



3Emotion

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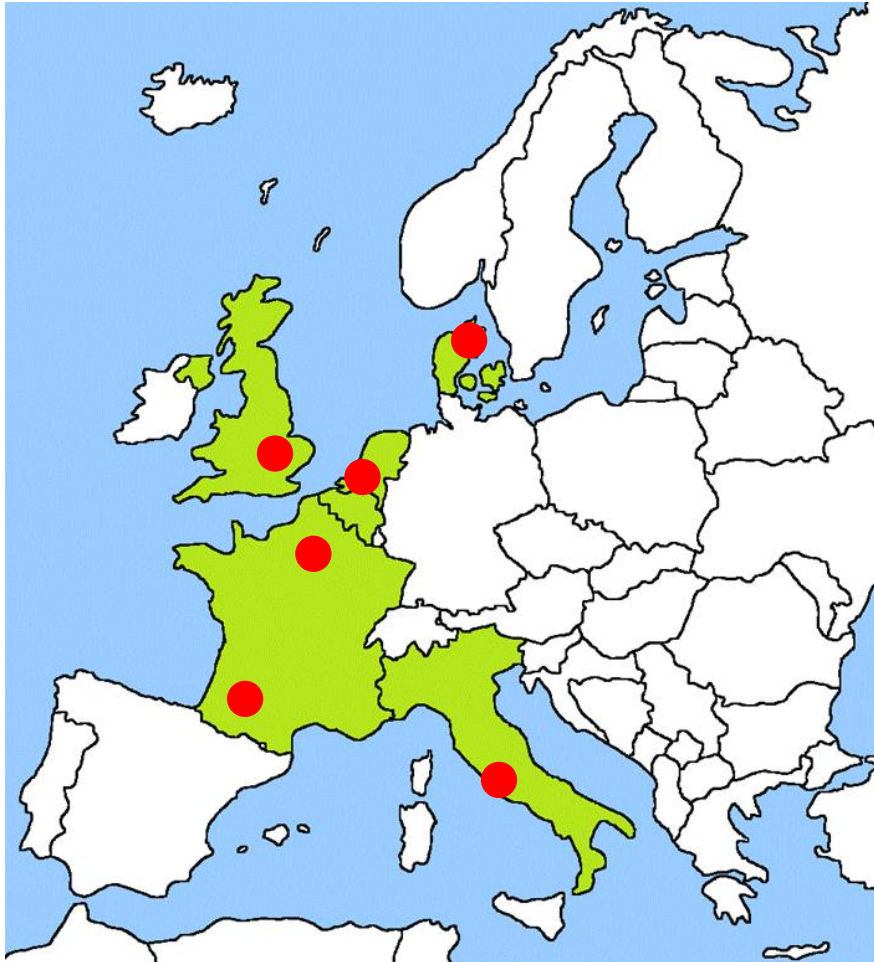
www.3Emotion.eu

Email Coordinator: flip.bamelis@vanhool.be

Programme Review Days 2017
Brussels, 23-24 November

- Call year: 2013
- Call topic: Large demonstration of road vehicles and refuelling infrastructure IV
- Project dates: 1/1/2015 - 31/12/2022
- % stage of implementation 01/11/2017: 36 %
- Total project budget: 39.232.162,60 €
- FCH JU max. contribution: 14.999.983,00 €
- Other financial contribution: 24.232.179,60 €
- Partners: Van Hool, Ballard Europe, Air Liquide, CEA, Regione Lazio, Provincie Zuid-Holland, TfL, RET, WaterstofNet, FIT, CIRPS, SAVAC, Aalborg Kommune, Region Nordjylland, ATAC, SMTU Pau and Connexxion

