

# Clean Air for Australian Highway and Tunnel Construction in the “WestConnex” major Project

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## “WestConnex” Project

For years the population and the economy in the Australian federal state of New South Wales with its capital Sydney have been trying to come to terms with an overloaded infrastructure. The greatly overburdened ports and highways – triggered through increasing imports and a growing population – led to the government embarking on the “WestConnex” project involving investments of just under 17 billion AUD. The aim is to create long-term economic growth and substantially improve the infrastructure in the region around Sydney. The increase in capacity for the M4 and M5 motorways as laid down in the project plus linking these two motorways is intended to enhance connections between the city, the airport and the port (Fig. 1).

## Implementing the Project

By implementing the project in three construction phases with a scheduled duration of eight years and a deadline for completion in 2023 around 10,000 jobs are to be established in various branches of the economy. The project is being executed by the CPB Samsung John Holland Joint Venture as well as the Leighton Dragados Samsung Joint Venture. The high investment costs are essentially to be retrieved through calculated economic benefits of 20 billion AUD. Nonetheless, due to the financial and ecological concerns of the local population, project planning took many years until it was ultimately approved.

The first two construction sections include upgrading the M4 motorway to four lanes per direction as well as tunnel excavations to widen the M5 motorway. In the third construction section two further tunnels with three lanes each way are to be driven in order to link the two motorways with one other.

Altogether about 50 roadheaders are in action within the scope of the project to produce a 33 km long continuous motorway – 14 km of which are on the surface and 19 km in tunnels (roughly at a depth of 50 m). Energy-efficient, economic and eco-friendly technologies are designed to assure that any disadvantages and disturbances that might occur are kept to a minimum and that the general public is constantly convinced of the benefits throughout the duration of the project.

The air quality on the construction sites and in their proximity is thus examined during the entire period of the project and made transparent for the population in

CFT GmbH Compact Filter Technik is providing 35 systems including Korfmann fan stations for low-noise and energy-saving dedusting for the “WestConnex” highway and tunnel construction project in Sydney, Australia.

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published reports. This calls for professional and reliable dedusting during the construction measures.

## Dedusting the Construction Sites

The company CFT GmbH Compact Filter Technik, Gladbeck, Germany was commissioned to provide low-noise and resource-efficient dedusting of the construction sites for the “WestConnex” major project to follow up on the “NorthConnex” tunnel project [1].

## Dry-Type Dedusting Plants

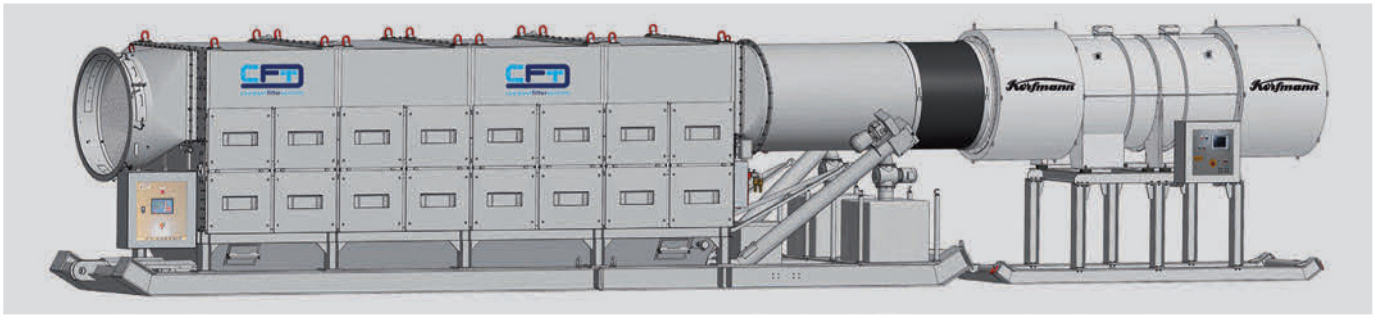
On the first two construction sites, 35 dry-type dedusting plants made by CFT GmbH provide air for a comfortable and clean working environment while complying with the MAK values legally prescribed for workplace and environmental protection purposes. Due to the clean air on the construction sites, the protection

**Fig. 1:** Route of the “WestConnex” project indicating the three tunnel construction sections

Source: <http://www.abc.net.au>







**Fig. 2:** 3D presentation of a CFT dry-type dedusting system as well as Korfmann fan station and connecting duct

Source: CFT GmbH Compact Filter Technik

of man and machine is ensured for the entire duration of the project.

