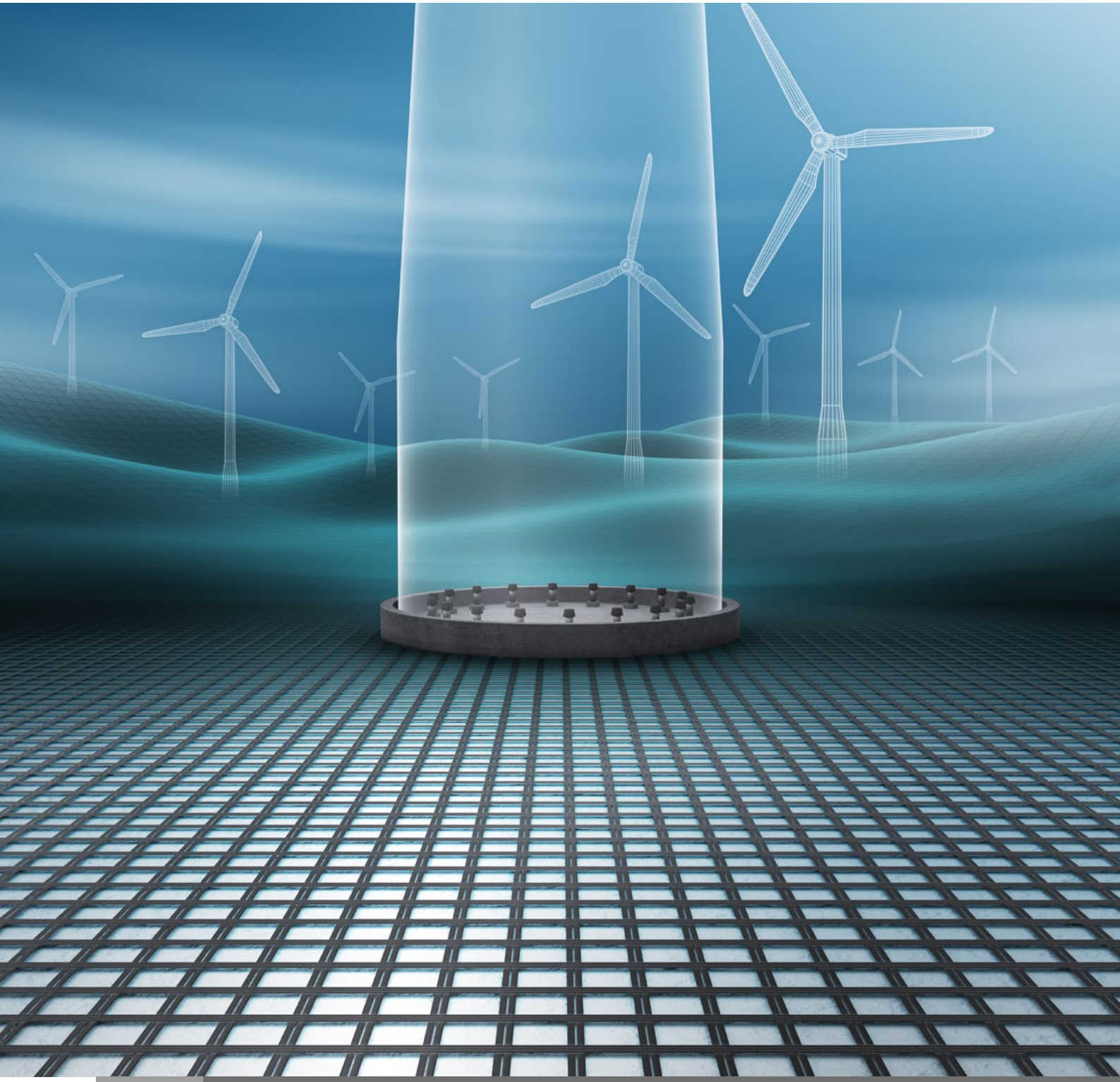


Geotextile solutions for wind farms

Building safely and sustainably to strengthen wind energy

HUESKER
Ideas. Engineers. Innovations.

