Seminaires @ ICARE

Effect of Ventilation and Geometrical Parameters on the Heat Release Rate in Tunnel Fires

par

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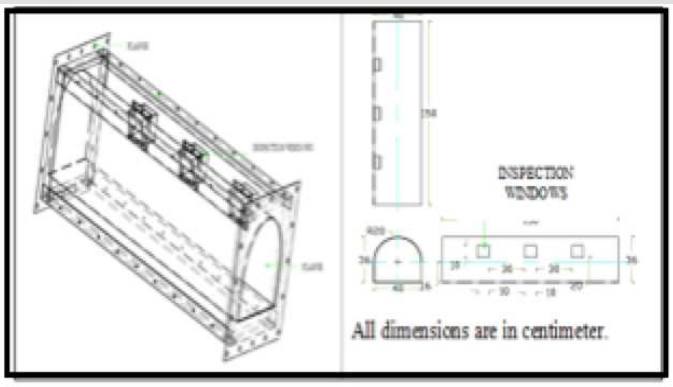

Tunnels have been used extensively for mass transit since the 19th century. Tunnels have fire safety systems consisting of detection, suppression, and ventilation systems, so they can be used safely. However, even when strict safety measures are implemented, fire incidents can occur inside tunnels. Tunnel fires can damage the tunnel and interrupt traffic for years. This ongoing concern, coupled with the overwhelmingly high investment cost of tunnel construction, has drawn extensive research attention to the safety issues associated with the design of tunnels as well as risk perception and maintenance strategies. A better understanding of tunnel fire dynamics and related phenomena will provide much needed information about the safety measures that need to be taken. A 1/13 scaled model tunnel is constructed in order to investigate the blockage effect (the ratio of the model cross sectional area to the tunnel cross sectional area) and ventilation velocity on the heat release rate inside the tunnel. In the experiments, wood sticks assembled in different geometrical configurations and pools of ethanol and n-heptane are burned with various longitudinal ventilation velocities inside the model tunnel. It was found that the variation in heat release rate is attributed mostly to changes in the blockage ratio.

Pour tout renseignement complémentaire, ou proposition de séminaire par un thésard ou un chercheur invité, contacter Sedina Tsikata (sedina.tsikata@cnrs-orleans.fr)