Coastal & waterway infrastructure
Solutions overview
Introduction

One of the most profound effects of climate change is the increase in sea levels. Over the last 100 years, sea levels have risen globally by 0.25-0.50 m. However, refined projections for the next 100 years indicate the acceleration of tidal rise with estimates of an increase of 1.3 m in the North Sea increasing to 2.0-4.0 m by 2200.

Even small increases in sea level can have devastating effects on coastal habitats with flooding and coastal erosion being the most obvious and dramatic examples. Higher sea levels will also have a drastic effect on farming with low-lying farm land potentially being rendered unusable by salt water. Salt water will also affect the flora and fauna in coastal nature reserves and can even contaminate aquifers, threatening drinking water supplies further inland.

In addition to the rising sea levels, the effects of climate change are also felt in the increasing incidence of severe weather events with more severe storm damage, increased levels of rainfall in some areas and drought in others. All of these can contribute to further problems on inland rivers, waterways and reservoirs and increase the threat posed by the rising tide levels to existing coastal defences and coastal infrastructure.

Coastal economies will be affected as beaches and tourist areas are lost, whilst erosion and deposition caused by tidal flux around river mouths can alter the viable shipping channels and affect the operation and even viability of ports and quays further inland. This potentially threatens whole economies reliant on trade or fishing. Further inland, we are already seeing the effects of severe and repeated flooding events – with increasing frequency – in areas where flooding was previously unknown.

Geosynthetics can play a major role in smart solutions to coastal protection and waterway applications. The use of geosynthetics can result in substantially better, faster and/or cheaper construction of new flood defenses, reinforcement of existing dykes or coastal protection. This could give a considerable boost to the ambitions of global flood protection programs.
We monitor and supervise your project from the initial definition of the problem all the way through to the post-sales phase. Our specialist engineers will provide the appropriate type of support required for each individual step of your project.

**Project approach**

We provide advice and contribute possible solutions for specific problems or applications. If desired, we can also provide training on specific topics associated with the use of geosynthetics in civil engineering.

In this phase we work out the best possible solution in conjunction with the customer. We provide tailored advice by means of calculations for the all-round solution and delivering drawings, sketches and models. An optimal mix of products is sought for the specific situation, including the relevant cost calculations.

We can either deliver standardised specification documents and drawings, or draw up a set of project-specific installation instructions. If desired, we can also organise project-specific installation training sessions. Our customers can also rely on on-site support.

Once the project has been completed, we will be happy to assist our customers with any future challenges. We make use of the expertise gained during the execution of specific projects to further streamline our solutions and develop new products.
Our solutions for your coastal and waterway infrastructure needs

1. Vegetated erosion control
2. Flood defences and dykes
3. Reinforced soil structures and retaining walls
4. Coastal protection with geotextile elements
5. Hard armour erosion control
6. Soil consolidation and land reclamation
7. Dewatering of sludge
8. Salt barrier
**1 Vegetated erosion control**

Erosion is the action of surface processes such as water and wind displacing soil aggregates from one location to another. There are various types of erosion, including splash, sheet, rill, gully and stream channel erosion.

Nature itself provides an excellent product to protect soil against erosion in the form of vegetation. Sometimes however nature needs a helping hand, for instance if the erosive forces are too strong or when vegetation needs to grow under difficult conditions.

Biodegradable materials such as jute, coir, flax, wood wool and straw mats will typically retain their structural integrity for one or two years in a moist soil environment. They are intended to provide temporary protection until the vegetation can take over.

An open, three-dimensional synthetic mat such as EnkaMat provides this temporary protection for the bare soil to encourage the development of vegetation. EnkaMat will also permanently reinforce the top soil in the root zone should the vegetation fail.

EnkaMat fills the gap between protection with ordinary vegetation and more radical protection with materials such as rock and concrete. This solution is ideal for the environmentally friendly protection of dry slopes with an incline of up to 60 degrees and is perfectly suited for the erosion protection of ditches, canals, lakes and rivers.

**Functions**

- Surface stabilization
- Erosion protection
- Vegetation reinforcement

**Relevant products**

- EnkaMat
- EnkaMat® A20

Understanding the type of soil and how prone it is to erosion can help avoid problems on roadways and infrastructure. Soil erosion removes valuable top soil, important for the growth of vegetation.
2 Flood defenses and embankments

Dykes are essential structures to protect us from floodings. They are often built on soft soils which will cause differential settlements. Erosion becomes a risk when water levels are high and dykes are under heavy attack from waves for a period of time. Another risk is the so-called piping phenomenon that may cause serious damage during high water.

