



# CASE STUDY: Clever & CO SBS TSN

## HAZELWOOD CHIMNEY REPAIR

### BACKGROUND

Absafe is a progressive and innovative Specialist Access contractor, providing a broad range of remedial engineering solutions for industrial, construction and maintenance projects. Their broad experience working on complicated jobs in difficult to access areas was put to good use when engaged to develop a more cost effective and efficient means to remediate spalling concrete around the capping of a 50 year old, 140m tall concrete chimney rising above Victoria's pastures in the LaTrobe Valley, Australia, as part of a scheduled maintenance program.

When confronting the scope of works required after their initial inspection, Absafe and Hazelwood Power Station looked for an innovative solution to an increasingly common issue on these types of structures. Driven by Hazelwood's continuous improvement process, Absafe extensively researched the potential for shotcreting at height. As the best source of this type of specialist equipment, Absafe consulted Antec for advice and to assist with the correct specification to carry out these remedial works.



### JOB DESCRIPTION

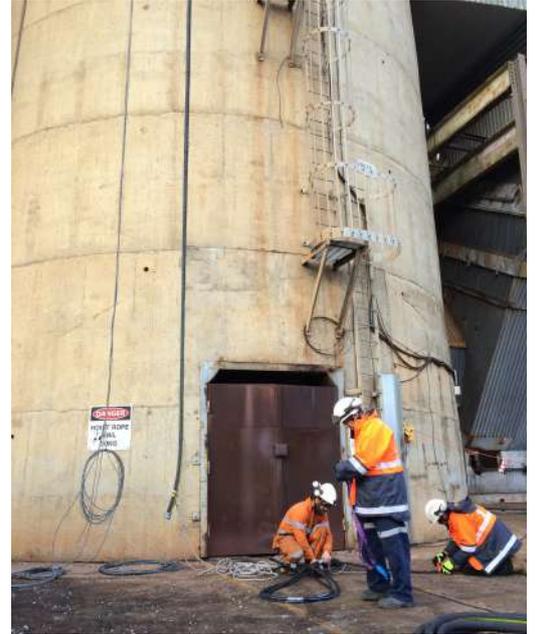
Concrete spalling is often termed concrete cancer. Its main symptom is concrete flaking from the surface of the affected area accompanied by nearby staining. Concrete spalling is caused when steel reinforcement within a concrete slab begins rusting. When steel rusts it expands approximately 4-5 times its original size causing concrete displacement and flaking. On becoming damaged, more water can enter the affected area, speeding up the process. In the case of the Hazelwood site over many years hand patching as well as form and pour repair methods have been undertaken. Both are relatively slow tasks, are laborious in nature and expensive to undertake during major shutdowns where tight timeframes are closely managed. There had to be a better way, a way that was quicker, safer and more cost effective.

## ANTEC SOLUTION

As the Australian Distributor for German specialist dry shotcrete manufacturer Clever & Co. ANTEC provided ABSAFE with a new SBS Type TSN Shotcrete Machine. The TSN machines successfully pumped BASF Master Emaco S820CI repair mortar and water in separate lines to the Chimney capping located 140m above ground level. The mortar and water was blended by an experienced nozzle man to provide a shotcrete finish capable of being trowel finished.

The intelligent SBS Control Chamber system allows the user to easily and reliably produce excellent quality shotcrete in the toughest conditions over exceptionally long distances of up to 1500m. At Hazelwood our water and cement were conveyed individually to a height of 140m from the machine which was located 10 metres horizontally from the base of the chimney.

Lots of small pockets (in this case 18) load the air flow with small even portions of spraying material. An adequate supply of the spraying material in the feed chamber and a constant flow of air (5bar) ensure thin-flow conveying with a pulsation free, even material flow to the nozzle tip. The electric hydraulic drive in the spraying machine guarantees stepless adjustment of the material quantity by altering the speed of the pocket wheel. The allocator unit responsible for loading the feed chamber seals the pressurised part of the machine reliably, guaranteeing that the machine works in an absolutely dust free manner.



The SBS machine works in conjunction with a separate High Pressure 415v PANDA pump specially designed to deliver consistent water pressure of up to 100bar. Maximising efficiency with a good mixing effect of water/cement relies on matching the size of the conveying hose and nozzle reflecting the desired output for each particular project. In this case we used a material conveying hose of 52mm OD hose, 32mm ID (1 ¼") along with 12mm 160bar rated high pressure hose to convey water to the nozzle from the PANDA pump located at ground level. Working in an extremely difficult working environment in winter, at height and with minimal manoeuvrability (600mm) from the repair face, a 25mm Clever & Co. nozzle was chosen in conjunction with the above mentioned hoses. With water pressure delivered at 2000psi and 80psi air pressure (5bar) we managed to spray one pallet per hour (breaking bags every 90 seconds).

The feature appreciated most on this particular project which proved invaluable was the "set and forget" functions of the TSN. Once air pressure and feed were adjusted and agreed upon by the nozzle man, operating the machine was very straight forward and required only monitoring of air and water pressures via two way radios between base level and the chimney capping team. The TSN provides consistent results each and every day with little maintenance required daily.



## RESULTS

The Hazelwood chimney is back online, the project was completed within two weeks and the capping should now be sound for many years to come.

## ABOUT ANTEC

Antec is a manufacturer and distributor of a wide range of products to the mining, minerals processing and infrastructure industries and the exclusive distributor of the Clever & Co range in Australia.



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