Challenges in the expansion of wind power

Building wind farms safely and sustainably with geotextiles

Energy from wind power is a significant driver in achieving climate protection goals and independence from fossil fuels. The construction of wind turbines and wind farms can present the planning and design engineers with major challenges in terms of resource conservation and stability.

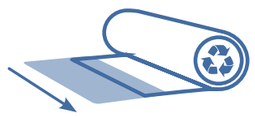
Geotextile solutions can provide significant support in making the construction of access routes and crane working platforms and storage areas safer and more sustainable.

Whenever earthworks have to be built on weak subsoils, you can place your trust in the world-class geogrids, geotextiles and system solutions supplied by HUESKER.

You too can profit from our many years of experience, state-of-the-art production, quality assurance regime as well as our project specific engineering solutions. We look forward to lending you a helping hand with the planning, design, costing and implementation of your projects.

Highest safety thanks to
established design methods

Conservation of natural resources and
landscapes, e.g. peatlands



Minimization of overlap losses thanks
to large roll widths and lengths

Less CO_2 emissions thanks to the reduction
of primary raw materials

Less transport due to reduced base
course thicknesses

Easy dismantling due to
high robustness of the geosynthetics

Wind farm access roads

Challenges with access routes

Wherever access roads have to be used permanently or temporarily on low-bearing soils, soil improvement measures are necessary. Alternating high stresses on soils of varying strengths place different demands on base courses.

Our high-tensile geogrids and systems by far outperfom conventional (e.g. lime or cement stabilisation) constructions through their exceptional durability, sustainability and cost-effectiveness.
The objective is the same for all applications:

- Reduction in required base course thickness
- Avoiding the loss of base course material
- Increasing the load capacity
- Improving the trafficability
- Reduction of the rut depth
- Reduced impact on the soil as a protected resource

Function and effect

Geosynthetics perform important tasks in the base course by providing an increase in load-bearing capacity and ensuring an improvement in trafficability. By using them, rut depths and base course thicknesses can be significantly reduced.

Reinforcement

Membrane effect

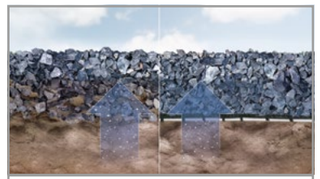
Load distribution

Increase of the base failure safety

Separation

Separation of base course and subgrade

No base course loss with soft substrate



Filtration

Avoidance of fine particle entry

Free drainage

Dynamic filter stability

Crane working platforms and assembly areas

Challenge planning and execution

Crane working platforms and assembly areas are highly stressed engineering structures for which the highest safety standards apply and which require a complex geotechnical design. The requirements for planning and execution are enormous due to:

- Extremely high loads
- Load transfer platforms
- Rapid loading in predominantly undrained ground conditions
- Low permissible total settlements
- Low permissible rotations for mobile and crawler cranes (< 2 %)

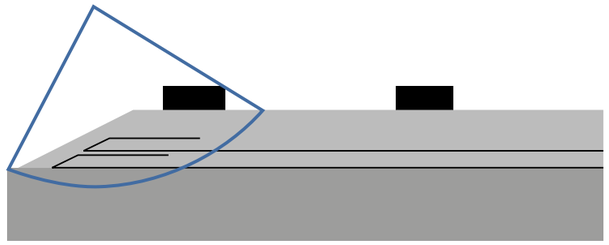
Horizontal reinforcement

Use of geosynthetics as horizontal reinforcement or even in combination with vertical support elements significantly improves the stability and serviceability of highly loaded areas. The main functions are:

