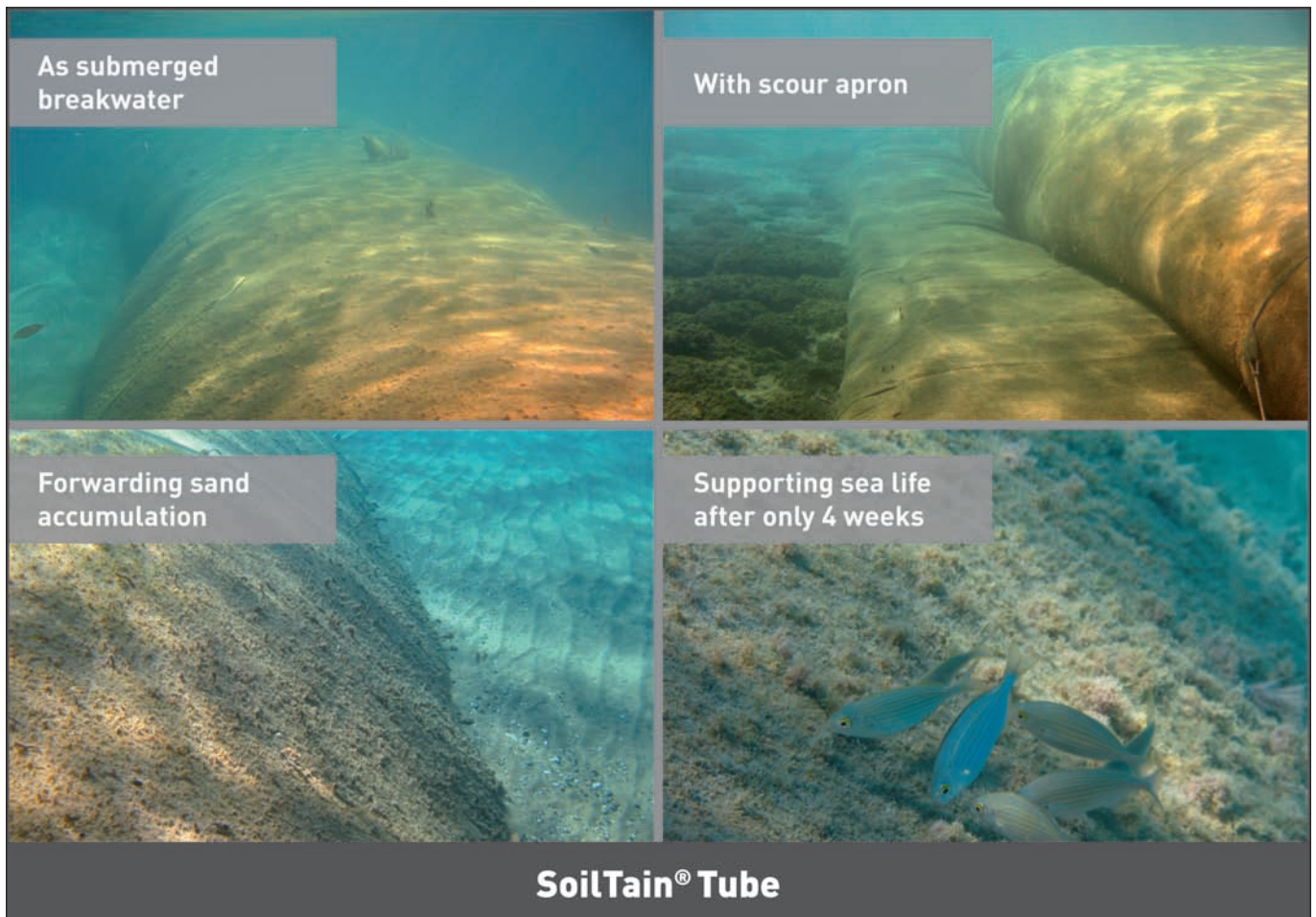


SoilTain® Tubes for Coastal Protection



HUESKER
Ideen. Ingenieure. Innovationen.

SoilTain® Tubes for stabilisation of the shoreline in multifunctional applications



SoilTain® Tubes for coastal or riverine protection are tubular containment systems made of specialised geosynthetics which prevent soil from being eroded by waves or currents.

Typically **SoilTain® Tubes** are hydraulically filled with a slurry of sand and water but the tubes can also be filled by a combined mechanical/hydraulic method.

Versatile function

SoilTain® Tubes can be integrated as part of a structure or they may replace the complete structure like artificial dunes, artificial reefs, dykes, breakwaters or groynes.

Economical construction element

SoilTain® Tubes enable the substitution of expensive construction materials like rock by locally available materials. Hence, **SoilTain® Tubes** represent a competitive solution to the conventional way of constructing coastal protection structures.



Picture 1/2: **SoilTain® Tubes** as breakwaters temporarily protruding from the water under wave action during low tide

State-of-the-art design

The determination of the required design parameters for the geosynthetic tube is conducted using state-of-the-art computer software. For all designs relevant current research and the latest design manuals are considered.

Custom-made solutions

The tube dimensions can be customized according to the project requirements. HUESKER provides a wide range of tubes with varying lengths and diameters. Furthermore HUESKER offers different types of fabrics with varying characteristics for the tube shell.

Advanced geosynthetics

For tubes exposed to waves and currents HUESKER developed a highly specialised geocomposite. The combination of woven and non-woven geotextiles guarantees a high soil retention capacity combined with high permeability. This prevents excessive loading generated by hydraulic impacts. Therefore the **SoilTain® Tube** for coastal protection provides excellent performance under wave action and currents. The **SoilTain®** geocomposite has a natural appearance especially when used on beaches and integrates perfectly into the existing environment.

