

JIVE/JIVE2/MEHRLIN

Towards clean public transportation with fuel cell buses

CBEP & JIVE/JIVE 2 User Group meeting – 20th Oct. 2022 – Madrid, Spain



Presentation by Element Energy



The JIVE, JIVE 2 & MEHRLIN projects are flagship FCB projects in Europe, aiming to deploy ~300 buses by the end of 2022



🚌 The projects were launched in **2016** (MEHRLIN), **2017** (JIVE) and **2018** (JIVE 2).

🚌 Deploy **298 Fuel Cell buses (FCBs)** across **16 European cities and regions** in **6 countries** – the **largest deployment attempted to date in Europe**.



🚌 Deploy **18 Hydrogen Refuelling Stations**.



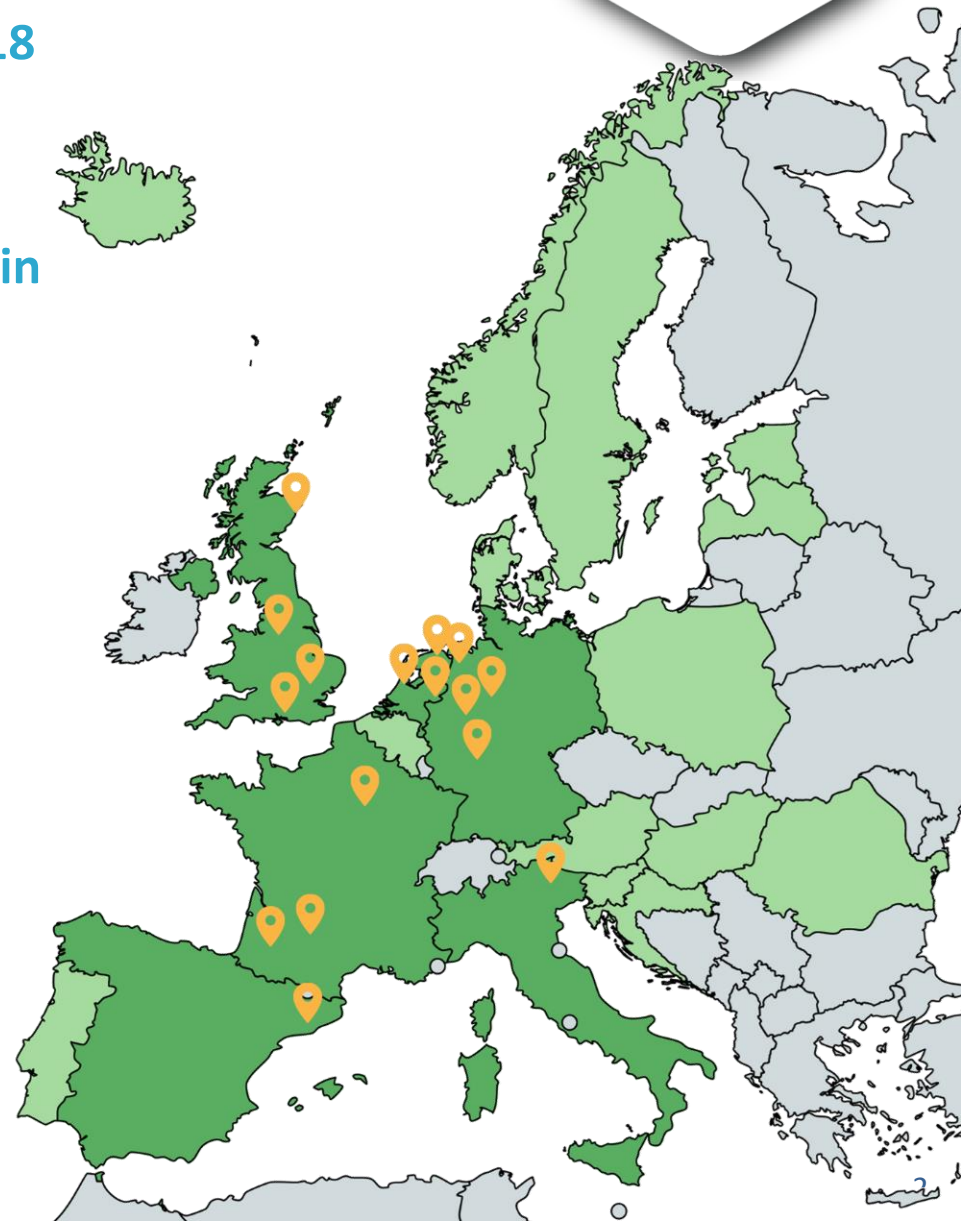
European funding from the Clean Hydrogen Partnership for the JIVE & JIVE 2 projects and CEF funding for MEHRLIN catalyses private and public investment on the national and regional levels.