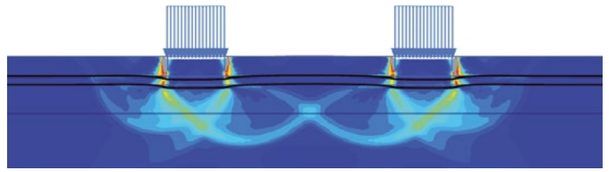
- Maximum safety of the crane location and erection area thanks to high-tensile, creep-resistant reinforcement layers in longitudinal and transverse direction
- Increase of the bearing capacity by increasing the load distribution angle and balancing the forces
- Absorption and redistribution of vertical loads from the working platform and spreading forces
- Compensation of variable subsurface conditions and reduction of unacceptable differential settlements

Established design methods and many years of experience

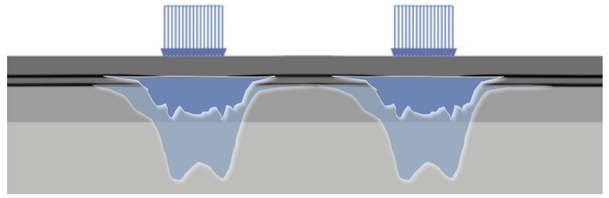
Our experienced specialists perform stability analyses using analytical and numerical methods in 2D as well as 3D. We are happy to support you with the geotechnical design of your project.



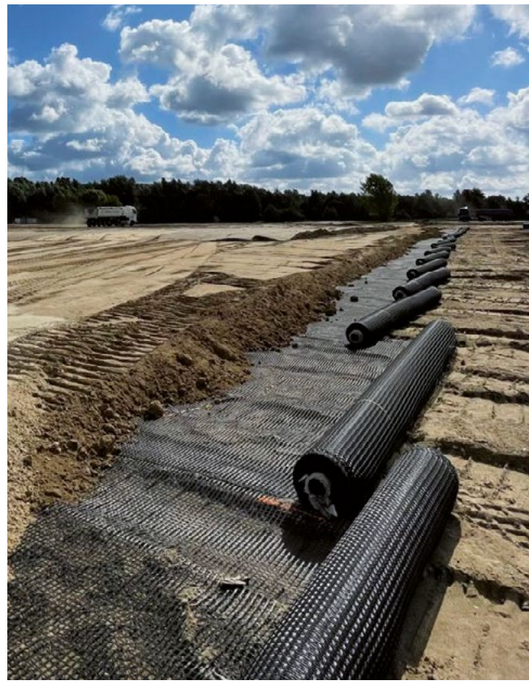
Slope failure investigation by means of analytical calculation methods



Failure mechanism represented by deviatoric shear stresses (FEM).



Tensile force distribution in the horizontal reinforcement layers (FEM)



Project examples

Wind farms

Sheldon Windfarm
United States | The "Sheldon Wind Farm" generates wind energy for the town of Sheldon in Wyoming County, New York. The project has a maximum electrical capacity of 129 MW and produces enough clean, renewable energy to power approximately 60,000 homes per year.

Neuharlingersiel
Germany | Temporary access roads to the Neuharlingersiel wind farm for the construction of four wind turbines. The construction roads on soft, organic soil were reinforced with a biaxial geofabric with a tensile strength of 80 kN/m.

