



H2PORTS

First operational experience using hydrogen at ports

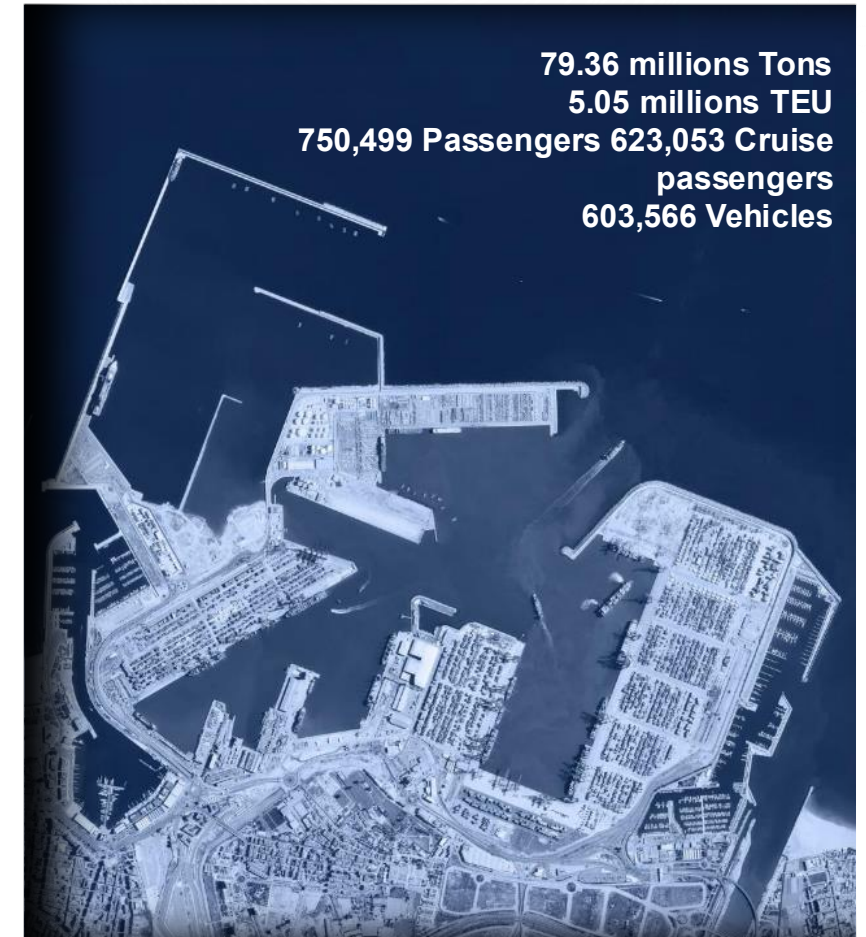
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Hydrogen Research & Innovation Days

24-25 November 2025



The Port of Valencia



Hydrogen Research & Innovation Days

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Implementing Fuel Cells and Hydrogen Technologies in Ports



Co-funded by the European Union

Port of Valencia



Reach Stacker in MSC Terminal

- 2 years / 5000 h of operation

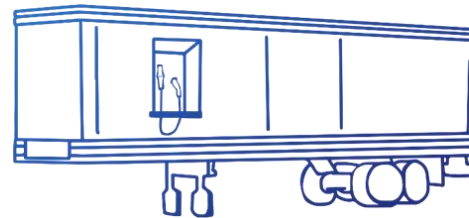
Mobile HRS

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



Yard Tractor in Valencia Terminal Europa

- 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



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Coordination:



