


Solutions for tunneling and mining

# TBM



Expanding Horizons

Underground

 **MEYCO**



# MEYCO

## Cost Effective Solutions

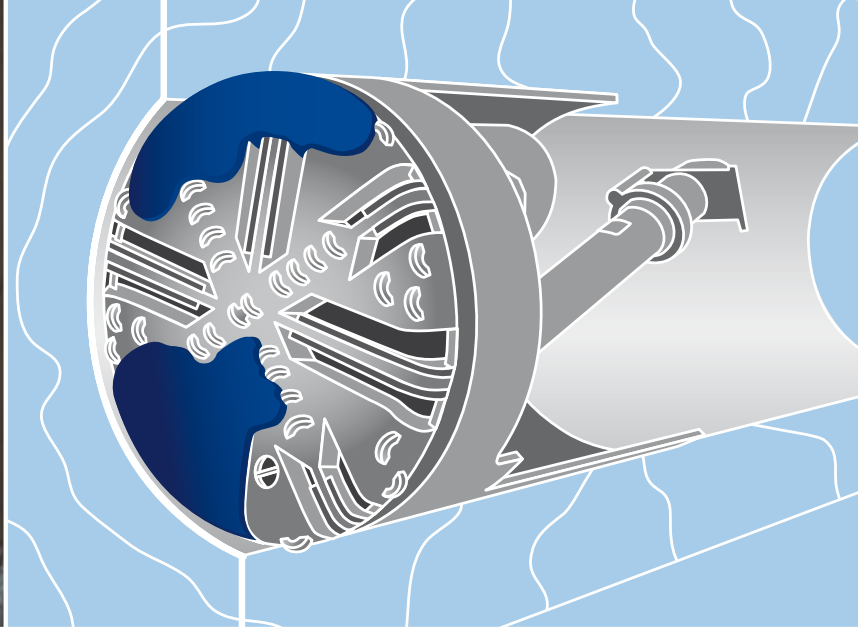
MEYCO® Global Underground Construction (MEYCO) is a world leader in the provision of reliable, customer oriented product solutions focused on your needs in the tunneling and mining industries. We are part of BASF - The Chemical Company, a well established multinational company with the extensive support frameworks and resources of a leading worldwide construction chemicals supplier.

## Partnership

MEYCO recognises that your success is founded on delivering solutions that meet or exceed your customers' critical, essential or significant needs. By integrating with you from project start-up and understanding the issues that are important to you, we can contribute to your success.

As many underground projects attract international contractor and design teams, our global presence supports seamless transfer of technology and services to any of your projects, anywhere in the world.





### Increase TBM Advance Rate

- A one-stop shop offering a comprehensive range of products for shielded TBM excavation in soft ground and for TBM excavation in hard rock.
- Professional and competent technical services, provided by a team of international and local tunneling specialists, who are ready to be with you 24 hours a day, 7 days a week, helping you with product training, technical advice, job site supervision, trouble shooting and quality control.
- Innovative solutions through Research & Development dedicated to tunneling needs.
- Laboratory resources at your disposal to carry out project specific testing, helping you with product selection so that you get it right first time.
- Technical consulting at every project stage, from planning to completion, keeping you well informed about all our technologies all the time.
- Our world-known reputation and reliability give you the confidence you require from a technology supplier.

