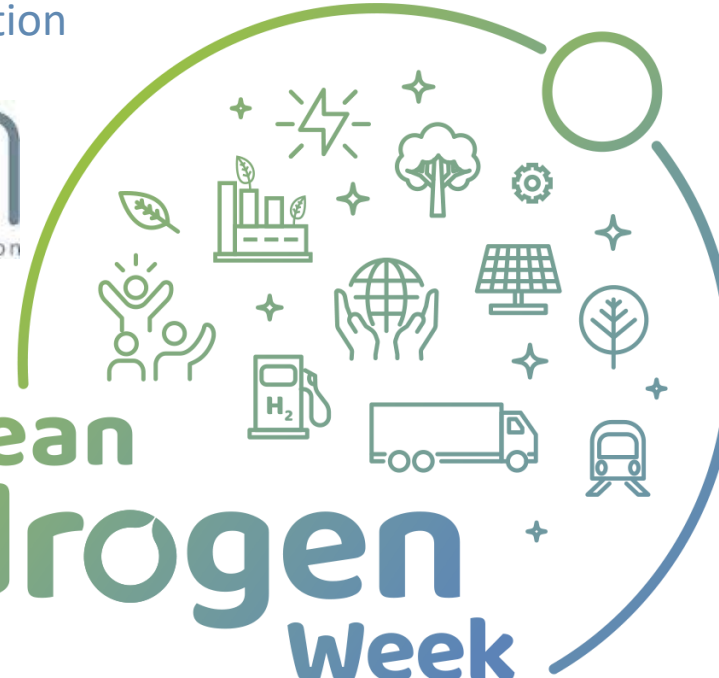


3EMotion

Environmentally Friendly, Efficient Electric Motion



European  
Hydrogen  
Week



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WaterstofNet vzw

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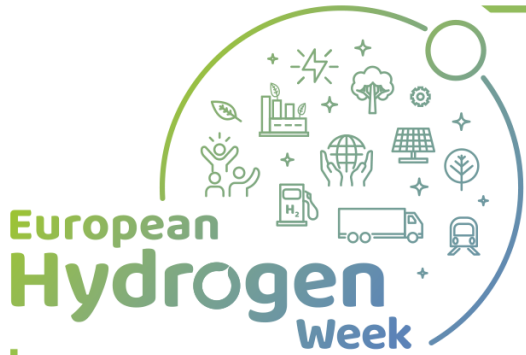


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#PRD2022  
#CleanHydrogen



# Project Overview

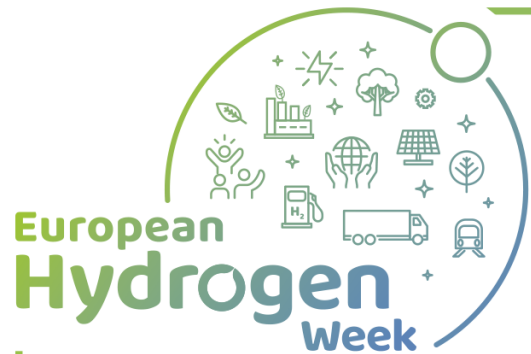
- Call year: 2013 [FP7]
- Call topic: SP1-JTI-FCH.2013.1.1 - Large-scale demonstration of road vehicles and refuelling infrastructure VI
- Project dates: [1-1-2014 - 31-12-2022]
- % stage of implementation 28/11/2022: [+/-95 %]
- Total project budget: 38,332,796.72€
- Clean Hydrogen Partnership max. contribution: 14,999,983.00€
- Other financial contribution: 0 €
- Partners:



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# Partner countries incl. initial ones



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# Project Summary

The project bridges(d) the gap between early fuel cell bus demonstration projects and larger scale deployment.

It presents(ed) the deployment of 21 new and the further use of 8 existing fuel cell buses with the required refueling infrastructure.



