

H2 Trams as a Service

“Let Us Breathe”

©Light Rail (UK)

A

presentation by

Jim Harkins FCILT MTPS

Clean & Green Transport Plc.

Chairman,

Warrington B C +

Town Hall,

7th Jan 2025

*Light Rail UK believes in the proven success of current UK Tramways and
the merging of the ongoing successful development of science & technology
in the Hydrogen field,
driven by*

Climate Change demands.



*Light Rail (UK)

**Is a trading name for Light Rail Solutions UK 2024 Ltd, a CIC Company.*

An association

of :-

**Light Rail Consultants
Transport Engineers
Politicians, Academics
Environmentalists
Financiers & Funders
Developers**

Commercial Specialists in Affordable & Sustainable Tramways

www.applrguk.co.uk

E-mail jimmyharkins@aol.com

Warrington, UK

07721378223, 01925 740675



H2 Trams as a Service

The problem(s)

Congestion & Poor Air Quality



Mountains of assorted plastic



Government (s) and LA's response



Or Skint!



"Let Us Breathe"

©Light Rail (UK)



H2 Trams as a Service

A solutions is HTaaS!



Private
Infrastructure
investment
Funding

+



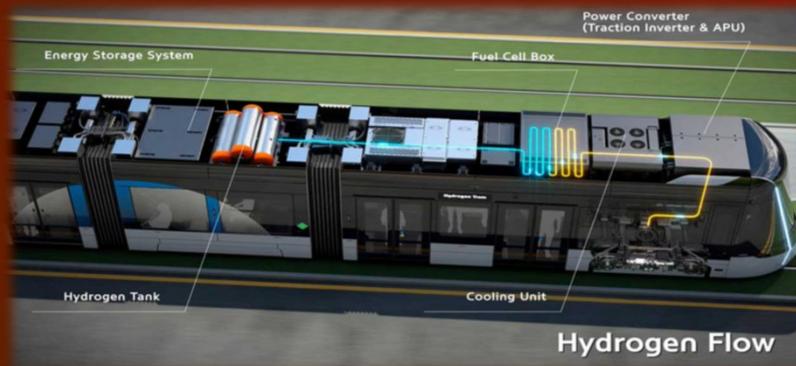
Very Light Rail (VLR)
Less than £10M per track KM.

Hydrogen trams in Doha can run
for 2 x 18-hour duty on 1 x kg H2

+



Mine and repurpose
Urban Tip sites



“Let Us Breathe”



H2 Trams as a Service

Why VLR Trams?

Some benefits of Very Light Rail

No pollution at point of use, no particulates (PM10 & PM 2.5) more efficient use of urban road space

Achieving wider economic and social objectives of employment, inclusion, and accessibility in the communities served by rail

The spine of most urban, inter-urban sustainable integrated transport plan

Less than £10 million per KM (2023)

Being mindful of the Western world ageing population, trams are fully accessible and easy to use

High modal switch averaging 28%-32%

in the year ending March 2023 passenger journeys increased on all of the 8 light rail systems by between 9% (and 58% Passenger revenue increased year ending March 2023 17% - 67%

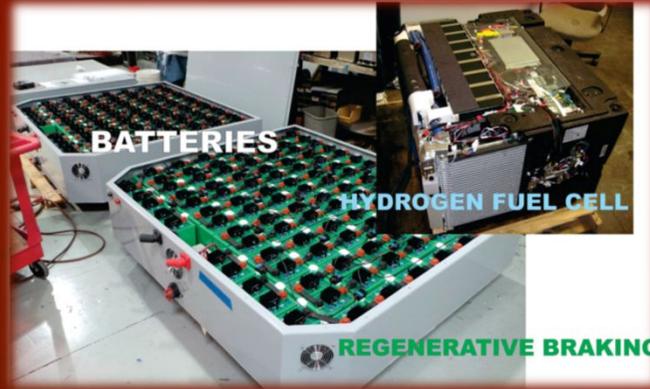
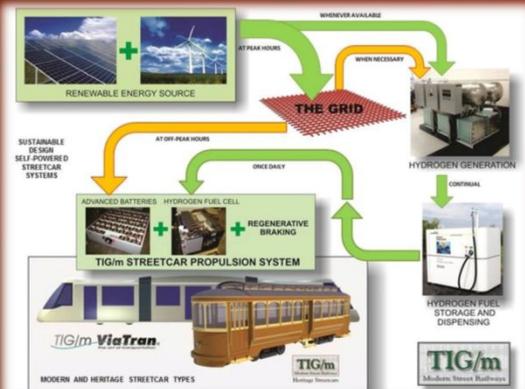