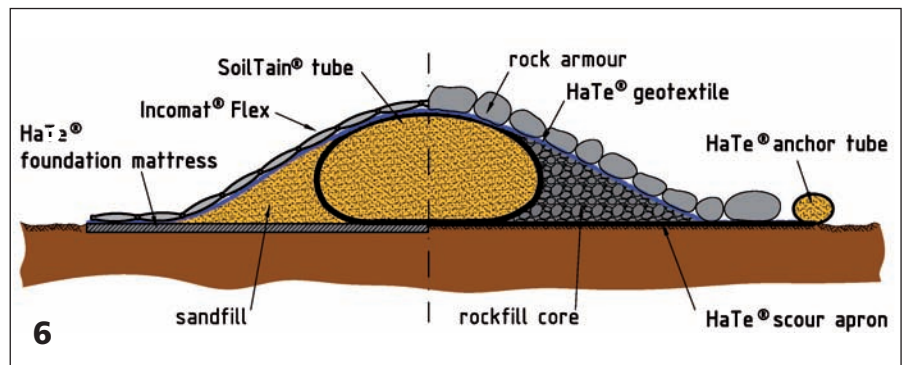
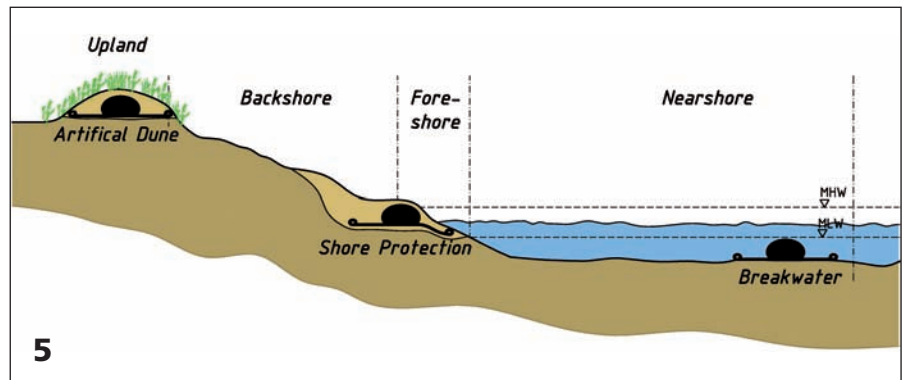
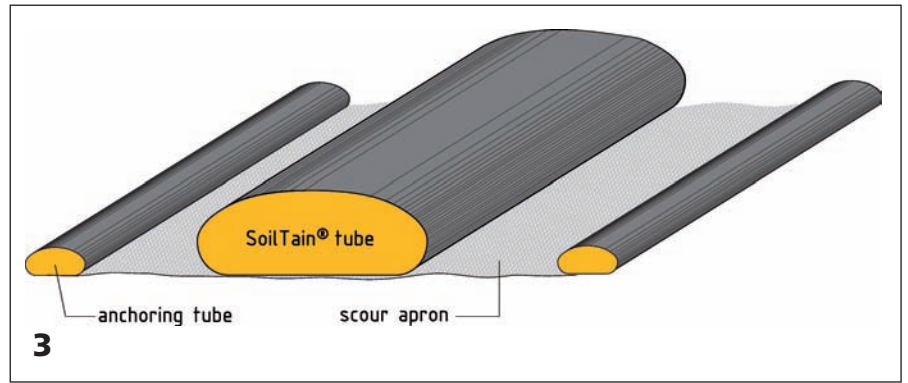
Ecological sustainability

The acceptance of **SoilTain® Tubes** by the marine flora and fauna has been scientifically examined and successfully proven in practice. For this reason **SoilTain® Tubes** for coastal protection represent an environmentally friendly solution.

Integral concept

SoilTain® Tube system for coastal protection exhibits exceptional performance with regard to all important aspects of a coastal protection system.

Picture 3:
*Definition sketch of a **SoilTain® Tube** breakwater with scour apron and anchoring tubes*



Picture 4:
***SoilTain® Tube** as widening for an existing groyne*

Picture 5:
*Shore stabilization possibilities with **SoilTain® Tubes** including scour apron parallel to the coastline*

Picture 6:
***SoilTain® Tube** as breakwater or jetty core with alternative scour aprons and coverings*

SoilTain® is a registered trademark of HUESKER Synthetic GmbH.



HUESKER Synthetic GmbH is certified by:



HUESKER offers a wide range of technically demanding solutions relying on our many years' experience. Our solutions are economical, reliable and up-to-date and used in:

Earthworks and foundation engineering, landfill construction, hydraulic engineering, road construction

Technical assistance, planning, support - worldwide

Reliable and advanced techniques characterise our products in many applications:

Fortrac® - a flexible, high modulus and low-creep geogrid for soil reinforcement

HaTelit® - a flexible, high-modulus and temperature resistant grid for asphalt reinforcement

Stabilenka® - a high-modulus polyester woven for reinforcement and separation of soils

Robutec® - a very high-modulus and alkali-resistant woven for reinforcement and separation of soils

Fornit® - a biaxial geogrid for subbase reinforcement

Comtrac® - a geocomposite for reinforcement, separation and filtration of soils

Duogrid® - a geocomposite made of biaxial high-modulus flexible geogrid and a nonwoven

NaBento® - geosynthetic clay liner for sealing

Incomat® - a concrete- or sand-mat for sealing and erosion control

Ringtrac® - geotextile tube for reinforcement and soil containment

HaTe® - wovens and nonwovens for separation, filtration, drainage and protection

SoilTain® - systems for hydraulic engineering and dewatering

Geosynthetics made by HUESKER - reliability by experience!

HUESKER

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