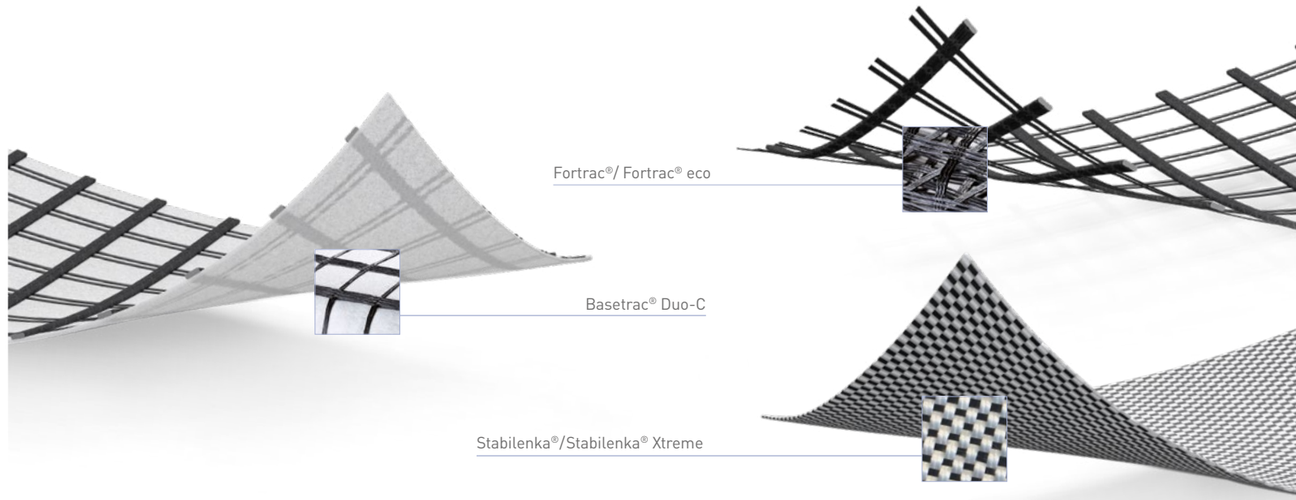
Windpark Zuidwester
Netherlands | To improve the subsoil for the erection of 12 wind turbines with a total capacity of 90 MW, 2,400 concrete piles were installed at each crane installation site. Fortrac 400/50-30 T (in the longitudinal direction) and Fortrac 200 T (in the transverse direction) serve as high-tensile, creep-resistant reinforcement above the piles.

Steelwind Nordenham
Germany | Expansion of the bearing area on difficult ground conditions. Monopiles are foundation bodies that serve as foundations for wind turbines. With the installation of around 15,000 m2 Stabilenka 300/300, monopiles 120 m long and with a diameter of approx. 10 m can be stored on the newly created storage area.

Product excellence

The usage of geosynthetics

Geosynthetics have proven their worth in base course stabilization and reinforcement of working platforms. For good reason, because in addition to maximum resistance to mechanical stress, they offer other decisive advantages, especially in economic and ecological terms.

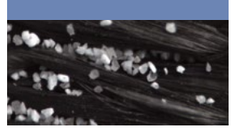


Benefits

- Optimal reinforcement and stabilization effect due to high composite flexibility
- High tensile strengths to withstand extreme loads
- Easy dismantling due to high robustness
- Saving resources possible through the use of recycled PET bottles

Optimal reinforcement and stabilization effect

High composite flexibility of HUESKER geogrids and composites:

Micro-interlock	+	Meso-interlock	+	Macro-interlock	+	Adaptability
						
Rough-surfaced geogrids achieve microscopic interlock with soil particles (friction).		Favourable surface texture of geogrids promotes interlock between geogrid ribs and soil particles.		Mesh openings allow interlock of stones with geogrid.		Flexible geogrids are capable of adapting to unevenness in soil during/after compaction.

HUESKER Services

HUESKER services begin with providing the customer with initial advice and it ends with supporting the realisation of the project on site. What we provide are safe, customised, ecologically sound and economically viable project solutions.

Engineering Services

Technical consulting
We will recommend the appropriate product types for your specific requirements.

Technical design
Our engineers assist design practices by performing verifiable design calculations in accordance with international codes of practice.

Project-specific placement plans
We will prepare installation and placing recommendations plus installation diagrams.

International knowledge transfer
Best-practice solutions and techniques from our global network.

Documents

Certificates and approvals
Our products have numerous certifications and approvals that are issued, for example, by BAM, BAW, BBA, EBA, IVG and SVG, depending on the product type.

Tender documents
We would be happy to provide you with proposals for your specification texts.

Technical guidelines
Technical guidelines will help you to ensure the best-practice installation of your products on site.

