

Cost-efficient tunnel widening - the tunnel-in-a-tunnel method



Railway tunnels have been in operation in Germany since the 19th century. The cross-section of these tunnels must be widened to meet the heightened safety requirements and speed increases. This also applies to the Petersberg Tunnel. In this case, a method is now being employed that has never been used before on an electrified line in Germany. Based on a protective gantry, the enlargement is being carried out during ongoing rail operations.

Under contract with the Petersberg Tunnel joint venture, we have built a tunnel enlargement system that allows the construction work to be carried out in a very confined space. At the same time, it withstands the blasting load and earth pressure and remains in place during the blasting process.



Petersberg Tunnel: Enlargement of a railway tunnel during ongoing rail operations



Client
ARGE Tunnel Petersberg

Built
2017

Tunnel Enlargement System (TES)

- Wagon 1, barrier wagon, 36 t
- Wagon 2, drive wagon, 130 t
- Wagon 3, supply wagon 55 t
- Length of complete train 35 m



1 TES at the portal before start of driving

2 TES pre-assembled in Moosseedorf

3 Hoisting wagon 2

A tunnel enlargement system, which we designed, is used in the space between the protective enclosure and the existing tunnel. It consists of three distinct wagons. During the blasting process - once in the morning and once in the evening and always during a break between trains - the entire equipment assembly remains in place in the tunnel. That means that the first two wagons and all their mounted equipment are exposed to the full blasting load. They must also withstand the earth pressure of the rubble.