PROJECT SUMMARY - Objective



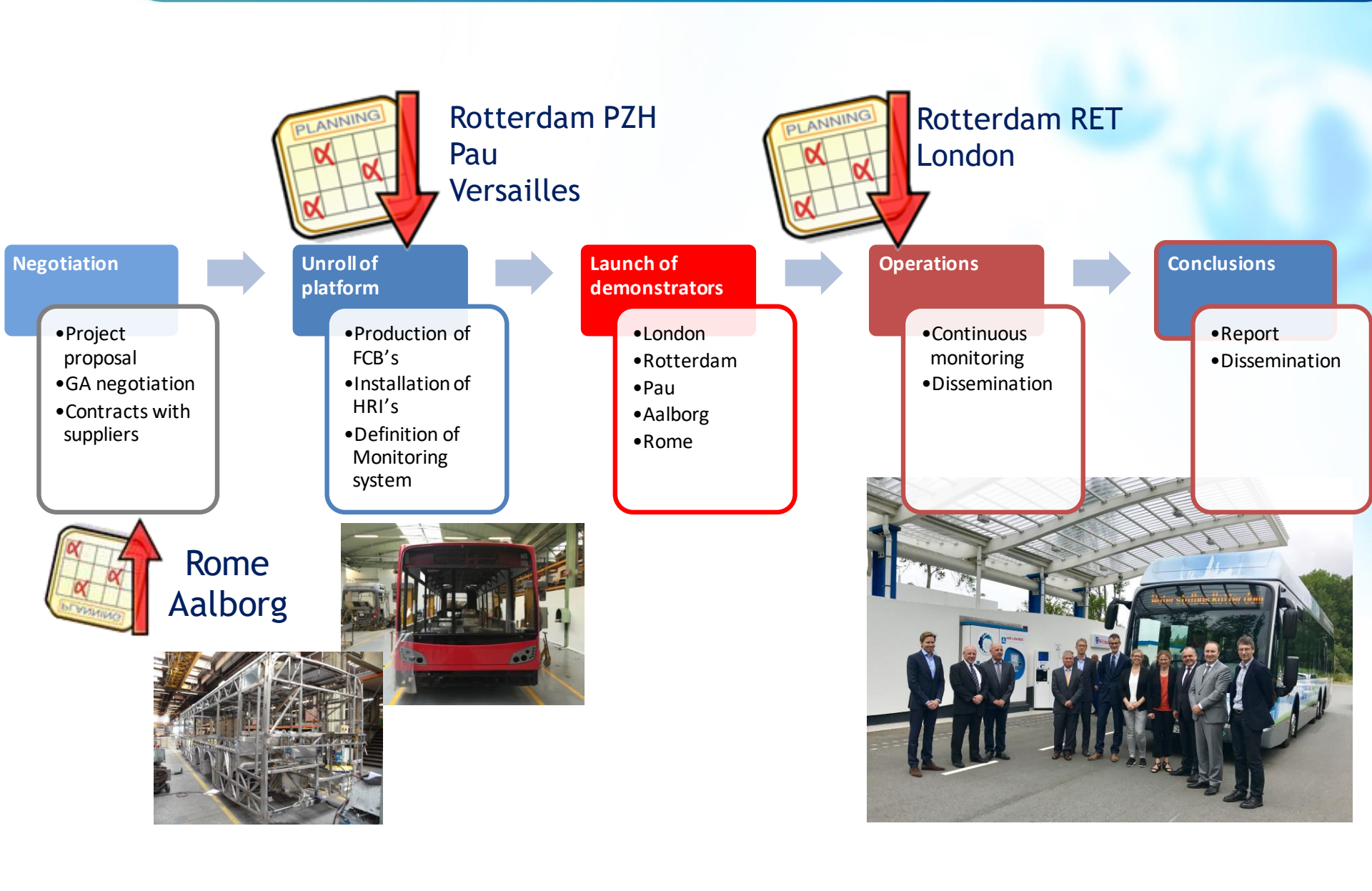
Project objective

To bridge the gap between current demonstration projects and larger scale deployment of Fuel Cell buses. By:

- the realisation of a significant price reduction
- a further geographical expansion
- enhancement of technical availability
- demonstration of full life cycle

