

CASE STUDY

C105-14

AirPlus by CompAir offers an exhaust particulate filter as one of numerous options.



The sled model by CompAir follows the progress of the construction

Semmering base tunnel well on schedule

Austria: The Semmering base tunnel is one of the biggest infrastructure projects with the most long-term significance in European high-performance transport networks. When it comes into operation in 2026, the train between Donau and Mur will be transported into the 21st century. The Semmering base tunnel will alleviate a bottleneck along the Baltic-Adriatic corridor and will enable an attractive goods traffic route across the southern Austrian stretch. The tunnel alleviates and expands the existing Ghega mountain route, which at 160 years old, has reached its capacity.

Project overview

- ▶ **User**
ARGE Fröschnitzgraben
- ▶ **Usage site**
Fröschnitzgraben access shaft at the Semmering base tunnel, Austria
- ▶ **Applications**
Operation of compressed air tools for the assembly of the tunnel boring machines; dry drilling for ground anchors or blast holes; operation of a vibrator during concrete construction
- ▶ **Machine used**
2 series C105-14 compressors
- ▶ **Added value**
Thanks to AirPlus with regular options:
 - Exhaust particulate filter
 - Exhaust spark arrestor
 - Sled model

The applications in detail

The two-passage train tunnel between Gloggnitz and Mürzzuschlag, with one track system per tunnel passageway is one of the most complex tunnel structures in Europe. Every

500m, the two tunnel passageways are connected by lateral galleries along the entire 27.3 kilometre length. ÖBB infrastructure started the construction in 2014. The tunnel

excavation is taking place in two directions from the Fröschnitzgraben access shaft south of Steinhaus am Semmering. The four kilometre long section (approx.) towards Mürzzuschlag is created using excavators and blasting, and the nine kilometre long section (approx.) towards Gloggnitz using two tunnel boring machines. The excavated material is taken to the nearby Longsgraben depot using conveyor belts. For the Fröschnitzgraben access shaft, another two were built as 400 metre deep shafts with diameters of around ten metres. There is a cavern at their foot – an enormous underground construction site: it's from here that the construction of the tunnel passages started in 2017. The cavern will later become an underground emergency stop.

Construction material and machines are taken down using a goods elevator with a capacity of 120 tonnes. Self-loading concrete mixer trucks are also transported using this method. The construction site is ventilated and of course, all the machines with combustion engines that are being used are fitted with a special emissions control system with particulate filters. Arge Fröschnitzgraben is also using two CompAir compressors at the construction site. Thanks to AirPlus, which the compressor manufacturer offers, the machines can be fitted with many extras like the exhaust gas particulate filter, exhaust spark arrestor and also with extended compressed air conditioning using aftercoolers and microfilters as regular options. The type C105 compressors have a volume flow of 10.5m³/min and deliver a maximum positive operating pressure of 14 bar. This provides enough output for all required



The CompAir compressor sled model follows the progress of the construction.

tasks, such as the operation of tools for the assembly of tunnel boring machines, for dry drilling, for fixing anchors and creating blast holes or for operating a vibrator during concrete construction. The construction compressors are designed in accordance with the sled model and follow the progress of the construction. To do this, they are simply moved as required.



The tunnel excavation is taking place in two directions from the Fröschnitzgraben access shaft south of Steinhaus am Semmering. The first trains will be travelling through the Semmering base tunnel from 2026.

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GERMAN
ENGINEERING
& DESIGN



Your benefits at a glance

- ▶ **Reliable, robust and energy-saving Deutz TCD4.1 L4 engine**
 - Meets level IV of the EU emissions standards and is ready to meet the outstanding level V (from 2019).
 - Diesel particulate filter (DPF) as standard
 - Enables use in low-emissions zones
- ▶ **Numerous AirPlus options** are available:
 - Aftercooler
 - Filtration
 - Lubricator
 - Hose Reel Front
 - Remote starting and stopping
 - Exhaust spark arrestor

**LOW
EMISSION
ZONE**

Technical data

Type			DLT 1304							
Model			C85-14	C95-12	C100-10	C110-9	C105-14	C115-12	C130-10	C140-9
Operating data	Volume flow ¹⁾	m ³ /min	8,6	9,4	10,0	10,8	10,5	11,5	12,5	13,3
	Positive operating pressure	bar	14	12	10	8,6	5-14	5-12	5-10	5-9
Engine	Propulsion engine		Deutz TCD4.1 L4				Deutz TCD4.1 L4			
	Cylinders		4				4			
	EU emissions stage		IV				IV			
	Engine cooling		Water cooling				Water cooling			
	Engine power	kW	90				105			
	Idling speed range	min ⁻¹	1.300	1.300	1.300	1.300	1.300	1.300	1.300	1.300
	Full-load speed range	min ⁻¹	1.850	2.000	2.100	2.300	1.700	1.900	2.050	2.200

¹⁾ according to ISO 1217 Ed. 3 1996 Appendix D