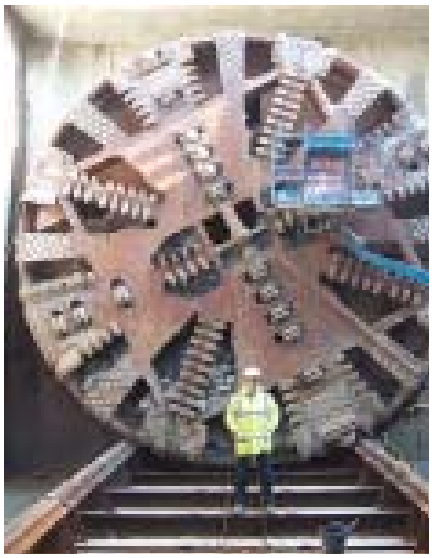
TECHNICAL GLOBAL SERVICES

Nuove tecnologie e materiali speciali per l'Ingegneria Civile e l'Architettura.
New technologies and innovative materials for Civil Engineering and Architectural applications

FID-ASLAN 100 GFRP



NON FERROUS REINFORCEMENT

Soft-Eye openings

Glass Fiber Reinforced Polymer (GFRP) bars have high strength primarily along the length of the bar but can be easily abraded or "consumed" by tunnel boring machines (TBM-Tunnel Boring Machine) or tunnelling equipment. This unique "anisotropic" property of these high strength reinforcing bars offers many benefits simplifying TBM launch and reception chambers as well as pre-consolidation in New Austrian Tunneling Method/Sequential Excavation Method (NATM/SEM) tunneling.

In places where the TBM needs to pass through a diaphragm wall, GFRP bars are incorporated in the "soft-eye" opening. This significantly speeds up the construction process and eliminates the need to stop the TBM, lower workers in the area between the TBM and the concrete face, remove the concrete and steel so the TBM can pass. The result is typically a "hybrid" Steel/FRP cage with GFRP bars used with appropriate tolerance around the TBM diameter. Tolerance adjusted to variation in TBM breakout and variation in placement of cage.

FIDIA S.r.l. can offer design assistance and material supply to engineers and consultants following international standards.

For more Information please contact:

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Our partners:

AslanFRP

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BENEFITS OF FIDASLAN GFRP

TBM breaking through GFRP Reinforced Diaphragm Walls

- No Grout Block;
- Time and Construction Cost Saving;
- TBM passes directly through the diaphragm wall;
- Speeds up construction schedule;
- No workers are needed to access the shaft;
- Safety improved;
- Fabrication of GFRP cage is easier due to its light weight (1/4 of steel rebar);
- Time and labor cost saving;
- TBM can pass through the diaphragm wall prior to excavation;
- Construction Flexibility;
- No wear and tear on cutter machine.

Conventional steel reinforced diaphragm wall–breaking the opening

- A large jet grout block or soil consolidation is often needed in front of the opening;
- Several days of construction delay to demolish and cut through steel rebar in the diaphragm wall to allow TBM penetration;
- Cost of machine time (TBM idle time & demolition equipment);
- Safety issues with worker access in the shaft;
- The deep excavation must be completed before the TBM's arrival;
- Driving through steel would damage cutter head.

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