Product Services

Custom-designed project solutions
We will partner with you in developing custom-fabricated products to meet your particular requirements.

Alternative solutions
We will propose alternative design solutions as well as recommendations for adjustments and optimisations.

On-The-Spot

On-site instruction
Where required, our application technicians can offer installation assistance related to the specifics of product installation.

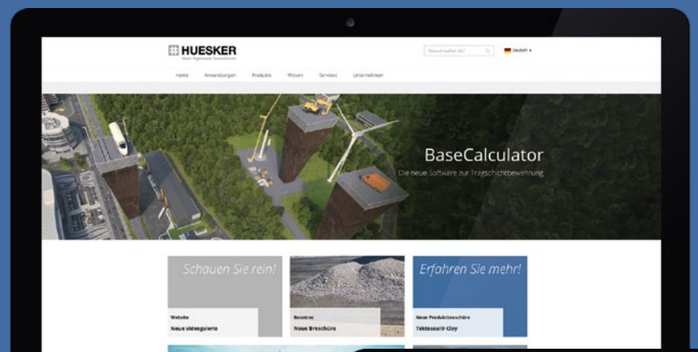
Installation aids
We can offer you practical installation aids to facilitate the application of our products.

Training
Product and application specific instruction.

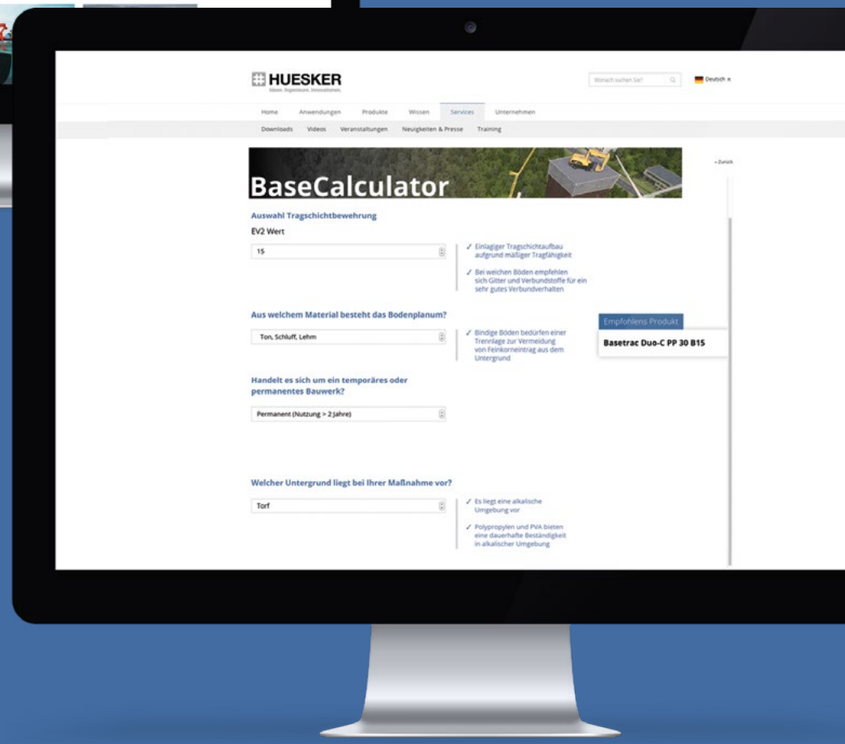
The BaseCalculator

The BaseCalculator easily calculates the required base course thickness of the access roads. What material is the soil subgrade made of? Is it a temporary or permanent structure?

The BaseCalculator software available online will easily guide you to the recommended HUESKER solution. With just a few clicks, you will receive suggestions for selecting the right geosynthetic and information on saving base course material. HUESKER offers you this service in a simple and uncomplicated way, i.e. free of charge and without time-consuming registration. At the end you will receive the calculation as a PDF document, which you can save and use later.



Scan QR code and discover suitable product solution!



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