📍 16 sites

■ 6 deployment countries

■ 14 observer regions



Recent news from the project



Buses and HRS deployment



Toulouse received its 1st bus on 2 March (left) and received its 1st AIRBUS FCBs on 24 June (right).



South Holland (11 March): The HRS started dispensing green hydrogen to the 20 FCB fleet.



Emmen (24 June): Site launch event.

Events



Connecting Europe Days (28 – 30 June): the JIVE/JIVE 2 projects were represented at the Hydrogen Mobility Pavilion



Barcelona launch event on the 26 May followed by a visit of the hydrogen refuelling station.

Consortium meetings

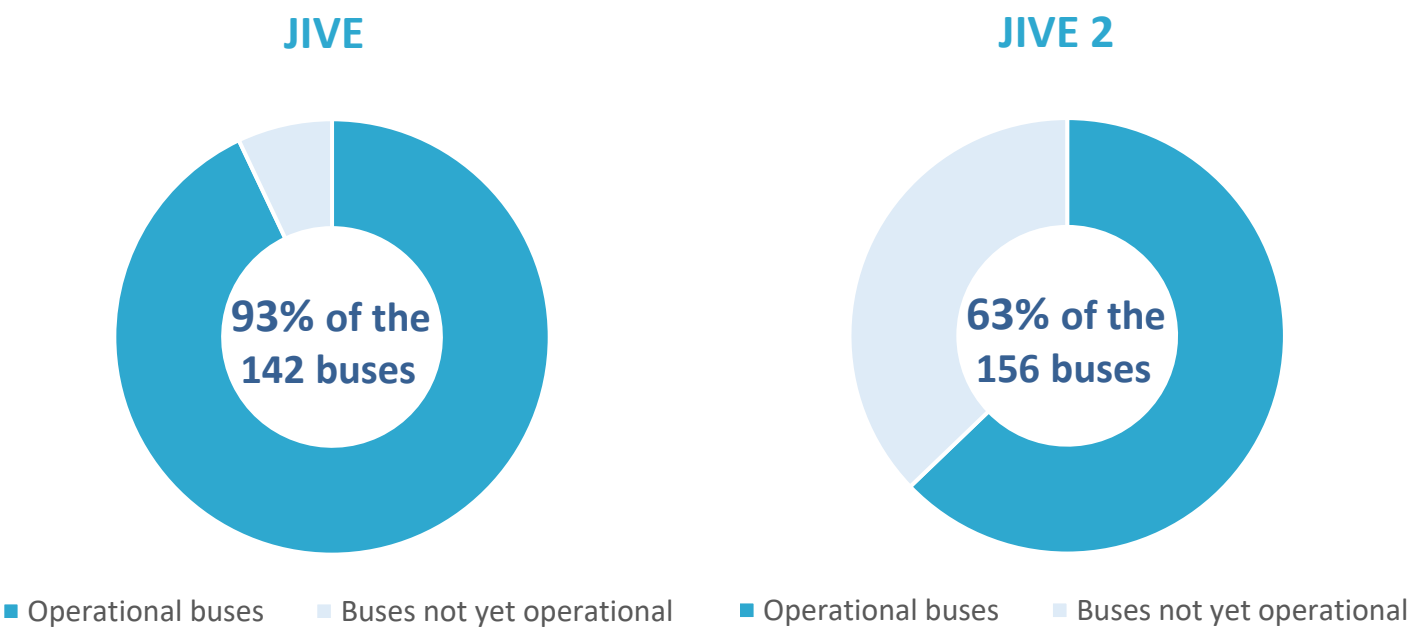


JIVE/JIVE2/MEHRLIN General Assembly 9 and 10 May in Rotterdam (NL).