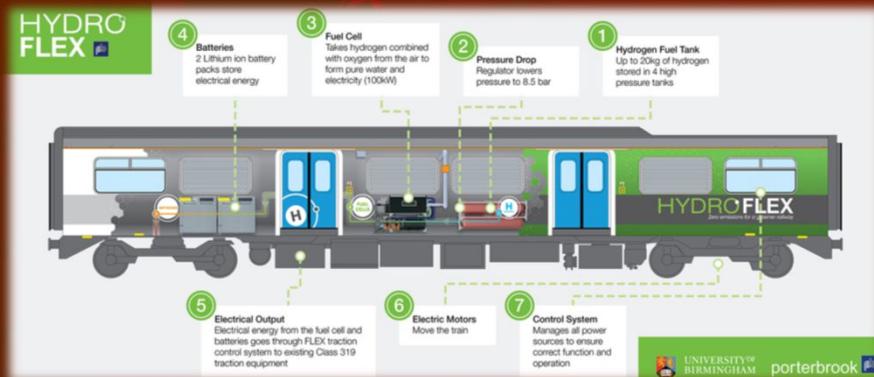
H2 Trams as a Service

How can VLR trams use Hydrogen?

On board



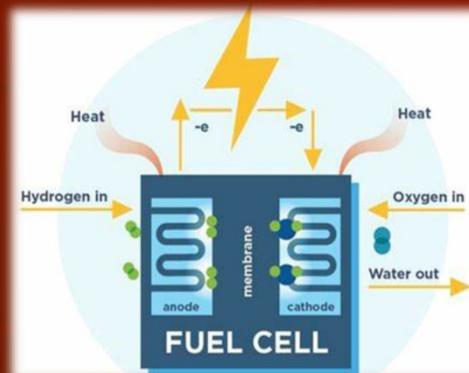
The hybrid power system on the roof



High Floor Trams

(Illustrations Only)

“Let Us Breathe”



Tritonex treated cylinders

©Light Rail (UK)



H2 Trams as a Service

How can VLR trams use Hydrogen?

By Wire



OHLE - Pantograph



OHLE - Traditional Trolley Pole



OHLE - Bow Collector



Overhead charger for
Tram & Bus



For depot and operations
beyond
the wire operation



APS
Alimentation Par Sol

“Let Us Breathe”

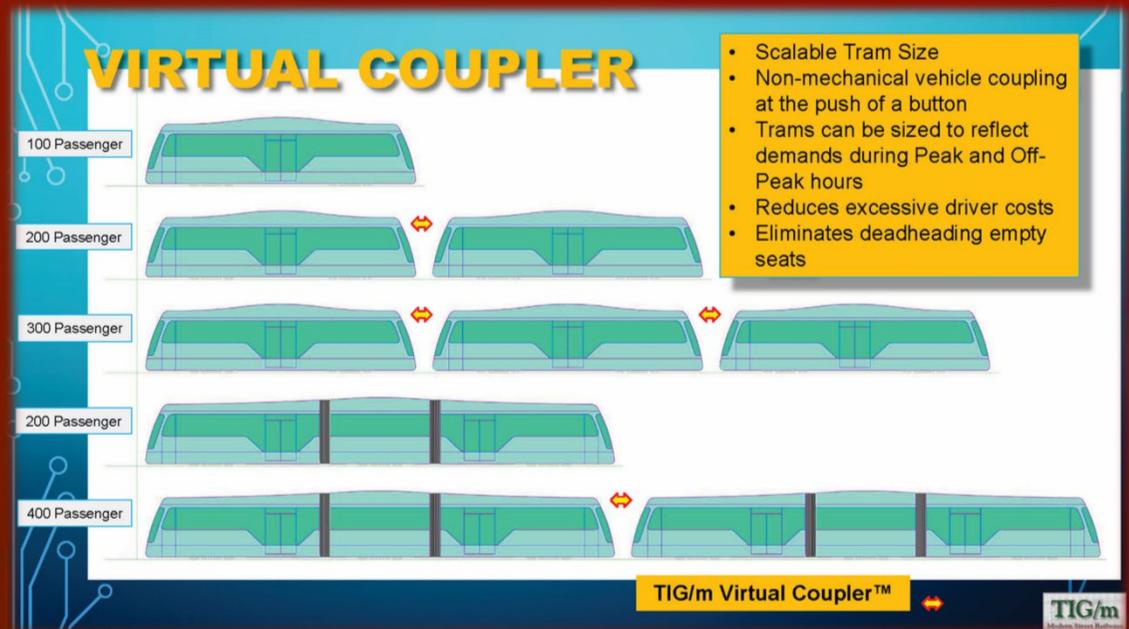


H2 Trams as a Service



Video, if time available!

