

SUSTAINABLE CONSTRUCTION
AND GREEN ENGINEERING



TENSAR SOLUTIONS FOR THE WIND ENERGY INDUSTRY

DESIGNED FOR EFFICIENCY
AND THE ENVIRONMENT.



Tensar[®]

Delivering successful solutions for the wind energy sector.

Tensor's systems have been used successfully on wind energy projects around the world for more than 25 years, helping deliver temporary and permanent works quickly, economically and safely.



Tensor TriAx® geogrids are used to mechanically stabilise granular materials in access roads, site compounds and working platforms, while our range of systems for soil retaining walls, bridge abutments and reinforced slopes can help maximise construction areas for both temporary and permanent applications.

Our solutions allow non standard fills to be used, including selected site won material, reducing the import of aggregates and removal of excavated material, and cutting CO₂ emissions by up to half.

Tensor TriAx geogrids

TriAx geogrids have delivered benefits to thousands of projects around the world, in many different climates and ground conditions.



Stable access roads, site compounds and working platforms

Unpaved temporary access roads, compounds and working platforms are a critical aspect of enabling works for both onshore and offshore windfarm projects. While supporting extremely heavy loads, these often have to be built on weak or variable ground.

An aggregate layer stabilised with TriAx geogrids performs as a composite, due to the interlocking mechanism and particle confinement that develops between the aggregate and the Tensor stabilisation geogrid.

This Tensor mechanically stabilised layer provides more effective support to the entire pavement structure than aggregate alone, improving performance and saving time and money without compromising on safety.

THE BENEFITS

Increased bearing capacity

Mechanically stabilised layers create a safer and more reliable base for heavy plant and high traffic areas.

Reduced layer thickness

Granular layers incorporating TriAx can be up to 50% thinner, with no loss of performance.

Saving time and money

Less aggregate is needed and excavation and disposal is reduced, so construction is faster and costs are lower.



Design & Technical Support

Helping you with conceptual designs for budgeting to providing a full design and supply package.

- 1 Supply Only**
- 2 Application Suggestion & Supply**
Conceptual drawing, calculation and advice to support your decision to use Tensor products and systems in your application.
- 3 Design & Supply**
Detailed design and construction drawings for using Tensor products and systems on your project.



Example of floating road over peat on Scottish windfarm

Economical temporary retaining walls, bridge abutments and steep slopes

Practicality and economy take priority over aesthetics when it comes to temporary retaining walls and bridge abutments. TensarTech systems can be used to build temporary and permanent reinforced soil retaining walls, wing walls, bridge abutments and steep slopes, quickly and economically.



TR2 can be built quickly and easily, without specialist equipment



Completed load bearing bridge abutment using TR2 system

THE BENEFITS

Fast construction

Most systems can be built without formwork, temporary propping or crane lifts and are ready for use immediately.

Simple to build

Conventional construction techniques can be used and systems are dismantled easily, or can be backfilled against, at the end of a project.

Structures at a fraction of the cost

Systems can be built at a fraction of the cost of conventional methods - with up to 75% savings.

Tensar solutions reduce CO₂ emissions

Wind energy projects often require large volumes of materials that need to be transported considerable distances to and from site.

Reducing material use in construction results in fewer vehicle movements, which can deliver significant CO₂ emission savings of up to 50% when compared with non-stabilised designs. CO₂ savings can be determined by entering the Tensar application suggestion into the TriAx carbon calculator, available at:

www.tensar.co.uk/services/carbon-calculator

TensarTech Stratum for crane hardstandings

The TensarTech Stratum cellular foundation mattress system creates a thick stiff foundation platform that is a faster and more economical alternative to piling and other deep foundations for crane working platforms.



