



VIRTUAL CONFERENCE

Hydrogen-fuelled Buses and Infrastructure in Europe

Opportunities, Plans and Potential

February 18, 2021 | 9:30 AM – 4:30 PM Central European Time (CET)

Hosted by:

Global **Mass Transit**

BACKGROUND

The European Commission (EC), various cities and regions in Europe, as well as private players have taken many initiatives to fast-track the deployment of hydrogen-fuelled buses in the past few years.

The key recent and ongoing EC-supported initiatives include the H2BusEurope scheme that involves the deployment of 1,000 hydrogen buses and infrastructure; JIVE and JIVE 2 projects that involve putting into operation nearly 300 fuel cell electric buses (FCEBs) in 22 cities across Europe by the early 2020s; 3Emotion, involving the deployment of 21 new FCEBs and the further use of eight existing FCEBs with the required refuelling infrastructure; and MEHRLIN, involving the installation of seven hydrogen refuelling stations (HRSs). These initiatives aim to advance the commercialisation of FCEBs through large-scale deployments, facilitate commercial viability for bus operators and demonstrate a financeable demand-led business model for HRSs. While the JIVE projects aim to achieve the maximum price of EUR625,000 for a standard fuel cell bus, H2BusEurope's objective is to bring the 12-metre single-deck bus price below EUR375,000.

In August 2019, the EC revised the Clean Vehicles Directive, which sets binding targets for public procurements of clean buses, including hydrogen-fuelled buses, by 2025 and 2030. The directive states that 50 per cent of the minimum target for the share of clean buses has to be fulfilled by procuring zero-emission buses, including hydrogen-fuelled buses. Going forward, the revision of the Directive on Alternative Fuel Infrastructure (DAFI), which is expected in the second quarter of 2021, aims to fill the gaps in the build-up of hydrogen infrastructure and replace the system of national plans with more efficient instruments such as binding and enforceable targets. Further, on May 27, 2020, the EC strengthened its focus on developing alternative fuel infrastructure, including hydrogen technology, in its proposed recovery plan for Europe in response to the coronavirus pandemic.

Several important developments have taken place in 2020. As on October 5, 2020, nearly 200 buses had been ordered under JIVE and JIVE 2 projects and 50 were in operation. Further, in October 2020, the world's first double-decker hydrogen-fuelled buses were delivered in Aberdeen, Scotland. In August 2020, Europe's largest hybrid fuel cell bus fleet of 35 buses and first hydrogen infrastructure for public transport were unveiled by Regionalverkehr Köln GmbH (RVK), Germany. In the same month, a contract was awarded to establish a hydrogen refuelling station (HRS) at the Connexion bus depot in Heinenoord in the Netherlands, which will supply hydrogen to 20 buses from 2021, making it the largest refuelling station in Europe.

The setting up of hydrogen valley projects in Denmark, France, Germany, Spain, Sweden, the Netherlands, Norway and the United Kingdom is expected to have a positive impact on the deployment of hydrogen-fuelled buses. Recently, on October 30, 2020, businesses and government bodies in the Northern Netherlands published the Northern Netherlands Hydrogen Investment Plan, which includes investments of EUR9 billion in areas such as gas infrastructure and mobility.

Hydrogen as a fuel is attractive as there are several benefits of deploying fuel cell buses, including almost no local emissions in terms of exhaust gas and reduced operating noise. In addition, the buses guarantee the required ranges and short refuelling time.

That said, there are barriers of price and energy efficiency of hydrogen-fuelled buses as compared to electric buses, which have limited their uptake so far. There is also the challenge of the hydrogen supply chain and infrastructure, which requires an overhaul. To overcome some of these challenges and bring costs down, the industry is looking to scale-up the vehicle fleet and infrastructure.

In light of these developments and opportunities in the segment, Global Mass Transit (GMT) is organising a **virtual conference** on **Hydrogen-fuelled Buses and Infrastructure in Europe** on **February 18, 2021**.

The mission of the conference is to focus on the progress and opportunities in the deployment of hydrogen-fuelled buses and development of infrastructure in Europe. It will explore the European Commission's (EC) initiatives, relevant experiences, recent developments, best practices, issues with large-scale deployment and lessons learnt, and provide information on procuring, financing, operating and maintaining hydrogen-fuelled buses as well as HRSs.

