NewBusFuel

New Bus ReFuelling for European Hydrogen Bus Depots

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http://newbusfuel.eu/

Programme Review Days 2016
Brussels, 21-22 November

PROJECT OVERVIEW

Project Information	
Call topic	FCH-01.6-2014: Engineering studies for large scale bus refuelling
Grant agreement number	671426
Application area (FP7) or Pillar (Horizon 2020)	Transport
Start date	01/06/2015
End date	31/03/2017
Total budget (€)	€ 2,471,144.75
FCH JU contribution (€)	€ 2,438,634.27
Other contribution	n/a
Stage of implementation	**82%** project months elapsed vs total project duration, at date of November 1, 2016
Partners	Consortium includes 26 partners

PROJECT CONSORTIUM (1/2)

NewBusFuel

PROJECT CONSORTIUM (2/2)

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1 Aberdeen
- Linde
- Aberdeen City Council

9 Oslo/Akershus
- HYOP
- Akershus City Council
- Kunnskapsbyen Lillestrom Forening

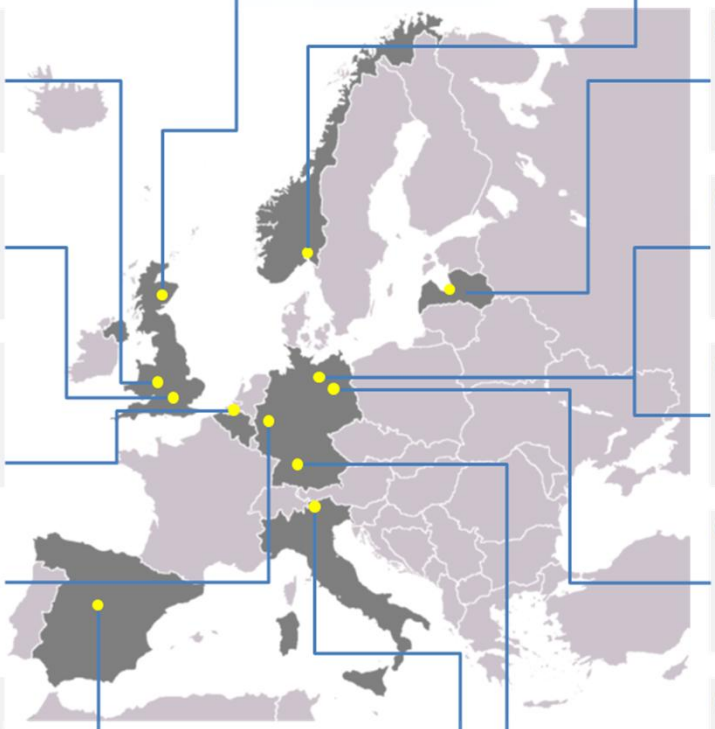
2 Birmingham
- ITM Power
- Birmingham City Council