3Emotion	
# Sites	6
# FC buses	29
<i>New</i>	21
<i>Existing</i>	8
# New HRI's	4

PROJECT SUMMARY - Status



4 New Refuelling stations, others upgraded

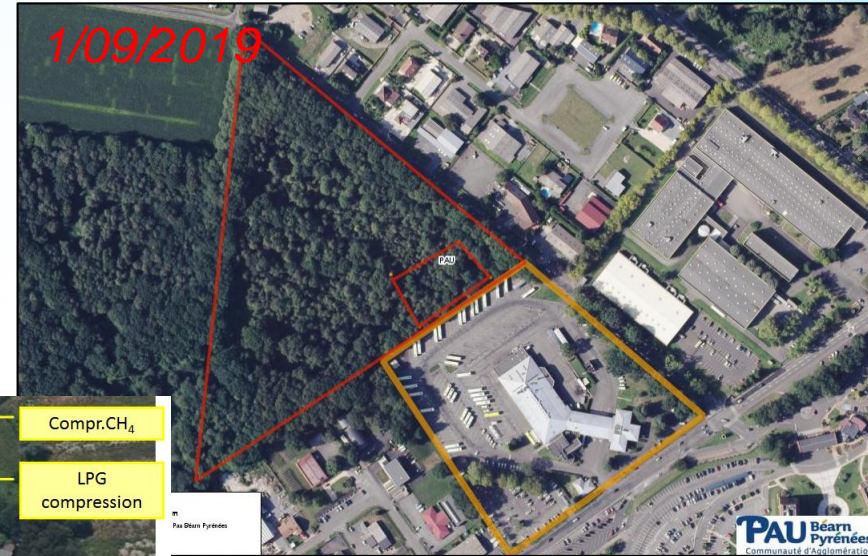
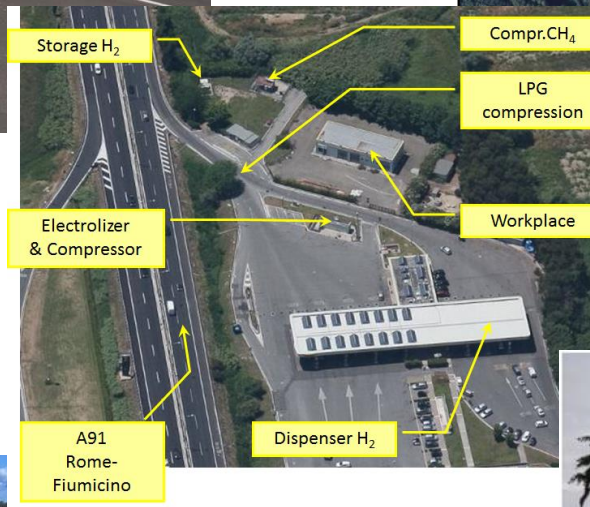


HRI Rotterdam (Rhoon) is upgraded

HRI Roma integrates UniPhy gasifier in tank site

HRI Aalborg refuels H2 from HyBalance

31/01/2018

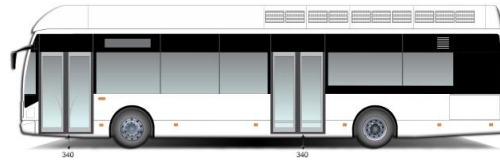


HRI Pau integrated in depot

Brand new HRI in Versailles



29 Fuel Cell buses in practise



	Rotterdam RET	London	Rotterdam CXX	Pau
Status	In service	Delivered	In production	Ordered
Bus type	VH A360FC	VH A360FC	VDL Citea SLF-120 Hydrogen	VH Ex.QuiCity FC
Amount	2	2	4	3 (+5)
Doors	2	2	2	4
Axle	3	2	2 (3)	3
Bus length	13m	12m		18m (articulated)
Hydrogen capacity	37.5kg	30kg	40kg	37.5kg

