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**EMERGENCY OPERATION OF VENTILATION
FOR THE KAN-ETSU ROAD TUNNEL**

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Summary

The Kan-etsu Road Tunnel is equipped with a longitudinal ventilation system in spite of its length of 10.9 km, the longest road tunnel in Japan. The study on the performance of normal ventilation was already presented at the 4th ISAVVT. In the present paper, the authors will discuss in detail the operation methods of ventilators related to refuge circumstances when fire breaks out in the tunnel.

The authors have made a thorough investigation on the spatial and temporal distribution of smoke through numerical simulation under the various operation regimes which might be installed in the actual system.

Shutdown of all ventilators is the simplest and immediately obvious mode of operation. With this mode, it is possible to maintain safety under most of the situations. In some cases, however, on account of unbalanced traffic or strong ventilation draft by natural wind, a critical situation may be expected to occur.

One of the improvements to this primitive method is a feedback control of the axial flow velocity in the tunnel. If the jet fans could be properly operated according to the situation inside the tunnel, the most favorable circumstance to the refugee could be realized. We set the criteria that the flow velocity in the tunnel would come down to zero as soon as possible and keep it. The control system was established on the simulator, in which traffic and wind velocity data are utilized. By this mode, the wind velocity could be successfully reduced to values below 1 m/s within three minutes at the most for all simulation cases.

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