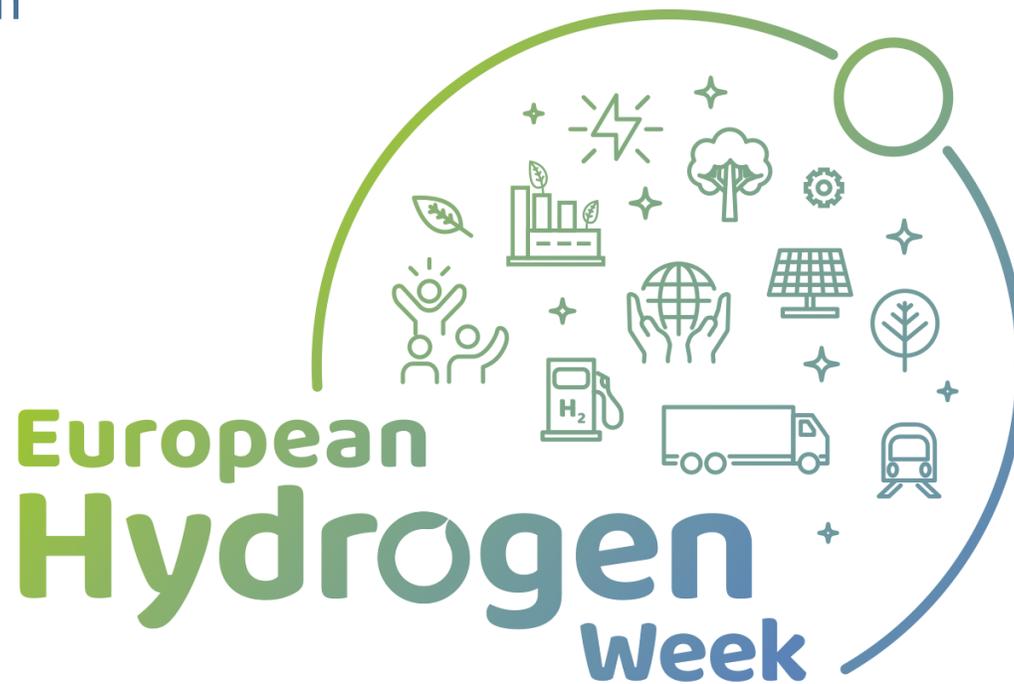


JIVE & JIVE 2

Joint Initiative for hydrogen
Vehicles across Europe



Madeline Ojakovoh
Element Energy

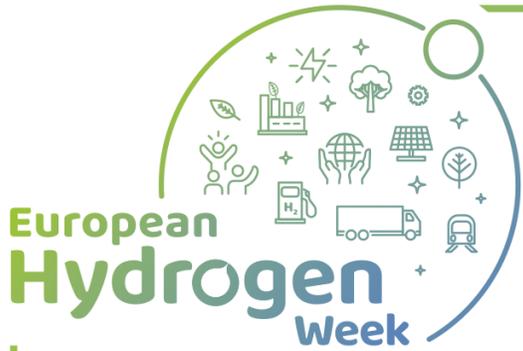
<https://www.fuelcellbuses.eu>

Email coordinator:

Madeline.Ojakovoh@element-energy.co.uk

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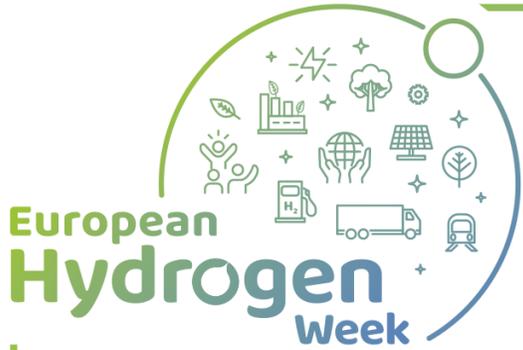
Project Overview

	JIVE	JIVE 2
▪ Call year:	2016	2017
▪ Call topic:	FCH-01-9-2016	FCH-01-5-2017
▪ Project dates:	Jan 17 - Dec 22	Jan 18 - Dec 23
▪ % stage of implementation:	65%	49%
▪ Total project budget:	€110.3 million	€106.6 million
▪ FCH JU max. contribution:	€32 million	€25 million

▪ Partners:



+ 20 public transport authorities and operators across Europe



Project Summary

- 18 Sites
- 7 Deployment Countries
- 12 Observer Regions

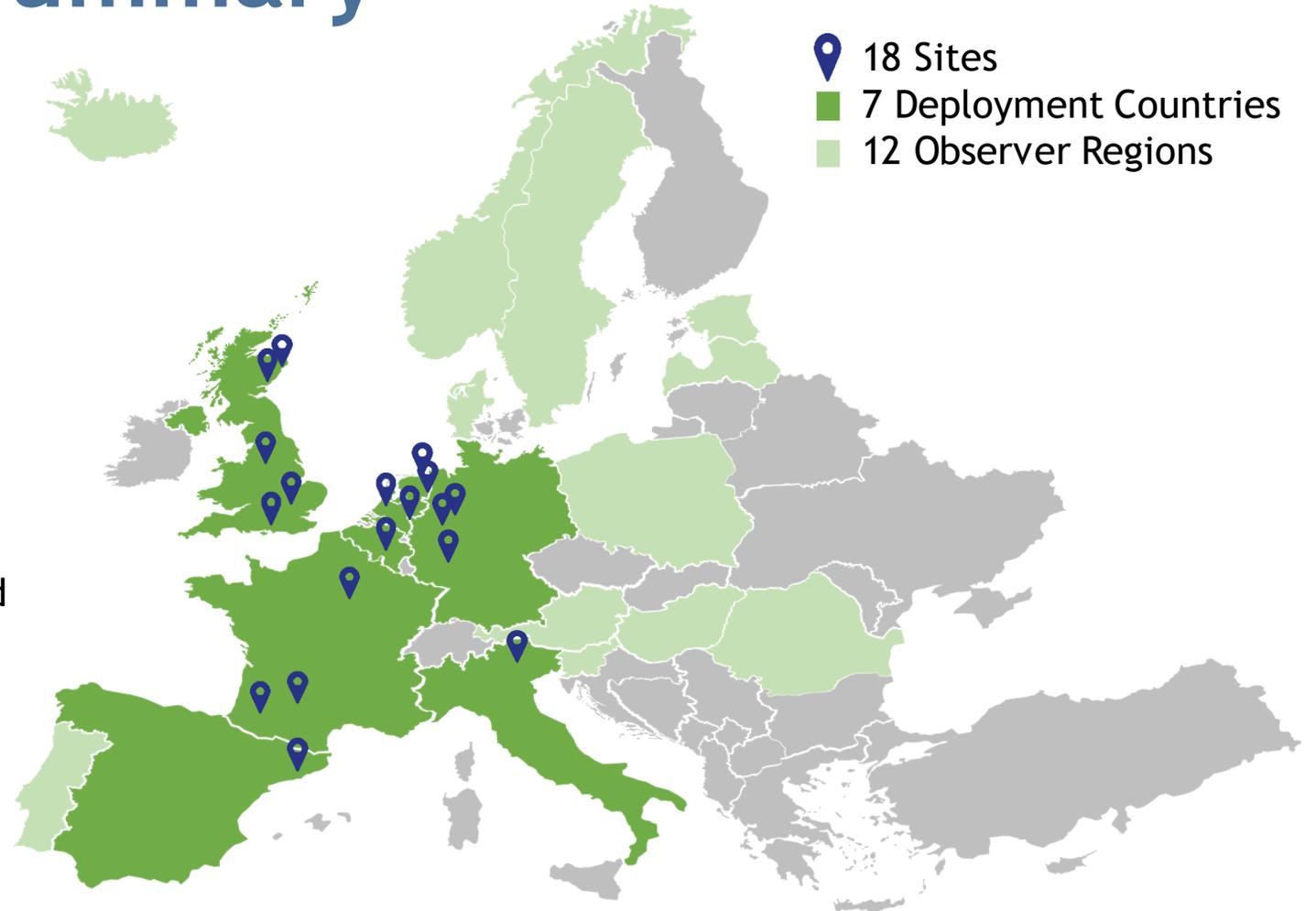
Objectives:

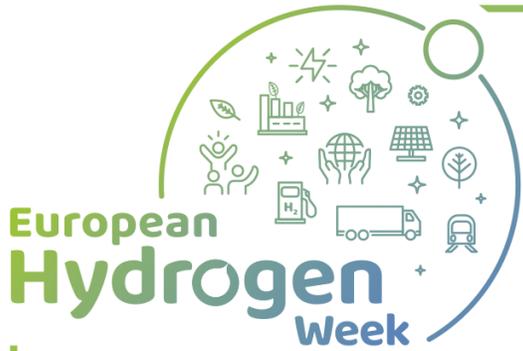


- Deploy 291 fuel cell buses
- Validate large scale fleets in operation
- Stimulate the FCB market
- Achieve a maximum price of €650k (JIVE) and €625k (JIVE 2) for a standard fuel cell bus