**LONDON** 10 

Transport for London (TFL)

- 2 new buses in operation from January 2018 till March 2020
- 8 existing buses in operation from January 2015 till March 2020



**VERSAILLES** 7 

- 2 buses (SAVAC) in operation since September 2019
- 5 buses (Be Green) in operation since August 2020



**PAU** 3 

SMTU/STAP

- 3 Exqui.city buses in operation since December 2019



**AALBORG** 3 

- 2 buses Keolis - Region North Jutland
- 1 bus Arriva - Municipality of Aalborg in operation since March 2020



**ROTTERDAM** 6 

- 2 buses RET - City of Rotterdam in operation since September 2017
- 4 buses Connexion - Province of South Holland (intercity) in operation since June 2020



## Bridging the gap

From prototype demonstration to large scale demonstration, followed by commercialisation



	Activity	2010 - 2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Demonstration Projects	CHIC	■	■									
	High V.Lo.City	■	■	■	■							
	HyTransit	■	■	■	■							
	3Emotion	■	■	■	■	■	■	■	■	■		
	JIVE			■	■	■	■	■	■			
	JIVE2				■	■	■	■	■	■	■	
Transition to commercialization	H2Bus Europe						■	■	■	■	■	■

- 4 bus OEMs
  - VanHool
  - VDL
  - SAFRA bus
  - Wright bus
  
- 4-5 bustypes
  - 12m
  - 13m
  - Articulated 18m
  - Integrated Range extender
  - Range EXtender (REX) Trailer
  
- 2 FuelCell supplier
  - Ballard
  - Michelin-Symbio

# Project Progress/Actions



Achievement to-date

PROJECT  
START VALUE



PROJECT  
TARGET VALUE

25%

50%

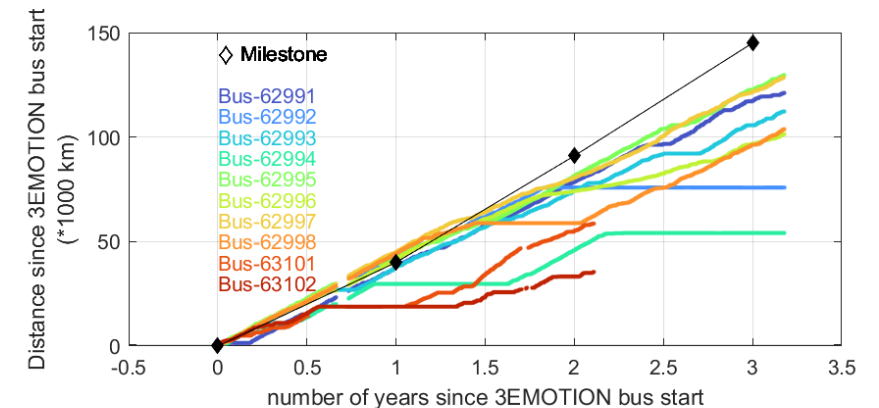
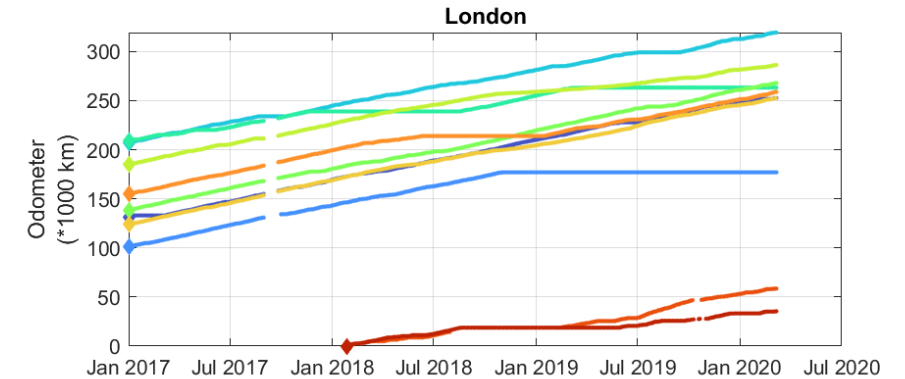
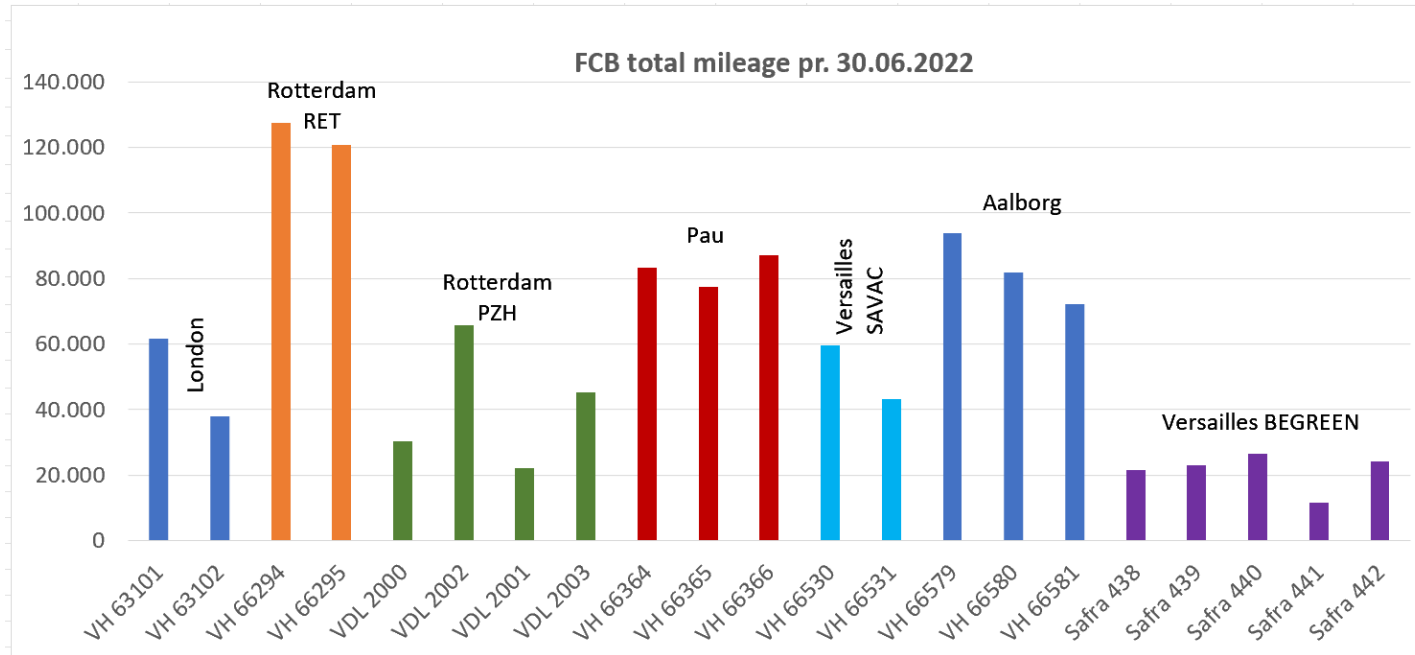
75%