### Consultancy



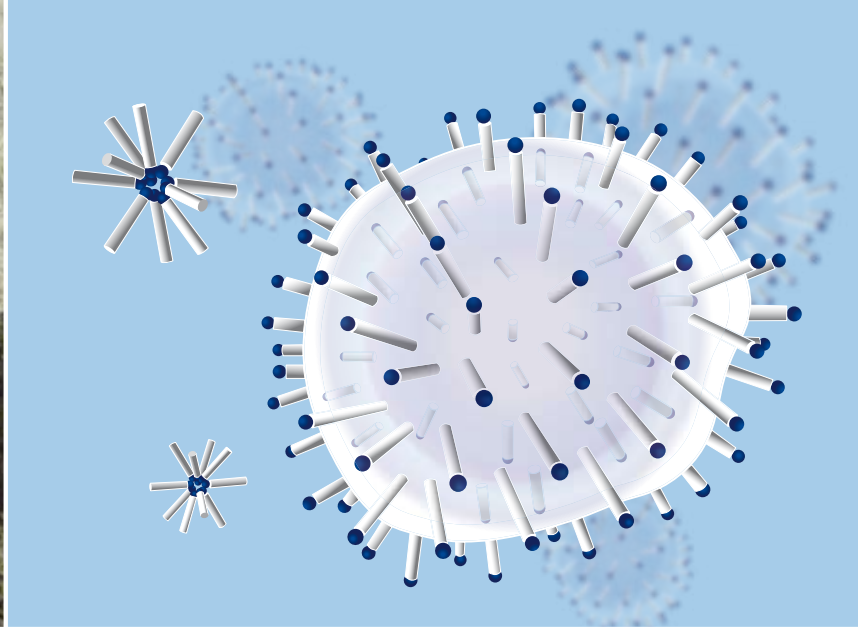


## Solutions

### Complete Range of Speciality Products

- MEYCO SLF range of Foams giving maximum efficiency for every soil type you encounter during EPB tunneling.
- MEYCO SLF P range of Polymers to support MEYCO Foams in difficult conditions.
- RHEOSOIL range of anti-clogging agents for reducing clay clogging and adhesion on metal surfaces on soft and hard rock TBMs.
- MEYCO TSG range of tail sealants: well proven and cost effective.
- MEYCO BSG range of main bearing sealing grease for effective main bearing protection with outstanding wash-off properties.
- MEYCO EPB range of high quality EP2 greases.
- MEYCO ABR range of unique anti-wear and dust suppression technology for hard rock TBM operating in abrasive ground.
- Annulus grout behind segment rings: tailor-made solutions from a wide range of admixtures.

