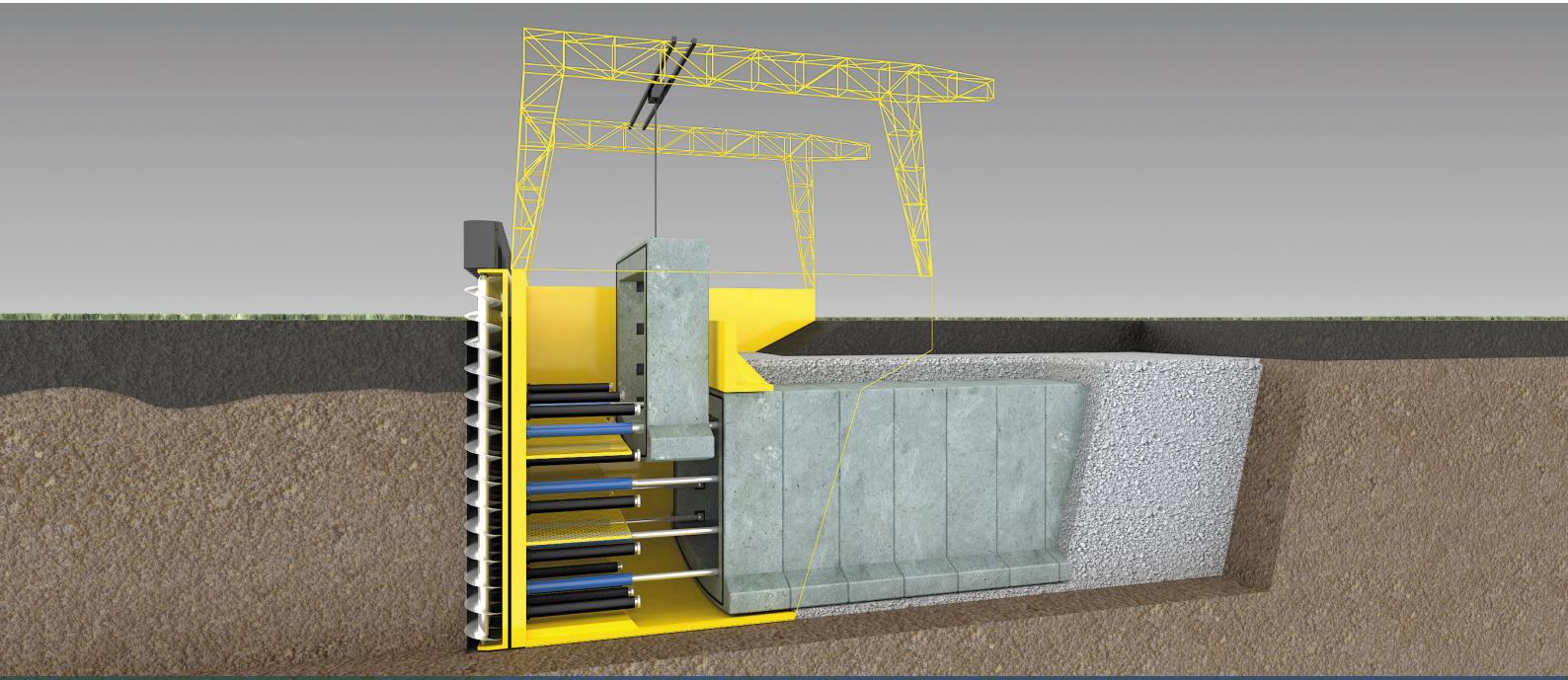




ENGINEERING
EXCELLENCE



**Mobile equipment
for the construction
of cut-and-cover