7 London
- Air Products
- London Bus Services Limited

4 De Lijn
- Linde
- De Lijn

13 Wuppertal
- Hydrogenics
- Wuppertaler Stadtwerke

8 Madrid
- Abengoa Hidrógeno
- Empresa Municipal de Transportes de Madrid



Industrial lead
Operator lead
Other industrial

3 Bolzano
- Ingenieurbüro Bergmeister
- Institut für Innovative Technologien Bozen Konsortial
- Siemens, Linde

11 Riga
- Industry role to be tendered
- Riga Satiksme

5 Hamburg 1
- Vattenfall Innovation
- Hamburger Hochbahn
- Siemens

6 Hamburg 2
- Air Products
- Hamburger Hochbahn

10 Potsdam
- McPhy Energy
- ViP Potsdam
- H2 Logic

12 Stuttgart
- Siemens
- Stuttgarter Strassenbahnen

Inter-study partners: Element Energy, thinkstep

PROJECT SUMMARY

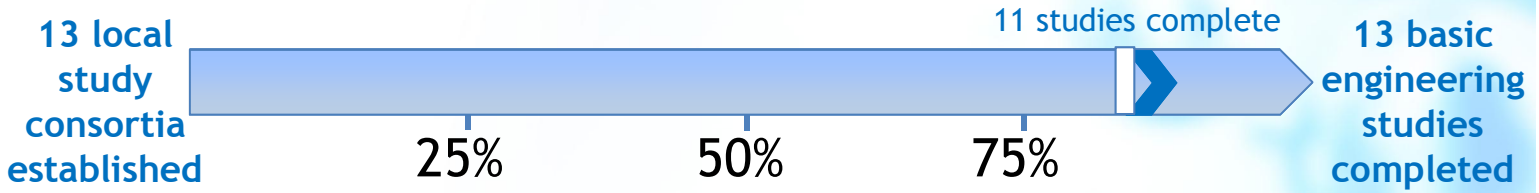
- NewBusFuel aims is to **resolve a significant knowledge gap** around technologies and engineering solutions required for large-scale hydrogen refuelling at bus depots.
- Challenges include:
  - **Scale** – throughputs in excess of 2,000kg/day (compared to 100kg/day for passenger car stations)
  - **Ultra-high reliability** – ensure 100% availability of hydrogen supply for public transport networks
  - **Short refuelling window** – buses need to be refuelled in a short window, leading to rapid throughput
  - **Footprint** – needs to be reduced to fit within busy urban bus depots
  - **Volume of hydrogen storage** – can exceed 10 tonnes and lead to new RCS and safety constraints
- Other challenges include RCS, strategies for demand growth, new ownership models, etc..
- Collaborative design teams involving bus operators and industrial HRS experts, have defined optimal designs, hydrogen supply routes, commercial arrangements and practicalities for a hydrogen station capable of providing fuel to a fleet of fuel cell buses (75-260 buses).
- The analysis team are currently evaluating outputs to produce a guidance document to inform new bus operators of the information needed when developing a fuel cell bus project.

PROJECT PROGRESS/ACTIONS

NewBusFuel

Achievement to-date

% stage of implement.



Future steps:

- *Local study teams to complete basic engineering studies*
- *Analysis team to finalise evaluation of study data and write-up reports*
- *Dissemination task force to prepare materials for sharing*

Targets:

- *No project objectives are directly relevant to specific FCH JU targets.*
- *Industry targets to drive fuel cell bus commercialisation, consistent with NewBusFuel results, are described below.*

Parameter (KPI)	Unit	NewBusFuel average	Industry targets	
			2017	2020
Hydrogen price at the nozzle	€/kg	8	7	6

SYNERGIES WITH OTHER PROJECTS AND PROGRAMMES

Interactions with projects funded under EU programmes	
CHIC	• Many bus operators and infrastructure suppliers involved in CHIC have brought experience and knowledge to the NewBusFuel engineering studies.
JIVE	• Project will coordinate a large joint procurement of 142 fuel cell buses across nine European cities. • NewBusFuel findings will be used by bus operators to simplify and inform upgrades of existing depots or construction of new depots.

DISSEMINATION ACTIVITIES

Public deliverables

- Two main project reports:
  - Guidance document on large scale hydrogen bus refuelling (D4.2)
  - High-level techno-economic report (D4.3)
- A series of small reports:
  - Bus depot specifications for tendering activities (D3.2)
  - Review of RCS issues encountered (D3.3)
  - Review of electrolyser business models (D3.4)
  - Recommendations for demand growth strategies (D3.5)
  - Review of redundancy strategies (D3.6-3.7)
  - Review of hydrogen supply chain business cases (D3.8)
- Dissemination materials:
  - Public website (D5.2)
  - Presentation summarising project outputs (D5.1)

Conferences/Workshops

- Two public roundtable discussions:
  - Technical: Workshop B2 @ ZEB conference
  - Policy: To be determined
- Public launch workshop:
  - Event to be held in Lillestrom (NO) on **14th March 2017**
  - **If you would like to receive an initiation to this event, please contact:**

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Thank You!

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