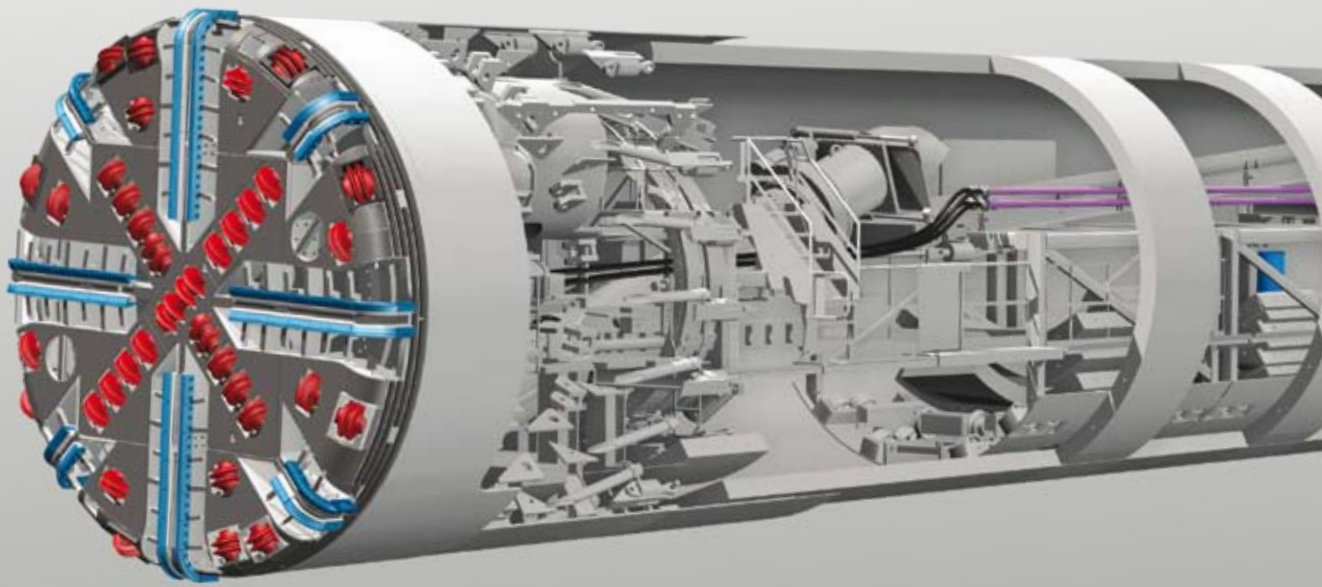




## Improve Operational Efficiency

- Wide range of mineral and chemical injection technologies for water sealing, ground consolidation and void filling.
- Sprayed concrete: a wide range of alkali-free accelerators and admixtures, plus modular and custom-made robotic manipulators and pumps, for trouble-free concrete spraying.
- Thin spray-on liner especially designed for gripper TBMs for surface protection immediately behind the TBM cutterhead.
- Precast segments and cast in place concrete: high performance and cost effective concrete admixtures, mold release agents, curing aids, fibers and repair materials.
- MASTERSEAL spray applied waterproofing membrane: perfect bonding makes sprayed concrete single shell lining possible, and is the most cost effective solution for waterproofing cross-passages in twin driven tunnels.