A Stratum system being constructed, Netherlands



Stratum system being filled using recycled aggregates

THE BENEFITS

Mitigate settlement

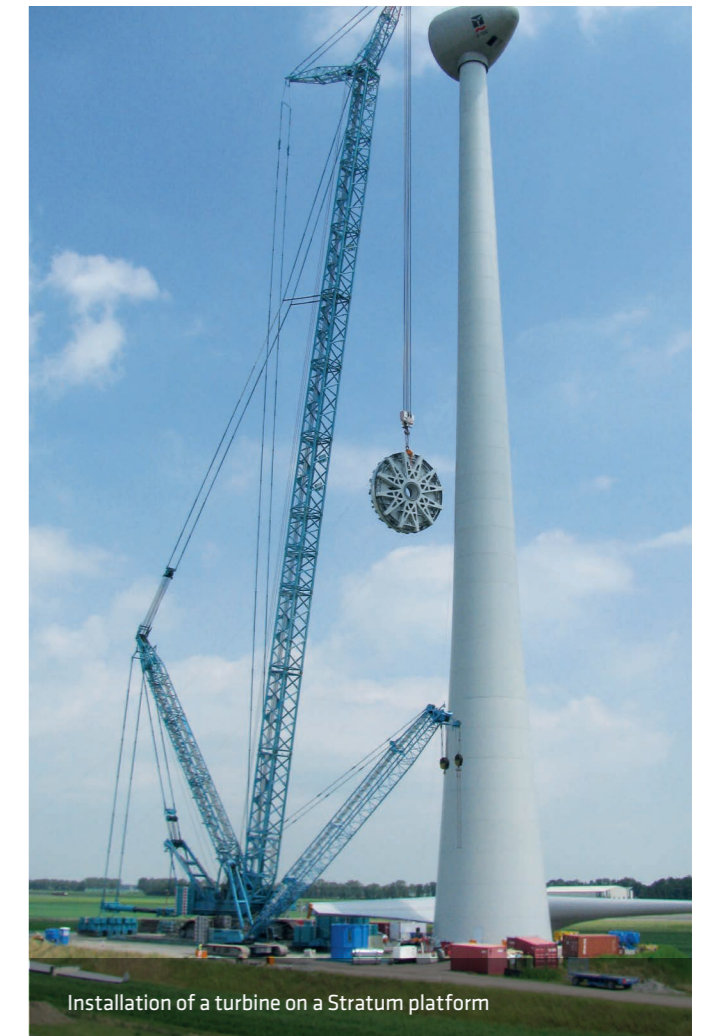
TensarTech Stratum increases stability, reduces lateral spread and peak settlement and allows very even and controlled settlement.

Reduce material disposal

There is usually no need for excavation and removal of subsoil, saving time and money.

Quick and easy to build

The cellular mattress can be placed directly on the ground, without the need for pre-consolidation or treatment. Assembled on site by hand, it can be built in all weathers.

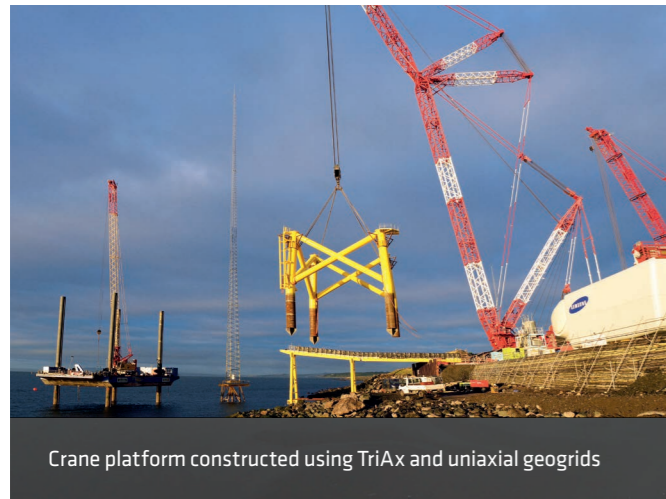


Installation of a turbine on a Stratum platform

Offshore wind developments

Offshore wind farm projects typically require large onshore areas for lay down and assembly of turbines. As these must be sited next to rivers or harbours, they typically have to be built on weak and waterlogged ground, while being strong enough to support the heavy loads from cranes and turbine sections.

Tensar mechanically stabilised layers are a proven, practical way of providing safe, reliable and robust access roads, lay down areas and crane working platforms that are quick and economical to build.