- Deploy 18 Hydrogen Refueling Stations
- Enable new cities & regions to trial hydrogen technologies
- Demonstrate routes to low cost renewable H₂
- Stimulate further large-scale uptake of fuel cell vehicles





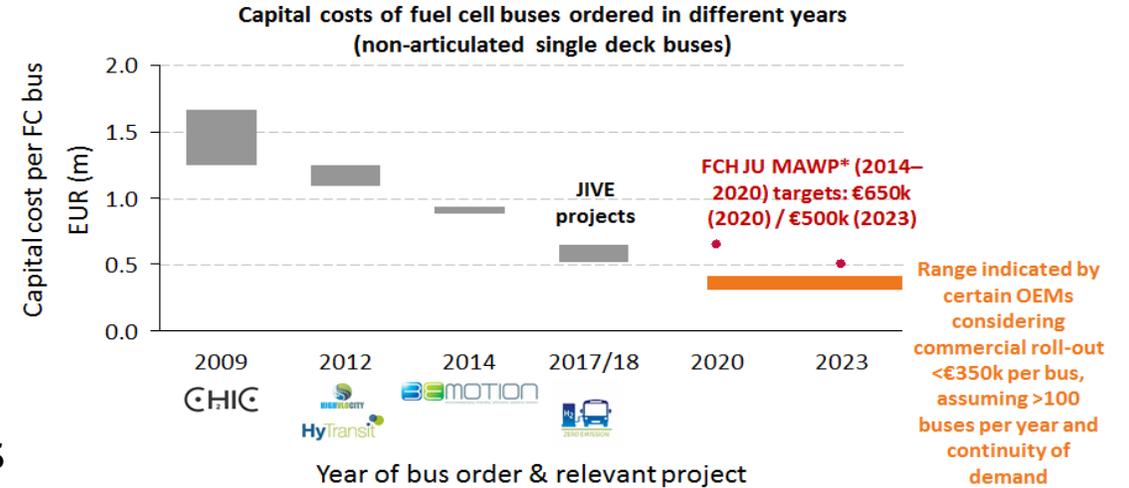
Project Progress

Status of deployment activities

Bus Deployment



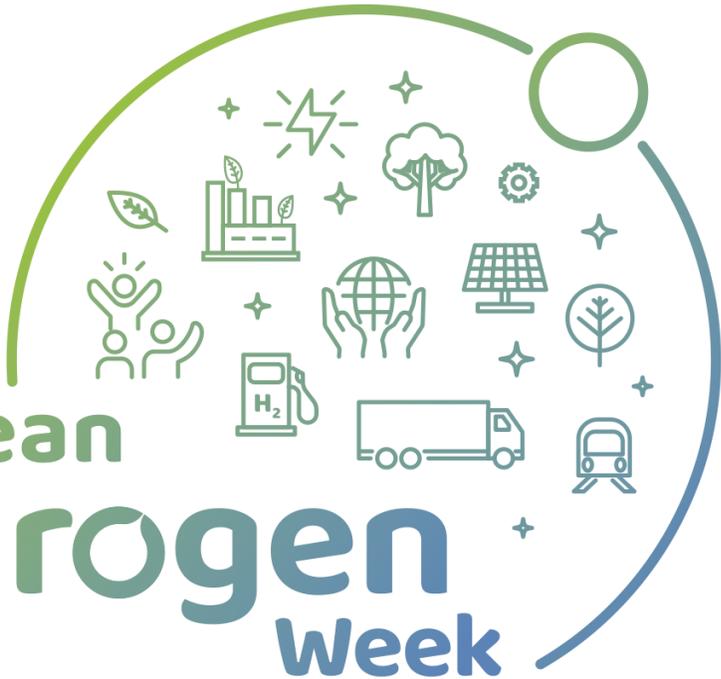
- All buses are on track to be ordered and **100 buses across 8 sites will be fully operational by Dec 2020.**
- JIVE has directly stimulated the FCB market: **14 European manufacturers are now offering FCBs.**
- Demonstrated cost reductions below the FCH JU MAWP target for 2023 **bus CAPEX of €500k/bus.**
- Produced best practices & lessons learned report for bus deployment [available at: www.uitp.org/publications].