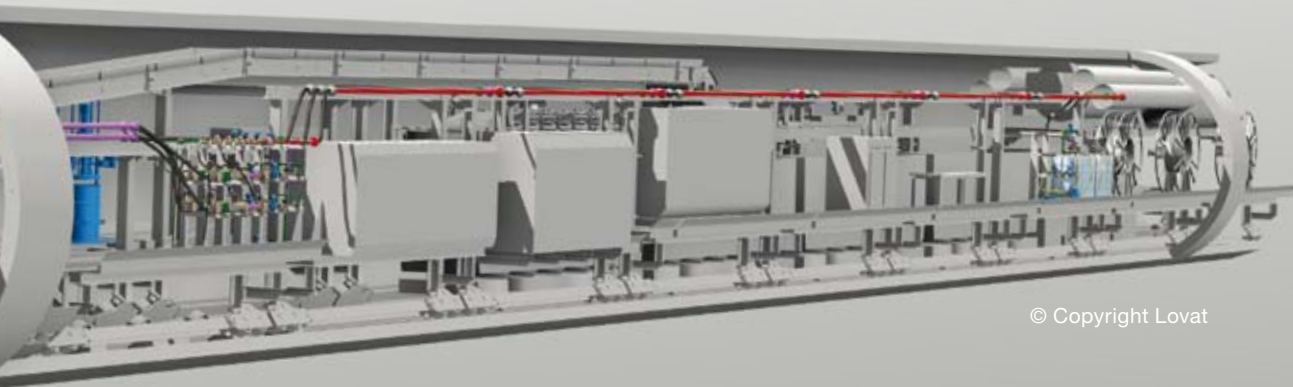




## Soft Ground TBM

Application	Products	Benefits
<ul style="list-style-type: none"> <li>• Soil conditioning (EPB)</li> </ul>	<ul style="list-style-type: none"> <li>• MEYCO® SLF Foams</li> <li>• MEYCO® SLF Polymers</li> <li>• RHEOSOIL®</li> </ul>	<ul style="list-style-type: none"> <li>• Reduce torque; plasticize soil; reduce soil permeability</li> <li>• Reduce the stickiness of soil, minimising clogging risk</li> <li>• Increase TBM advance rates</li> </ul>
<ul style="list-style-type: none"> <li>• Slurry TBM</li> </ul>	<ul style="list-style-type: none"> <li>• MEYCO® SLF Polymers</li> </ul>	<ul style="list-style-type: none"> <li>• Optimise bentonite characteristics</li> </ul>
<ul style="list-style-type: none"> <li>• Tail sealant</li> </ul>	<ul style="list-style-type: none"> <li>• MEYCO® TSG</li> </ul>	<ul style="list-style-type: none"> <li>• Excellent sealing performance</li> </ul>
<ul style="list-style-type: none"> <li>• Main bearing sealant</li> </ul>	<ul style="list-style-type: none"> <li>• MEYCO® BSG</li> </ul>	<ul style="list-style-type: none"> <li>• Highly efficient protection of the main bearing</li> <li>• Excellent pumpability</li> <li>• Outstanding wash-off properties</li> </ul>
<ul style="list-style-type: none"> <li>• Main bearing lubrication</li> </ul>	<ul style="list-style-type: none"> <li>• MEYCO® EPB</li> </ul>	<ul style="list-style-type: none"> <li>• Excellent mechanical stability</li> <li>• Effective corrosion protection</li> </ul>
<ul style="list-style-type: none"> <li>• Annulus grouting</li> </ul>	<ul style="list-style-type: none"> <li>• Superplasticizers: GLENIUM®, RHEOBUILD®</li> <li>• Plasticizers: POZZOLITH®</li> <li>• Pumping aids: POLYHEED®, RHEOMAC®</li> <li>• Air entrainers: RHEOCELL®, MICRO-AIR®</li> <li>• Hydration stabilizers: DELVO®CRETE</li> <li>• Accelerators: MEYCO® SA</li> <li>• Consistency control agents: MEYCO® TCC</li> </ul>	<ul style="list-style-type: none"> <li>• Improve transport and storage stability; improve pumpability and extend pumping time (up to 72 hrs); prevent bleeding, segregation and washout; accelerate setting and achieve high early strength</li> </ul>





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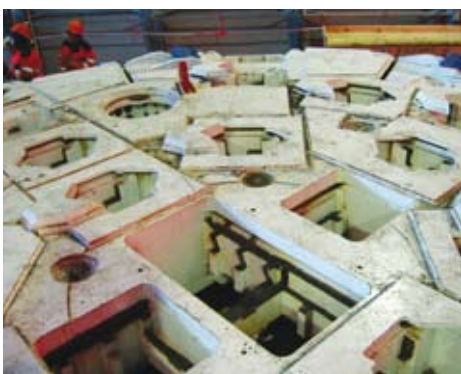
Application	Products	Benefits
<ul style="list-style-type: none"> <li>• Precast segments</li> <li>• Cast in place concrete</li> </ul>	<ul style="list-style-type: none"> <li>• Superplasticizers: GLENIUM®, RHEOBUILD®</li> <li>• Special additives: MEYCO® MS range</li> <li>• Mold release agent: RHEOFINISH®</li> <li>• Air entrainers: MICRO-AIR®</li> <li>• Repair mortars, fibres and crack injection</li> </ul>	<ul style="list-style-type: none"> <li>• Early demolding time</li> <li>• Highly durable concrete</li> </ul>
<ul style="list-style-type: none"> <li>• Spray applied waterproofing membrane</li> </ul>	<ul style="list-style-type: none"> <li>• MASTERSEAL®</li> </ul>	<ul style="list-style-type: none"> <li>• Perfect for cross-passages in twin tube driven tunnels</li> <li>• Sprayed with MEYCO® Piccola dry spray unit</li> </ul>
<ul style="list-style-type: none"> <li>• Injection</li> </ul>	<ul style="list-style-type: none"> <li>• Mineral grout based on colloidal silica: MEYCO® MP 320 T</li> <li>• Microcements: RHEOCEM®</li> <li>• Acrylic &amp; polyurethane resins: MEYCO® MP</li> </ul>	<ul style="list-style-type: none"> <li>• Ground consolidation at TBM start and reception shafts</li> <li>• Sealing leakage behind segment rings</li> <li>• Cavity filling</li> </ul>