tunnels
(mobile construction
pit)**

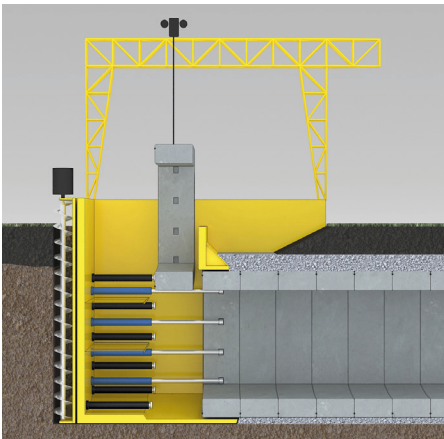
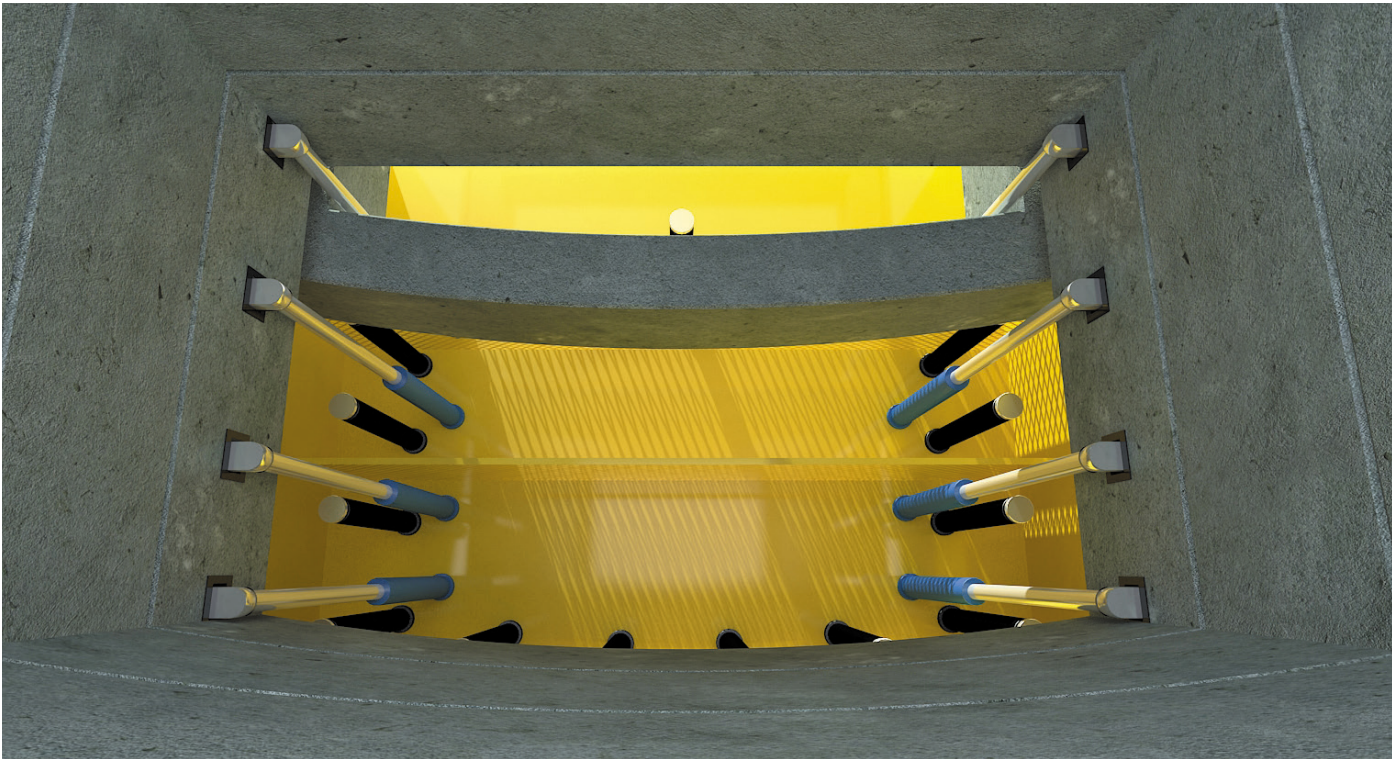


