CDTI-NEDO online Joint Workshop on Hydrogen Technology
- Green Hydrogen Production & Mobility -

H2PORTS
Implementing Fuel Cells and Hydrogen Technologies in Ports

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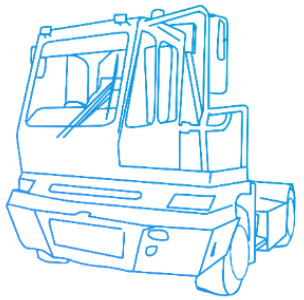
Implementing Fuel Cells and Hydrogen Technologies in Ports (H2Ports)

FUEL CELLS AND HYDROGEN JOINT UNDERTAKING



Yard Tractor in Valencia Terminal Europa

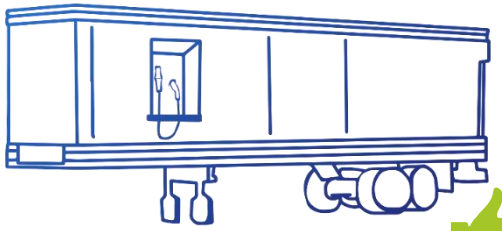
- 2 years / 5000 h of operation

Mobile HRS

- Hydrogen supply logistics at ports
- Port regulatory framework
- Safety procedures

Reach Stacker in MSC Terminal

- 2 years / 5000 h of operation



First application in Europe of hydrogen technologies for port handling equipment in real operative conditions

General features

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

Partners

Coordination:

