
STRUCTURAL
TIMBER
AWARDS
2021

K:PORT®
ELECTRIC VEHICLE CHARGING STATION

The construction of the first **K:Port® Electric Vehicle Charging Station** has provided the coastal town of Portishead, Somerset with a sustainable glimpse into the future.

The Charging Station, which is conveniently located at Parish Wharf Leisure Centre, allows electric vehicle (EV) owners to charge their cars in just 30 minutes. With two rapid chargers, each of which can charge two vehicles at a time, the hub has doubled the number of charging points in Portishead town centre.

Designed by award-winning architectural practice Hewitt Studios and delivered by EJ McGrath Construction Ltd, the Charging Station includes the latest generation of rapid chargers and a highly sustainable canopy made of glued laminated timber, an integrated photovoltaic roofing system and a holistic planting concept that enables a sustainable drainage strategy.

The unique project was recently recognised by the Structural Timber Awards 2021, in the 'Product Innovation' category. »

"The hub will provide reliable EV charging for Portishead residents and visitors, making it more practical for people to make the switch to electric vehicles, which are cleaner, quieter and cheaper to run than petrol or diesel cars."

Speaking to PREMIER CONSTRUCTION MAGAZINE about the project, EJ McGrath Construction Ltd Director Liam McGrath said: *"We are a ground works and civil contractor, but we also do general construction. This was definitely something a bit unusual though. There were some minor enabling works because of some HV cabling that ran through the site, but apart from that it was fairly straightforward. From start to finish, work took approximately 8 months to complete.*

"There's a reinforced concrete plinth with a reinforced steel cage and holding down bolts cast to secure the Glulam structure. The Glulam structure came prefabricated from HESS TIMBER in Germany. A connection to the mains electric feed was also required to enable a high-capacity supply into the new feeder pillar to power the site. The scheme has battery storage from solar panels as well as rapid chargers, and it's a relatively new process to have solar panels in combination with rapid chargers.

"It was a very collaborative project with a number of parties working together to successfully complete the project. It's great to show that we're able to successfully bring a complex project with so many stakeholders together. It's nice to have something a bit out of the ordinary in the portfolio too."

The concept for K:Port® created by Hewitt Studios derives from the Japanese notion of 'Komorebi'; the dappled light which occurs when sunlight shines through the leaves of a tree.

The essence of the tree is apparent throughout the design, from the form of the canopy itself and the timbers which make up its structure, to the collection and use of solar energy and rainwater – this is photosynthetic architecture.

LED 'lines of light' are incorporated along the main structural glulam beams and columns to emphasise the structural forms at night. And the tips of these LEDs to provide a coloured 'bay free' indicator, so users can see at a glance if there is an available space in the K:Port®.

As one of four charging hubs planned across the West of England, including Eastville Park Hub in Bristol which opened in 2019, the Portishead Hub is part of a wider project to promote the uptake of electric vehicles.

Portishead comprises a single K:Port® 'tree', but Hewitt Studios have a developed kit of parts capable of adapting to any site in modules of 2 or 4 charging bays. It is easily configured for use by domestic EVs, taxis or to provide electric mobility charging instead.

In addition to this, a cafe module can be provided, based on the same structural components as the charging bay, to provide the high-quality leisure and business space that users will need for the duration of their charging session. Or, to provide a demonstration and education space for promotion of EVs and other sustainable technologies.

Cllr James Tonkin, North Somerset Council's Executive Member for Transport said: *"The hub will provide reliable EV charging for Portishead residents and visitors, making it more practical for people to make the switch to electric vehicles, which are cleaner, quieter and cheaper to run than petrol or diesel cars.*

"The Go Ultra Low project has also seen the council convert 40 per cent of its vehicle fleet to electric and will see charging points installed at other key locations across North Somerset this winter, with the first planned for Kewstoke."

Funding for the charging hubs has come from the Office for Low Emission Vehicles (OLEV), which awarded the four West of England authorities £7.1 million as part of the Go Ultra Low West (GULW) programme. ■

K:Port Portishead

The design, by the renowned British architectural practice Hewitt Studios simultaneously combines two current megatrends of the 21st century: electro mobility and sustainable timber construction. The canopy of the charging station for electric cars, intended for four vehicles, is made of long-lasting larch glued laminated timber of the highest visual quality. It consists of a central support element with four cantilevers connected to it with roof purlins resting on them.

■ Design Engineering

The architect's desire for a refined visual appearance with 'invisible' connections between supporting elements, as well as the particular demands of a timber structure, required special consideration in terms of design and structural engineering.

Consequently, the crosswise extending cantilevers are connected to the central pillar element with a cleverly concealed slotted sheet metal and dowel detail. Special attention has also been paid to the corrosion protection of the steel components due the project location close to the Bristol Channel.

■ Prefabrication and Sustainability

K:Port is an entirely prefabricated construction, capable of adapting to any site in modules of 2 or 4 charging bays.

The timber used across in the project is sustainably forested under the PEFC accredited scheme and has been manufactured highly efficient with zero wastage production methods. State-of-the-art CNC technology ensure that the timber is cut to precise measurements with off-cuts reused for other purposes down in the value chain such as chipboards, pellets, or bio-fuel power.

■ About HESS TIMBER

HESS TIMBER, a member of the HASSLACHER group, based in Germany has specialized in the development and execution of architecturally challenging projects and can refer to outstanding projects worldwide.

As a project specialist in the field of timber engineering, HESS TIMBER offers a unique range of services for architects, planners, construction companies and project developers and sets new standards with over 140 years of experience and a constant drive for innovation as a sought-after company for special solutions in timber engineering. ■