Key topics to be discussed and explored

- ❖ EC's initiatives in promoting hydrogen-fuelled buses
- ❖ Case studies, key deployments, experience so far
- ❖ Plans of cities for the deployment of clean buses
- ❖ Opportunities available for manufacturers of hydrogen-fuelled buses
- ❖ Total cost of ownership (TCO) of hydrogen-fuelled buses
- ❖ Operations and maintenance of hydrogen-fuelled buses
- ❖ Hydrogen refuelling stations and infrastructure
- ❖ Hydrogen valley projects and impact on mobility
- ❖ Current market size of hydrogen-fuelled buses and infrastructure
- ❖ Key recent trends and market outlook for hydrogen-fuelled buses in Europe
- ❖ Impact of Covid-19 on the deployment of hydrogen-fuelled buses
- ❖ Sources of financing
- ❖ Procurement of fuel cell buses and HRS
- ❖ Economics and business models
- ❖ Cost-effective integration of fuel cell buses in local bus fleets
- ❖ Technical and safety specifications for refuelling infrastructure
- ❖ Commercialisation of hydrogen
- ❖ Overcoming barriers to the uptake of hydrogen-fuelled buses and roll-out of infrastructure
- ❖ Development of tender documents, selecting suppliers, development of contracts

Benefits of attending a virtual event

- ❖ **Live interaction** with senior speakers and key stakeholders (Q&A facility)
- ❖ **Easy connectivity** to geographically dispersed delegates (click of a mouse)
- ❖ **Virtual meetings** and interactions with industry peers and leaders
- ❖ **Cost effective** (lower ticket price as compared to a physical conference)
- ❖ **Flexibility and convenience**
- ❖ **Access to conference recordings** to watch later 'on demand'

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Session 1: Key Trends and Outlook

- ❖ Current market size of hydrogen-fuelled buses and infrastructure
- ❖ Key emerging trends
- ❖ Why hydrogen-fuelled buses are gaining momentum
- ❖ Key pending issues and challenges
- ❖ Market outlook, opportunities and the way forward

Session 2: European Commission's Initiatives

- ❖ Initiatives, programmes and funding
- ❖ H2Bus, JIVE, JIVE 2, CHIC, 3Emotion
- ❖ Progress so far
- ❖ New initiatives and future plans

Session 3: What has worked so far?

- ❖ Key case studies and initiatives
- ❖ City-level policies for promoting the deployment of fuel cell buses
- ❖ Transport operators' perspective
- ❖ Experience so far, lessons learnt and best practices
- ❖ Private sector initiatives

Session 4: Project Conceptualisation, Financing and Planning, and Procurement

- ❖ Understanding the context, clarifying and managing expectations, and identifying and prioritising stakeholders
- ❖ Sources of financing
- ❖ Planning for operations of hydrogen buses
- ❖ Development of tender documents, selection of suppliers, and development of contracts

Session 5: Economics of Hydrogen-Fuelled Buses

- ❖ Comparative analysis of clean buses (electric, hydrogen, LNG, bio-fuel, retrofitted buses, etc.)
- ❖ Operations and maintenance costs of hydrogen-fuelled buses
- ❖ Total cost of ownership (TCO) of hydrogen-fuelled buses

Session 6: Hydrogen Refuelling Stations and Infrastructure

- ❖ What is hydrogen infrastructure for buses? What are the supply options?
- ❖ Planning for HRS operations
- ❖ Procurement of HRSs
- ❖ Standards and regulations
- ❖ Scaling-up infrastructure
- ❖ Impact of the revision of the Directive on Alternative Fuel Infrastructure (DAFI)

Session 7: Future Plans

- ❖ Plans of cities to deploy hydrogen-fuelled buses and set up HRSs
- ❖ Investments and timelines
- ❖ Risks and challenges

Session 8: Road to the future: Potential of hydrogen by 2030

- ❖ Short-term, medium-term and long-term targets
- ❖ OEM perspective: Launching new technologies, reducing costs, improving efficiency Commercialisation of hydrogen
- ❖ Hydrogen valley projects and impact on mobility
- ❖ Key challenges and recommendations to overcome them.

