

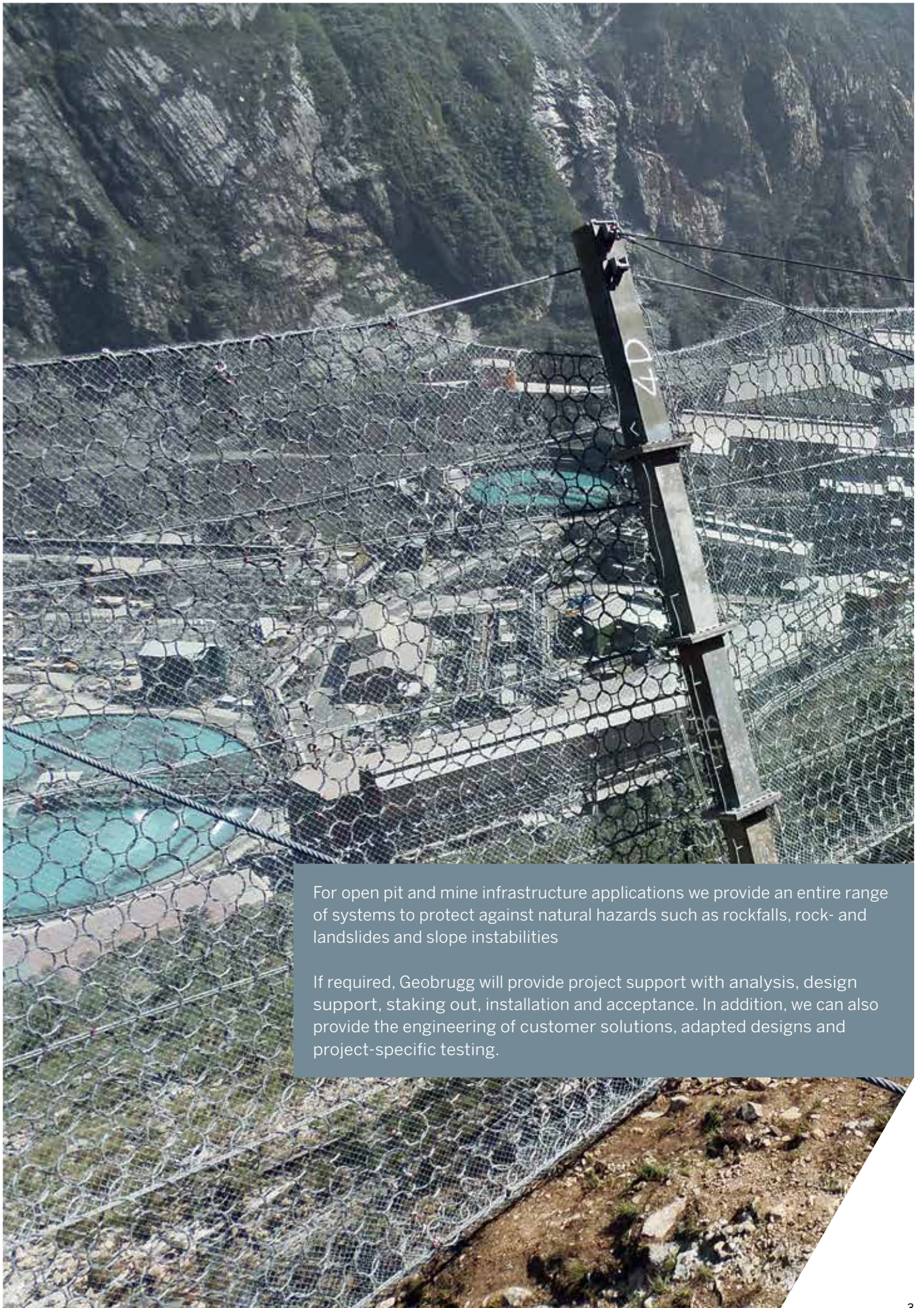
**Rockfall Mitigation, Slope Stabilization and  
Surface Support**

**SPECIFIC SOLUTIONS FOR THE  
MINING INDUSTRY**

# SOLUTIONS TO PROTECT MINERS AND INFRASTRUCTURE.



MINAX® mesh offers surface support in either fall-of-ground or heavy rockburst conditions. Reliable protection and efficient installation result in the most competitive cost-performance ratio per m<sup>2</sup> installed support. MINAX® high-tensile steel wire mesh offers significantly higher static and dynamic capacity compared to common mild steel mesh.



