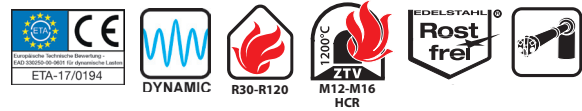
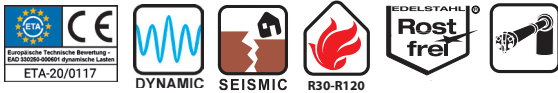




Credit: Hodapp GmbH & Co. KG / Nikolay Kazakov

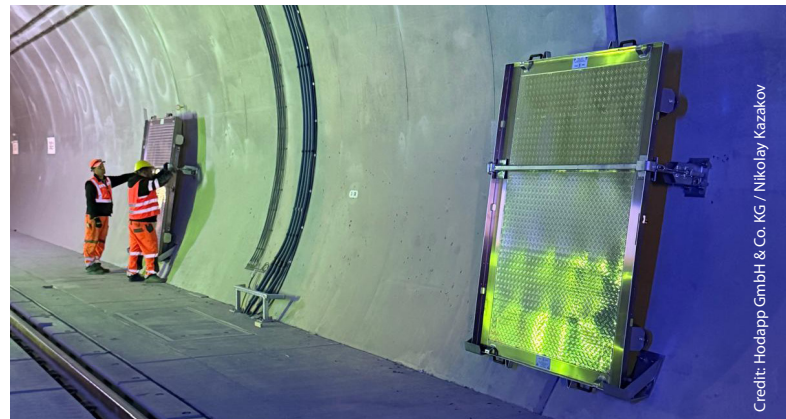


MKT Wedge Anchor BZ3 dynamic MKT Injection System VMZ dynamic

Anchoring for fatigue loading to the S21 Filder Tunnel, Stuttgart, Germany

The S21 Filder Tunnel near Stuttgart is a 10-km-long, double-track railway tunnel constructed between 2013 and 2025. The EUR 800 million investment forms a key part of the underground railway station project into which the tunnel connects. High-speed trains travelling at velocities of up to 200 km/h generate dynamic pressure acting on the structure and on all components installed therein. Anchors used in the tunnel must therefore be qualified and designed for fatigue loading.

Escape route signage and handrails along the tunnel were installed using a total of 125,000 MKT BZ3 Dynamic wedge anchors. Large-surface objects subjected to large suction forces—such as fire doors and rail trolleys parked on the sidelines when not in use—were secured using 500 MKT VMZ Dynamic anchor, consisting of a cone rod and a chemical mortar. Due to the demanding environmental conditions requiring adequate corrosion resistance, stainless steel A4 anchor versions were used for both anchor types.



Credit: Hodapp GmbH & Co. KG / Nikolay Kazakov



Product	MKT Wedge anchor BZ3 dynamic A4
Steel grade	A4 stainless
Quantity	125,000 pcs
Application	Anchoring evacuation route signage and hand rail
Contractor	Hodapp GmbH & Co KG for Deutsche Bahn



Product	MKT Injection System VMZ dynamic A4
Steel grade	A4 stainless
Quantity	500 pcs
Application	Anchoring fire doors and rail trolleys
Contractor	Hodapp GmbH & Co KG for Deutsche Bahn