



# 3Emotion

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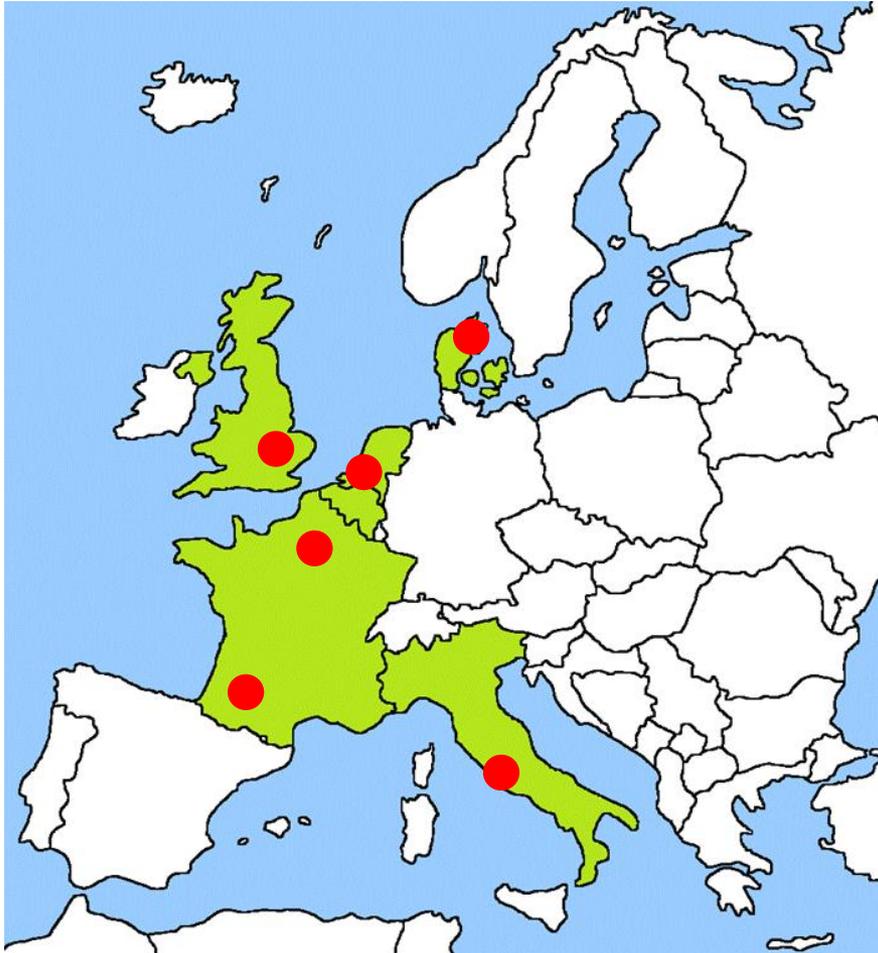
**[www.3Emotion.eu](http://www.3Emotion.eu)**

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***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



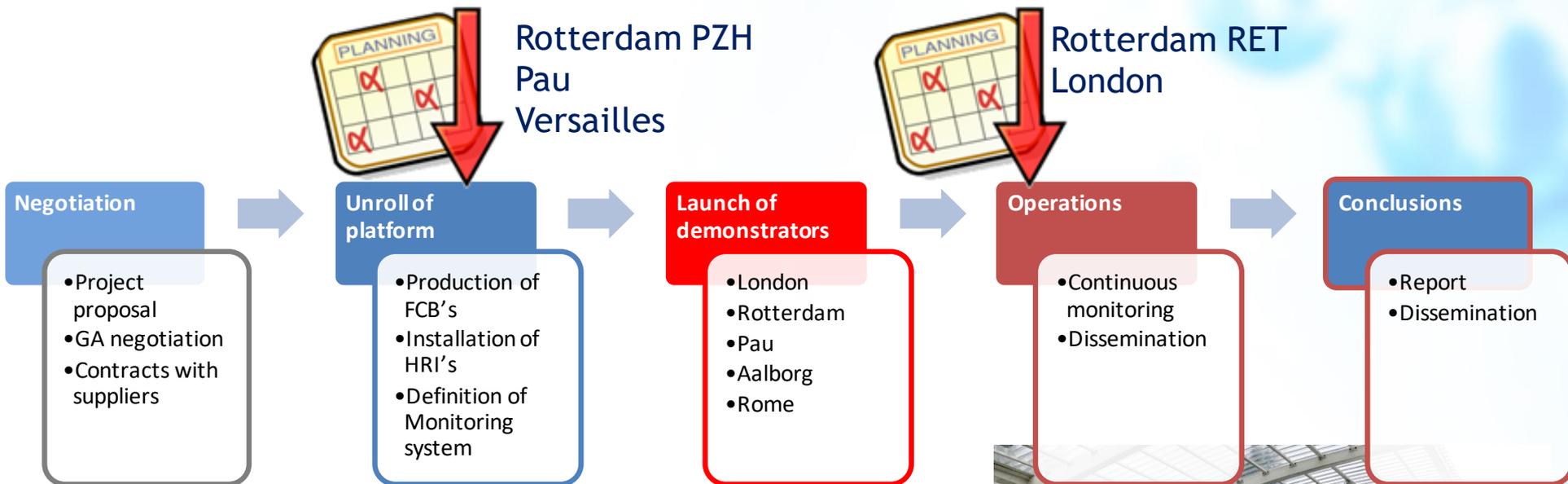
## Project objective

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	<b>29</b>
<i>New</i>	21
<i>Existing</i>	8
# New HRI's	4

