



SUSTAINABLE PROTECTION AGAINST COASTAL EROSION

**High-tensile stainless-steel
wire mesh system**

BRUGG
Geobrugg 

Safety is our nature

A scenic coastal landscape featuring a winding asphalt road that curves along a steep, grassy cliffside. Below the cliff, a sandy beach meets the ocean, with waves breaking onto the shore. The background shows rolling green hills under a soft, hazy sky. The overall tone is warm and natural, emphasizing the coastal environment.

FACING THE DYNAMICS OF CLIMATE CHANGE SUSTAINABLY

People living and working in coastal regions have always had to protect their assets from the forces of the sea. Tides, surf, recurring storms and erosion caused by heavy rain events have always presented challenges. In recent years, the effects of climate change have magnified these problems bringing more frequent extreme weather events and steadily rising sea levels. These problems exist today and will do so for many years to come. In order to help offset these processes, Geobrugg TECCO® CELL was developed. TECCO® CELL is versatile, durable and sustainable. The cell can be easily adapted to suit a wide range of local erosion control requirements such as scour protection, sediment control, shoreline defence or in combination with traditional revetments such as rock armour (riprap), sandbags or precast concrete blocks.

Facing the dynamics of climate change sustainably

TECCO® CELL is an engineered system consisting of marine grade high tensile stainless-steel mesh, tensioning hardware, a geo-textile layer and rock, which can be of local origin. The cell was initially developed and first trialed at Beesands, South Devon in 2016 to offer a cost-effective, flexible and sustainable alternative to traditional methods of managing erosion and flooding.

For many years Beesands has suffered from erosion and flooding but the economic justification of installing a barrier system of defence has been problematic.

Due to the success of the 2016 installation in 2021 a further 80 linear metres of TECCO® CELL was installed adjacent to the initial installation. Since installation the system has delivered very effective defence of the shoreline with no ongoing maintenance required.

Easy to install



TECCO® CELL wrap design is constructed on site using custom designed bracing and connecting components and locally sourced fill materials of various grades. TECCO® stainless steel mesh which is quickly and efficiently constructed to form a 'cell' encasing fill



material and bracing/tensioning components. The system offers minimal impact on the landscape yet gives optimum protection to the interface between the beach and its surroundings.

In response to key requirements, TECCO® Cell was developed to design and build while maintaining the existing shore profile, protecting the coastline from erosion and wave overtopping, offering improved aesthetics compared to rock armour and concrete sea walls, all while remaining cost-competitive.

Basic design of the TECCO® CELL

The cell is designed and constructed to meet the needs of local conditions in terms of beach geometry and make up but also tidal conditions and wave height/direction. The open structure of TECCO® CELL allows not only water to pass through but enables plant and animal life to make itself at home. In addition, the cells are finished on site. Local stones of different sizes are used as filling material. Thus, this solution not only blends in with the local conditions. It also eliminates the often-international transport of stones weighing several tons as used in rock armour installations. This avoids considerable cost expenditure and emissions.



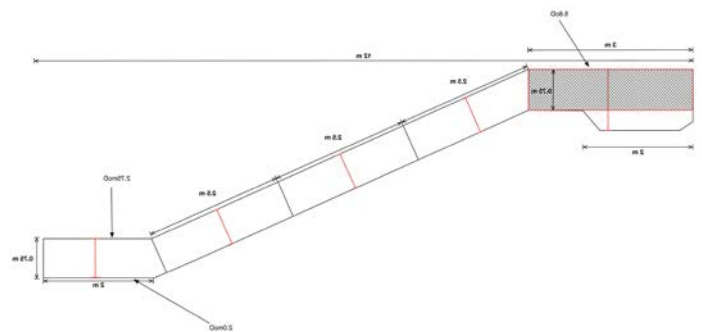
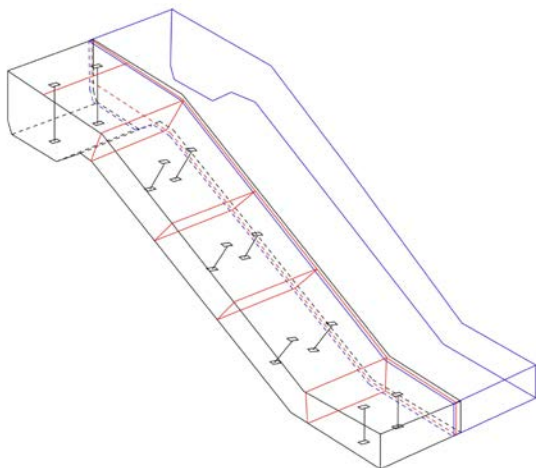
Appearance

The finished installed solution is universally accepted as being visually more appealing than either a rock armour or concrete revetment.



