# PORTS

#### H2Ports Implementing Fuel Cells and Hydrogen Technologies in Ports

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#### WHO WE ARE

Fundación Valenciaport is a centre for **Applied Research, Innovation** and **Training**, serving the port-logistics cluster.

It is an initiative of the Port Authority of Valencia, bringing together key companies, universities and institutions in the port community.

Since its creation, it has developed projects in more than sixty countries, mainly in the Mediterranean, the rest of Europe, Asia and Latin America.



#### Port of Valencia

Valencia City : 789,744 hab ; Metropolitan area: 1,581,057 hab



#### The port in figures



77.5 M tonnes. Total Traffic1



5.6 M TEU Container Traffic<sup>1</sup>



412 k ITU RoRo Traffic<sup>1</sup>



31,563<sup>2</sup> direct or indirect jobs



**1.82<sup>2</sup> billion euros** in economic impact (GVA)

<sup>1</sup> Values from 2021<sup>2</sup> Values from 2016 (update in progress)



#### **Reach Stacker in MSC Terminal**

• 2 years / 5000 h of operation

#### **General features**

- Total Budget: 4,117,197.5 EUR
- Duration: 2019-2023



First application in Europe of hydrogen technologies for

port handling equipment in real operative conditions





Clean Hydrogen Partnership

Co-funded by the European Union



## **Project Structure**





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### WP2. Hydrogen supply



Gas Supplier

Partnership



Buffer Tank 50 m<sup>3</sup>; D:2450 L:11510 10-40 bar 180kg



**Compressor** 50m3/h *p*<sub>in</sub>:10-40 bar *p*<sub>out</sub>: 300-450 bar



the European Union



FCHJU funding € 800,000 approx.

National Hydrogen Centre, Carburos Metálicos, Fundación Valenciaport, Valencia Port Authority, MSCTV, Hyster-Yale, Grimaldi, ATENA, Enagás



- Mobile hydrogen refuelling station
- $\circ$  Up to 60 kg of H<sub>2</sub> at 350 bar per day
- Hydrogen flow rate up to 3.6 kg/min
- Storage cascade at 300 and 450 bar use
  in order to save energy







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FCHJU funding € 1,300,000 approx.

Hyster-Yale Nederland B.V., MSCTV, Port Authority of Valencia, Fundación Valenciaport, National Hydrogen Centre



#### Expected achievements

- Average CO<sub>2</sub> reduction of 128,000 kg per year per vehicle (3000 h & 16 L/h)
- $\circ$  Lower TCO
- Improved productivity













FCHJU funding € 1,100,000 approx.

ATENA, Grimaldi Group, Ballard, National Hydrogen Centre, Fundacion Valenciaport



Development and deployment a 4x4 Yard Tractor equipped with a Fuel Cells and test it in Valencia Terminal Europa (Grimaldi Group). It involves three tasks:

- Design of the new FCEV YT
- Assembling of new components in the YT
- Testing and Piloting of the FCEV YT in Valencia, Spain





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## Market uptake strategy and risk management

#### **Objectives**

Analysis of the technical and financial feasibility of the use Hydrogen Fuel Cells in ports machinery.



#### Logistics

Define the most adequate logistic chain for supplying hydrogen. Estimate potential agregated demand



#### Regulatory

Analyse all aspects related to safety. Study the permiting process



#### Market uptake

Assess the financial feasibility. Propose a path for the introduction of FC in the port maritime sector. Define the most probable implementing scenarios.

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#### https://h2ports.eu/











H2PORTS project. Implementing Fuel Cells and Hydrogen Technologies in Ports. Fuel Cells and Hydrogen Joint Undertaking.

📰 Se unió en febrero de 2019

21 Siguiendo 322 Seguidores

#### Linked in





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### Thank you!

