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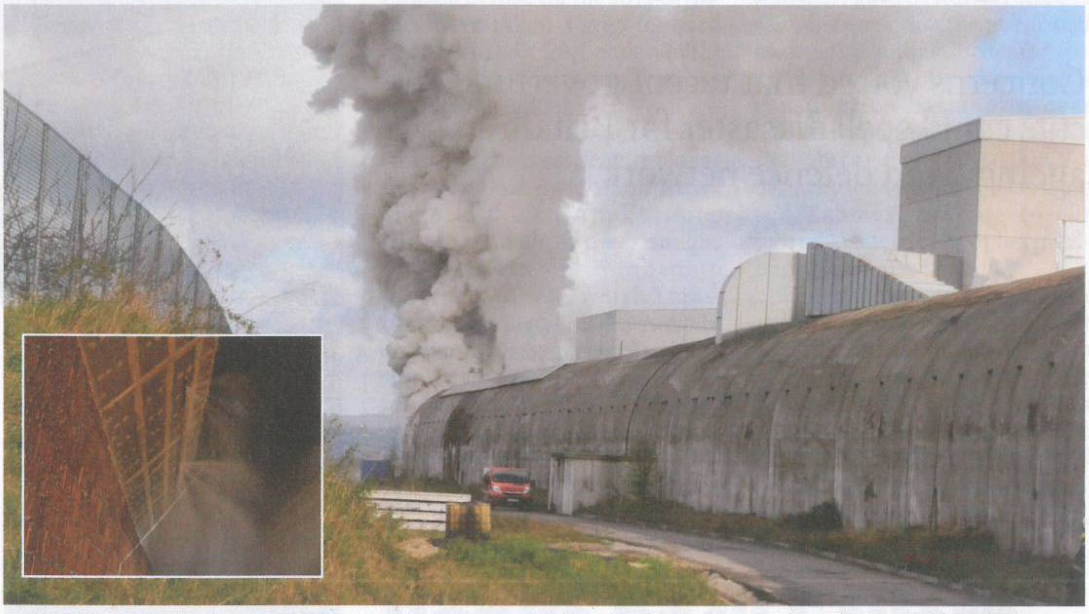
Eurotunnel unveils secret fire suppression system

Tunnel operator close to completing work as investigator criticises safety shortcomings.

By Alexandra Wynne



Testing times: Fogtec hones its fire suppression system mist (inset) in the test tunnel (main) ahead of installation

Eurotunnel this week revealed that it was close to completing the covert installation and testing of a fire suppression system in the Channel Tunnel.

It decided to install the system as part of an overall safety initiative called the Salamander Project in November last year but has only revealed details this week.

The move to publicise its actions came as accident investigators published a damning report into the causes of a catastrophic fire of 2008. Eurotunnel had previously ruled out installing any fire suppression systems.

The blaze caused serious damage along 650m of one of the twin bore tunnel's concrete linings and left this section closed for five months.

Investigators from the UK Rail Accident Investigation Branch (RAIB) and the French Bureau d'Enquêtes sur les Accidents de Transport Terrestre exposed a raft of management and operational failures at Eurotunnel in the build up to the disaster.

They made 31 recommendations for Eurotunnel and eight more recommendations for improvements to emergency services and the way in which Eurotunnel is scrutinised by the Intergovernmental Commission.

A Eurotunnel spokesman said the tunnel operator had already acted to tackle most of the recommendations, particularly by reversing its stance on the introducton of a fire suppression system.

The Fogtec sprinkler system now being installed comprises four approximately 800m long stations – two in each of the 50.5km long running tunnel around a third of the way from each portal.

Fibre optic cables will pinpoint fires within individual wagons, before water mist nozzles are activated in the critical areas.

> **"The technology for a fixed system has moved on"**
> Eurotunnel

Fogtec designed, built and is installing the system, along with Eurotunnel engineers. It produces a mist of very small water droplets that can cool air temperatures in a burning tunnel from 1,200°C down to 50°C in two minutes.

Passenger evacuation procedures will remain broadly unchanged. Eurotunnel said that the previous system had been sufficient to protect human life.

The system is based on the principle of preventing damage to infrastructure. There have been three fires in the Channel Tunnel since it opened in 1994.

A fire in 2006 fire was relatively minor, but the other two severely damaged the tunnel lining.

The November 1996 fire damaged concrete along 500m of the tunnel, putting that section out of action for six months and leading to £260M in losses. The 2008 blaze cost around £234M.

Eurotunnel had investigated a sprinkler based system in the 1990s but is understood to have ruled it out on cost grounds (*NCE* 30 October 2008).

A prototype onboard water based system was also examined in the six years after the first fire, but was also rejected because it would be "unreliable in service" and "expensive to maintain", said an RAIB report following the 2006 incident. The Eurotunnel spokesman said that previous proposals had been abandoned because of technical problems.

"It was impractical in terms of the weight of water and pipework that had to be accommodated by trains," he said. "There were huge technical problems. Now the technology for a fixed system has moved on," he said.

However, the spokesman confirmed that the new system was designed to prevent the kind of damage and disruption caused by previous fires. "We do have enhanced safety for protecting people. But now we're putting the infrastructure first too."

The spokesman was unable to confirm the cost of the system but said it would run to "tens of millions" of pounds.

Leading independent fire safety expert Fathi Tarada refuted the suggestion that the technology had not been advanced enough for earlier deployment but welcomed the new plans. "They are definitely a step forward," he said, also stressing that while the system is designed to suppress and not extinguish a fire, full scale testing would be vital.

"If you have too many HGVs on fire before the train reaches a [fire suppression] station it could overwhelm it," he said.

Eurotunnel said it will test the first fire suppression station over the next couple of months, while installing the other three. Design began in late 2009 and Fogtec carried out testing at a test tunnel in Spain over the last winter.

The aim is to complete work in the new year, said the spokesman.

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