

# FCH<sub>2</sub>RAIL

## FUEL CELL HYBRID POWERPACK FOR RAIL APPLICATIONS



<b>Project ID:</b>	<b>101006633</b>
<b>PRD 2023:</b>	<b>Panel 3 – H2 end uses – transport</b>
<b>Call topic:</b>	<b>FCH-01-7-2020: Extending the use cases for FC trains through innovative designs and streamlined administrative framework</b>
<b>Project total costs:</b>	<b>EUR 18 137 313.98</b>
<b>Clean H<sub>2</sub> JU max. contribution:</b>	<b>EUR 9 999 999.12</b>
<b>Project period:</b>	<b>1.1.2021–31.12.2024</b>
<b>Coordinator:</b>	<b>Deutsches Zentrum für Luft- und Raumfahrt EV, Germany</b>
<b>Beneficiaries:</b>	Administrador de Infraestructuras Ferroviarias, CAF Digital & Design Solutions SA, CAF Power & Automation SL, CAF Turnkey & Engineering SL, Centro de Ensayos y Analisis Cetest SL, Centro Nacional de Experimentación de Tecnologías de Hidrógeno y Pilas de Combustible Consorcio, Construcciones y Auxiliar de Ferrocarriles Investigacion y Desarrollo SL, Construcciones y Auxiliar de Ferrocarriles, SA, Faiveley Transport Leipzig GmbH & Co. KG, Infraestruturas de Portugal SA, Renfe Operadora, Renfe Viajeros SA, Stemmann-Technik GmbH, Toyota Motor Europe NV

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### PROJECT AND OBJECTIVES

The project consortium is developing and testing a new train prototype. At the heart of the project is a hybrid, bimodal drive system that combines the advantages of an electrical power supply from the overhead line with a hybrid power pack consisting of fuel cells and batteries. This system allows for more sustainable and energy-efficient rail transport. The project will show that this type of bimodal power pack is a competitive and environmentally friendly alternative to diesel power.

### NON-QUANTITATIVE OBJECTIVES

An expert network with external stakeholders was held in 2022 to support the analysis of gaps in the normative framework.

### PROGRESS AND MAIN ACHIEVEMENTS

- Fuel cell hybrid powerpack (FCHPP) development and tests on the CNH<sub>2</sub> test bench were successfully completed.
- Physical integration of two FCHPPs into the demonstrator train was successfully completed.
- The first static test of FCHPP in the demonstrator train has been conducted.

### FUTURE STEPS AND PLANS

- Dynamic testing of the demonstrator train on closed tracks will be carried out.
- The implementation of the hydrogen refueling station will be completed.
- The first test runs of the demonstrator train on open tracks will take place.



### QUANTITATIVE TARGETS AND STATUS

Target source	Parameter	Achieved to date by the project
Project's own objectives	System lifetime/durability	
	Hydrogen and electricity consumption	