

Prototype funded to electrify UK rail freight terminals

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A prototype electrified rail freight terminal in Dunbar is one of 30 projects to have received funding from Innovate UK and the Department for Transport as part of the First of a Kind 2021 rail innovation competition.

Engineering firm, Furrer+Frey GB, will use the funding to develop an overhead conductor system specifically designed for UK freight terminals, which currently rely on diesel shunters.

Tarmac will host the development and trialling of the concept at their cement plant in Dunbar on the East Coast Mainline.

Despite many rail freight terminals being next to electrified railways, the overhead cables must stop short of the terminals, so the trains can be loaded and unloaded safely.

All freight terminals in the UK today rely on diesel shunters to move trains into position, which comes with added time, fuel, noise and pollution.

The prototype by Furrer+Frey involves moveable overhead cables that will allow freight trains to move into position then retract to enable safe loading and unloading, called the Moveable Overhead Conductor-rail System.

By making rail freight quicker and greener, it could help shift more freight from road to rail with significant benefits for UK carbon emissions. Moving goods by HGV produces nine times the emissions of the equivalent amount moved by rail (per tonne per kilometre).¹

Diesel is also a major source of air pollution, particularly in towns and cities, and a shift away from the fuel will help efforts to improve air quality, particularly for urban rail freight terminals.

The Decarbonisation and Electrification of Freight Terminals (DEFT) project is being led by Furrer + Frey with support from Tarmac and Rail Forum Midlands. The project has the backing of major rail freight companies including Tarmac, VTG, DB Cargo, Freightliner, GB Railfreight and ERMEWA.

The project will last for nine months and is due to finish in March 2022.

Noel Dolphin, Head of UK Projects, Furrer+Frey, said: "Electric rail freight can become a quick, green and pollution-free alternative to lorries on our roads.

"We're really happy to have our entry win funding from Innovate UK to design a new system and trial it in Scotland.

"The system is tried-and-tested at passenger train depots, but no working system has been developed to deal with the challenges of UK freight.

"We hope that DEFT will eliminate one of the last remaining barriers to full electrification, ensuring diesel can be completely squeezed out of freight operations, paving the way to net-zero.

"We are grateful for Tarmac and the Rail Forum Midlands' support to make it happen."

Chris Swan, Head of Rail, Tarmac said: "As highlighted in a number of recent strategic papers on the future of a decarbonised freight railway, electric traction is an important option for it to be a success.

"However, finding a practical yet cost effective solution for the many UK terminals must be researched further if we are to take advantage of it.

"We're delighted to be taking part in this work with Furrer+Frey to look at the challenges faced at terminal operations, which is currently being explored at our cement plant at Dunbar where rail is an integral part of current and future operations."

Robert Hodgson, Engagement Manager, Rail Forum Midlands, said: "The DEFT project was an excellent submission to our challenge on decarbonisation for Small and Medium Enterprises.

"We are delighted that it has secured Department for Transport and Innovate UK First-of-a-Kind funding,

enabling progression to the next phase of development.

“This success demonstrates the real value of our SME challenges and together with the collaborations being created as a result, and we look forward to more SMEs getting involved in future challenge opportunities.”

Furrer+Frey GB have installed similar retractable systems at passenger train depots, for instance at the Temple Mills Eurostar depot but no such system has been successfully developed for the distinct needs of rail freight, which include the overhead loading and unloading of goods and movement of the loading machinery.

1 - Source: Railway Industry Association (April 2021) Why Rail Electrification

2 - One freight train removes up to 76 Heavy Goods Vehicles (HGV) from the road (Department for Transport, 2016, Rail Freight Strategy: Moving Britain Ahead)

3 - The Decarbonisation & Electrification of Freight Terminals (DEFT) project is one of 30 ground-breaking projects that have won a share of £9 million from the Department for Transport, in partnership with Innovate UK. The competition is focused on developing pioneering technology and exceptional ideas that can improve journeys for travellers, encourage passengers back onto the network and reducing the environmental impacts of rail as we build back better from Covid-19

4 - Innovate UK is part of UK Research and Innovation, a non-departmental public body funded by a grant-in-aid from the UK government.

5 - The First of a Kind 2021 competition is the fifth in the series of rail innovation competitions delivered by Innovate UK on behalf of the Department of Transport, each focusing on key rail industry priorities.

6 - Furrer+Frey GB are the British arm of the independent transport electrification company founded in 1923 in Switzerland, who specialise in overhead contact lines for rail and more recently electric bus charging infrastructure. Based in Derby, Furrer+Frey GB provide decarbonisation expertise around rail and bus 'OppCharge'. Working with Network Rail, they have sponsored and guided extensive research at the University of Sheffield to improve the reliability of both current and future rail electrification schemes.

7 - The Rail Forum Midlands are a “not for profit” national industry body with strong regional links with members companies drawn from across the UK. The SME Challenges are being undertaken by the Rail Forum Midlands on behalf of the Rail Supply Group and the wider Rail Sector Deal which forms part of the UK Governments Industrial Strategy

Photo credit: Furrer+Frey GB