

CFD Simulation of a Large Scale Unconfined Hydrogen Deflagration

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Abstract : In the present work, CFD simulations of a large scale open deflagration experiment are performed. Stoichiometric hydrogen-air mixture occupies a 20 m hemisphere. Two combustion models are compared and are evaluated against the experiment. The Eddy Dissipation Model and a Multi-physics combustion model which is based on Yakhot's equation for the turbulent flame speed. The values of models' critical parameters are investigated. The effect of the turbulence model is also examined. k- ϵ model and LES approach were tested.

Keywords : CFD, deflagration, hydrogen, combustion model

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