FUNDACIÓN VALENCIAPORT

Public authorities

valenciaport

Autoridad Portuaria de Valencia

Research institutions

Centro Nacional del Hidrógeno

ATENA FUTURE TECHNOLOGY

End users

msc TERMINAL VALENCIA

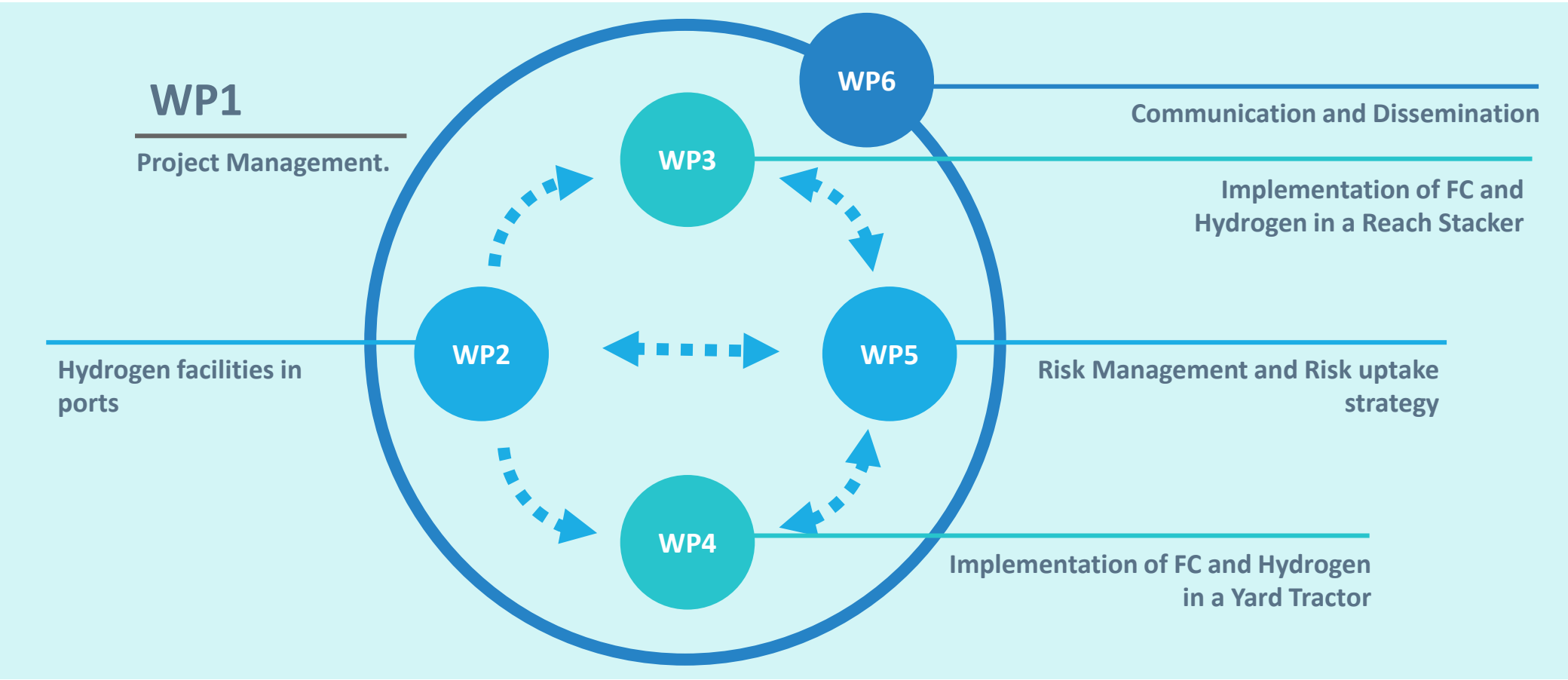
GRIMALDI GROUP

Industry

HYSTER-YALE GROUP

BALLARD

Project Structure



WP2. Hydrogen supply

Gas Supplier

Buffer Tank
50 m³; D:2450 L:11510
10-40 bar
180kg

Compressor
50m3/h
p_{in}:10-40 bar
p_{out}: 300-450 bar

Mobile Unit

High pressure storage

300 bar
153 L
151 Kg

450bar
135L
841 Kg

Panel dispenser
Up to 3.6 kg/min
Tmax 85 °C

FCHJU funding € 800,000 approx.

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

- Mobile hydrogen refuelling station
- Up to 60 kg of H_2 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

WP3. Reach Stacker

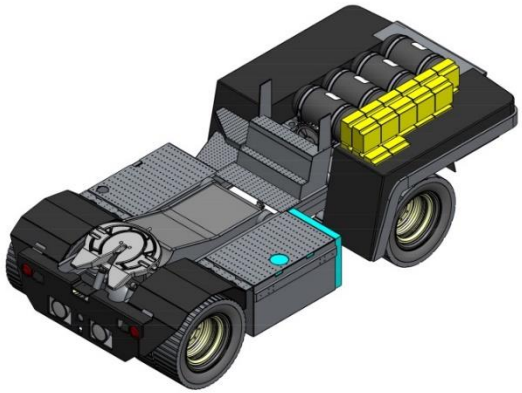
FCHJU funding € 1,300,000 approx.

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

Expected achievements

- Average CO_2 reduction of 128,000 kg per year per vehicle (3000 h & 16 L/h)
- Lower TCO
- Improved productivity

WP4. Terminal Tractor



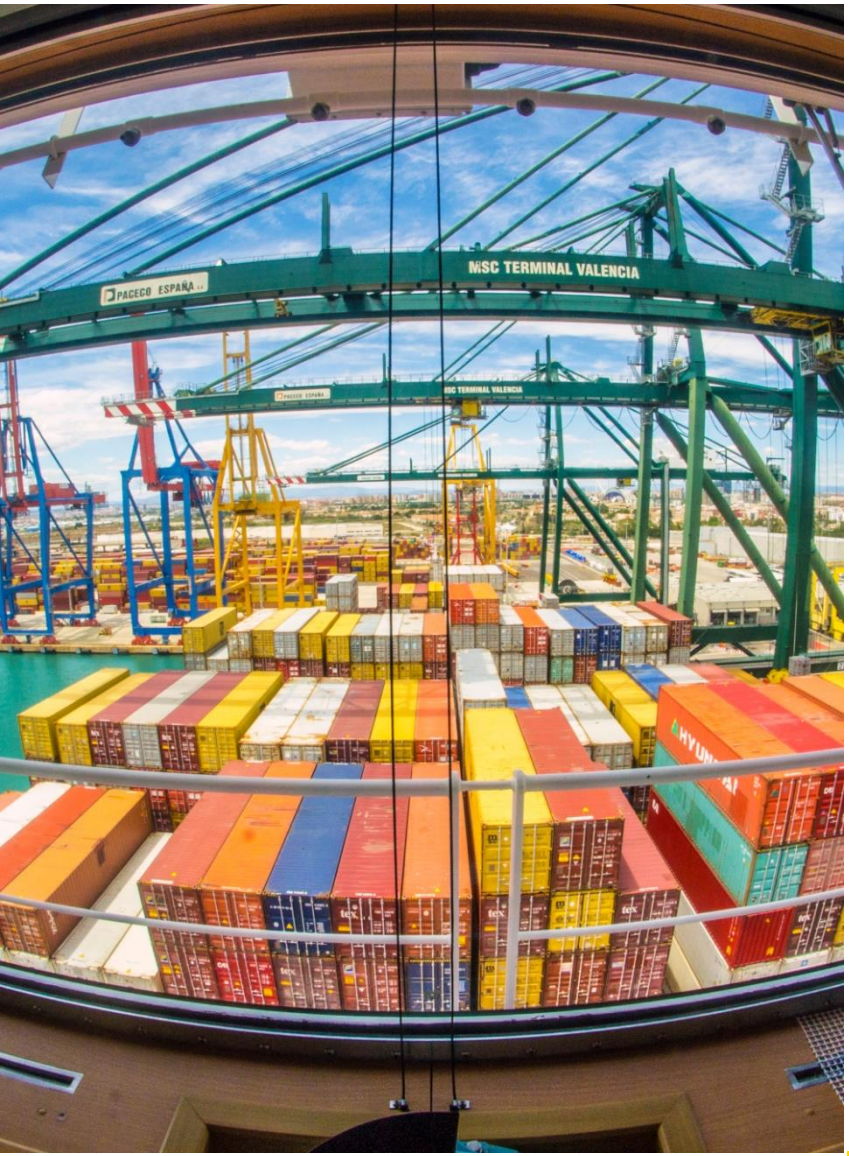
FCHJU funding € 1,100,000 approx.

