

3EMOTION

ENVIRONMENTALLY FRIENDLY, EFFICIENT ELECTRIC MOTION



Project ID:	633174
PRD 2023:	Panel 3 – H2 end uses – transport
Call topic:	SP1-JTI-FCH.2013.1.1: Large-scale demonstration of road vehicles and refuelling infrastructure VI
Project total costs:	EUR 38 181 930.72
Clean H₂ JU max. contribution:	EUR 14 999 983.00
Project period:	1.1.2015–31.12.2022
Coordinator:	Van Hool NV, Belgium
Beneficiaries:	Aalborg Kommune, Acetilene & Gastecnici Di Bagnoli Maria & C. SAS, Agenzia nazionale per le nuove tecnologie, l'energia e lo sviluppo economico sostenibile, Air Liquide Advanced Business, Air Liquide Advanced Technologies SA, Autocars Dominique, Azienda per la mobilità del Comune di Roma SpA, B.E. Green, Centro Interuniversitario di Ricerca Per lo Sviluppo sostenibile, Commissariat à l'énergie atomique et aux énergies alternatives, Communauté urbaine de Cherbourg, Commune de Cherbourg-en-Cotentin, Compagnia Trasporti Laziali, Connexion Openbaar Vervoer NV, Connexion Vloot BV, Dantherm Power AS, Fit Consulting SRL, London Bus Services Limited, Provincie Zuid-Holland, Regione Lazio, Region Nordjylland, Rotterdamse Elektrische Tram NV, Services Automobile de la Vallée de Chevreuse SAS, Syndicat mixte des transports urbains de Pau-Porte des Pyrénées, Università degli Studi di Roma 'La Sapienza', Vlaamse Vervoersmaatschappij De Lijn, WaterstofNet VZW

<http://www.3emotion.eu/>

PROJECT AND OBJECTIVES

3Emotion aims to operate 29 fuel cell buses (FCBs) in five leading European cities – Aalborg, London, Pau, Rotterdam (with intercity links throughout the province of South Holland) and Versailles – and develop three new hydrogen refuelling stations (HRSS).

Objectives:

- lower H₂ consumption to < 9 kg/100 km;
- integrate the latest drivetrain, fuel cell and battery technologies to lower the total cost of ownership and increase FCBs' lifetimes;
- ensure FCB availability of > 90 %;
- increase warranties (> 15 000 hours) and improve the delivery times of the key components;
- reduce bus investment costs to < EUR 850 000 for a 13 m bus.

PROGRESS AND MAIN ACHIEVEMENTS

- All 29 FCBs and all three HRSSs are in operation.
- The project has engaged three manufacturers of original bus equipment to make two different fuel cells at the price per bus set in the initial call, operating at various EU sites.
- The buses are largely meeting their targets on H₂ consumption, average consumption and availability.

FUTURE STEPS AND PLANS

- The project was finalised on 31 December 2022.
- 3Emotion will meet the expectation of having higher capacities at the HRSSs. In the final year of the project, as restrictions related to the COVID-19 pandemic have been lifted, the operation of the buses will be resumed, and full operation of HRSSs can be achieved.
- The project will perform the data monitoring and gathering of operational and performance indicators for the FCBs and the HRSSs.



QUANTITATIVE TARGETS AND STATUS

Target source	Parameter	Unit	Target	Achieved to date by the project	Target achieved?
	Lower H ₂ consumption for FCBs to < 9 kg/100 km	kg/100 km	9	Average: 8	✓
Project's own objectives	Ensure availability of > 90 %	%	90	Average: ≤ 80	⚙️
	Increased warranties (> 15 000 hours)	hours	15 000	15 000	✓
	Investment cost of EUR < 850 000 for a 13 m bus	€	850 000	850 000	✓