How can VLR trams use Hydrogen?



<https://www.youtube.com/watch?v=VyDyLNElids>

<https://www.youtube.com/watch?v=31KpWSOYy5w>

<https://www.youtube.com/watch?v=Y3EbB8PSwPA>



H2 Trams as a Service

Why Hydrogen?

Hydrogen is the most abundant element in the universe with almost no pollution when burnt, making it a desirable source of power.

Hydrogen is a versatile energy carrier with a wide range of potential applications.

It can be used in fuel cells to generate electricity and heat, making it a potential energy source for buildings and electric vehicles.

It can also be used to store renewable energy, helping to balance the supply and demand on the power grid

As we continue to innovate and improve hydrogen production methods, the cost of renewable and nuclear energy will continue to fall, the role of hydrogen in our energy systems will set to grow.

Hydrogen holds immense potential as a sustainable energy carrier. While there are challenges to overcome, particularly in terms of cost and infrastructure, the benefits of hydrogen in terms of sustainability and versatility make it a key player in the global energy transition to Net Zero.



£15 per Kilo Retail ?



H2 Trams as a Service

Potential Revenue Streams

Hydrogen Storage

National Security of Power in time of strife, Ukraine War and other conflicts later this century

An independent power station in every town (Sustainable & Nuclear)

76 + small cities & towns identified in TramTracker.

Reduces the need for "Pylons marching down the Glen"

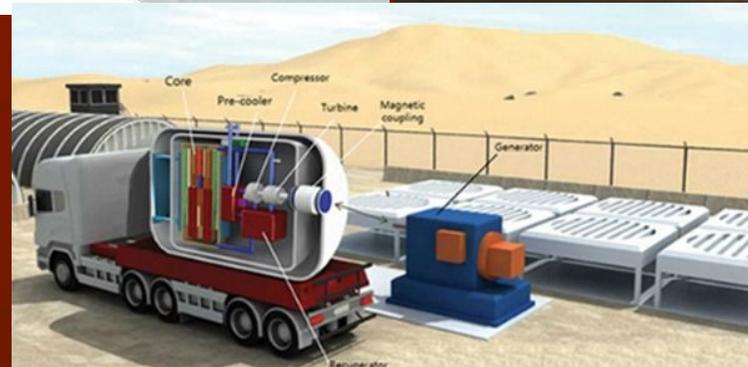
No more intrusive 'Grids in the countryside

Tip Site mining
Ocean plastic

Mersey Barrier



Offshore/On shore wind turbines



Mobile Nuclear Plant



Solar Farm surplus

Our deal with Warrington Borough Council will make it the first local authority to produce all its own electricity and make money by selling clean power.



"Let Us Breathe"



H2 Trams as a Service

What can be done at the "Tip Site" location?



Production plant for Tritonex & Tritonor
(A set up dowry of £11 million possible!)

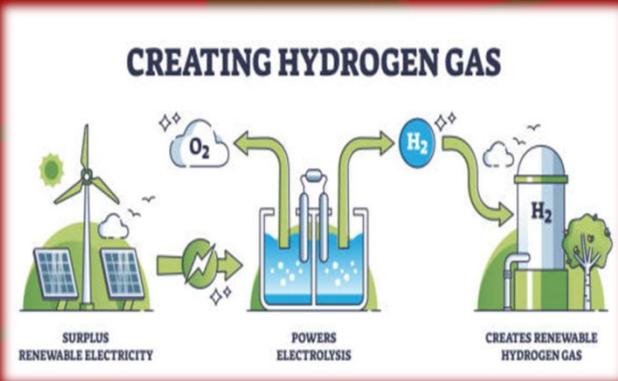
An absolute game changer for all things Hydrogen
with 100% Angel share corrosion protected



+Oceanic plastic feedstock



Off peak site storage, re-sale at peak



Multi sustainable input

(Illustrations Only)



Peel Holdings Plastic Park Ellesmere Port

"Let Us Breathe"



Road vehicle fueling

©Light Rail (UK)



H2 Trams as a Service

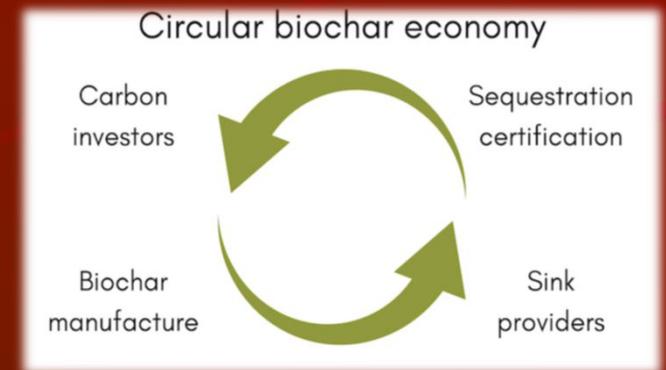
Revenue Stream By-Products



On/Off peak storage



Where do the bubbles come from



(Illustrations Only)

“Let Us Breathe”

©Light Rail (UK)



H2 Trams as a Service

A Circular Project



Green Rebates returned to the Municipality's Infrastructure Loan Repayments.