BUS Targets and Outputs	Units	SP1-JTI-FCH.2013 call Targets	3EMOTION Targets	3EMOTION results pr 30.06.2022
Bus Fleets	n°	5 buses for each site (minimum 15 FCB in two sites)	29 FCB in 5 sites	29 FCB in 5 sites
Bus Availability	%	>85% with maintenance	>90%	60-90%
Fuel cell warranty of buses	hours	6000 h	> 15000 h warranty	> 15000 h warranty
Bus costs	euro	reduction of 25% with respect of running buses (1.300.000)	850.000 euro	850.000 euro
			(1.250.000 euro for articulated bus)	(1.250.000 euro for articulated bus)
Fuel Consumption*	kg/km	< 11 - 13 kg H2/100 km	8-10kg H2/100 km	8-10kg H2/100 km
Gas pressure	bar	350 bar CGH2	350 bar CGH2	350 bar CGH2

- 5 Cities
- 7 Sites
- 8 operators

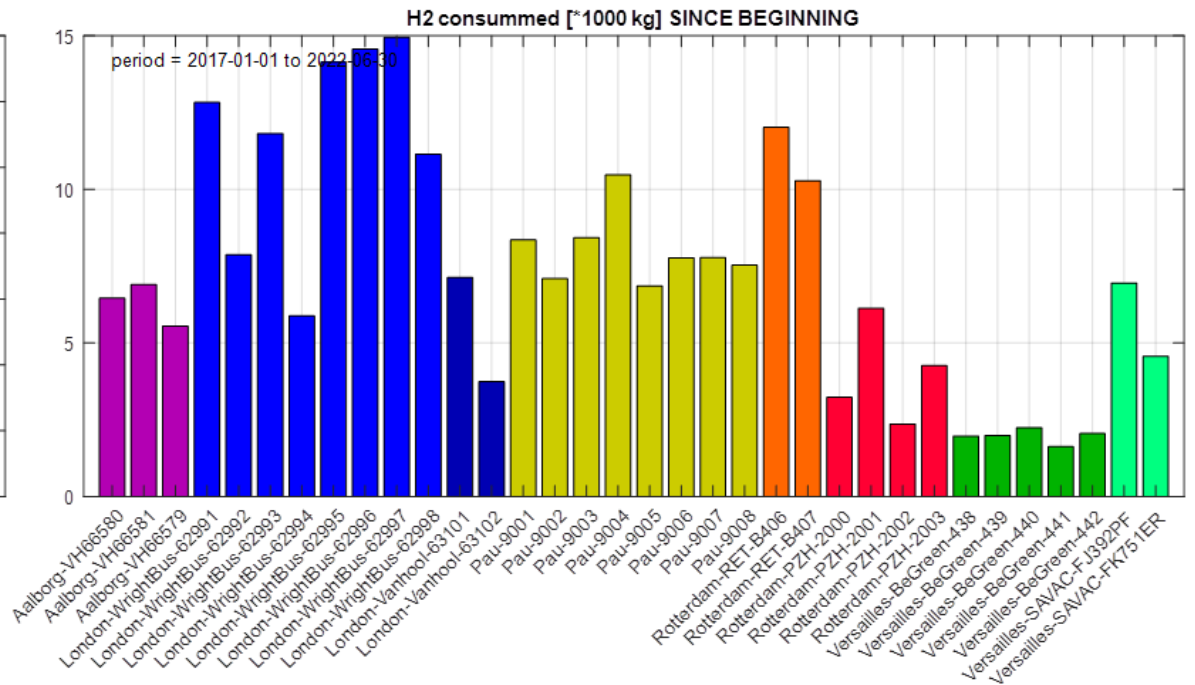
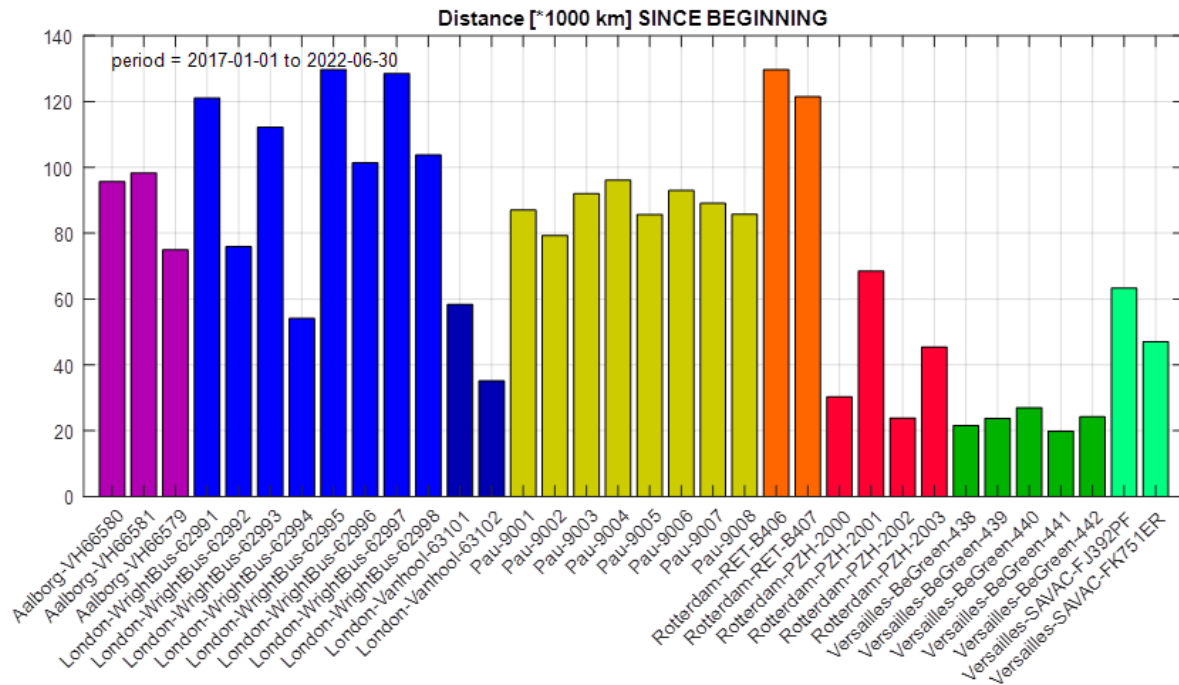


