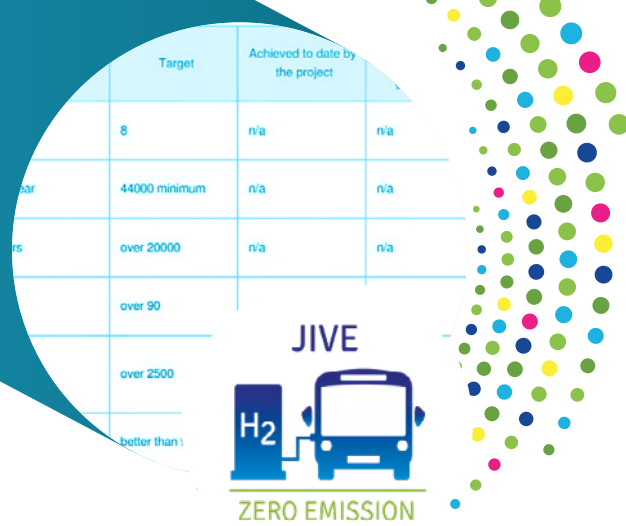


JIVE

JOINT INITIATIVE FOR HYDROGEN VEHICLES ACROSS EUROPE



Project ID:	735582
PRD 2023:	Panel 3 – H2 end uses – transport
Call topic:	FCH-01-9-2016: Large scale validation of fuel cell bus fleets
Project total costs:	EUR 88 770 205.25
Clean H₂ JU max. contribution:	EUR 32 000 000.00
Project period:	1.1.2017–30.6.2024
Coordinator:	Element Energy Limited, United Kingdom
Beneficiaries:	Aberdeen City Council, Birmingham City Council, EE Energy Engineers GmbH, ESWE Verkehrsgesellschaft mbH, Fondazione Bruno Kessler, Gelderland, HyCologne – Wasserstoff Region Rheinland e.V., Hydrogen Europe, London Bus Services Limited, Planungsgruppe Energie und Technik GbR, Rebelgroup Advisory BV, Regionalverkehr Köln GmbH, Sphera Solutions GmbH, SASA SpA AG, Union Internationale des Transports Publics, WSW mobil GmbH

<https://www.fuelcellbuses.eu/projects/jive>

PROJECT AND OBJECTIVES

JIVE exists to assist the commercialisation of fuel cell buses (FCBs) as a zero-emission public transport option across Europe. The project aims to address the current high ownership cost of FCBs relative to conventionally powered buses and the lack of hydrogen refuelling infrastructure across Europe by supporting the deployment of 142 FCBs in eight locations. This will more than double the number of FCBs currently operating in Europe.

NON-QUANTITATIVE OBJECTIVES

- JIVE 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 FCB uptake in Europe continues beyond the project.

- JIVE 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 CO₂ abatement and will not simply operate as a ‘visible extra’.

PROGRESS AND MAIN ACHIEVEMENTS

- All 142 buses have been ordered, from four bus manufacturers.
- In total, 132 buses have started operating, representing 93 % of all the buses.

FUTURE STEPS AND PLANS

- By the end of the first half of 2023, all buses are expected to be operational.
- To date, only one city does not yet have operational buses.
- Uncertainties around ongoing issues related to hydrogen supply (undelivered hydrogen, hydrogen prices, etc.) are expected to be clarified in the upcoming period to ensure that all buses are fully operational.

QUANTITATIVE TARGETS AND STATUS

Target source	Parameter	Unit	Target	Target achieved?
Project's own objectives and AWP 2016	Vehicle operational lifetime	years	8	
	Distance travelled	km/year	≥ 44 000	
	Operating hours per fuel cell system	hours	> 20 000	
	Availability	%	> 90	
	MDBF	km	> 2 500	
	Specific fuel consumption	kg/100 km	> 9	
	Efficiency	%	> 42	
	Vehicle OPEX	€	Max. 100 % more than diesel bus OPEX	
	Vehicle CAPEX	€	< 650 000	✓