

Comparison of Experimental and Simulations Results of a Large-Scale Propane Jet Fire using CFD and DNV-Phast Software

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Abstract

In the present study, vertical propane jet fires are simulated using computational fluid dynamics (CFD) with Shear Stress Transport (SST), Eddy Dissipation Concept (EDC) and Monte Carlo. These models are used for turbulence, combustion and radiation, respectively, and the results are compared with the DNV-Phast 7.2 software. The predicted radiations are validated at three horizontal distance points. The results show that the average radiation error predicted by the DNV-Phast 7.2 software and the CFD method with experiments data were 98% and 10.5%, respectively. The simulation results also show that it is not possible to accurately predict the amount of radiation during a propane jet flame by using the DNV-Phast 7.2 software; whereas the CFD simulations determine the amount of radiation at all locations

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