Building dykes on soft soils with heavy duty woven reinforcing fabrics is a technology that has existed for 40 years since it was first used along the Mississippi in the USA. In general three failure modes can be identified: 1) loss of overall stability; 2) loss of foundation stability; 3) bearing capacity failure, as illustrated on the next page. Design advice is available on request.

When water levels are high, the resulting pressure can force water to seep through the base of a dyke. This water may take grains of sand with it, creating tubular openings (pipes) under the dyke that get bigger and bigger, jeopardising the stability of the structure. This can weaken the dyke and, in the worst case, cause it to collapse. Vertical panels of geotextiles can be used as filtering layers to avoid piping. The principle of the vertical screen is based on allowing water, but not sand, to pass through the base of the dyke.

Where environmentally friendly engineering is a priority, EnkaMat is used for dyke slope sections above the main water level. This allows for erosion protected embankments to grow naturally vegetated facings. Below that level, flexible EnkaLoopPile with precast concrete blocks or EnkaMattress have proven to withstand heavy wave attacks.

A large variety of uses for geosynthetics contributes to the stability of embankments during construction and during their lifetime.
Horizontal soil pressure on retaining walls can lead to serious failure modes and requires attention during the design phase. Concrete element block walls are often used to create retaining walls, but they may be subject to deterioration when the blocks are reinforced with steel bars.

For retaining walls, reinforced soil layers combined with steel gabion facing, modular concrete blocks or thin concrete panels are used to build a vertical facing. A facing designed in this way can accommodate high surcharges, including mobile cranes.

Conventional solutions such as steel sheet piling, gabions, mass concrete gravity walls, concrete L-shape cantilever or piled walls all work by passively resisting the weight of the soil itself.

The distinct advantage of reinforced soil solutions is that they are stabilised internally. This is achieved by the installation of horizontal layers of geogrids or woven fabrics in the soil. The tensile strength of the reinforcement is mobilised by the weight of the soil and surcharge loads.

EnkaMat can be used in the facing system to create optimal circumstances for a vegetated retaining slope.

**Functions**
- Reinforcement
- Erosion control
- Relevant products
  - EnkaGrid® PRO
  - EnkaMat®
  - Woven PET geotextile

Vertical retaining structures can be realised by uni-axial EnkaGrid fixed to concrete block facing systems.
Coastal protection with geotextile elements

More than 70% of the earth’s shorelines are retreating due to rising sea levels. As shorelines move further inland, structures located on or near the coast may be destroyed. The appearance of a beach and its potential for recreational use may suffer. Importing sand to refill the beach levels is required every few years to keep beaches from retreating, and this typically comes at a very high cost each time.

Beach ecosystems may be negatively impacted by the importation of sand. Rock armour is a possible solution, but cannot always be used in highly populated areas or tourist resorts due to its hard structure. In these situations, Enka Solutions products can offer alternatives.

EnkaBag is a direct solution to protect the beach from erosion. These are extremely robust nonwoven bags designed to be filled with local sand, which can be used as a construction element. EnkaBag has proven a successful solution for beach wall protection, revetments, breakwaters and riverbank protection.

Flexible EnkaBag forms a solid seawall area and riverbank protection.
High strength geotextiles, wrapped around the bottom layers and securely anchored back into the structure retain local deformation and loss of stability.

The beach can also be protected indirectly by adapting the current along the beach or the wave action on the beach which is responsible for the erosion. EnkaTube is installed perpendicular to the beach in order to block the current, which diminishes the strength of the current and causes the sand to settle rather than being washed away.

To influence the wave energy on the beach, EnkaTube can be installed underwater parallel to the beach. This makes the waves break earlier so that some of their energy will be lost before they reach the beach. Consequently, the wave has less impact on the beach, which reduces erosion.

Functions:
- Wave energy absorption
- Erosion control

Remnant products:
- Enka®Bag
- Enka®Tube

Relevant products
- EnkaBag
  - Standard
  - NW Rock 1200
- EnkaTube
  - Perpendicular to
  - Parallel to

UV-stabilized nonwoven for Enka®Bag Standard
Heavy duty UV-stabilized nonwoven composite for EnkaBag NW Rock 1200
5 Hard armour erosion control

Built-up areas have an increased need for protection against the erosion and scour which go along with rising water levels. Scour means a localised loss of soil often situated around underwater foundation elements such as piles, quay walls, bridge abutments, etc.