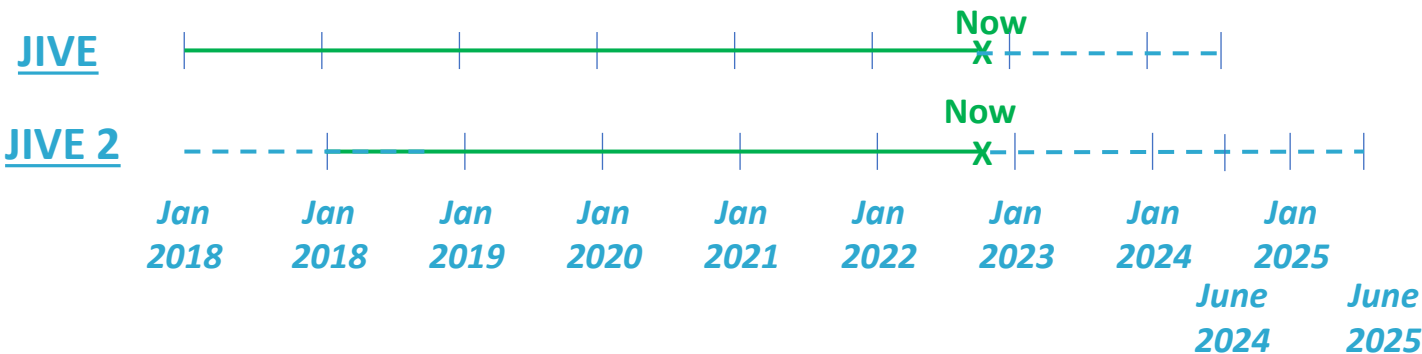
Current Status: Fuel Cell Buses



As of September 2022, **~77% of the buses are operational**, and 6.5M km have been driven cumulatively as of June 2022.



- 5 European OEMs
- Single deck (~60%) and double deck (~40%) buses
- Fleets from 5 to 50 buses



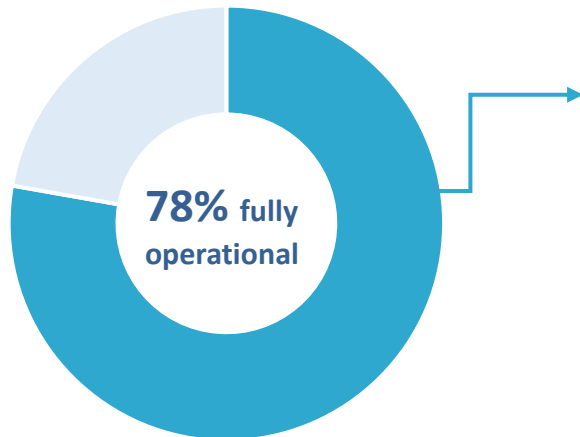
Current Status: Hydrogen Refuelling Stations



There are 14 HRS fully operational, most delivering green hydrogen to the vehicles.

- 🚌 **Seven** hydrogen refuelling stations used by the JIVE and JIVE 2 buses are financed through the MEHRLIN project (CINEA).
- 🚌 Several operators use, or plan to use, other existing local HRS / **mobile HRS configurations** to allow buses to start operating before HRS commissioning.

Hydrogen refuelling stations (JIVE/JIVE2/MEHRLIN)



- 🚌 **13** of the 14 operational HRS dispensing **green hydrogen** – overall, ~90% of the overall hydrogen dispensed will be green.
- 🚌 Sites with currently blue or by-product hydrogen have plans to move to green hydrogen
- 🚌 Across the project, **~60%** of the hydrogen will be produced **on-site with electrolyzers**.