For open pit and mine infrastructure applications we provide an entire range of systems to protect against natural hazards such as rockfalls, rock- and landslides and slope instabilities

If required, Geobruigg will provide project support with analysis, design support, staking out, installation and acceptance. In addition, we can also provide the engineering of customer solutions, adapted designs and project-specific testing.

# PROVEN MESH FOR SURFACE SUPPORT.

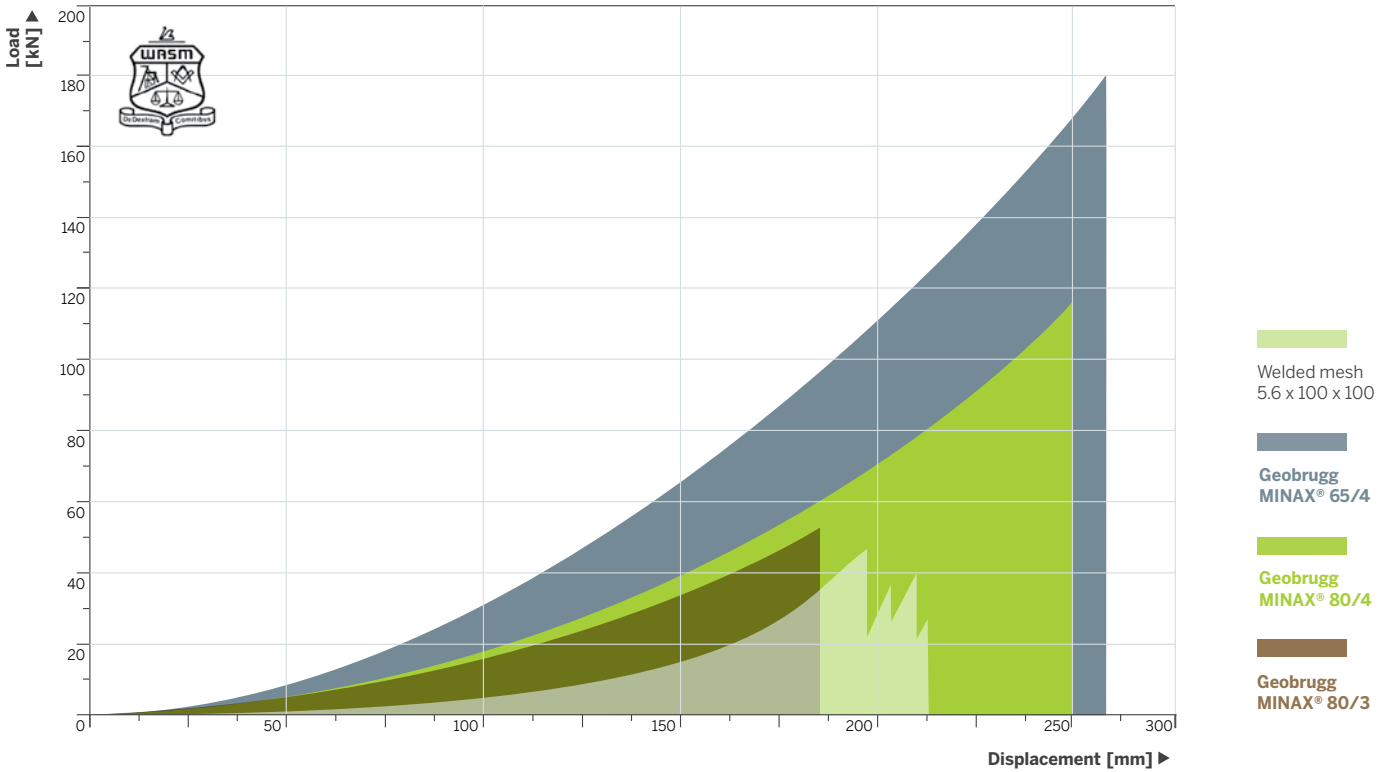


Geobruigg MINAX® mesh for underground surface support has become a global success story. The low weight of the mesh is beneficial in manual installations and can be supplied in custom size dimensions to suit your specific requirements. The high-tensile steel mesh offers high resistance in rockburst or blasting prone conditions.

