

GCRE backs innovative hyperTunnel underpass project

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A project to build an underpass, trialling advanced technology from underground construction innovators, **hyperTunnel**, has been awarded funding from the Global Centre of Rail Excellence (**GCRE**) in Wales.

The £25,000 grant will be used to carry out a feasibility study into building an underpass at GCRE using hyperTunnel's approach which is 10 times faster and up to 50% more economical than current cut-and-cover construction techniques. The project aims to provide an economically viable alternative to hazardous level crossings, to improve safety, increase rail capacity and avoid inconvenience to road users.

Currently under construction in South Wales, GCRE is Europe's first, purpose-built rail innovation facility. It aims to undertake world-class research, testing and certification of innovative new rail technologies, acting as an incubator for pioneering projects. The hyperTunnel scheme was selected as one of 24 stand-out railway innovations in the first phase of a two-phase competition. If successful in Phase 1, the project may progress to a second funding round where 12 schemes will be demonstrated on GCRE's Dulais Valley site in 2024.

Using AI, digital surveying and swarm robotics to 3D print a structure in the ground before any excavation takes place, hyperTunnel's unique low-disruption approach uses 50% less electrical energy, has a lower carbon footprint and generates far less waste than traditional underground-building methods. It is also much safer and involves far less operational and financial risk. It has already proven successful in a large-scale trial in controlled conditions. Phase 2 of the project would enable it to be tested on a real site in the form of a 10m long pedestrian-sized tunnel built under GCRE's test track, with the railway remaining open throughout.

"The digital revolution using AI, machine learning and robotics has advanced other industries, but in underground construction, techniques haven't changed," said hyperTunnel co-founder Steve Jordan. "Building underground must become quicker and more affordable and sustainable. We believe our methodology presents a genuine technological breakthrough to solve the urgent need for underpasses. We're very excited at the prospect of testing it in real-world conditions at GCRE. It's a fantastic opportunity to get feedback for the further advancement of our technologies."

Photo credit: hyperTunnel