

Innovative Urban Very Light Rail overhead charger commissioned

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The world's first rapid battery charger for Urban Very Light Rail (VLR) has undergone commissioning at the [Very Light Rail National Innovation Centre](#) in Dudley.

The milestone will see the prototype [Coventry Very Light Rail](#) start testing its automated, rapid charging capability.

The adapted, 450kw overhead bus opportunity charger can top-up battery powered VLR vehicles in an estimated three minutes.

- [UK Very Light Rail Conference 2022](#)
- [BCIMO and Higgs form partnership](#)
- [Launch of innovation leadership programme](#)

It uses a pantograph that lowers from above, rather than one fitted on the roof of the tram.

The set-up is the first of its kind in a rail application and was completed by Furrer+Frey with the vehicle

designers, Transport Design International, alongside WMG at the University of Warwick and the Black Country Innovative Manufacturing Organisation (BCIMO), who are building and will operate the Very Light Rail National Innovation Centre.

Known as 'Opportunity Charging', the overhead system means VLR vehicles can be charged at scheduled stops or at the ends of routes.

It allows for lighter batteries and is seen as critical to maintaining a high-frequency service, while also saving drivers the manual effort of plugging in and facing lengthy periods charging in depots.

The vision is for the chargers to be used by buses as well as VLR vehicles, with stations serving multiple bus and VLR routes as part of an electrified public transport network.

Coventry Very Light Rail is intended to be cheaper and easier to install than a typical metro, through innovations in the design of the vehicle, its traction power and the track it runs on. For instance, using rapid chargers and batteries instead of overhead lines, a shallower slab track aiming to sit above utilities and the ability to make very tight turns in urban settings.

Furrer+Frey GB adapted the charger from those already in use for buses to communicate with software on the Very Light Rail application, allowing for fully automated charging.

Councillor Jim O'Boyle, cabinet member for jobs, regeneration and climate change at Coventry City Council, said: "This is an important milestone for the Coventry Very Light Rail project, which demonstrates the tight integration we expect to have between Coventry Very Light Rail and our all-electric bus fleet, with both being able to charge at a single site.

"The charger is a key piece of the puzzle which, alongside the vehicle's battery - avoids the need for overhead lines and means the system is zero emission.

"Coventry Very Light Rail forms a key part of our transport strategy, building on our efforts to install more vehicle charge points than anywhere outside London, roll out the innovative WM on Demand and of course our plans for a Gigafactory."

Noel Dolphin, Head of UK Projects at Furrer+Frey, said: "Coventry Very Light Rail is an exciting project for our industry, pushing the limits of new technologies, materials and battery power to deliver something cost-effective for smaller urban areas.

"Our engineers have adapted our All-in-One opportunity charger to communicate with and power the prototype VLR vehicle.

"Transforming the compatibility of these chargers demonstrates how they could form a key part of a cost-effective, integrated and multi-modal transport system - providing power to both electric buses and very light rail.

"We are very confident opportunity charging will be a major contributor to the electrification of public

transport in the UK.”

Nick Mallinson, CEO at BCIMO, said:

“A key element to delivering lower cost rail solutions, with accelerated delivery times and reduced risk, is to transfer proven technical solutions from other industry sectors. In this example, it was achieved by taking a proven high power electric bus charger and with minor modifications transferring it for use on a very light rail vehicle. While the Furrer & Frey charger was procured specifically for the Coventry VLR project, it will remain located on BCIMO’s test track and be available for other vehicle projects that require rapid battery charging.

“BCIMO will continue to seek technical solutions in other sectors and transfer them into the emerging very light rail sector.”

The charger, vehicle and test track will continue to undergo extensive testing at Dudley’s innovation centre in preparation for the VLR’s first full trial in Coventry.