# Hard Rock TBM

Application	Products	Benefits
<ul style="list-style-type: none"> <li>• Anti-wear</li> <li>• Dust suppression</li> </ul>	<ul style="list-style-type: none"> <li>• MEYCO® ABR</li> </ul>	<ul style="list-style-type: none"> <li>• Reduce cutter abrasive wear</li> <li>• Reduce TBM downtimes and save project cost</li> </ul>
<ul style="list-style-type: none"> <li>• Anti-clogging</li> </ul>	<ul style="list-style-type: none"> <li>• RHEOSOIL®</li> </ul>	<ul style="list-style-type: none"> <li>• Eliminate dust in the TBM working area</li> <li>• Reduce clay clogging and adhesion on metal surfaces</li> </ul>
<ul style="list-style-type: none"> <li>• Sprayed concrete</li> </ul>	<ul style="list-style-type: none"> <li>• Alkali free accelerators: MEYCO® SA</li> <li>• Hydration stabilizer: DELVO®CRETE</li> <li>• Superplasticizers: GLENIUM®</li> <li>• Internal curing agent: MEYCO® TCC 735</li> <li>• Fibers and colloidal silica</li> </ul>	<ul style="list-style-type: none"> <li>• Best available admixture system in the market to give high quality and durable sprayed concrete</li> </ul>
<ul style="list-style-type: none"> <li>• Sprayed concrete equipment</li> </ul>	<ul style="list-style-type: none"> <li>• MEYCO® state-of-the-art spraying systems</li> <li>• Modular, custom-made robotic manipulators and pumps</li> </ul>	<ul style="list-style-type: none"> <li>• Accurate dosing</li> <li>• Less rebound</li> <li>• Compact construction</li> </ul>
<ul style="list-style-type: none"> <li>• Thin support liner</li> </ul>	<ul style="list-style-type: none"> <li>• MEYCO® TSL</li> </ul>	<ul style="list-style-type: none"> <li>• Spray applied membrane: strong and tough</li> <li>• Simple application equipment</li> <li>• Immediate surface protection behind cutterhead before sprayed concrete application</li> </ul>
<ul style="list-style-type: none"> <li>• Main bearing lubrication</li> </ul>	<ul style="list-style-type: none"> <li>• MEYCO® EPB</li> </ul>	<ul style="list-style-type: none"> <li>• Excellent mechanical stability</li> <li>• Effective corrosion protection</li> </ul>





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Application	Products	Benefits
<ul style="list-style-type: none"> <li>• Rock injection</li> <li>• Spray applied waterproofing membrane</li> </ul>	<ul style="list-style-type: none"> <li>• Microcement: RHEOCEM®</li> <li>• Acrylic &amp; polyurethane resins: MEYCO® MP</li> <li>• Mineral grout based on colloidal silica: MEYCO® MP 320 T</li> <li>• MASTERSEAL®</li> </ul>	<ul style="list-style-type: none"> <li>• Fast setting pre-injection systems</li> <li>• Cavity filling</li> <li>• Ground stabilization</li> <li>• Perfect bonding with concrete, metal and plastic</li> <li>• Single shell tunnel lining concept</li> <li>• Perfect for complex geometry, such as cross-passages</li> <li>• Sprayed with MEYCO® Piccola dry spray unit</li> </ul>
<ul style="list-style-type: none"> <li>• Precast segments</li> <li>• Cast in place concrete</li> </ul>	<ul style="list-style-type: none"> <li>• Superplasticizers: GLENIUM®, RHEOBUILD®</li> <li>• Special additives: MEYCO® MS range</li> <li>• Mold release agent: RHEOFINISH®</li> <li>• Air entrainers: MICRO-AIR®</li> <li>• Repair mortars, fibers and crack injection</li> </ul>	<ul style="list-style-type: none"> <li>• Early demolding time</li> <li>• Highly durable concrete</li> </ul>
<ul style="list-style-type: none"> <li>• Anchoring</li> </ul>	<ul style="list-style-type: none"> <li>• MEYCO® Flowcable</li> </ul>	<ul style="list-style-type: none"> <li>• Perfect for vertical and overhead grouting</li> </ul>





## Soil Conditioning Examples

**EPB excavation with MEYCO SLF Foams and Polymers in running sand under 3 bar water pressure**



**EPB excavation with RHEOSOIL in sticky clay**



**Pumping out sticky clay with RHEOSOIL**





**Documentation available on request:**

- Reference list
- Project reports
- Method statements
- And more



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Brochures on our solutions are available at [www.meyco.basf.com](http://www.meyco.basf.com):



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**Certified quality**

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