H2 Trams as a Service

Storage & Forwarding



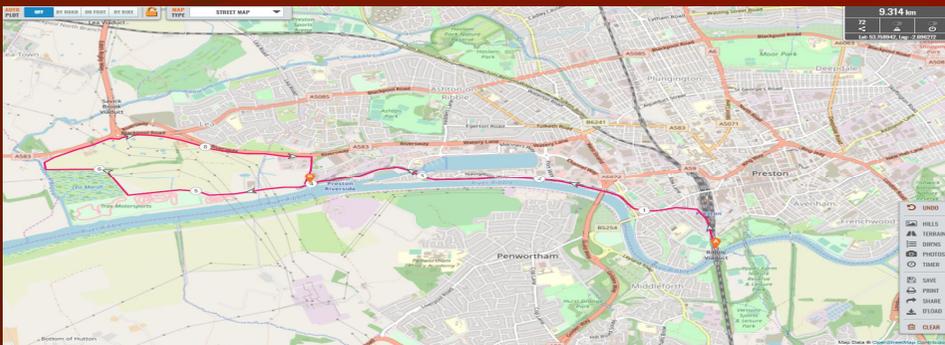
“Let Us Breathe”

©Light Rail (UK)

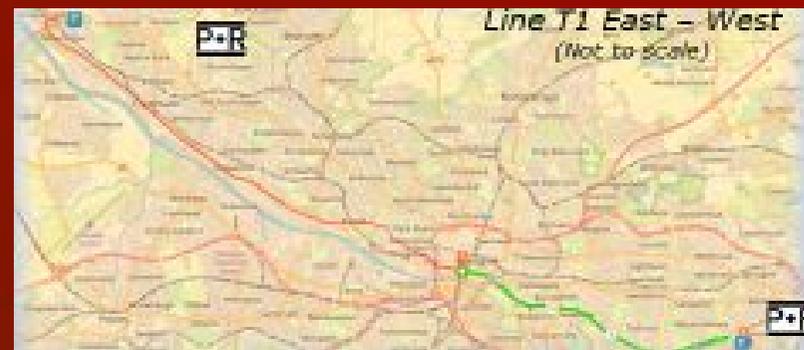


H2 Trams as a Service

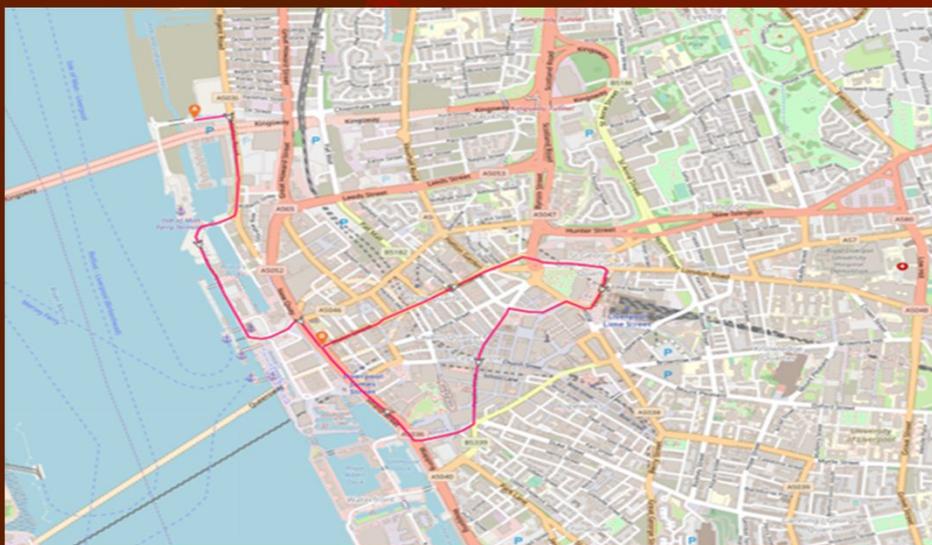
Types of VLR Off Taker Applications



Preston Dock Line, on board H2 over Battery



Glasgow, Hydrogen by wire/on board



Liverpool Cruise Liner City VLR Shuttle

LR UK Tram Tracker
has identified
76 + UK Cities & Towns that would
benefit from

“Hydrogen Trams as a Service”



***Will Tramcar use in City and Town
Urban Transport in the near future make this a Sunrise
or a Sunset for Tramways and Urban living?***

***Doing Nothing is not an Option !
Getting it wrong is unforgiveable.***

– its your world !

