

# JIVE 2

## JOINT INITIATIVE FOR HYDROGEN VEHICLES ACROSS EUROPE 2



<b>Project ID:</b>	779563
<b>PRD 2023:</b>	Panel 3 – H2 end uses – transport
<b>Call topic:</b>	FCH-01-5-2017: Large scale demonstration in preparation for a wider roll-out of fuel cell bus fleets (FCB) including new cities – phase two
<b>Project total costs:</b>	EUR 89 972 571.27
<b>Clean H<sub>2</sub> JU max. contribution:</b>	EUR 25 000 000.00
<b>Project period:</b>	1.1.2018–30.6.2025
<b>Coordinator:</b>	Element Energy Limited, United Kingdom
<b>Beneficiaries:</b>	ERM France, Transdev Occitanie Ouest, Hyport, Engie Energie Services, CA de l'Auxerrois, Connexion Vloot BV, Société publique locale d'exploitation des transports publics et des services à la mobilité de l'agglomération paloise, TwynstraGudde Mobiliteit & Infrastructuur BV, Openbaar Lichaam OV-bureau Groningen en Drenthe, Pau Béarn Pyrénées Mobilités, Rebelgroup Advisory BV, Regionalverkehr Köln GmbH, Connexion Openbaar Vervoer NV, Messer SE & Co. KGaA, WSW Mobil GmbH, Rīgas Pašvaldības Sabiedrība ar ierobežotu Atbildību Rīgas Satiksme, Transports de Barcelona SA, EE Energy Engineers GmbH, Sphera Solutions GmbH, Brighton & Hove Bus and Coach Company Limited, Provincie Zuid-Holland, Vätgas Sverige Ideell Förening, Union Internationale des Transports Publics, Hydrogen Europe
<a href="https://www.fuelcellbuses.eu/projects/jive-2">https://www.fuelcellbuses.eu/projects/jive-2</a>	

### PROJECT AND OBJECTIVES

JIVE 2 aims to deploy 156 fuel cell buses (FCBs). Combined, the JIVE projects will deploy nearly 300 FCBs in 16 cities across Europe by the end of the early 2020s – the largest deployment in Europe to date.

### NON-QUANTITATIVE OBJECTIVES

- JIVE 2 aims to demonstrate the suitability and provide experience of FCBs for wider roll-out. Through the publication of project deliverables such as a best practice and commercialisation report, information flows to interested observer parties have been established.
- The project aims to raise awareness of the readiness of fuel cell technology for wider roll-out – with a focus on bus purchasers and regulators. A strong observer group within the JIVE consortium has been established. This group monitors discussions and best practices emerging from the project. This will ensure that the momentum for the FCB uptake in Europe continues beyond the project.

- JIVE 2 aims to deliver positive environmental impacts by operating FCBs for extended periods. As per the project objectives, all buses deployed thus far in the project are replacing diesel technology. This means that the buses will lead to CO<sub>2</sub> abatement and will not simply operate as a 'visible extra'.

### PROGRESS AND MAIN ACHIEVEMENTS

- To date, 122 buses have been ordered.
- To date, 98 buses have become operational, representing 63 % of all the buses.
- To date, one site has been operating its fuel cell electric buses for more than 3 years.

### FUTURE STEPS AND PLANS

- By Q2 2023, all buses will have been ordered.
- By Q3 2024, all buses will have been delivered and put into operation. At present, only one site does not yet have its buses in operation.

### QUANTITATIVE TARGETS AND STATUS

Target source	Parameter	Unit	Target	Achieved to date by the project	Target achieved?
Project's own objectives and AWP 2017	Vehicle operational lifetime	years	8	N/A	
	Distance travelled	km/bus	> 50 000 minimum	27 627	
	Operating hours per fuel cell system	hours	> 20 000	2 015	
	Availability	%	> 90	86.10	⚙️
	MDBF	km	< 3 500	10 242	
	Specific fuel consumption	kg/100 km	> 9.0	7.21	
	Efficiency	%	> 42		
	Vehicle OPEX	€	Max. 100 % more than diesel bus OPEX	N/A	
	Vehicle CAPEX	€	< 650 000		✓