■ Operational HRS ■ HRS not yet fully operational

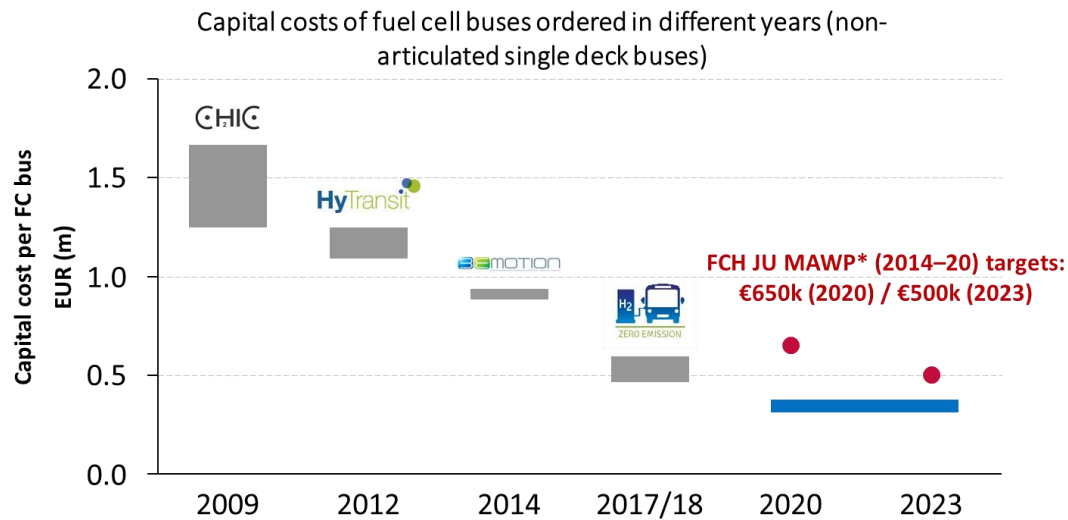


Drop in bus prices



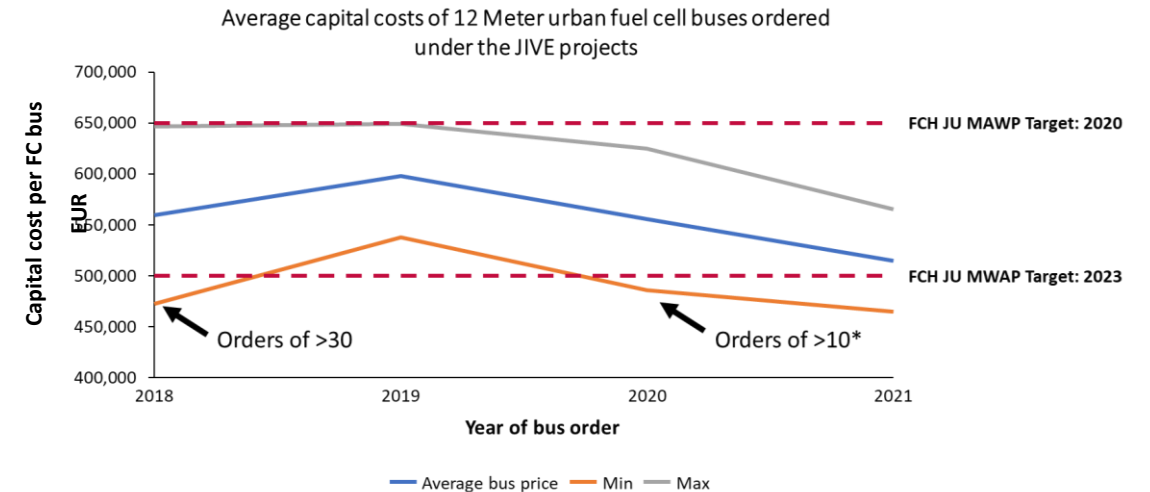
The prices of the buses purchased under JIVE and JIVE 2 have significantly decreased compared to previous projects.

Actual bus capex – historic FCB projects



Prices have significantly decreased since the first funded FCB projects.

Actual bus capex – JIVE & JIVE 2



Minimum costs are accessible for vehicle orders of >10 buses. Price varies dependent on specifications.

The JIVE and JIVE 2 targets in terms of prices have been achieved (below €650,000 and €625,000 respectively).



The **last buses and HRS are expected to go live** in the next couple of months – all should be operational by end Q1 2023. Some challenges are still expected along the way.



Data will continue to be gathered to **provide further knowledge and insights on the performance** of the buses and HRS (vs. the targets set out in the project).



Dissemination and communication activities will be pursued.



**EUROPEAN
ZERO EMISSION BUS
CONFERENCE** 9th - 12th Oct 2023
@ **Busworld** Europe Brussels

**Next ZEB conference announced in collaboration
with Busworld (9th – 12th October 2023)**

[ZEB website](#) and [Busworld news](#)

- Conference which brings together operators, policy makers, manufacturers, and industry to discuss decarbonisation of public and private transportation.



Full report available online: on
the Fuel Cell Buses website.
[Here](#)

Project coordination
elementenergy

an ERM Group company

Project dissemination



Hydrogen
Europe

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If you have any questions, please don't hesitate to contact:
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