

Brenner Base Tunnel Project: Tunnel Guidance by Axis3D and the Foremen

The Brenner Base Tunnel will be at the heart of the new Brenner rail line between Munich and Verona. But before the 64km long tunnel is drilled through the Alps, an exploratory tunnel is being built under the two main tubes for geological and hydrological research. This preliminary measure will reduce costs and risks during the construction of one of Europe’s most ambitious infrastructure projects. ARGE EBN, the consortium for the exploratory tunnel Brenner-Nord, consisting of contractors STRABAG and PORR, are using Axis3D MLS from **significant software** for the construction of the “Sillschlucht” and “Ahrental” sections of the tunnel.

„The foremen quickly saw the advantages of Axis3D MLS and are very pleased with it. They immediately accepted the system.“

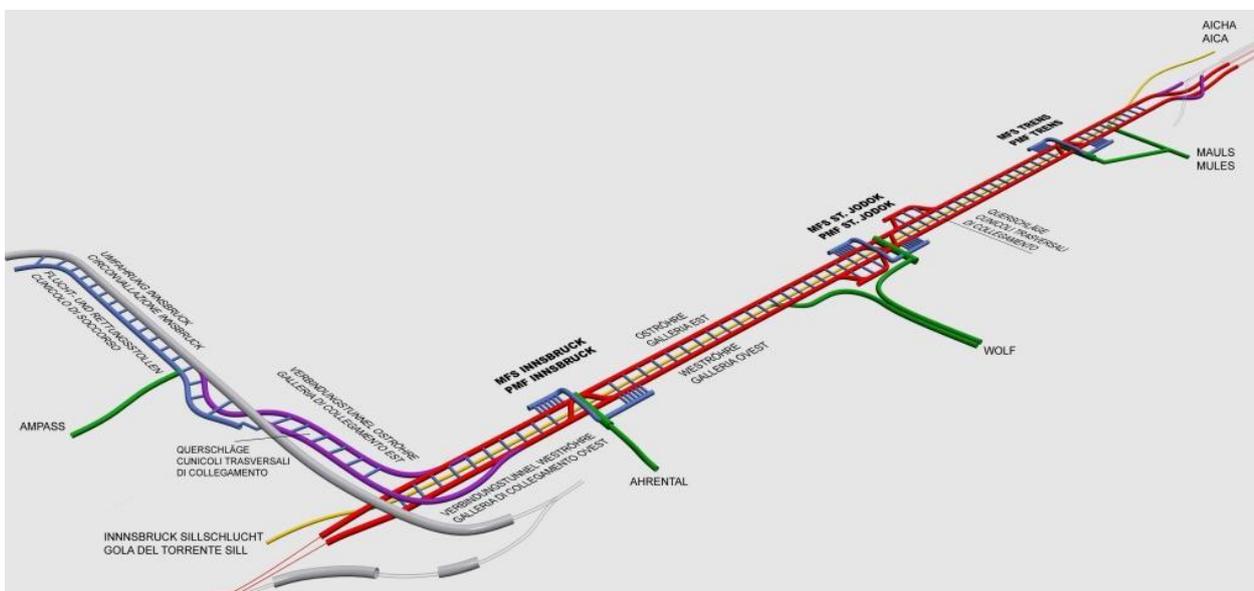
Anton Ertl, Site Manager ARGE EBN



A total of four Axis3D MLS systems are in use in the two tunnels: each tunnel has a permanently installed total station on a console with WiFi and a notebook, as well as a mobile system on a tripod. The notebook and batteries are mounted on the tripod for complete freedom of movement.

“With the permanent system we control tunnel advancement underground via the notebook, without the need for a surveyor,” says Site Manager Anton Ertl. Axis3D MLS is used primarily to position girders and to configure and control the drilling jumbo. The intuitive user interface makes it easy for the foremen to complete the work themselves.

For the bench excavation, the miners use the mobile Axis3D MLS system. With high-capacity batteries and all components attached to the tripod, the system is completely autonomous. “The MLS system is really light, making it easy to move,” says Ertl. To use the system, the foreman roughly targets any three reference points with the help of a red laser beam to complete a free station. With this, he can do profile checks and stake out the tunnel profile, without the need of a surveyor. The mobile system is primarily used where the application of the console is limited: for profile enlargements, niches, bends in the axes, and anywhere space is limited.



„With Axis3D MLS we can minimize the need for surveyors, since the system configuration is easy and clear.“

Michael Huber, Project Manager TRIGONOS

“My foremen are very happy with the systems. After some brief training they immediately embraced the opportunity to work independently and autonomously and it’s going very well,” says a pleased Ertl.

Michael Huber, Project Manager at surveying contractor Trigonos, who look after the system for ARGE EBN, explains: „Axis3D MLS is the perfect tool to enable the tunnel driving teams to work around the clock and without a surveyor. The contractors save time and money: foremen can keep track that expensive deviations from the design profile are kept to a minimum themselves – crucial for a project with such minimal tolerances. As surveyors we are left with just two tasks: first, the ongoing configuration of the system and second, to ensure that there are always enough target points in the tunnel for free stationing. “



PROJECT: Brenner Base Tunnel – Exploratory Tunnel

Client: Brenner Basistunnel BBT SE

Contractor: ARGE EBN (consortium for exploratory tunnel Brenner-Nord) STRABAG / PORR; surveying by Trigonos ZT GmbH

Project task: Tunnel advancement for access tunnel „Sillschlucht“ and exploratory tunnel „Ahrental“ of the Brenner Base Tunnel

Software/Hardware: Axis3D MLS

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