Protection

Achieved by dissipation of wave energy as water passes through the cell erosion is prevented both behind and in front of the cell. Cell is stable due weight of the cells and the monolithic nature of the structure.



The University of Plymouth provided a programme of ongoing monitoring utilizing topographic surveys, laser scanning and UAV's which has provided evidence and analysis which indicates the suitability and stability of the system for application elsewhere.

TECCO® CELL at a glance

Our TECCO® CELL - your advantages

Design Life

The TECCO® G65/3 mesh used in this application shows no visible corrosion even after 7+ years in service. Its long lifespan, along with high-tensile stainless steel components, ensures durability, even in highly corrosive environments and under the constant action of the sea.

Flexibility

The flexibility of the cell allows it to adapt to changing beach levels, thereby improving stability over time and enabling effective erosion protection.

Sustainability

We prioritize the use of local fill materials, using local rock and gravel to fill TECCO® CELL compartments, adapting to beach conditions. This significantly reduces our carbon footprint by over 50% compared to traditional rock armor (riprap), while also ensuring minimal environmental impact. There are no toxic components released, and all materials are recyclable.

Seamless Integration

TECCO® CELL's modular design allows for small and extensive areas to be protected. TECCO® CELL offers both visual appeal and versatility. It's barely visible from a distance, seamlessly blending with the local environment. Additionally, the cells are designed to meet local needs, allowing for adaptation to requirements such as beach access and vegetative growth.

Performance

Effective dissipation of wave energy as water passes through the cell erosion is prevented both behind and in front of the cell.

Cost effective

when compared to traditional rock armour, seawalls, concrete blocks and other traditional methods of coastal defense.



TECCO® CELL Mobile - Stability to go

As the name suggests: **TECCO® CELL** and **TECCO® CELL Mobile** have many features in common. The primary difference is the flexibility of the mobile system, with cells being constructed offsite at a convenient and safe working location in advance. Cells are

preloaded with local fill material, tensioned and then placed in difficult to access locations, such as by mobile crane or from a barge. This stabilization solution is rapidly deployed, and as such is perfect for emergency situations as well as more complex erosive applications.

Ease of deployment in difficult access situations



Eroded coastal sections that are not directly connected to traffic routes are the rule rather than the exception and often worthy of protection. In these circumstances TECCO® CELL Mobile can be deployed quickly to stabilize the location with a minimum of disruption to the local environment.



This solution is simply positioned as required in the problematic area with minimal preparation or excavation. Cells can be interconnected, however linking of the cells is not necessary as the substantial weight of a single cell provides stability and efficient protection against further erosion of a small area.to the local environment.



Open for revegetation

Greening with local indigenous grasses and plants can help to stabilize the structure and blends into the natural environment.



Protection from seashores to riverbanks

Where there is moving water, the side effect is erosion and erosion generally brings problems. TECCO® Cell can protect against erosion along rivers or streams.

TECCO® Trapunta - Higher safety under water

TECCO® Trapunta is similar to the TECCO® CELL Mobile solution, but has been designed specifically for under-water application. A more compact arrangement of cells is used to resist the most demanding conditions. Providing protection of water-based infrastructure, such as scouring around harbour walls, bridge piers and under-water pipework and cables. This product also can be used for seabed sediment control as its flexibility enables it to conform very well to the existing seabed.

Trapunta in Italian is a duvet or quilt. This describes the function of the flexible unit of mesh and local rock: It adapts well to the subsoil and protects with its heavy weight from wash-out or damage of any kind.



With a weight of approx. 850 kg/m² the TECCO® Trapunta presents a sustainable solution to protect harbour basins, power/tele-communication cables or pipes especially when single TECCO®



Trapunta units (each approx. 6'500 kg) are connected together. Depending on the ground condition a geo-textile layer prevents the TECCO® Trapuntas from sinking in.

