

A numerical study of two turbulent flame speed models for H₂/CH₄/air premixed combustion

Mark Tidswell, *SPR Muppala, Vendra C. Madhav Rao

*School of Mechanical and Automotive Engineering
Faculty of Science Engineering and Computing
Kingston University, London*

*S.Muppala@kingston.ac.uk

A number of numerical studies have been carried out in order to validate the Zimont and Peter's turbulent flame speed models when applied to a low-swirl Methane/Air/Hydrogen flame. These models are contained as default options within the ANSYS Fluent Premixed reaction model. Two distinct tasks were completed as part of the study – non-reacting and reacting conditions – the latter of which was carried out with three different mixtures – 0, 40 and 60% hydrogen. The results show that the RANS approach provides a reasonable prediction of the cold flow conditions, whilst the reacting flow conditions, apart from the recirculation region, were well predicted up to 40% enrichment.