# WHERE SAFETY MEETS ECONOMY.

**Graph based on results of quasi-static tests made by the Western Australian School of Mines (WASM):**  
 MINAX® mesh with a wire tensile strength of 1770 N/mm<sup>2</sup> can carry very high static and dynamic loads.

## Performance: More load with MINAX® meshes



## Less overlap, greater savings

Larger panels/rolls result in a more homogenous surface support and hence in less potentially weaker seams.

**Cross-section example**

20 m  
6 m  
5 m

**Welded mesh**

• 4 time more overlap area

**MINAX®**

• less mesh  
• more flexibility in bolt pattern

# MORE THAN JUST MESH - WE ARE YOUR TECHNOLOGY PARTNER.

We support you in finding the optimal solution for your mine. Whether through designing a solution, through realistic tests or through innovative accessories that take efficiency to a completely new level like for example with the mechanized unrolling device MESHA®. It is especially designed to install our high-tensile mesh fully mechanized in one working process. The solution requires minimum manual handling for installation; with miners not being exposed to the unsupported ground.

## Mechanized installation



Above: MESHA® can be retrofitted to any multi-boom bolter.

Right: Using the MESHA® handler, mesh can be installed significantly faster than manually or with sheet meshing in the underground environment.



## Cutting-edge test facility

Our test center enables us to simulate and investigate in detail the application of different surface support solutions under rock-burst conditions.



The MINAX® mesh is made from high-tensile steel wire with a minimum strength of 1770 N/mm<sup>2</sup>, which has three times higher tensile strength than mild steel sheet or chain-link mesh and is characterized by high mechanical resistance, energy absorption capability and durability. We provide MINAX® with tailor-made corrosion protection, taking into account your specific mining conditions.

### Innovative



MINAX® and its system components are specially designed for surface support.

