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# Laser signs partly powered by Grundfos pumps prove a winner

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## The Situation

Preventing over height trucks from entering Sydney's 2.3 kilometre-long harbour tunnel presented a problem to the Sydney Harbour Tunnel Company. When it first opened in 1992, there were traditional warning signs along the approach to the northern end of the tunnel, but these proved a failure. More 'active' signs were introduced, but they fared little better.

The Company's General Manager, Bob Allen, knew of the problems over height trucks could cause - at the very least resulting massive traffic disruptions, and at the very worst, causing a catastrophic fire. He was also well aware of the disastrous Mount Blanc tunnel fiasco, which claimed 39 lives and burnt for 52 hours. Similar accidents had claimed lives in the Gotthard Tunnel (Switzerland) and the Tauern tunnel (Austria).

"More than 90,000 vehicles a day use the tunnel, which equates to around 60 per minute, so a truck becoming stuck for an hour or so could create traffic chaos," he says.

"Since opening, the tunnel has endured over 10,500 traffic incidents ranging from accidents, breakdowns, fire and cars running out of fuel. Delays and closures prove very costly for the Sydney community, as the tunnel is a key access route for the city's business district and eastern suburbs."

Bob says that in one incident when there was a tunnel fire, motorists ignored the warning lights and signs and continued driving towards the fire.

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### LOCATION:

Australia

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### COMPANY:

Sydney Harbour Tunnel Company

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“These drivers exposed themselves to smoke and toxic fumes from the fire and then to compound the situation they turned around - in a one way tunnel - and drove back out of the tunnel against incoming traffic,” says Bob.

In 2004 Bob eventually hit on a solution.

"I figured that we might be able to use a laser style of sign, but couldn't determine what type of screen we could use," he says. "It was a real dilemma."

#### The Grundfos Solution

Bob Allen knew there was a way around the problem. Eventually, he discovered Laservision, an award winning Sydney-based company that was founded in the entertainment industry displaying colourful and dynamic lasers on a variety of screens.

Laservision, which had 30 years of laser experience, and Bob, examined a variety of ways in which lasers could be used, including screening a large “STOP” sign on a water screen.

Laservision had often incorporated Grundfos pumps in its displays, so it was decided to look at ways in which the Grundfos pumps could be used.

Eventually they decided to use two Grundfos NB End-suction close-coupled pumps operated by a Grundfos variable speed control panel, to ensure smooth performance of the pumps, and fed by a large 15,000-litre water tank. They were purchased through local Grundfos Dealer, Prime Pumps.

The entire installation would be placed above the roadway just inside the portal of the 4.55 metre high tunnel. This would allow, at the press of a button, the pumps to create the screen within three seconds, and rear screen projectors to show a large stop sign.

The sign would be large enough to cover the complete width and height of the dual lane roadway. And the sign would have to have the strength not to distort because of the draft created by the tunnel's powerful fresh circulation fans.

Laservision called the product the Softstop Solution, and while its mechanics remain a commercial secret, the system was trialled successfully in day and night time conditions before installation.

#### The Outcome

The Softstop Solution has proven its worth. As over height trucks enter the road leading to the tunnel entrance, they pass through a series of five warning signs and ultra red beams with the latter sounding alarms in the tunnel control room. If drivers ignore the last of these, the controller presses the Softstop Solution start button. The screen and sign appear within three seconds and are enough to

make most reasonable people stop immediately.&nbsp; Few people would willingly drive through the water screen and ignore the stop sign it displays.

Once the Softstop Solution is activated, a physical boom is lowered about two minutes later, although the laser sign can be maintained for around 10 minutes.

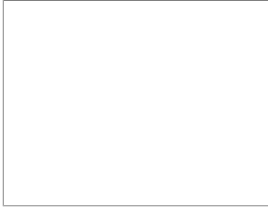
“The sign was activated 18 times last year,” says Bob Allen.&nbsp; “Eight hundred and forty-two over height trucks entered the road leading to the tunnel, and all but those 18 had taken exits off the road by the time they passed the fifth warning sign and beam.

“Without the Softstop Solution, I hate to think how many of those 18 would have entered the tunnel, perhaps forcing it close down for hours at a time.

“The Softstop Solution and Grundfos pumps have proven to be highly reliable.”

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