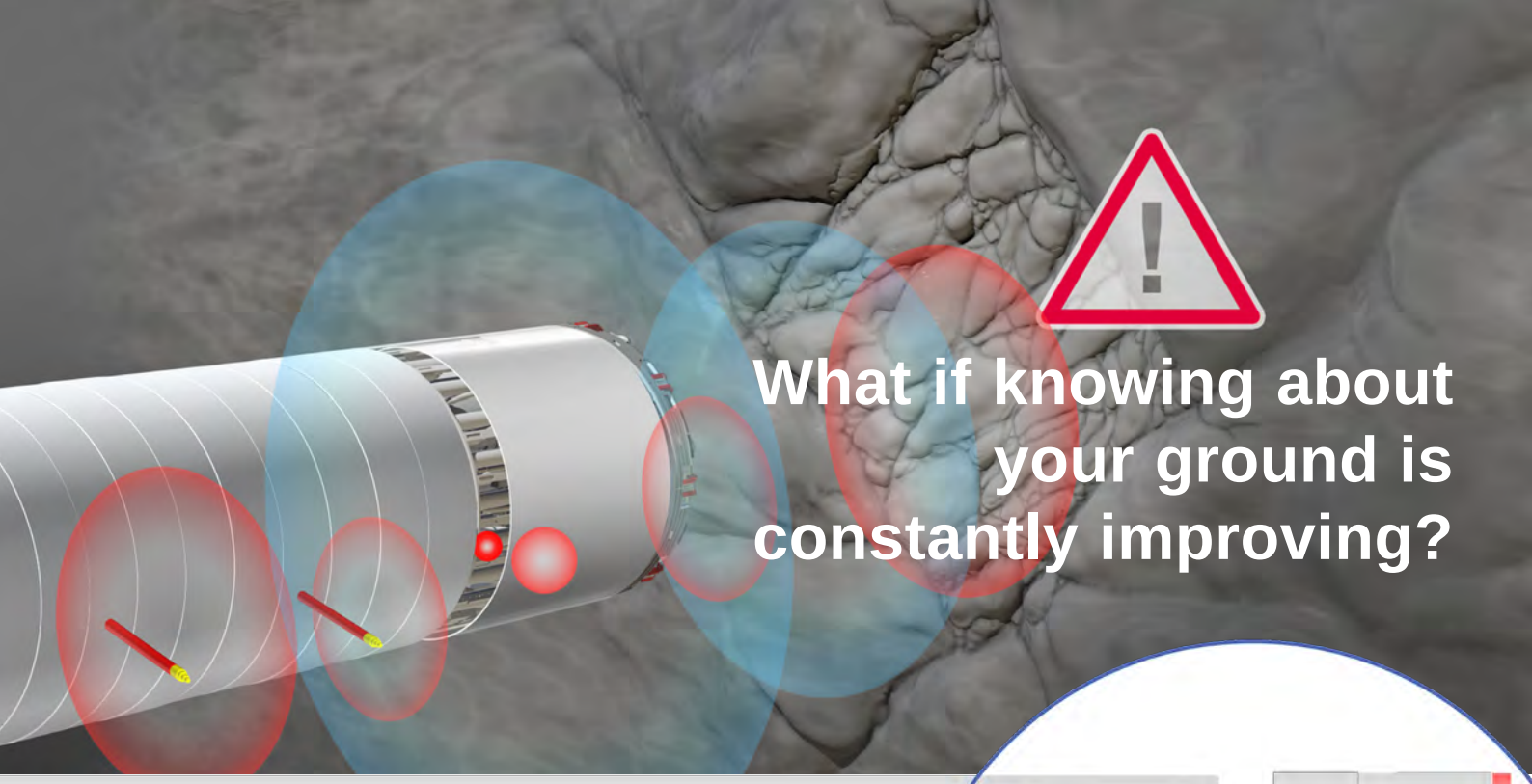
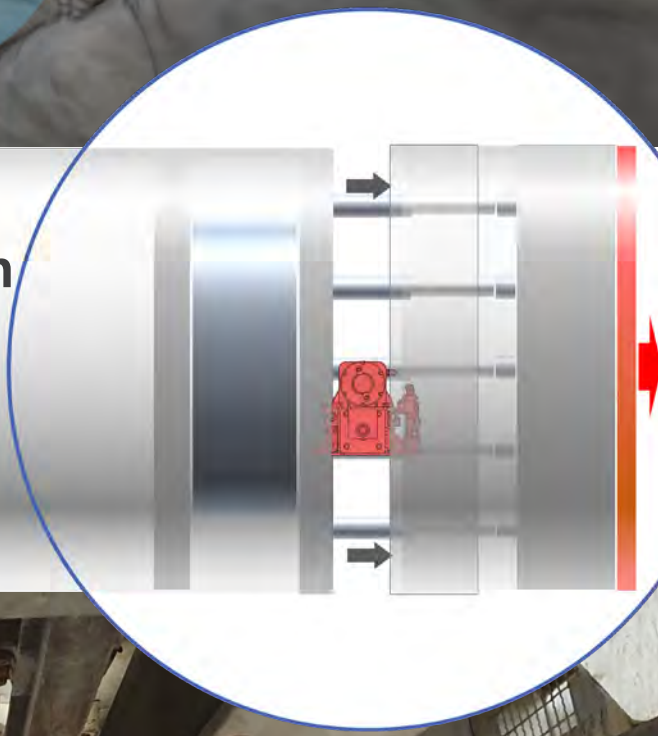