Figure a: Lowering of segment picture 1

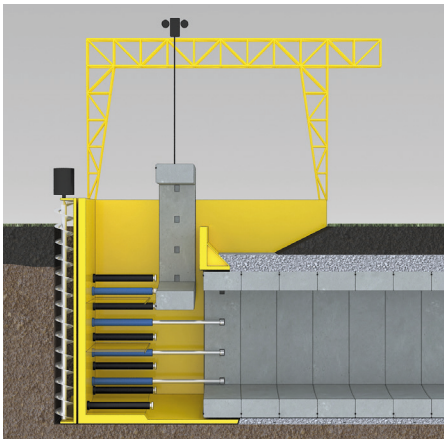


Figure b: Lowering of segment picture 2

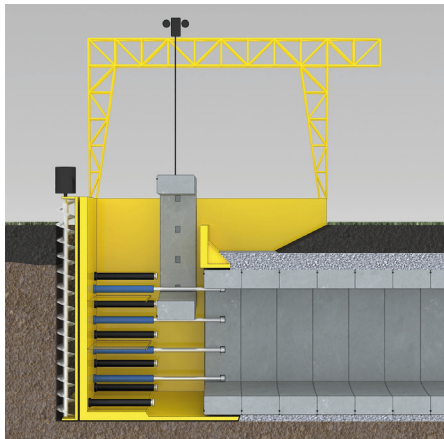


Figure c: Lowering of segment picture 3

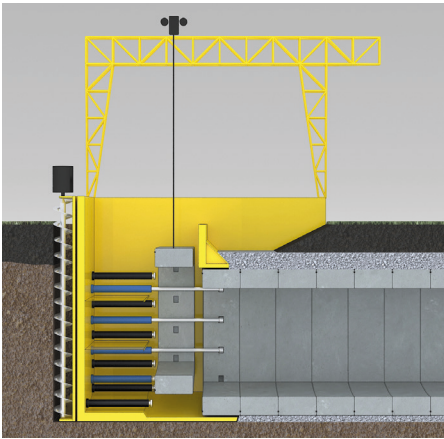


Figure d: Lowering of segment picture 4

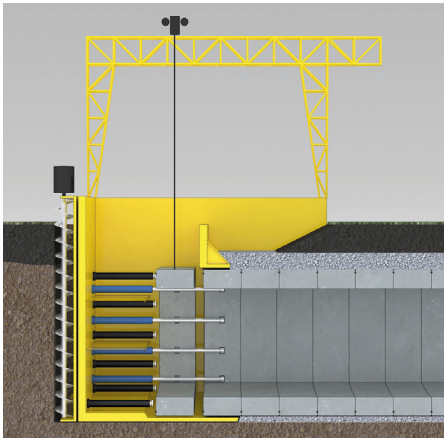


Figure e: Pressing of segment againsts previous segment

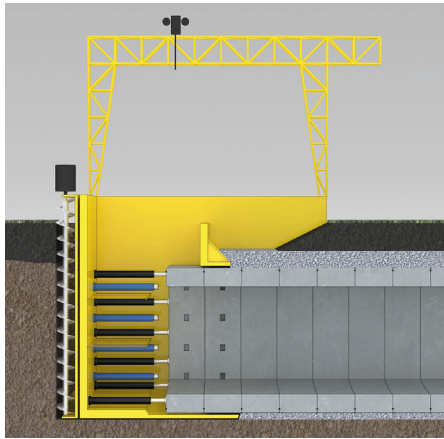
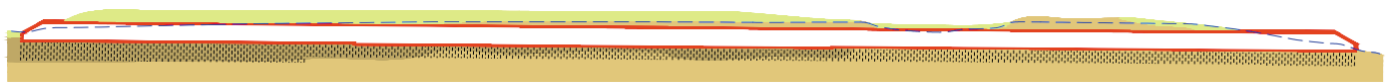


Figure f: Excavating of soil and advancing of mobile construction pit

Tunnel construction using mobile construction pit

Loosening and removal of soil in front of mobile construction pit, consecutive advancing of mobile construction pit and placing of tunnel segments in mobile construction pit.

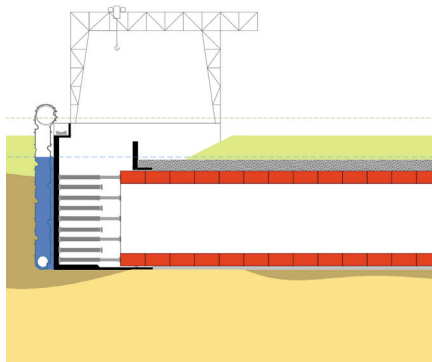


Construction of tunnel tube:

- Production of reinforced concrete segments with sealing rings in the production hall at the portal
- Delivery of tunnel segments to the mobile construction pit
- Lowering of tunnel segments into the mobile construction pit, alternating retraction and extension of thrust cylinders which transfer loads to the side walls of the tunnel (Fig. a - d)
- Pressing of tunnel segments against constructed tunnel tube, including bolting if needed (Fig. e)
- Loosening and removal of soil - consecutive or simultaneous advancing of mobile construction pit by using thrust cylinders which push off from the face of the tunnel tube (Fig. f)

Loosening and removal of soil with:

- Diaphragm wall grab / cutter, if needed supported by slurry pressure
- Chain conveyor
- Screw conveyor
- Water jet and extraction of soil-water mix by suction