# Project Progress - all sites up and running



# Performance of the 3EMotion busfleet

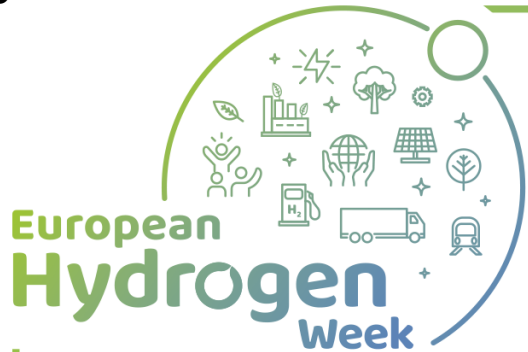
+/- 2,5 Million kms driven





# Risks, Challenges and Lessons Learned

- Not all bus concepts are equal successful and or will be scale able.
- Data-monitoring exercise remains a challenge
- HRS availability still needs to improve
- Overall big competition from BEV, cheaper buses, infrastructure is clear, service providers are well known power solution providers/ electricity suppliers.  
At large deployment, the large charging infrastructure and real estate come into play, that favour for Hydrogen
- Hydrogen is a viable option in full operational service and some buses reached EOL



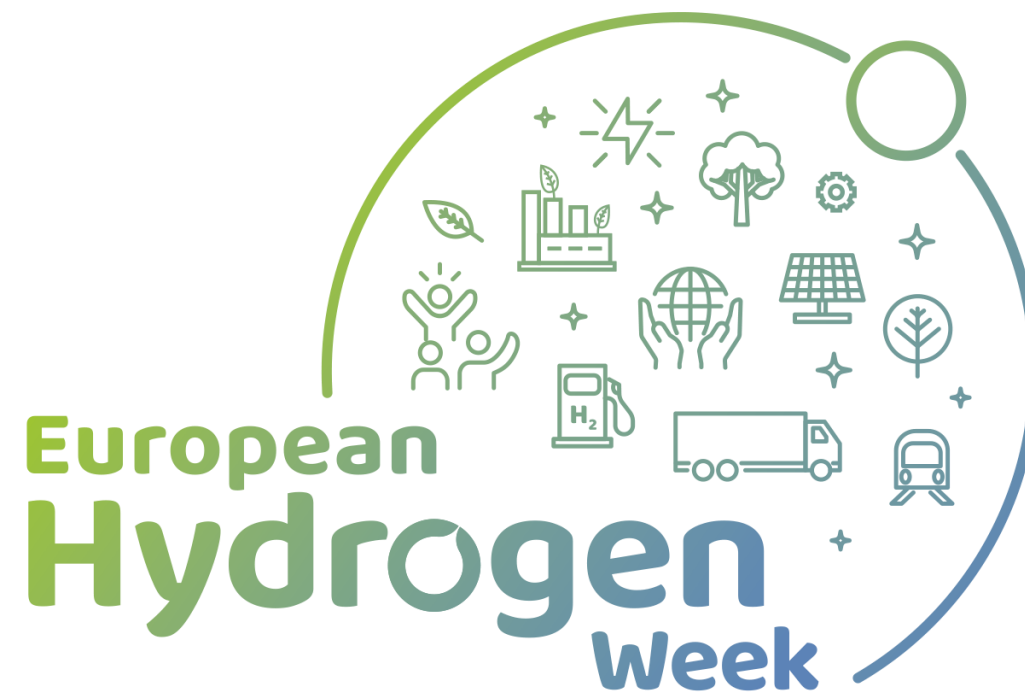
# Communications Activities

- Project website
- Newsletters
- Inauguration events
- Project posters
- Local dissemination packages (F, NL, DK, UK)
- Project video's (combined with JIVE for some sites)
- Fuelcellbuses.eu - website
- Social Media (Linked-in, Twitter)
- Zero Emission Bus conferences
- Clean buses in Europe conferences

## Latest:

- Exploring and informing “new(er)” regions for FCEBs [ e.g. Spain, Portugal,...]
- Knowledge exchange of partners with LIFE-programme [LIFE 3H project (Italy)]





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