JIVE

A success Story:

Deploying Europe's biggest Fuel Cell Bus Fleet at RVK



European
Hydrogen
Week

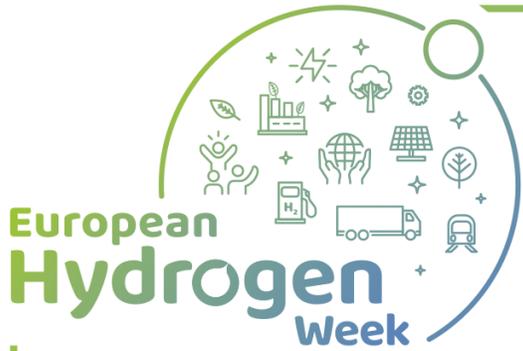
Jens Conrad
Project Manager
Regionalverkehr Köln GmbH (RVK)

<https://www.fuelcellbuses.eu>
Coordinator Madeline.Ojakovoh@element-
energy.co.uk



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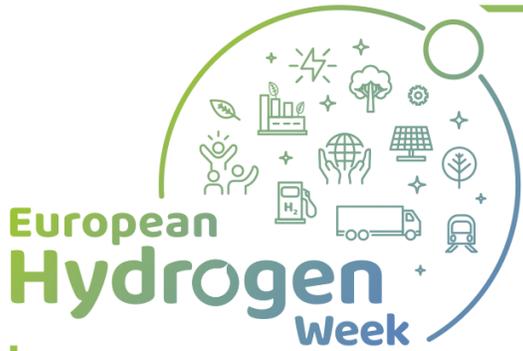


Regionalverkehr Köln GmbH (RVK)

Regional public transport operator

- Approx. **830** employees
- Area covered: approx. **2.800 km²**;
more than **2,3** mio. inhabitants
- Buses in daily operation: approx. **450**
(300 RVK owned buses plus approx. 150 buses from subcontractors)





Experience of RVK with deployment of FC buses

Fuel cell buses in service since 2011



From prototype...



...to pre- serial production



...to serial production!

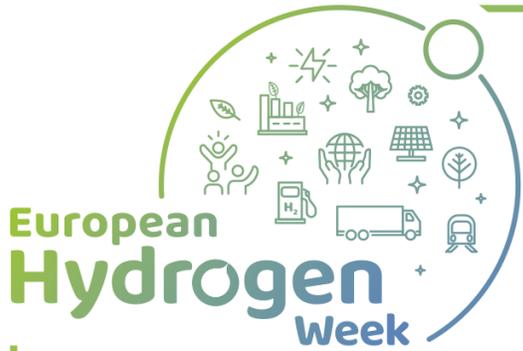
2011 – 2016

2014 – (at least) 2024

2020 – ongoing

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Expansion of FC bus fleet

50 Fuel cell electric buses

2 H₂-refueling stations



for the Cologne Region



JIVE



ZERO EMISSION



This project has received funding from the Fuel Cell and Hydrogen 2 Joint Undertaking under grant agreement No 735582. This Joint Undertaking receives support from the European Union's Horizon 2020 research and innovation programme, Hydrogen Europe and Hydrogen Europe research.



Gefördert durch:



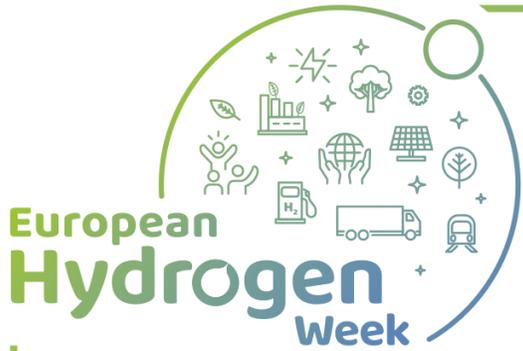
Koordiniert durch:



Kofinanziert von der Politik "Connecting Europe" der Europäischen Union

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Expansion of FC bus fleet – current status

Delivery of **35** fuel cell buses complete

10 buses in service since January 2020, **25** buses since October 2020

Delivery of additional **15** buses starting in early 2021



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Gefördert durch:

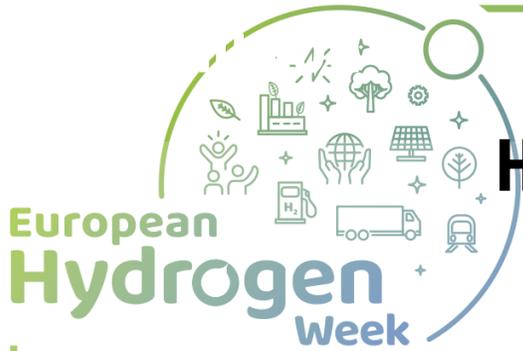


Bundesministerium für Verkehr und digitale Infrastruktur



Koordiniert durch:





Hydrogen and Fuel Cell technology are **ready for the market**

Hydrogen can be produced **locally** and **environment friendly**

Due to **advantages** of range, flexibility and refueling time feasible for regional public transport

With already **37** vehicles RVK deploys **Europe's biggest fuel cell bus fleet** refueling roughly **1 tonne of H₂** per day