What if knowing about your ground is constantly improving?



TSPwE© - Tunnel Seismic Prediction while Excavating with TBM in rock mass

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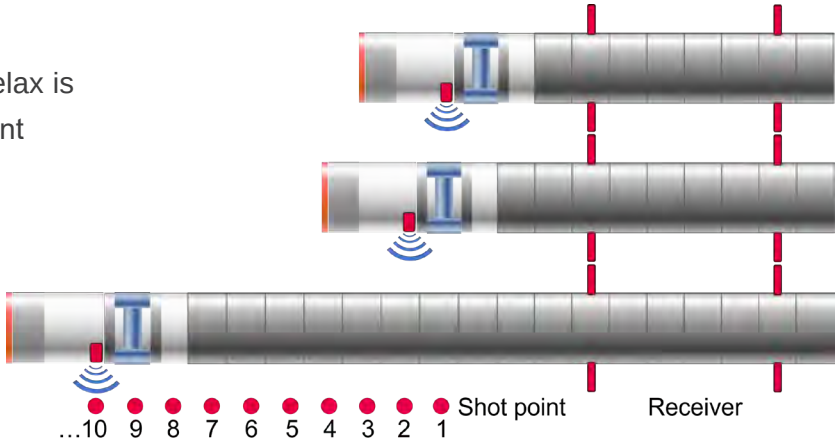
How does the data acquisition of TSPwE© work in your TBM?

- 4-6 seismic receivers are deployed through the segments (top picture).
- The triaxial receivers are placed about 8 to 10 m apart in the sidewall.
- It requires 1.5 m deep holes, Ø 50 mm.
- All components work wirelessly.

- A pneumatic impact hammer is preferably mounted to a console behind the cutter head (middle picture).
- It requires the TBM`s supply of compressed air (7bar) and electricity.
- After each stroke when the TBM is at a standstill, it autonomously stretches radially against the rock through an opening in the shield.
- Immediately, striking of 5-10 shots starts and lasts only 1-2 minutes.
- The hammer is completely controlled via the control box or wirelessly via the tablet.

- The hammer's procedure of Stretch-Shot-Relax is carried out after each stroke and at a different station.
- With the data of min. 20 shot positions, an analysis and geological forecast is made.



Watch the intro movie of TSP for TBM

Tunnel Seismic Prediction TSP Swiss made since 1994

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