Monitoring during demonstrations

- Key Performance Indicators Buses

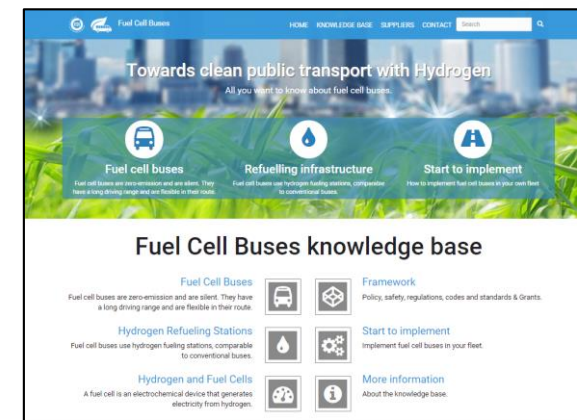
Bus KPIs				
	<u>KPI</u>	<u>CHIC</u>	<u>HVLO</u>	<u>3E Target</u>
Reliability	Availability	85%	85%	90%
Bus efficiency	H2 Consumption	11-13kg/100	10kg/100km	8kg/100km 10kg/100km*
Costs	CAPEX		1.300.000€	850.000€ 1.250.000€*
	OPEX (maint)			
Operational data	Mileages	9.300.000km	700.000 km	

* articulated buses

** for information

SYNERGIES WITH OTHER PROJECTS AND PROGRAMMES

- Interactions with projects funded under EU programmes
 - **HyBalance:** Hydrogen refuelled in the HRI in Aalborg will be produced in the HyBalance site in Hobro
 - **CHIC:** 3Emotion takes over 8 FC Buses demonstrated in London
 - **UniPhy:** A gasifier developed in UniPhy is integrated in the HRI in Rome
- Coordinated communication with the other FCH-JU bus projects
 - Close collaboration with the HyTransit, High V.LO-City and JIVE projects
 - Coordinated communication at EU level
 - Knowledge base for FC buses in Europe:
www.fuelcellbuses.eu



Deliverables

- 3Emotion dissemination plan
- Project logo and brand
- Project brochure and banner
- Project website:
www.3emotion.eu and newsletter
- Contribution to
www.fuelcellbuses.eu

Conferences/Workshops

The project has participated at more than 30 events (presentations):

3 levels of Communication:

- Fuel cell bus sector
- 3Emotion (project level)
- Demonstration sites (local site level)

Social media



@fuelcellbus

Press releases:

Start of the project/Ordering of the buses in Rotterdam and London/Launch of the buses in Rotterdam/buses in Rotterdam in operation/Pau as a demonstration site

Kick off events:

30 june 2017: launch of the buses at RET

Subscribe to the newsletter at www.3Emotion.eu



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"We bridge the gap between fuel cell bus demonstration & larger scale deployment"



About the project

We bridge the gap between fuel cell bus demonstration and larger scale deployment.

[Read more](#)

Demonstration

3Emotion presents the deployment of 21 new and the further use of 8 existing Fuel cell buses with the required refueling infrastructure.

[Read more](#)

Partners

The following partners participate in the project.

[Read more](#)



FUEL CELLS AND HYDROGEN
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News

First two 3Emotion Fuel Cell Electric buses start to drive in Rotterdam

*3Emotion's first
kick-off event at
RET in Rotterdam.*



FCBs in Europe - today and tomorrow

EU-funded FCB projects

CHIC ● (project over in 2016/buses still driving)

- ✓ Bolzano, IT – 5 FC buses (2013)
- ✓ London, UK – 8 FC buses (2011)
- ✓ Milan, IT – 3 FC buses (2013)
- ✓ Oslo, NO – 5 FC buses (2013)
- ✓ Cologne, DE* – 2 FC buses (2014)
- ✓ Hamburg, DE* – 6 FC buses (2011/2015)

