COMPARISON WITH LARGE DIAMETER SHIELD TBM TUNNELING ON THE
SAMPLES OF THE SLURRY SHIELD TBM OF H3/4, THE MIXSHIELD TBM OF
FINNETUNNEL AND THE OPEN CUT SHIELD OF WIENERWALDTUNNEL

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ABSTRACT

The section H3-4 consists of a 5.8 km long main tunnel section driven by a slurry shield with a diameter of 13.03 m. The tunnelling machine has to pass through rock, bored piles, diaphragm walls, injection blocks and the loose ground of the Inn valley varying from clays and silty sands to gravel with boulders. The hydroshield TBM is designed for this demanding project and is equipped with a number of special features to scope with the various ground conditions 30 m below groundwater table.

The Finnetunnel, two parallel tubes with a length of 6’970 m each, crosses the mountainous spine of the flat Finne on the eastern edge of the Thuringian Mulde with a maximum overlay of 65m. The technical challenge of the project is the tunnelling through the so-called Finne Faultline during the first 1.5 km of the tunnel. For the excavation of the Finne-Faultline both TBMs are designed for Hydro Shield mode to be changed to an open cut shield TBM to continue tunnelling for the following 5.2 km.

TBM tunnelling is completed on the Wienerwald Tunnel contract, which is part of the new railway route between Vienna and St. Pölten, currently Austria’s largest tunnel project. The technical challenges of the project includes not only conventional tunneling in large cross sections, as well as the use of two open shield TBMs with a diameter of 10,68 m on a length of 10,7 km each.