Our TECCO® Trapunta and TECCO® Cell - your advantages

Efficient protection

Ready-made modules are simply placed on the areas to be protected, e.g. by mobile crane or from a barge.

Quick and wasteless preparation

Cells are constructed offsite in a quality controlled location.

Flexibility of cells

Multiple cells can be linked together.

Minimum environmental impact

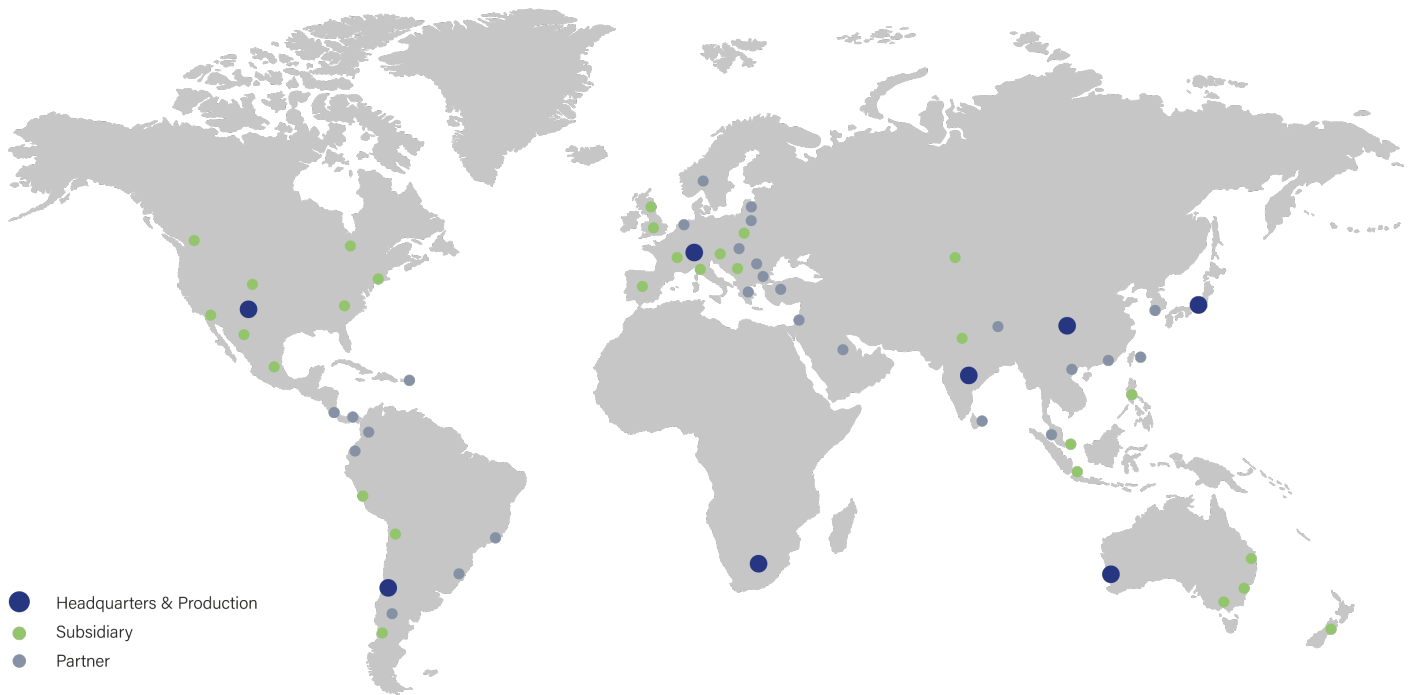
The filling material consists of local rock. Components can not be released into the environment and the material can be recycled if cells are ever to be removed.

Long lifespan

High-class stainless steel components guarantee a long lifespan even in highly corrosive environment.

Worldwide close to you

Geobrugg has been a pioneer and technology leader in natural hazard protection with flexible steel wire mesh for over 70 years. Since 35 years we have been developing solutions in the field of debris flow protection. Combined with pioneering solutions in slope stabilization, this wealth of experience led to special solutions in hydraulic engineering 10 years ago.



Geobrugg AG

Aachstrasse 11 • 8590 Romanshorn • Switzerland
www.geobrugg.com

You can find more information on our website:
www.geobrugg.com/en_coastalerosion

