



FireVu Video Smoke Detection Delivers Early Warning for Sydney Harbour Tunnel

NetVu's advanced Video Smoke Detection (VSD) system is being used to provide a rapid response to potential fires in the AU\$554 million Sydney Harbour Tunnel. Retrofitted to 80 of the tunnel's CCTV cameras - 40 in each tube - VSD offers a vital early warning of incidents in the tunnel which carries nearly 90,000 vehicles a day.

The key benefit of the Video Smoke Detection (VSD), now being applied in Sydney, is its ability to use image-processing technology and extensive detection and known false alarm algorithms to alert the system operator to the presence of smoke in the shortest possible time. This is especially critical in a confined tunnel environment. Unlike traditional methods, by effectively detecting smoke at source, VSD does not rely on the proximity of smoke to the detector and is therefore unaffected by distance.

Said Shaun Smith, D-Tec's Regional Manager for Australasia: "We are extremely pleased - in conjunction with our Australian agent, Chubb Fire Safety - to be associated with such a prestigious project, which underlines the growing demand for VSD to be applied to minimise the risk that fire presents to road and rail tunnels."

At the time of construction of the Sydney Harbour Tunnel, back in 1992, it was fitted with the best fire protection systems available. These consisted of thermal point detectors spaced

every 15 metres over each lane; more than 40 CCTV cameras - an additional 48 cameras were installed in 2000 - facing oncoming traffic throughout both tubes; complimented by a manual deluge system operated from a dedicated 24-hour manned control room in North Sydney.

The catalyst for the move to implement a new NetVu Video Smoke Detection solution came from an ongoing programme of intensive training and monthly maintenance by the Sydney Harbour Tunnel Company (SHTC). With advances in technology, the tunnel's management was keen to look for more effective systems of fire detection. In conjunction with the Sydney Fire Brigade a series of controlled vehicle fires were created to test the tunnel's exhaust system's ability to remove smoke, the activation of the point detectors, and the capability of the deluge system to suppress a fire. At this stage the SHTC management invited us and our Australian agent Chubb Fire Safety to take part in these tests and trial the state-of-the-art VSD.

UK and EMEA: **NetVu Ltd.** www.netvu.org.uk
No 1 Thellow Heath Park, Northwich Road, Northwich, Cheshire. CW9 6JH

USA: **Dedicated Micros Inc.** www.dedicatedmicros.com
3855 Centerview Dr. - Suite 400 B, Chantilly, VA 20151 USA.

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During the live burning of the vehicles, temperatures at the fire site reached in excess of 500°C. All cameras in the fire's direct field of view were totally obscured within 25 seconds. The operation of the deluge system was delayed in order to allow the fire to develop and for a large volume of smoke to spread along the tunnel. Activation of any of the tunnel's alarms was monitored. After approximately five minutes and a full blown fire with extreme temperatures, the deluge was operated and the fire contained. The live images of the fire were screened through the VSD system and the first alarm was generated in 14 seconds of visible smoke and prior to any visible flames, a further 30 alarms were generated during the remainder of the test burn. This was in stark contrast with the existing solution. At no point during the tests did any of the older automated systems within the tunnel generate an alarm.

As a result of the successful tests, the VSD was then procured by the Sydney Harbour Tunnel Company (SHTC) to cover 80 of the tunnel's existing CCTV cameras. The solution is capable of providing real time images and has a storage capacity of up to

5000 watermarked bitmap images. For the Sydney Harbour Tunnel the VSD hardware transmits its alarm signals to a dedicated NFP2 Chubb fire panel. The NFP2 then provides a visual and audible alarm within the tunnel control room and generates an interactive mimic panel via a graphic interface package known as "Digifire".

The system was commissioned with the full co-operation of the SHTC control room staff and management and handed over in May 2006. Since that time thankfully the tunnel has been free from real time incidents. "We cannot afford to be complacent, the fatal fire within the Melbourne City Link Tunnel in March 2007 reminds us that we must remain vigilant at all times," said Bob Allen General Manager Sydney Harbour Tunnel.

NetVu is the world leader in CCTV camera-based VSD for fireprotection. Its systems have already established themselves on the front line in situations ranging from aircraft hangars to turbine halls, historic buildings, road tunnels, rail depots, warehouses and shopping malls.

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