicts effects of the oxygen-dilution on the flame-structure and heat-release, and model-predictions for temperature and major and minor species are in good agreement with the measurements.

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Date submitted: 05 Aug 2011

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