CFT engineers designed three different plants Type HTKK with dimensions ranging up to 15 m x 2.50 m x 3.50 m and extraction capacities of up to 3,000 m<sup>3</sup>/min for the “WestConnex” project (Fig. 2). Fitted with CFM quality filter material the dedusting plants attained residual dust contents of < 0.1 mg/m<sup>3</sup>. These test results were determined by the DMT GmbH & Co. KG, Essen, Germany. Among other things, these high-grade plants are distinguished by their longevity and efficiency as well as a mobile and especially robust form of construction.

The successful accomplishment of the project also involved the affiliated companies Korfmann Lufttechnik GmbH and DFT GmbH Deichmann Filter Technik. CFT’s Australian partner MTV Mine & Tunnel Ventilation Pty. Ltd., was tasked with the provision of fast and personal service on the ground.

### Fans

The Korfmann fans provide for the transport of air by producing corresponding negative pressure and can be applied in every contract section thanks to their robust, compact and modular design. The energy-efficient fan

stations are designed to minimise noise. Altogether, Korfmann supplied 35 fan stations. Primarily, fans Type GAL (counter-rotating axial fans) are used. With a diameter of 1.40 m, installed power of 2 x 110 kW and the application of two inverse impellers, they produce very high pressures at a very high level of efficiency (up to more than 90 %) (Fig. 3).

### Dust Storage and Discharge Systems

DFT GmbH Deichmann Filter Technik produced the dust storage and discharge systems to go along with the CFT dedusting systems.

### Conclusion

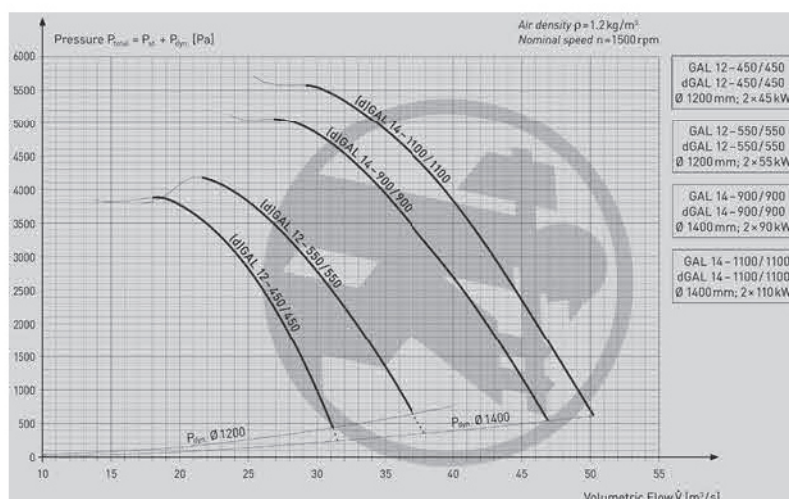
Thanks to their reliability and low-maintenance design, the products of CFT GmbH Compact Filter Technik, Korfmann Lufttechnik GmbH and DFT Deichmann Filter Technik are to be found not only in Australia but throughout the world in mining and tunnelling and industrial applications.

### Reference

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- [1] Thomeczek, M.; Both, C. (2015): CFT erhält Großauftrag in Sydney – 17 Entstaubungsanlagen für „NorthConnex“. In: GeoResources Zeitschrift (4-2015), S. 47. Online verfügbar unter <http://www.georesources.net/download/GeoResources-Zeitschrift-4-2015.pdf>

**Fig. 3:** Characteristics of the fans type GAL for the “WestConnex” major Project  
Source: Korfmann Lufttechnik GmbH



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