

Title:

REAL-TIME ESTIMATION OF HEAT RELEASE RATES
IN TUNNEL FIRES

Symposium:

Graz, 2014

Ichiro Nakahori.1, Toshiaki Sakaguchi.1, Ami Nakano.1, Atsushi Mitani.1,

Vardy A.E.2

1Sohatsu Systems Laboratory Inc., Japan

2University of Dundee, Dundee, United Kingdom

ABSTRACT

A method of estimating heat release rates in tunnel fires in real time is introduced. The method takes advantage of the ability of linear temperature sensors to provide reliable measurements of evolving temperature histories at numerous locations along a tunnel. The possibility of knowing the heat release rate will open up many new opportunities for responding to fires in tunnels, especially in remote tunnels that are operated automatically. The principle underlying the method is presented and its effectiveness is demonstrated using pool fire tests in a full-scale tunnel. At the current stage of development, a number of factors limit the accuracy of the method, but on-going developments will improve its capability. In the meantime, the current simple implementation offers a significant advance on existing practice.

Sohatsu Systems Laboratory Inc.
Tel: +81(0)78-325/3220 Fax:+81(0)78-325-3221
www.sohatsu.com
San-nomiya Denden Bldg.
64, Naniwa-machi, Cyuo-ku, Kobe, Hyogo
Japan 650-0035