Typically, Enka Solutions products for this application combine ballast with filtration to withstand the stronger shear forces that are involved in these situations.

EnkaMattress is a lost shuttering concrete mattress which follows the soil surface perfectly so that no gaps are subjected to erosion. It becomes a robust, rigid and long-lasting protection layer.

EnkaMattress can be prefabricated to project-specific panels that can be zipped around or laid down over pipelines prior to filling. Once filled it will protect the durable coating of pipelines from damage induced by falling anchors, rock or abrasion forces.

EnkaLoopPile is a three-dimensional woven fabric onto which concrete blocks are cast. It acts as integrated geotextile carrier and filter layer to Articulated Concrete Block systems (so called ACB), combining ballast and filtration. The woven fabric offers a flexible connection between the concrete blocks. This flexibility offers a self-healing erosion control system, which is able to adapt to scour-sensitive spots.

Scour is the result of bottom shear stress induced by water velocity. Once this becomes higher than the critical shear stress, soil will be transported away from the foundation element posing stability risks to the superstructure.

In front of quaywalls, soil is subject to erosion due to turbulent ship propeller forces and vortices. EnkaMattress can be used as a bedding protection to ensure the stability of the structure.

Critical riverbank sections and attacked seashore areas can be defended by EnkaLoopPile with precast concrete blocks.
On coastal reclamation works, a thick layer of granular reclamation material is applied to form the new land profile. Typically, the foreshore and seabed overlaid with this material is of a low quality alluvial material which may be poorly compacted and have low permeability. Variations in the depth of the weak soil and the differing depths of the reclamation mean that the finished reclamation profile may not settle evenly, and the presence of low permeability marine clays and silts will pose consolidation risks.

Soil consolidation and land reclamation

Allowing for consolidation can be a long process, lasting more than 25 years in weak saturated soils under surcharge loading. The solution lies in releasing the groundwater and reducing the pore water pressure as quickly as possible. To facilitate this drainage and accelerate consolidation, regularly spaced prefabricated vertical drains (PVDs) are installed to create shorter drainage pathways for the groundwater. This enables consolidation settlement to be completed while reclamation works and infrastructure installation are underway.

For shallow water reclamation or seabed consolidation, the PVDs can be installed from a barge and cut off at seabed level. The pore pressure is then released into the freely draining granular material placed in the reclamation works. For deeper reclamation, the drains are typically placed from the finished ground profile prior to placement of any additional surcharge fill.

Colbond drain prefabricated vertical drain is a geocomposite that resists tearing under load during installation. This maintains its integrity and thus supports the drainage pathway. The outer filter fabrics are bonded to the core structure over its entire surface to form a homogeneous geocomposite product.

Full consolidation of weak soils beneath the reclamation can be achieved in months rather than years when using Colbond drain prefabricated vertical drains (PVD).
Dredging of harbours, ponds, rivers or other waterways results in large volumes of sludge. Transportation and handling of the sludge can be made easier and more cost efficient when applying an effective dewatering system.

**Dewatering of sludge**

A simple and low-cost way to dewater sludge can be obtained by EnkaTube resulting in volume reductions of two to three times compared to in-situ conditions. The sludge is pumped from the water into the tubes that are positioned at the lake side or on the sea shore. During the dewatering process the sludge forms a cake against the inside of the special woven fabric EnkaTube is manufactured from. This cake acts as a natural filter and ensures clean water flows out of the tube. The water is collected on a membrane from which it is channeled back to the lake or the sea.

Flocculants can help to speed up this process by increasing the settlement speed of the sludge particles in the water, but also by increasing the water permeability of the natural filter (called the ‘cake’) in the tube. Typically these tubes are filled up in four or five stages. The maximum height must be respected at each stage.

In order to use the whole circumference of the tube, EnkaDrain can be rolled out under the tube to facilitate the run-off.

Woven fabric for Enka® Tube

EnkaDrain® Wide

Dewatering sludge to achieve a dry more easily transported material is important to be able to further process the sludge for agricultural use, for raising embankments or for transportation to waste disposals for containment.

**Functions**
- Filtration
- Containment
- Drainage
- Volume reduction

**Relevant products**
- Enka® Tube
- EnkaDrain® Wide
In deserts and arid areas close to the sea it is quite common for groundwater to move upwards. This is known as a ‘capillary rise process’ and brings dissolved salt in water close to the surface. Vegetation and marble pavements are seriously affected.

