



Large Scale Fire Test Runehamar Tunnel Andalsnes, Norway September 18-19 2003

In September 2003, the Swedish National Testing and Research Institute conducted live fire testing in an abandoned road tunnel near Andalsnes Norway. The purpose of the test was to study how large semi-trailer fires behave in a tunnel. Many large catastrophic tunnel fires have been caused by this type of vehicle.

In order to conduct the experiments in a controlled manner, a Mobile Ventilation Unit from Tempest Technology/B-I-G was used during the tests. The MVU was positioned at the tunnel entrance to ventilate the smoke and heat in the direction desired.

Typically, emergency tunnel ventilation systems require a wind velocity of at least 2.5 m/s to prevent smoke backlayering. Due to the extremely large size of the test fires, a wind velocity of no less than 3 m/s was required. To ensure that this speed could be achieved, even against ambient wind, two MVU's were used for the test. One MVU was positioned at the tunnel portal and another was positioned 100 meters inside.

Fire Material: 80% wood pallets, 20% polyurethane mattresses
Total Weight: 10 metric tons
Fire Load: 215 megawatts
Max Temp. 1,365 °C.
Ambient Wind: 1 m/s against flow of ventilation

To get an idea of how large a 215 megawatt fire is:

<u>Vehicle</u>	<u>Fire Load</u>
Passenger Car	5 MW
Van:	15 MW
Bus:	25 MW
Semi-Trailer	150+ MW
Tanker	120-300 MW



One truck mounted and one trailer mounted MVU were used for the test.



The sponsors of the Runehammar Tunnel Fire Tests.



A heat-resistant shield was constructed inside the tunnel to protect the tunnel walls.



Polyethylene mattresses and wood pallets used for the 215 megawatt fire.



Truck mounted MVU positioned outside tunnel portal.



Truck mounted MVU elevated in preparation for conducting PPV.



Truck mounted MVU used for the tests.

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