Renewable Energy Power Station

Cutting Edge Composite Trench Covers for Cutting Edge Renewable Energy Power Station

Garreg Lwyd wind farm under construction

Project Overview

Under the EU's renewable energy plan (still in place post-Brexit) the UK set targets to meet 15% of their energy needs from renewable sources by 2020, including generating 30% of electricity from wind, solar and other low carbon sources (**The Guardian, 2016**). Wales selected 7 SSAs (Strategic Search Areas) in Wales chosen for good wind speeds and lack of statutory designations. One of these was selected as a site for Garreg Lwyd large scale wind farm, which will be capable of providing sufficient renewable electricity to meet the average needs of more than 26,000 homes.

The project consists of 17 turbines, a control building and a substation to supply power to the grid at the correct voltage and amperage. Substations require large amounts of cabling and other utilities set below the ground while being easily accessible.

When considering materials and products to use when building this power station of the future, they specified future materials and products that will endure into it.

Requirement

At the substation, there are two long pre-cast concrete trenches: one 19 metres long with a span of 765 mm, the other 25 metres long with a span of 1250 mm. The trenches are set flush into the ground, with an edging created using upright concrete slabs. The trenches required a covering solution that could be easily manually removed for maintenance and monitoring, while performing at D400 load rating (40 tonne). The Sub-station specified a GRP composite solution to meet the required specifications. Covers also needed to provide a safe walking surface for operators, whatever the weather conditions.

Stanton Bonna, the pre-cast trench manufacturer partnered with Fibrelite to create a series of custom GRP trench covers to fit onto their pre cast concrete trenches.

Covers 'stepped' to reduce weight and fit trench width

Results

Fibrelite covers are a fit-and-forget solution: no maintenance is required, and the composite material has an inherent resistance to corrosion. Structural performance is guaranteed for years to come, with all covers independently tested to BS EN124 criteria.

Lifting and manual handling issues are eliminated. All Fibrelite GRP trench covers are safely removable by two operators, even at D400 (or F900!). This means increased efficiency on site when performing essential maintenance, while preventing risk of injury or need for specialised heavy lifting equipment.

The standard Fibrelite tread pattern provided the perfect slip resistance required for a safe walking surface

Bespoke Fibrelite trench covers 1250mm span

25 metre long pre-cast concrete trench with 1250mm span

Fibrelite covers are a fit-and-forget solution: no maintenance is required.

Fibrelite D400 trench covers on wind farm substation

The wind farm will be capable of providing renewable electricity to meet the average needs of more than 26,000 homes.

Solution

Fibrelite designed and manufactured a series of custom GRP trench covers to fit onto the Stanton Bonna pre-cast concrete trenches. Covers are 'stepped' to reduce unit weight and increase the load rating capability. The D400 load rated 1250 mm wide covers can be safely manually removed by two operators without risk of injury. The equivalent size concrete panel would have weighed approx. 400Kg. The standard Fibrelite tread pattern provided the perfect slip resistance required for a safe walking surface, with **test reports** demonstrating that even when wet, Fibrelite covers have anti-slip properties far exceeding health and safety advisory limits.

Covers safely manually removed with Fibrelite's ergonomically designed lifting handles

Slit trench with stepped covers over electrical cabling

For more information on Fibrelite's product range please contact us:

UK Office:
Tel: + 44 (0) 1756 799 773
Email: **enquiries@fibrelite.com**

US Office:
Tel: + 1 919 209 2404
Email: **enquiries@fibrelite.com**

Malaysia Office (Asia Pacific):
Tel: + 44 (0) 1756 799 773
Email: **enquiries@fibrelite.com**