To avoid the risks of capillary rise a barrier can be installed as a capillary break layer between saline soil and clean soil.

The EnkaDrain Wide and EnkaDrain Salt Barrier composites with their 4-6 mm thick V-shaped filament cores are particularly good at creating a void break. With 95% air space it will allow water to flow in all directions almost equally; thus acting as an efficient salt barrier.

A capillary break (salt barrier) must be situated above the high water level so that it does not become saturated by the contaminated, saline water. Even saline levels of 4 or 5 g/l are generally too high for plants and trees to survive. EnkaDrain has a sufficient flow capacity for both irrigation and groundwater flows percolating to the barrier to be drained away through the core without restriction.

Salt barriers act as a capillary layer to break the saline groundwater particles from moving to ground level and also serve as traditional drainage mats for excess sweet water.

Relevant products

EnkaDrain® Wide
EnkaDrain® Salt Barrier
Reference

Dyke protection against erosion and scour
The Roy Hill project, Pilbara region, Australia

The Roy Hill Project is a 55 million tonne per annum (Mtpa) iron ore mining, rail and port project being developed in West Australia’s Pilbara region. Situated approximately 115 kilometres north of Newman, Roy Hill is a world-class, low phosphorus, Marra Mamba iron ore deposit.

Challenge
The dykes that protect a part the iron ore mining against flooding need to be protected against erosion and scour in case flooding occurs. The durability of the construction is important and therefore every component used in this project must have a design life of 85 years in marine conditions. The original design was a traditional rock revetment with a nonwoven filter. The remote project location and the elevated price of quality rock would lead to high transportation costs. New alternatives imposed themselves.

Solution
We delivered 94,000 m² of EnkaLoopPile to the Roy Hill Project. Flexible concrete mats are used as an erosion control system in case of flooding. EnkaLoopPile combines the weight of the ballast with a filter by means of a very durable woven/looped fabric. Concrete blocks were cast upon the fabric before installation. The loops on the fabric provide an extremely strong connection between concrete block and woven fabric. The finished panels were brought to the site by truck.

A durability of 85 years in marine conditions is required. The woven fabric plays a crucial role to maintain the stability of the structure. We developed a special woven fabric by adding stabilisers to the extrusion process to increase the oxidation resistance. The woven geotextile was tested according to norm EN ISO 13438 which also defines the test procedure for a durability of 100 years.

Also the UV resistance is important. The product needs to withstand 200 kLy. By adding stabilisers and carbon black to the extrusion process we were able to reach the required durability.

Benefits of the solution
• EnkaLoopPile offers a unique combination of ballast and filtration in one product.
• Easy and fast installation (all-in-one go)
• Durability up to 100 years
• Cheaper solution than rock revetment (depending on availability of rock)
• Better alternative for articulating block mats, gabion mats,....

Result
A fast and cheap solution was offered with Enka Solutions to replace traditional rock revetment. The stability of the structure is assured by the loop pile fabric and its connection to the concrete.

Product
EnkaLoopPile

Volume
94,000 m²

Functions
Erosion control
Scour protection
Challenge
The sediments settle down at the sides of the lake making it impossible to swim or sail. Therefore the sludge needed to be removed so customers of the hotels could enjoy the lake again.

Unfortunately normal dredging was impossible as the water is only 1 m deep. So a very small dredger was required. As there was no possibility to store the sludge on the boat, it needed to be transported landwards. The project included 1500 m³ (or 65 trucks) of dewatered sludge. This would result in a huge space needed to store and to dewater the sludge.

Solution
Enka Solutions offered a solution which saved a lot of space and transport by means of EnkaTube dewatering tubes. Two tubes with a circumference of 30 m and 15 m length were delivered on site. Both tubes are able to contain 400 m³ of drained sludge. A larger tube with a circumference of 30 m and a length of 30 m is placed on the top of the two smaller tubes saving even more space. In this way only a small area of the hotel garden was in use for the dewatering of the sludge.

EnkaTube are fabricated out of a special technical woven fabric, allowing the tubes to filter the solid particles out of the sludge coming from the lake into the tubes. The water of the slurry flows through the fabric back into the lake. In this way great volume reductions are possible (up to 85%). Underneath the tubes a containment is installed by means of a membrane which gathers all the water and leads it back towards the lake.