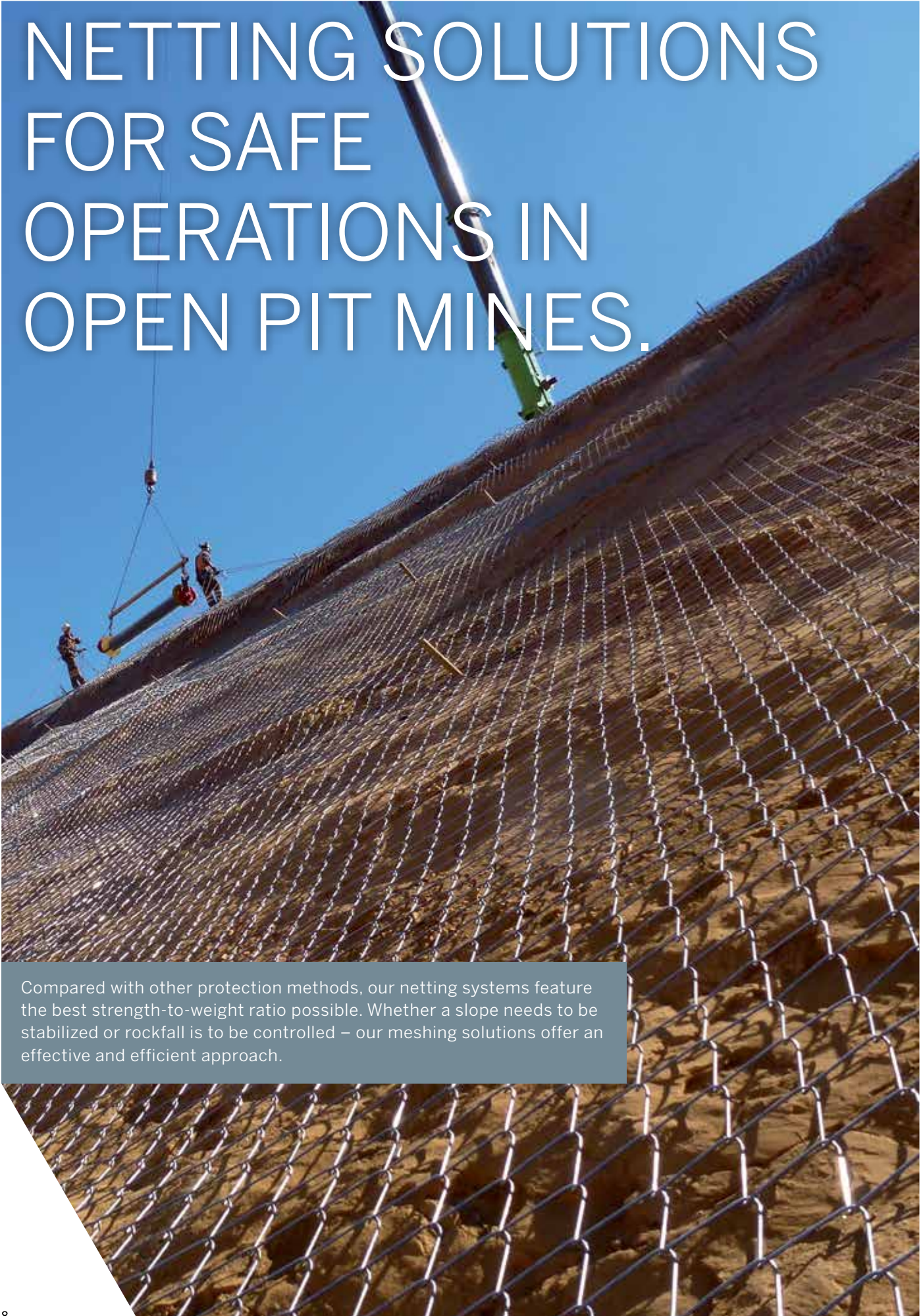


### Always ready for your request

Geobrugg's global network enables local availability of our products. With close proximity to our customers, we produce mesh on four continents. This not only offers top quality at a very attractive price, but also reduces the logistic expenditure, enables short delivery times and provides flexibility to adjust the level of capacity to customer needs.



# NETTING SOLUTIONS FOR SAFE OPERATIONS IN OPEN PIT MINES.



Compared with other protection methods, our netting systems feature the best strength-to-weight ratio possible. Whether a slope needs to be stabilized or rockfall is to be controlled – our meshing solutions offer an effective and efficient approach.



# SLOPE STABILIZATION.

TECCO® and/or SPIDER® netting solutions, designed with Geobrugg's RUVOLUM® dimensioning tool give you the freedom to optimize the nailed stabilization for every kind of slope. Net rolls are rapidly and simply installed due to easy unrolling and the non-overlapping linking of the netting panels using our connecting clip. The pre-tensioning of the high-tensile nets leads to an active slope stabilization that prevents any bulging of the installation.



Above: SPIDER® net is made from a spiral steel rope and secures loose, blocky rocks, rock spurs, overhangs or unstable rock formations.



# DRAPES - SAFE AND ECONOMICAL ROCKFALL CONTROL.

Rockfall drapes made from high-tensile steel wire nets and meshes control rockfalls under the drape and guide them into the deposition zones, safeguarding the protected asset. The small aperture of our mesh types means no secondary mesh is required. Due to the low installation costs, our rockfall drapes are perfect for use over large areas. The mesh type required will mainly depend on the design block size. We are happy to assist you with your design.



# BARRIERS PROTECTING FROM ROCK OR DEBRIS.



Where ever space is limited and therefore a runout zone for falling rocks and debris is not feasible our barrier systems will be the right solution to protect your personnel and infrastructure.

# ROCKFALL BARRIERS.

In open-pit mines flexible rockfall barriers are installed to effectively protect miners, equipment, access roads, tunnel portals and buildings. In addition to the highest value – to protect your employees – unplanned interruptions can also be avoided.



# LANDSLIDE BARRIERS.

Our flexible shallow landslide barriers's low deflection levels allow installation of systems close to the object requiring protection. As this solution is often used in terrain exposed to rockfall, it is also designed and tested for rockfalls with impact energies up to 500 kJ.



# AVALANCHE AND ROCKFALL PROTECTION.

The flexible avalanche prevention structure SPIDER® Avalanche offers a robust, easy to install solution with long durability. Compared to conventional protection systems, this solution offers a decisive advantage; during snow-free periods, it also protects against rockfall with impact energies up to 500 kJ.





Your local Geobrigg specialist:  
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