

Service Please! Launch of a New Hydrogen Trams-as-a-Service Working Group

Dec 12, 2024 |

As the imperative for cleaner and thus greener transport continues apace, the exploration of potential solutions becomes ever more important, including a range of options for propulsion to ensure sustainability of both source and supply.

The discussion opened this week on the role of clean hydrogen, encompassed in an 'as-a-Service' model for very light rail, with a new working group at BCIMO.

The session began with a welcome from Naomi Arblaster, Head of SME Development at BCIMO and project lead for the **Clean Futures Accelerator** programme, which was launched almost two years ago to facilitate the demonstration and commercialisation of 'green' innovation in the road and rail sectors. CEO, Neil Fulton, then outlined the important role of BCIMO as a not-for-profit research and technology organisation (RTO) within future transportation development, and specifically the scope of the world-class technical and commercial facilities and range of support available at the Very Light Rail National Innovation Centre (VLRNIC).

As an authority on the hydrogen economy, in particular its role within the region – and a 'graduate' of the Clean Futures programme – Dr. Michaela Kendall, co-founder and CEO of **Adelan**, discussed the complexity of the hydrogen landscape, including the breath of challenges, opportunities

and threats. She outlined the scale of possible applications for hydrogen across manufacturing and transport; and provided a



global viewpoint on the production specifically of clean hydrogen, alongside the business case and its contribution to the UK economy. Further insight addressed its role within the decarbonisation agenda for rail, across both traction and non-traction use, but noting the need for both development of supply chains, including within the West Midlands region, and investment required to achieve hydrogen objectives.



Stephen Collicott, Innovation Director at **Triton Hydrogen**, and Jim Harkins, Managing Director of **Light Rail (UK) Group**, detailed the opportunities offered by hydrogen trams ‘as-a-service’ (HTaaS). They began by noting the problems of congestion, poor air quality and plastic waste, and their view on governmental and local authority responses as ‘too busy’ and insufficient funding to address these. Offering HTaaS as a solution, they highlighted the intention of attracting private infrastructure investment, the significantly reduced costs associated with very light rail (VLR) systems and even the option to utilise urban waste to produce hydrogen, as ‘waste-to-energy’.

The presentation discussed the further benefits of VLR in eliminating emission and particulate pollution, alongside cost savings, and gave examples of projects already in place within urban and inter-urban environments. More specific focus on

hydrogen propulsion considered both on-board and trackside sources, alongside the siting of production facilities, for example, within new developments, to power both transport systems and homes; with additional benefits such as the creation of byproducts such as biochar, and thus circularity. Finally, they identified specific existing transport project challenges within the UK which could include such a system as a solution, plus more than seventy town and cities which could benefit from HTaaS.





Considering the development, testing, demonstration and ultimate commercialisation process of innovative transport systems, Naomi briefed the group on the Clean Futures programme. She outlined its original remit of progressing innovations from technology readiness level (TRL) 6 to 7, i.e., testing prototypes in a rail-specific environment and demonstrating to prospective industry and investment stakeholders, to the focus on the **Commercial Investment Hub** in progressing the innovation further, i.e., post-demonstration, toward commercial contracts and realised funding. Naomi explained how the Hub model works for all three stakeholders – Innovators, Industry and Investors – and the key benefits in accelerated commercialisation, de-risked investment opportunities and overall, the synergy that results in all working together collaboratively.

Focusing on the future of accelerator models, highlighting the tangible success of **Clean Futures** to date, she then revealed proposals for a new suite of ‘systems thinking’ transport accelerators at BCIMO, with the ambition to both explore multimodal interconnected projects and enhance economic activity in and value to the region. The concepts introduced were for three specific foci: a hydrogen tram systems demonstrator, including fuel cells, backup systems, hydrogen storage and other propulsion systems; a road to rail ‘last mile’ systems demonstrator, looking at aspects such as rail hubs, road vehicles, tracking and operational coordination; and an autonomous transport systems demonstrator, exploring a variety of technologies, e.g., self-driving shuttles, delivery robotics, freight vehicles, passenger interface and safety systems.





After a break, and time for the working group attendees to network, the session moved to a round table format, with Stephen facilitating a discussion on the topics raised, with responses captured by Amanda Coleman of **Cosimmetry**. Her work initially identified a number of themes emerging, such as the wider benefits of HTaaS, alongside those noted earlier in the potential to support housing and mitigate environmental impacts, but also several of the possible barriers to adoption, such as the need for specific standards and current public perception of hydrogen. Detailed analysis and reporting of the findings will then inform the next steps of the group. Finally, following a break for lunch, group members had the opportunity to take a tour of the **VRLNIC** site and facilities with Head of Engineering, Tony Joy, exploring the technical facilities from the **engineering hall** to the **test track**. Highlights for visitors included the technologies already installed on site as part of the Clean Futures programme, including

from **Changemaker 3D** and **Universal Signalling**, equipment such as the **mobility hub** and **rapid charger**, and the **T69 tram**, which was utilised as a platform for innovation to demonstrate the collaborative 'last mile delivery' system concept encompassing **BoxTube**, **Varamis** and **Coexlion** within Cohort 1.



Stephen Collicott, Innovation Director at Triton Hydrogen, but also an external consultant on the Clean Futures programme, said:

“The Clean Futures team did what it does best bringing people together in the commercial pursuance of innovation. From the challenge setter through the innovators to clients and stakeholders, the leadership and delivery shown by Naomi and team is appreciated, so it was a conscious decision to bring the Hydrogen Trams-as-a-Service concept to BCIMO for the launch of a working group. Their potential to design and

deliver a systems demonstrator is an exciting opportunity to make this a reality going forward and we look forward to working with them.”



Naomi Arblaster, Head of SME Development and project lead on Clean Futures, also said:

“The facilities here provide an ideal environment for testing transport systems. By demonstrating these systems in action and expanding their applications across various sectors, we can showcase the true value and benefits of integrated technologies, rather than evaluating them in isolation. This site is perfectly suited to host stakeholders, industry partners, manufacturers, and investors, allowing them to see the systems operating as a whole.

This approach will inspire confidence, encouraging faster investment and adoption into the market.”

For more information on BCIMO or HTaaS, please visit the BCIMO [website](#) or click [Contact Us](#) to make an enquiry / sign up to our mailing list.