Strong seams for a reliable product
During pumping the height of the tubes will rise due to the pressure which is building up inside the tube. The maximum allowable height of the tubes (2.6 m) was calculated by the Enka Solutions team and monitored during the whole process. The allowable height depends on the circumference, the density of the sludge, the pumping pressure, the strength of the fabric and its seams. The unique seam combines a very strong yarn with a multiple needled flat seam. The strength of the seams has been determined in a geotextile lab and reached up to 67% seam efficiency. This strength is implemented in the software used to calculate the maximum height and pressure possible for the EnkaTube. By using EnkaTube, the contractor was able to offer an economical, efficient and ecological solution to improve the beaches at Lake Balaton.

Reference
Dewatering of sludge
Lake Balaton, Hungary

An average depth of 4 m and a maximum depth of 11 m make Lake Balaton a shallow lake. During storms or high wind event sediments are transported from the west to the east of the lake. The sediments contaminate the beaches of hotels located at Lake Balaton.
Reference

Geobags to protect coastline from erosion and scour
Jerudong Beach, Brunei

Many of the sandy beaches around the world are subjected to ongoing erosion, with the subsequent threat to the integrity of beach infrastructure. EnkaBag is a proven solution for beach wall protection, revetments, breakwaters and as riverbank protection.

Challenge
Jerudong Beach suffered intense erosion and scour along a big part of the coastline. Breakwaters were installed to reduce the wave impact on the beach but still this was not enough. The coastline kept moving landward and became a problem for houses, roads,... built near the coast.

The Enka Solutions team was asked to cooperate in creating an erosion control system to stop the coastline from moving landward. Traditional rock revetment would be too expensive as no rock was available on this remote island. The system had to be easy to install, stable, environmentally friendly and with the same effectiveness as a rock revetment. The hydraulic specifications pushed our engineers towards a geobag system which could resist wave heights of $H_{\text{max}} = 1\text{m}$.

Solution
• EnkaBag was used as an erosion control system
• Different materials were used to optimise the design

EnkaBag is filled with in situ sand. This avoids the transportation of rock or fill material which has a positive influence on the carbon footprint of the whole structure.

The toe of the structure is wrapped with a UV stabilised woven fabric. The ends of the woven are retained by the weight of the structure. In this way the bags are able to move downward in case scour would transport sand away from underneath the lowest sand containers.

The geosynthetic bags are fabricated out of highly UV stabilised nonwoven. The robustness of the fabric makes the bags easy and fast to work with. They can be installed over granular fill without the risk of being damaged during installation.

Benefits of the solution
EnkaBag offers a soft engineering solution which is a sustainable and cost effective alternative to rock revetments. Because of their size and weight engineers can use them as building elements to create stable, durable erosion control structures.

Mussels, algae and other underwater life attach to the nonwoven so that the geosynthetic bags integrate quickly and easily into the sensitive sea ecosystem.

The high elongation of the fabric makes the erosion control structure self healing. Once a bag gets pulled out, the other bags will elongate and fill the gap.

Result
The bund of bags protects the coastline from eroding and moving landward.

Products
EnkaBag

Functions
Erosion control
Enka Solutions
Areas of expertise and product overview

Our solutions offering provides answers for many different geotechnical challenges. They can be applied to what we consider our ‘areas of expertise’.

Transportation infrastructure
Our geosynthetic solutions support rails and roads throughout the world.

Coastal & waterway infrastructure
Geosynthetics are effective in protecting coasts and water embankments against the influence of hydraulic loadings.

Environmental infrastructure
Our geosynthetic solutions help to create parks, playgrounds, ponds and canals to improve our residential, commercial or industrial areas.

Tunneling and mining
Enka Solutions’ offer for railway support, rock wall covering, soil stabilization, tunnel wall drainage and protection and vibration control are amongst the best in the world.

Landfills
Landfills are a common way of managing our disposal of regular waste. To ensure landfills will not cause any environmental harm, leachate and methane gas may not reach our environment.

Groundwork construction
When designing and constructing industrial, commercial or public buildings, special attention is required for foundation and drainage issues.

Product Portfolio

EnkaDrain®
Consistent and excellent long-term performance is a key feature of the EnkaDrain drainage mat. Each variant has a drainage core bonded to a synthetic nonwoven geotextile layer or is sandwiched between two such layers. EnkaDrain provides solutions for groundwater issues for civil engineering and building projects, both during construction and in service. With an extensive portfolio of product types, EnkaDrain is suitable for many different applications.

Colbonddrain®
When the sub-grade of a construction site is too weak to bear normal construction activity, Colbonddrain will speed up consolidation considerably. Colbonddrain is a tough and durable prefabricated vertical drain (PVD), designed to extract pore water from soils to achieve 90% consolidation within six months. Thanks to its high performance Colbonddrain is often the chosen PVD for major, technically demanding projects.

