



Tensar®



WIND
ENERGY

The unpaved roads were not only designed to support heavy construction traffic; they also serve as permanent access roads for maintenance vehicles to the 215 turbines.

Defeating peat

Tensar TriAx geogrids not only enabled access roads and working platforms for a new wind farm to be built over a peat bog, but also resulted in a significant reduction in aggregate use.

CLIENT'S CHALLENGE

Phase two of the Whitelee Wind Farm project in central Scotland involved construction of 45km of unpaved access roads, temporary working platforms and hardstanding at 75 turbine locations. The facility was built on weak, saturated ground, including thick peat deposits. The structures had to be able to support heavy construction traffic, including lorries bringing turbine sections, plus had to be long-lasting, as they were to serve as permanent access for maintenance vehicles.

TENSAR SOLUTION

The design of the unpaved access roads and working platforms used Tensar's TriAx geogrid incorporated into site-won aggregate to create mechanically stabilised layers. This resulted in thinner roads and platforms that were able to meet load requirements, while minimising aggregate use, compared with traditional solutions.

Whitelee Wind Farm

Subgrade stabilisation

📍 Scotland

BENEFITS

45km

of access roads and working platforms built over over weak soils

Roads & platforms

designed for both construction and operational use

Reduced

site-won aggregate volumes

REF TEN107



TriAx geogrid was incorporated into the aggregate used for the wind farm access roads and working platforms, cutting material use dramatically.

PROJECT BACKGROUND

Whitelee Wind Farm is the UK's largest onshore wind farm, located on Eaglesham Moor, about 30km south west of Glasgow. Scottish Power's facility has been operational since 2008 and currently has 215 turbines, generating up to 539MW of electricity, enough to power about 300,000 homes.

Originally the facility had 140 turbines and, soon after it was switched on, plans were put in place to extend it with 75 more. The contract to build this second phase was awarded to a joint venture of contractors John Sisk and Son and Roadbridge in 2010, with construction beginning in 2011.

Tensar, which had been involved in the first phase of the project, was brought in to design 45km of access roads, plus working platforms at each of the new turbines, and lay-down areas. All had to be able to support heavy construction traffic, including turbine deliveries and also had to provide permanent access for maintenance vehicles.

Ground conditions were highly variable, predominantly very weak and saturated soils, including very thick peat deposits, with CBR values of less than 1% in places. Digging out peat and replacing it with aggregate to form stable road foundations and safe working platforms could have been time-consuming and expensive.

Tensar's solution was to incorporate its TriAx geogrid within the unbound, site-won aggregate to create mechanically stabilised layers, creating thinner roads and platforms, minimising excavation and material use. The mechanically stabilised layers were capable of supporting construction activities, saving time and money for the project. Additionally, these 'floating' structures were designed to perform throughout the wind farm's operational life.

Contractor:

Sisk/Roadbridge JV

Client:

Scottish Power

“Our approach minimised the use of aggregate over the soft ground, delivering roads and working platforms that performed immediately and allowing these important project elements to be completed quickly, safely and economically.”

Mike Horton,
Application Technology Manager
Tensar International

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