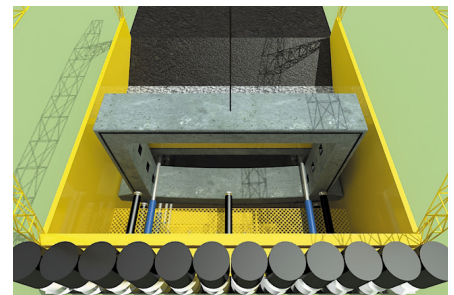


Steering by means of:

- Conic shape of construction pit walls
- Adjustable invert and side wall cutters
- Variable pressures of thrust cylinders over the tunnel section
- Soil excavation at different rates over the tunnel section
- Injection grout underneath the floor of the construction pit
- Application of ballast
- Cable bracing anchored in constructed tunnel tube

Areas of applications

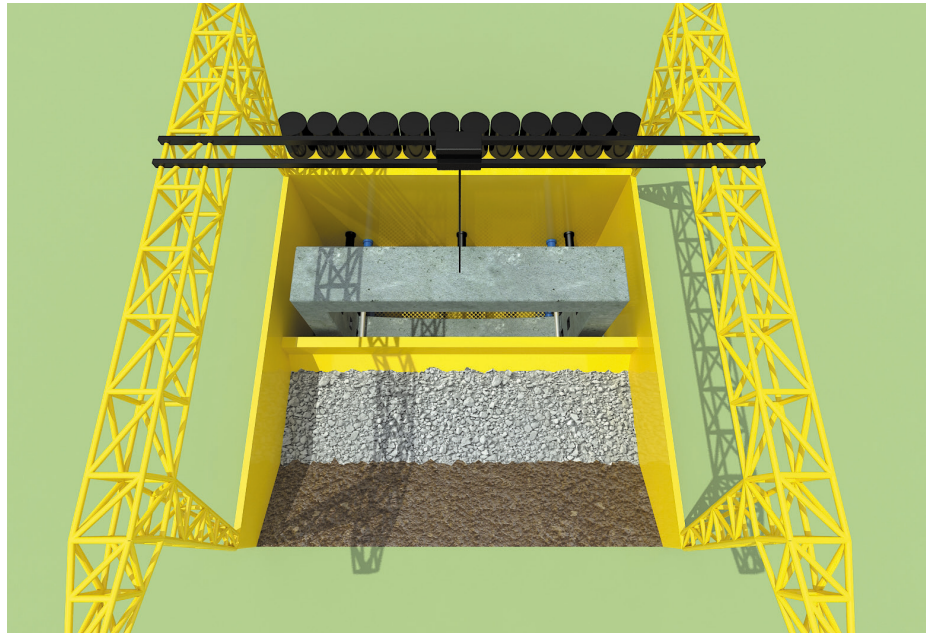
- in soil or loose rock, especially in case of:
 - low soil strength
 - little overburden, up to half the height of the tunnel segment
- in case of changing groundwater levels, also with:
 - high groundwater flow velocities
 - high groundwater levels even beyond the ground surface



Tunnel construction using mobile construction pit

Advantages

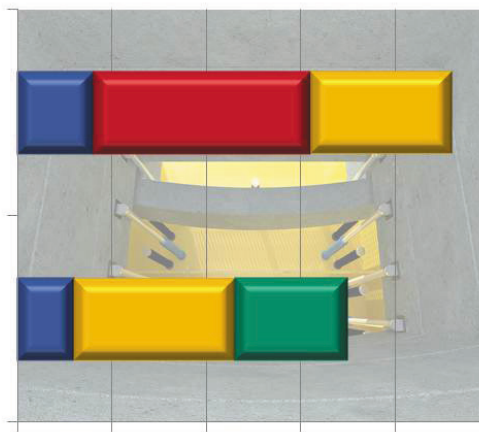
- Reduced construction time
- No need for separate construction pit support
- No interference by construction pit support elements remaining in the soil
- Reduced costs for relocation of utility lines which cross the tunnel alignment
- Reduced environmental impact during construction



Reduced construction costs

Tunnels constructed with the cut-and-cover method

Tunnels constructed with mobile construction pit



- Earthworks
- Construction pit support
- Tunnel tube
- Mobile construction pit

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Patent

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Weiterentwicklung

Gemeinsam mit Herrenknecht AG