Public authorities



Research institutions



End users



Industry

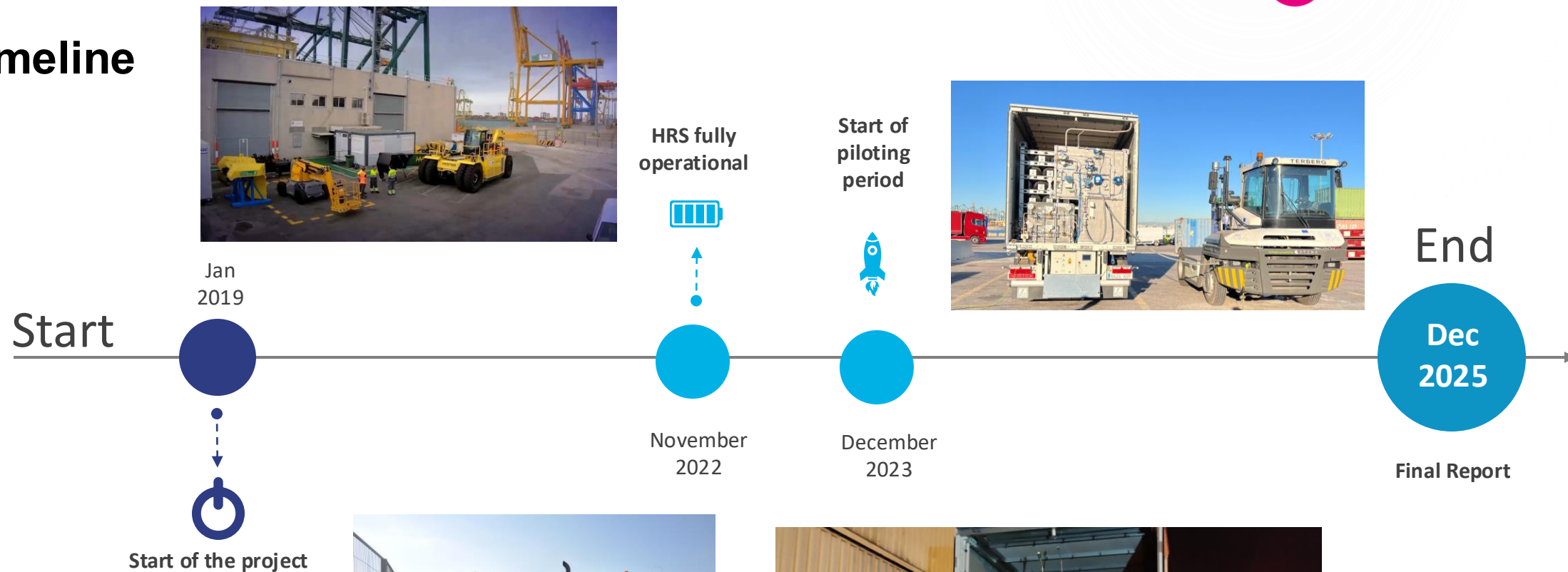


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Timeline



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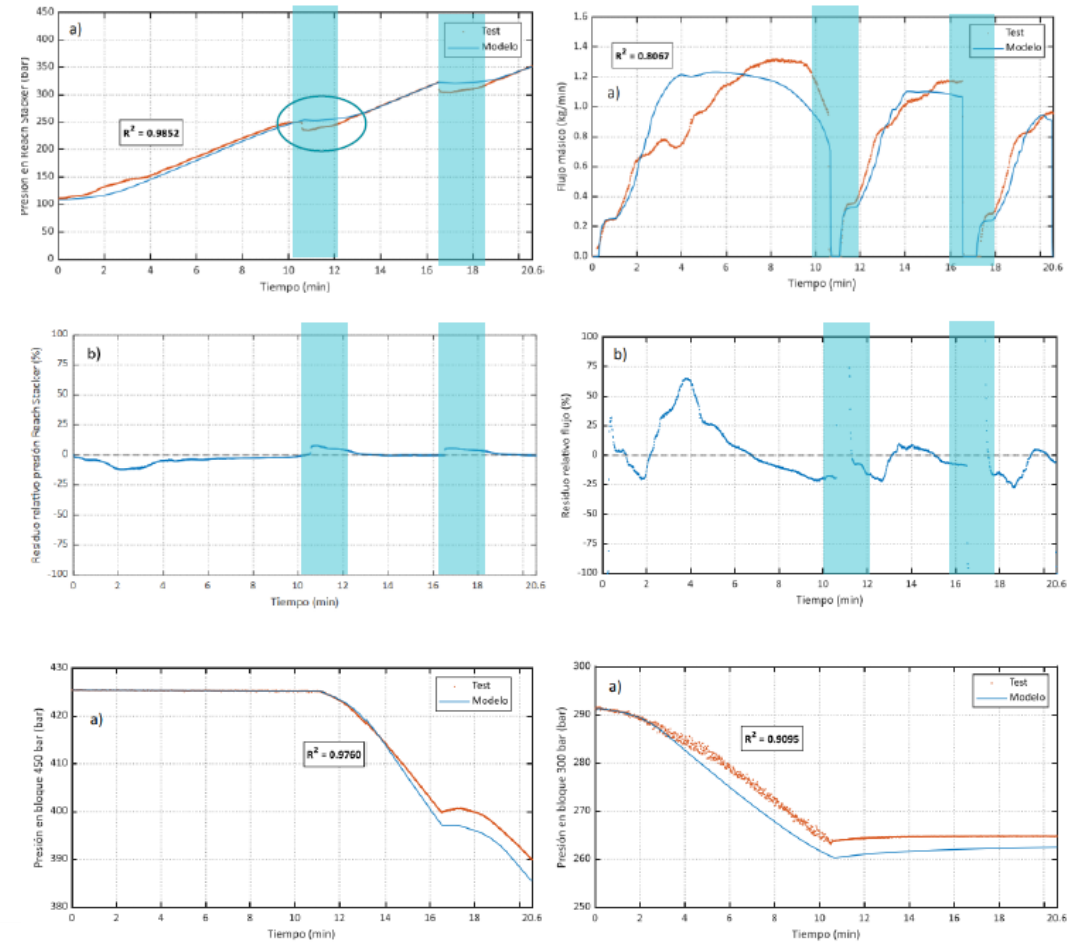
Results Pilots

KPI		REACH STACKER	YARD TRACTOR	UNITS
Operational	Hydrogen consumption	0,84	1,88	kg/h
	Availability	0,65	not available yet	%
	Cost of Spare parts	709	50	€/h
	Labour cost	not available yet	not available yet	manh/kh
	MTBF	64	not available yet	h
	Hours of operation	970	500	h
	Average number of movements/hour	2,6	5,0	mov/h
	Average distance per hour	1,35	12	km/h
	Average Energy Generated / h	1,6	60,0	kwh/h
	Stack efficiency	40	46	%
Refuelings	Number of H2 refuellings	303	20	n
	Total Hydrogen Consumption	1660	1,8	kg/h
	Hydrogen refueled/refueling	1630	n/a	kg/h
	Mean refueling time	1500	2400	s
Mainitenance	Downtime, overall	336	865	h
	Downtime for scheduled maintenance/upgrades	40	450	h
	Downtime due to electrical components	16	65	h
	Downtime due to the high voltage battery	80	200	h
	Downtime due to the on-board hydrogen storage tank	40	0	h
	Downtime due to peripheric mechanical components	16	60	h
	Downtime due to stack issues	72	40	h
	Downtime due to software issues	72	50	h
	Number of unforeseen stops / hour operation	4	not available yet	n
	Number of critical failures / hour operation	16	0,002	n



Results HRS

HRS Register	Results 2024	Results 2025
Number of refuellings	35	69
Time of HRS in service (days)	181	107
Number of No refuellings	208	143
Time of HRS out of service	56	94
Number of No refuellings due to HRS out of se	56	94
Number of No refuellings due to external issue	152	38
Total of Kg refuelled	400	800
Average Temperature per fuelling	28	20
Buffer Tank Fillings	8	11





Thank you!

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