EnkaMat®
EnkaMat is a flexible three-dimensional mat for immediate, permanent erosion protection on many different slope types. Its unique structure creates an artificial root structure that prevents soil erosion from steep slopes, river banks, landfill containments and other vulnerable areas. EnkaMat has excellent soil retention, providing the perfect conditions for vegetative root systems to develop. Embedded with soil, it forms an integrated and fully vegetated system to control erosion.

EnkaGrid®
The EnkaGrid product range comprises a large portfolio of rigid geogrids, their common values being the optimum soil-grid interaction delivered for each application in any soil type and their outstanding mechanical long-term durability. EnkaGrid types are uni-axial or bi-axial and manufactured from laser welded strips. A high strength grid composite of aramid mesh and a thermally bonded nonwoven is available for the most demanding projects.

High strength PET Woven
The high modulus multifilament yarns used in these fabrics offer excellent creep characteristics, making them the perfect choice for use in soil reinforcement applications. The range has been specifically designed to exhibit high strength at low elongation. Typical areas of application include reinforced soil walls, embankments on weak soil and load transfer platforms.
Engineering Nature

Three fundamental values are at the core of Enka Solutions: expertise, reliability and responsibility.

Expertise
We began creating our knowledge and expertise base on our products and the industry way back in the 1950’s, which means that today we have a multitude of project references worldwide. Coupled with extensive research conducted internally and externally with renowned universities and specialist organisations, our Research, Development and Innovation Team is constantly working in conjunction with clients all over the world to develop new solutions to add to our range of products and applications. In addition to this, our team of experienced engineers, who provide support across all market segments, ensures that numerous innovative solutions come to fruition. We see expertise both as the foundation of our business and as an ongoing process.

Reliability
It’s our daily mission to be a reliable partner for our customers in order for them to grow their business in a sustainable way. Reliability covers a range of different areas and ensures peace of mind for our partners. As well as our wide, high quality product range, we offer technical and marketing support for all market segments. All our processes are ISO 9001 certified and every single product is tested by our highly-qualified laboratory staff.

Furthermore, we hold specific product certifications in many different countries (e.g. Asqual, NorGeoSpec, Benor, HPQ, and BBA). Delivering what we promise is part of our nature.

Responsibility
We take our responsibilities seriously. This is why you can also rely on our solutions being sustainable. We not only examine the full product lifecycle and its impact on the environment to make continual improvements in terms of environment, nature and soil, but also ensure that we meet all legal requirements. We train and advise clients and stakeholders, and contribute to the establishment of new standards to help propel our entire industry forward into the future. It will therefore come as no surprise that safety is also a high priority for Enka Solutions. Safety is inherent to all our solutions and products, as part of our responsibility to care for both the people who use them on building sites, and our employees.

These values that are the core of Enka Solutions are reflected in our statement ‘Engineering Nature’, because not only is engineering in our nature, but we also see ourselves as engineers delivering reliable solutions that respect nature.
Enka Solutions originated in the late 60s when we invented the unique 3D-structured polymeric mat which is typical of so many Enka products even today. Ever since its invention we’ve been pushing forward its possibilities in terms of varieties of product and applications, constantly expanding the Enka Solutions portfolio through proprietary technologies.

The scope of markets supported by Enka Solutions is wide-ranging – from Civil Engineering and Waste Management to Building and Sports – including solutions in such specializations as water and gas drainage, prevention of erosion, soil stabilization, soil consolidation, vibration control, shock absorption and ventilation. We serve industrial markets in areas such as Filtration and Composites. The Enka Solutions portfolio includes market-leading and certified products such as EnkaMat®, EnkaDrain®, EnkaGrid®, EnkaVent®, EnkaSonic®, EnkaFlex, EnkaSpacer, EnkaFusion, and ColbondDrain®, each with proven track records around the world.

For global supply, we maintain production facilities and/or sales offices in Europe, North America and China. (Customer-specific) product developments and tests are conducted by our in-house R&D centers in Europe and North America and by independent external institutions. Our quality management system has been approved by Lloyd’s Register Quality Assurance to the ISO 9001:2015 standard.

Provision of the best solutions demands a thorough understanding of the need, and much of our success is down to our close collaboration with our valued customers.

Would you like to discover what Enka Solutions can do for you?
Simply contact the local team with your requirements and together we will find the best solution to your challenge.

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