Combigrid® Secugrid® - Electric vehicle battery gigafactory

Working platforms for piling and crane operations

- **Project Name**
  Electric vehicle battery gigafactory
- **Date**
  September 2022
- **Client**
  Envision AESC
- **Main Contractor**
  Wates Group
- **Installer**
  Groundwork Services Durham
- **Product**
  Combigrid® 30/30 Q1 GRK 4 C
  Secugrid® 30/30 Q1

Naue have supplied Combigrid® and Secugrid® products for use in the construction of working platforms, to support piling and crane operations, during construction of a gigafactory which will span 50 hectares of land at the International Advanced Manufacturing Park (IAMP) in the north east of England, on the border between South Tyneside and Sunderland.

In December 2021, Envision AESC, the world's leading battery technology company, appointed Wates Group and Turner & Townsend to lead design, construction and project management of the gigafactory. As main contractor, and one of the largest privately owned construction companies in the UK, Wates Group will develop an adaptable design and construct a gigafactory to manufacture batteries for electric vehicles. With Wates Group's expertise from across its integrated construction practice, and experience Turner & Townsend have acquired delivering EV battery gigafactories across Europe, Asia and the Americas, the team will work together to realise Envision AESC's ambition of creating a world-leading net zero carbon facility.

Located adjacent to the A19, just north of Nissan's manufacturing and distribution facilities, the £450m gigafactory forms part of a £1bn partnership between Nissan UK and Sunderland City Council to develop an electric vehicle production hub at IAMP and, with the new infrastructure due to be in place to support battery production by 2024, the first phase of this commitment will be providing power for Nissan's new electric vehicles.
To cope with the heavy loads and forces associated with construction site cranage and piling rig operations, designs for working platforms can demand significant depths and volumes of aggregate in order to create a safe and stable base. At the gigafactory site, platform construction for both piling and crane operations would extend to an area of around 100,000m2, and initial design calculations for the platforms called for granular fill material to a depth of 600mm, along with the installation of two layers of geogrid reinforcement.

However, as Steven Airey, Naue Geosynthetics' Infrastructure Manager, explains: "We were commissioned to submit an alternative, value engineered solution for construction of the platforms and, assisted by Naue's new Platform Software, we proposed a design which would reduce platform depths required for both the piling and crane operations; requiring 45,000 tonnes less fill than the original design, and yielding substantial cost savings."

The piling platform depth was recalculated at 400mm, and the revised design included a layer of Combigrid® plus a layer of Secugrid®. Even more savings were made for the crane platform, with a 50% reduction in depth to 300mm, and just a single layer of Naue's Combigrid® geocomposite required; reducing the geosynthetic requirement by over 45,000 square metres.

The material savings achieved by implementing Naue's engineered design cut deliveries to site by 2,250 truck movements; resulting in significantly reduced onsite traffic, lower carbon emissions, programme optimisation, and health and safety risks were minimised.

Paul Barton from Groundwork Services, who installed the working platforms, commented: "Naue's contribution to the design was invaluable, and their lightweight, easy-to-use geogrids are just rolled out on site, with simple overlaps, and then trimmed with any standard cutting tools."