# PROJECT SUMMARY - Status



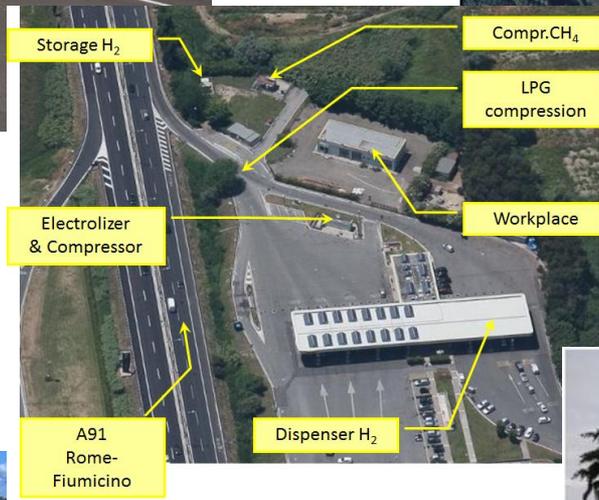
# 4 New Refuelling stations, others upgraded



HRI Roma integrates UniPhy gasifier in tank site

HRI Aalborg refuels H2 from HyBalance

*31/01/2018*

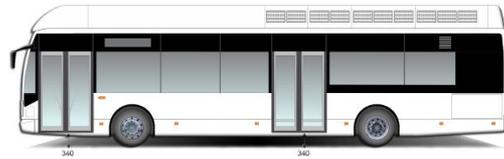


HRI Pau integrated in depot

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

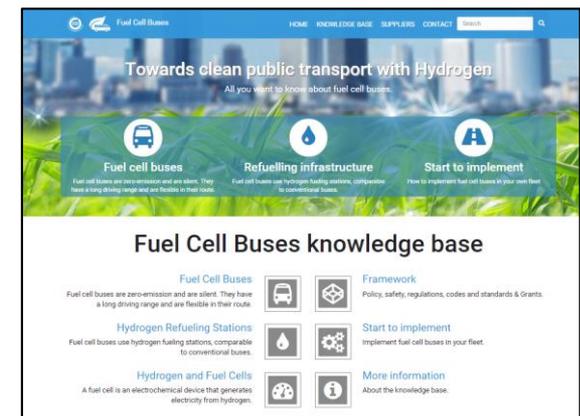
Bus KPIs				
	<u>KPI</u>	<u>CHIC</u>	<u>HVLO</u>	<u>3E Target</u>
Reliability	Availability	85%	85%	90%
Bus efficiency	H2 Consumption	11-13kg/100	10kg/100km	8kg/100km 10kg/100km*
Costs	CAPEX		1.300.000€	850.000€ 1.250.000€*
	OPEX (maint)			
Operational data	Mileages	9.300.000km	700.000 km	

\* 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](http://www.fuelcellbuses.eu)



## Deliverables

- 3Emotion dissemination plan
- Project logo and brand
- Project brochure and banner
- Project website:  
[www.3emotion.eu](http://www.3emotion.eu) and newsletter
- Contribution to  
[www.fuelcellbuses.eu](http://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](http://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](#)

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



FUEL CELLS AND HYDROGEN  
JOINT UNDERTAKING

### News

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

### Subscribe to our mailing list

Email Address \*



# 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** ●

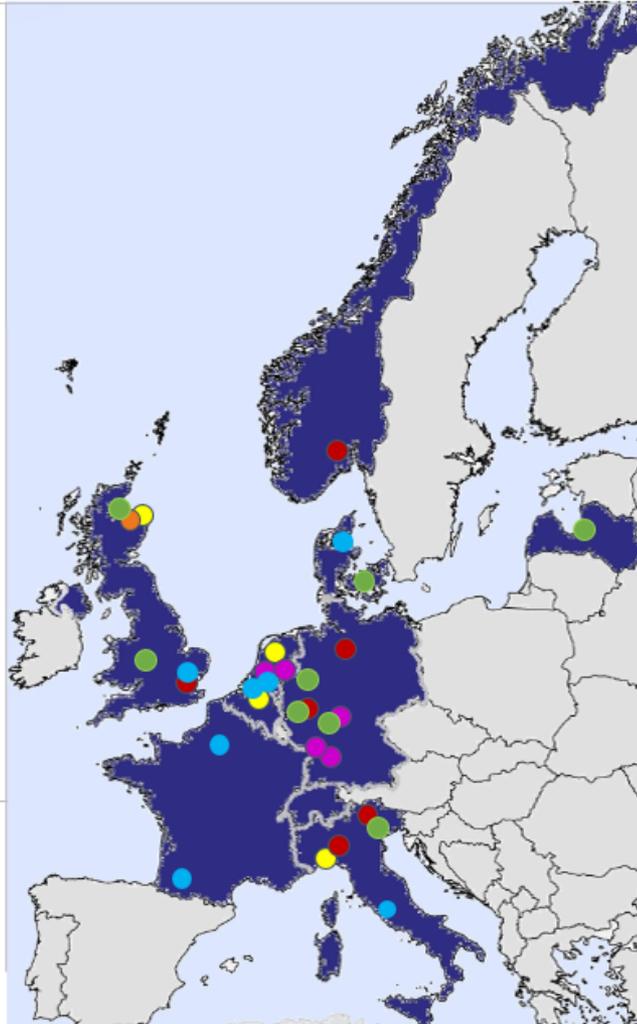
- ✓ Antwerp, BE – 5 FC buses (2014)
- ✓ Aberdeen, UK – 4 FC buses (2015)
- ✓ Groningen, NL – 2 FC buses (2016)
- ✓ San Remo, IT – 3 FC buses (2017)

**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!

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