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

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.

H2 PORTS

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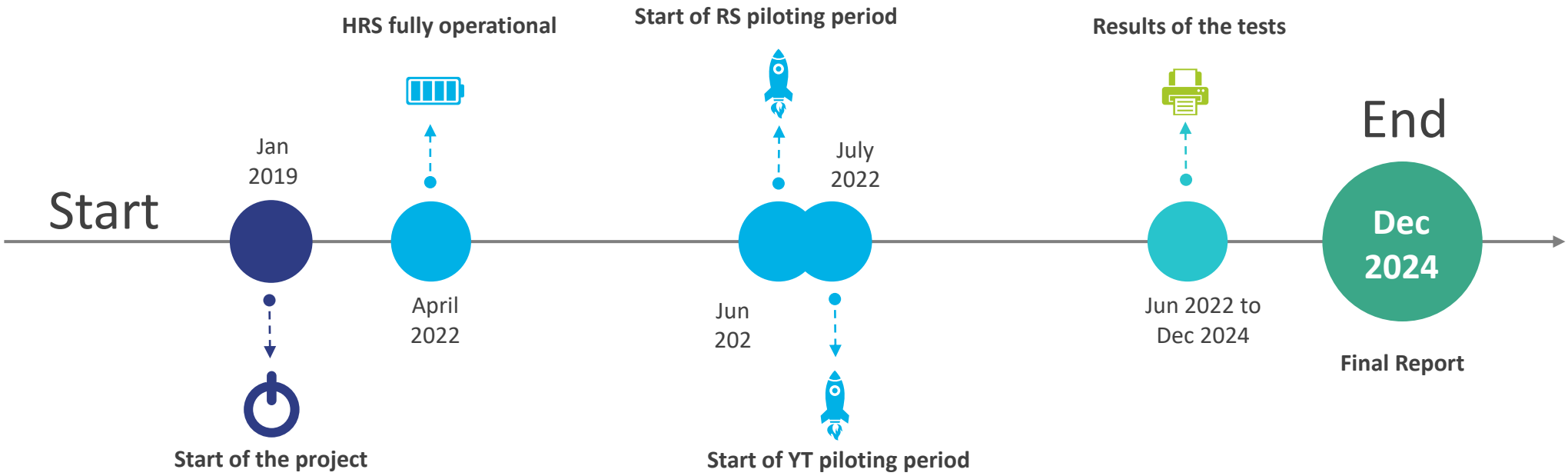
H2Ports current planning



Ideas for a Japan – Spain collaboration

- ✓ Being Japan a big Island, maritime ports can be a key point for the decarbonisation. H2Ports results can provide useful information to help Japan to its decarbonisation plan
- ✓ A mobile HRS can be a great solution for more facilities like big depots or big airports
- ✓ Introducing FC in maritime ports can be the starting point for other sites like railways workshops, airports and so on.

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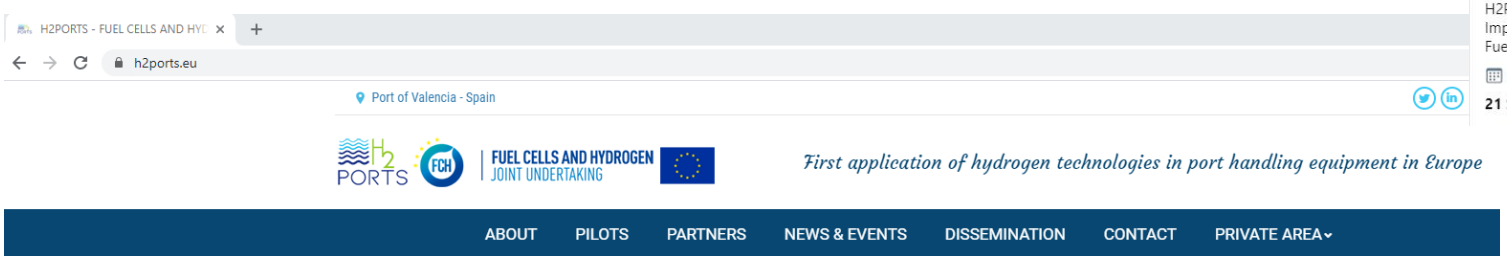
https://h2ports.eu/



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Thanks for your attention

- ✓ Cristina.Ballester@cnh2.es
- ✓ https://h2ports.eu/

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Partners:

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valenciaport Autoridad Portuaria de Valencia

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