

Abstract

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The computational modelling of Flame Spread Along a conveyor belt

This paper reports the results of an experimental and computational study conducted to characterize the initiation and spread of fire along the upper and lower surfaces of a conveyor belt mounted within a ventilated full-scale experimental fire test gallery. Experimental data were obtained from the instrumented fire test gallery that recorded the temperature gradients and airflow profiles produced within the gallery due to the spread of the flame front under various ventilation flow rates. The computational models were constructed using the three-dimensional commercial CFD software code, Fluent TM. A novel modelling method is proposed to represent the observed flame spread along the conveyor belt surfaces. It is concluded that this model was able to qualitatively replicate the flame spread observed on the belt surfaces within the test gallery.