High V.LO-City ●

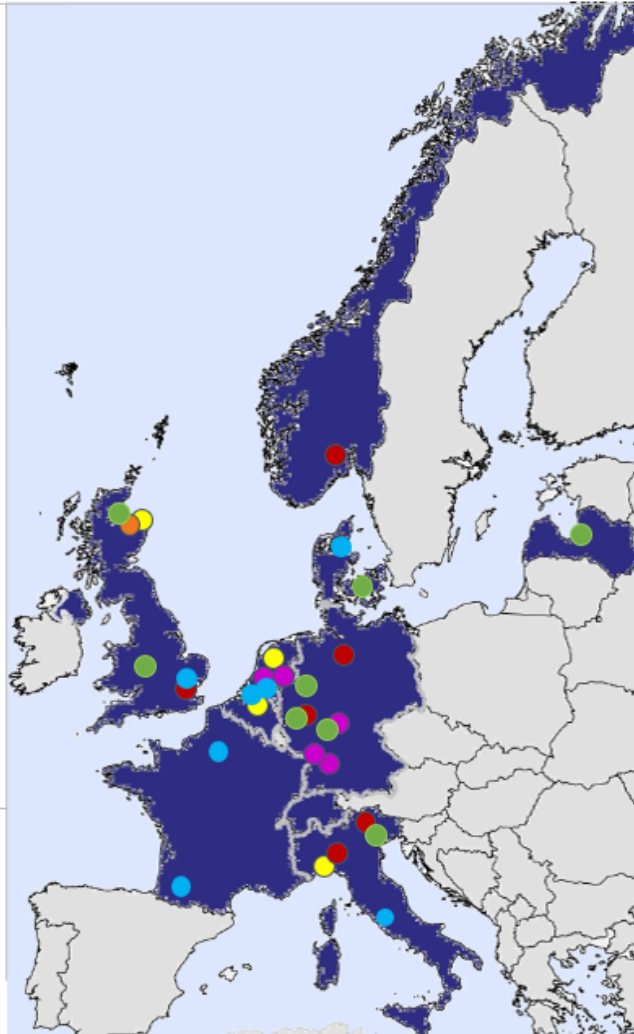
- ✓ Antwerp, BE – 5 FC buses (2014)
- ✓ Aberdeen, UK – 4 FC buses (2015)
- ✓ Groningen, NL – 2 FC buses (2016)
- ✓ San Remo, IT – 3 FC buses (2017)

HyTransit ●

- ✓ Aberdeen, UK – 6 FC buses (2015)

Legend

- Countries with (upcoming) FCB
- ✓ In operation
- ✓ Planned operation
- (2015) Operation start/planned start
- * Co-financed by regional/national funding sources



EU-funded FCB projects

3Emotion ●

- ✓ Aalborg, DK – 3 FC buses (2018)
- ✓ London, UK – 2 FC buses (2017)
- ✓ Pau, FR – 8 FC buses (2019)
- ✓ Rome, IT – 5 FC buses (2018)
- ✓ South Rotterdam, NL – 2 FC buses (2017)
- ✓ South Holland, NL – 4 FC buses (2018)
- ✓ Versailles, FR – 2 FC buses (2018)

JIVE ●

- ✓ Aberdeen, UK – 10 FC buses
- ✓ Birmingham – 20 FC buses
- ✓ Bozen, IT – 12 FC buses
- ✓ Cologne region, DE – 30 FC buses
- ✓ London, UK – 26 FC buses
- ✓ Rhein-Main region, DE – 11 FC buses
- ✓ Riga, LV – 10 FC buses
- ✓ Slagelse, DK – 10 buses
- ✓ Wuppertal, DE – 10 buses

Current national/regional-funded fuel cell bus projects

- ✓ Karlsruhe, DE* – 2 FC buses (2013)
- ✓ Stuttgart, DE* – 4 FC buses (2014)
- ✓ Frankfurt, DE* – 4 FC bus (2017)
- ✓ Arnhem, NL* – 1 FC bus (2017)
- ✓ North Brabant, NL* – 2 FC buses (2017)

Thank You!

Coordinator:
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