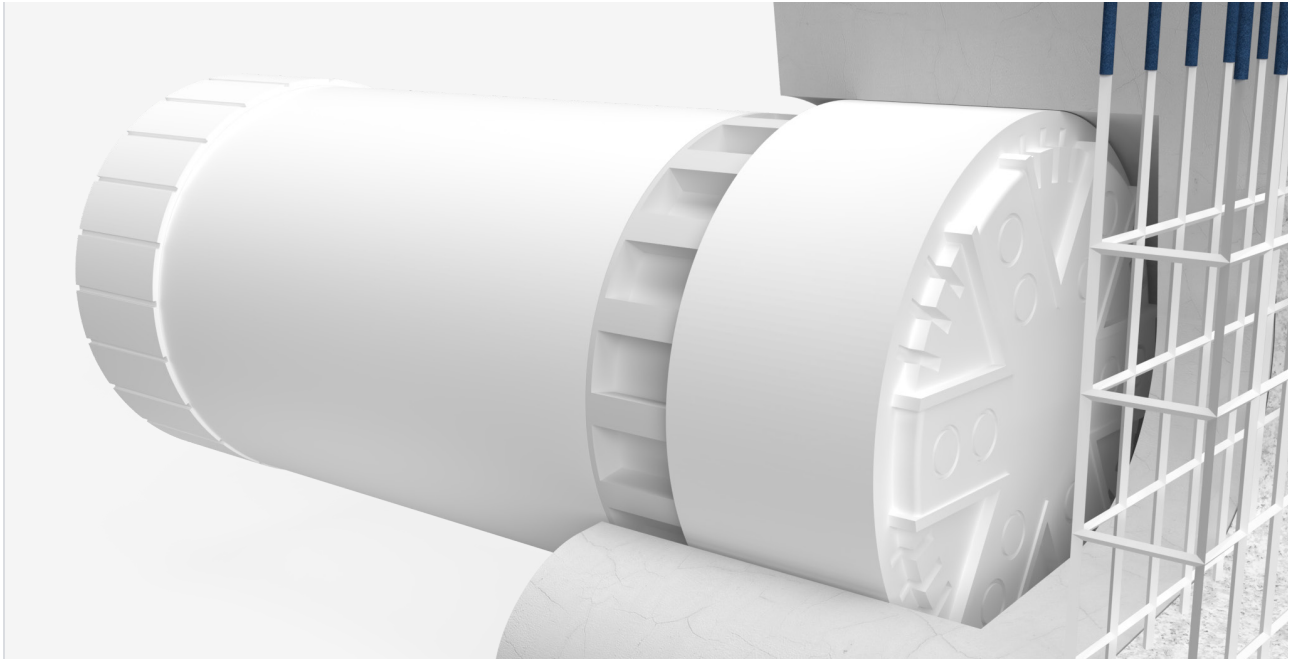


Glass Fiber Reinforced Polymer (GFRP) System



KEY FEATURES

DYWIDAG provides a diversified portfolio of GRP systems for various applications in Tunneling and Civil Engineering.

GRP Anchors and Rock Bolts are used as an alternative to conventional ground control elements made of steel.

Thanks to the rapid development of production technologies and a higher amount of mechanical excavation, GRP systems have gained importance in underground construction around the world.

Fields of application

- Rock reinforcement and rock support in underground excavation
- Mechanical excavations – TBM, roadheaders, and continuous miners
- Cutable ground control system for underground tunneling
- Injection lance for injectable grout and resin Systems
- Forepoling element
- Tunnel portals and temporary rock reinforcement to be removed by excavators
- Ground stabilization in slopes and special foundations

* Cutable Soft eyes to allow the penetration of tunnel boring machines (TBM)

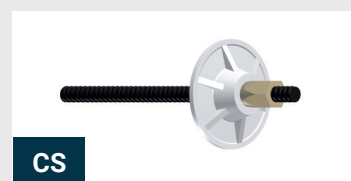
Materials

- GFRP nuts and plates for cuttability and permanent applications
- Steel nuts and plates for higher loads
- Steel couplers for extending bars or limited head room.
- Steel "Inside" hex nuts create a lower head profile for less shotcrete thickness.
- Galavnizing of steel components available for longer design life

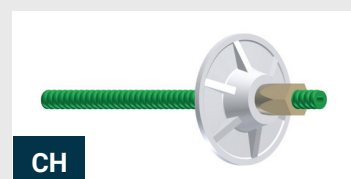
Main advantages

- Lightweight system ensures an easy application in challenging conditions
- High tensile load-bearing capacity
- Tough and durable, yet easy to cut
- using mechanical excavators or shearers
- Enhanced corrosion resistance
- Anti-static components
- Tough and resistant threadform adjusted to the demands in surface and underground construction
- Continuous rope thread allows for cutting to required length

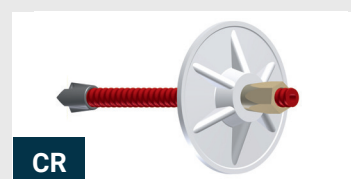
System components



- Fully threaded solid GRP bar
- GRP plate
- GRP nut



- Fully threaded hollow bar
- GRP plate
- GRP nut



- Single-use drill bit - different designs and dimensions available
- Fully threaded self-drilling hollow bar
- GRP plate
- GRP nut



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