Crane platform constructed using TriAx and uniaxial geogrids

APPLICATIONS INCLUDE:

Component lay down areas

Access and haul roads

Crane working platforms

Cable enabling works

Substation and transformer platforms



Temporary access road to allow the installation of HV cable

Upgrading public roads using asphalt interlayers

Local roads often have to be used to reach rural wind farm locations and these are often poorly maintained and unsuitable for heavy construction traffic and turbine deliveries.

Tensar's asphalt reinforcement products offer a quick and economical alternative to traditional methods of upgrading and widening roads which can be adopted by local authorities.



Asphalt reinforcement enables easy upgrading of local roads

Case Studies



Glenchamber Wind Farm - Access Roads

Site access over difficult ground

Using TriAx to mechanically stabilise site-won aggregate ensured access roads could be built across deep and very soft peat deposits quickly and economically, to carry heavy construction plant and materials to the site of the Glenchamber wind farm in Scotland. TriAx was also used in the widening of public roads near the site.

Economical
road design over deep, soft peaty ground

Ensuring on-time
delivery of construction materials and equipment

Maximising
the use of site-won aggregate

REF TEN361



Whitelee Wind Farm - Subgrade stabilisation

Defeating peat

The design of the unpaved access roads and working platforms at Whitelee Wind Farm near Glasgow used Tensar's TriAx geogrid incorporated into site-won aggregate to create mechanically stabilised layers. The thinner structures met load requirements, while minimising aggregate use, compared with traditional solutions.

Reduced
site-won aggregate volumes

45km
of access roads and working platforms built over weak soils

Roads & platforms
for construction and operation

REF TEN292



Tocha Wind Farm - Subgrade stabilisation

Fine performance

Tensar mechanically stabilised layers enabled the roads and platform to be 40% thinner than originally planned, minimising the use of aggregate, as well as reducing construction time and costs.

40%
reduction in road and working platform thickness

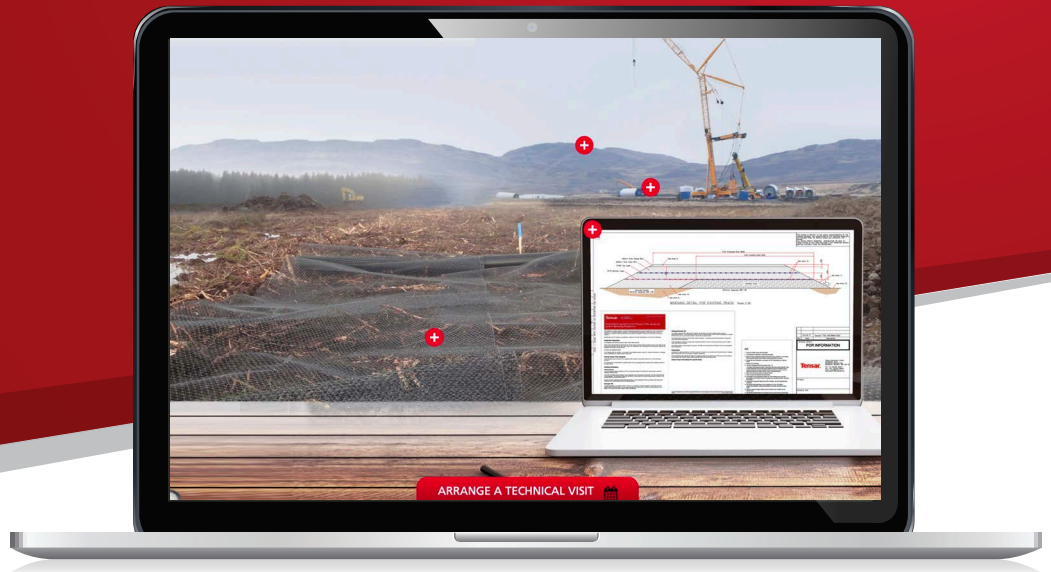
2.5km
of access roads and 7,000m² of working platforms built quickly and economically

Reduced
construction time and costs

REF TEN309

VISIT OUR DEDICATED WEBSITE:

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