Apollo June 1996



Thank You for Listening



Penetrates to the shopping area!



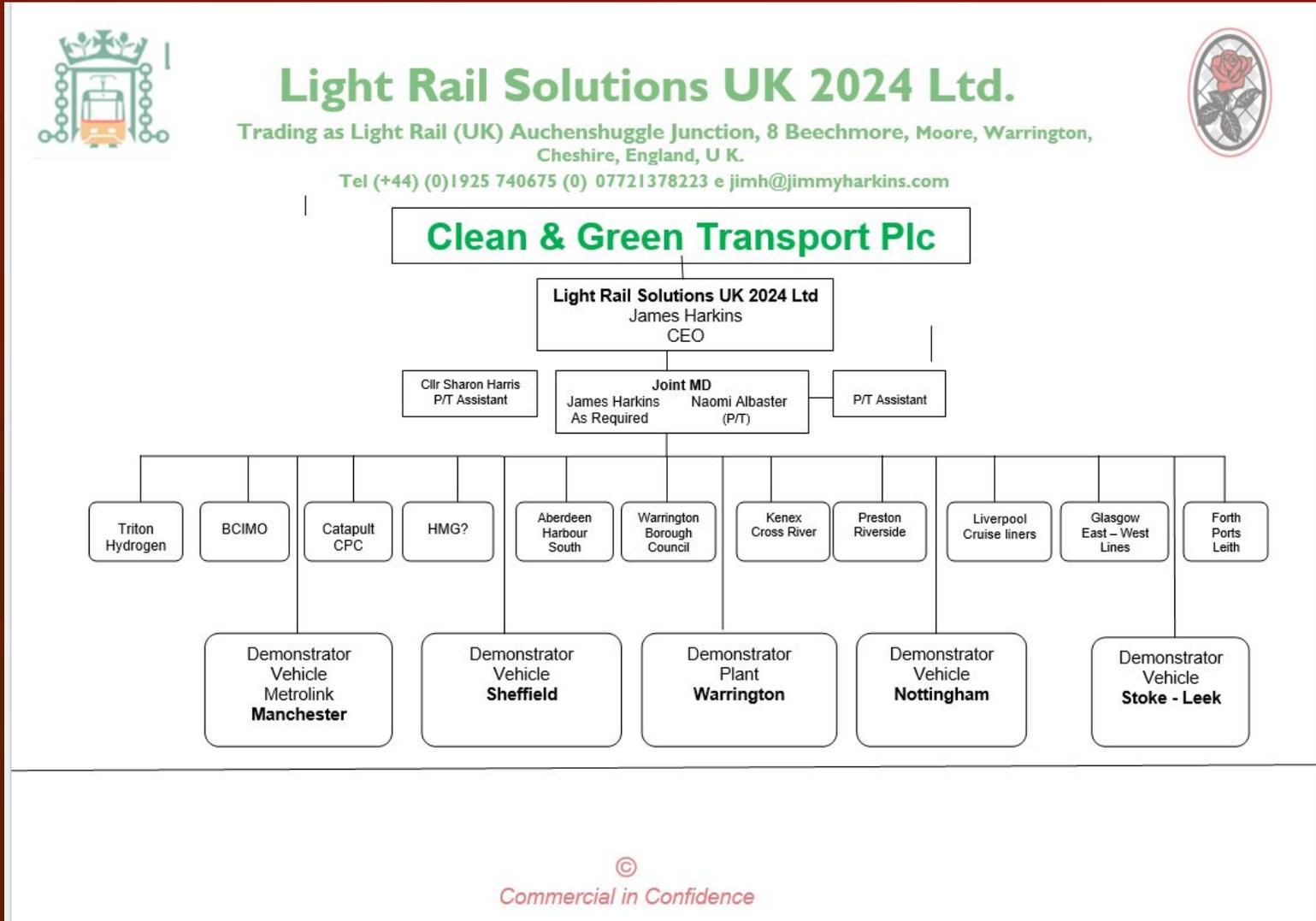
All weather service

Any Questions ?



H2 Trams as a Service

The Organisation



“Let Us Breathe”

©Light Rail (UK)