VIRTUAL SPEED NETWORKING AND BREAK



WHO SHOULD ATTEND?

The event is expected to draw participation from executives, managers and decision-makers from:

- ❖ Public transport authorities and transport operators
- ❖ Government transport departments
- ❖ City governments/municipalities / local bodies
- ❖ Policymaking and regulatory bodies
- ❖ Hydrogen-bus OEMs and technology providers
- ❖ Hydrogen producers and suppliers
- ❖ Fuel cell companies
- ❖ Infrastructure OEMs
- ❖ Hydrogen storage companies
- ❖ Suppliers of hydrogen bus components
- ❖ Technology providers
- ❖ Multilateral agencies
- ❖ Banks and financial institutions
- ❖ Academic institutions
- ❖ Research and development organisations
- ❖ Transport associations
- ❖ Consultants

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ABOUT THE ORGANISERS

Global Mass Transit is a leading provider of information and analysis on the global mass transit industry. We publish a monthly market intelligence report (**Global Mass Transit Report**), a weekly newsletter (**Global Mass Transit Weekly**) and operate the **www.globalmasstransit.net** (**website**).

We publish **multi-client research studies** and **undertake custom research assignments**. Global Mass Transit tracks developments in over 100 countries across all regions to ensure reliable and actionable research. Some of our leading research reports are Global Transit Ticketing & Fare Collection Report 2020; NFC Mobile Ticketing for Transit 2018; 1,000 Global Rail Projects Database; Investment and CAPEX Plans of Transit Authorities/Agencies Report 2019-2030; Global Light Rail Projects Report 2018-2030; Global Metro Projects Report 2018; and Europe Urban Bus Market Outlook Report 2017-2030.

Global Mass Transit also organises **conferences** on topical and crucial issues with focused sessions and discussions featuring speakers with vast experience and expertise in the **US, Europe, Asia** and **the Middle East**. Some of our past conferences include Transit Ticketing & Fare Collection APAC, Transit Ticketing & Fare Collection MENA, Clean Buses in Europe, Clean Buses in APAC, Transit State of Good Repair in the US, Rail Asset Management Europe, Rail Asset Management APAC and Wireless Communications in Mass Transit. These conferences received a strong response from speakers and delegates alike.

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- A 15-minute speaking slot
- Company logo will be displayed on the event website and the registration page
- Company logo will be displayed in the opening and closing slide/waiting room
- Special mailer to our database announcing your participation with details about your company/products
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- Mention in the webinar opening and closing remarks
- Eight attendee logins for the employees of the company (regular fee for eight logins is EUR1,150)
- Contact list of attendees

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DELEGATE FEE

	Price before December 17, 2020	Price before January 22, 2021	Standard price
1 Login	EUR126	EUR153	EUR180
2-3 Logins	EUR210	EUR255	EUR300
4-5 Logins	EUR294	EUR357	EUR420
6-9 Logins	EUR378	EUR459	EUR540
10-20 Logins	EUR462	EUR561	EUR660
Registration is complimentary for transit agencies and government authorities.			

REGISTRATION FORM

☐ I would like to register for the conference

☐ Please send me more information

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TERMS AND CONDITIONS

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- Cancellations received in writing 30 days before the date of the conference will receive a full refund, minus a service charge/administration fee of EUR40. We regret that no refunds will be made for any cancellations received less than 30 days prior to the conference.
- Substitutions/name changes are welcome at no extra charge. Please send these in writing at least two days prior to the conference.
- **Disclaimer:** *Global Mass Transit shall assume no liability whatsoever in case the event is postponed or cancelled due to a fortuitous event or unforeseen occurrence that renders the performance of this conference impracticable, illegal or impossible. For purpose of this clause, a fortuitous event shall include, but not be limited to: war, fire, labour strike, extreme weather or other emergency. Global Mass Transit's responsibility is limited to return of the registration fee only and is not liable for any other cost.
- Please note that it may become necessary for reasons beyond the control of the organisers to make alterations to the content and timing of the programme or speakers.

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