

Smart Ports Summit London

19th February 2020

PORT OF MARSEILLE FOS

**A SMART PORT FOR ENERGY TRANSITION
AND ENVIRONMENTAL EXCELLENCE**



Stéphane REICHE – Port of Marseille Authority

Marseille Fos a multipurpose port

One port, two harbors



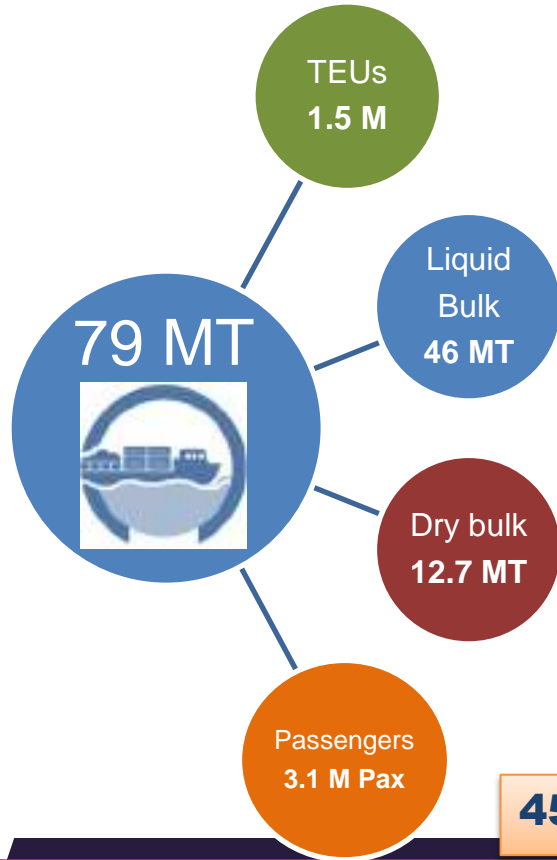
Western Harbors-Fos:
the Global Port/ 10 000 ha.

Activities: Containers, Petro-chemical complex, Energy, Solid bulk, Cars,

Eastern Harbors-Marseille:
the Shortsea Port/ 400 ha.

Activities: RoRo, ConRo, Cars, Breakbulk, Passengers – cruise & ferry

Marseille Fos 2019 vs. 2018



Containerized goods
TEUs
+4%



Cargo +2%
Cars +23% (Q2)

Liquid Bulk
+1%



LNG +5%
Biofuels +22%

Dry Bulk
-15%



Chemical & food +11%

Ferries & Cruise
+5%



45,000 direct and indirect jobs

3.5 billion euros of added value

Increasing massified inland modes: 2019 vs. 2018

Multimodal options for inland transportation, modal shares 2019 vs. 2018:

- River network: + 9.8%
- Rail network: + 34.4%
- Highway network: - 5.2%



Marseille Fos: a multimodal network

Fast expansion of regular rail services



25 destinations in France & Europe

Chavornay – Rotterdam – Antwerp – Zeebrugge –
Ludwigshafen – Duisburg – Hamburg – Lubeck –
Munich – Rotterdam – Schkopau – Bunsen

Open competition between rail operators



Marseille Fos : a multimodal Network

Growth of river traffic

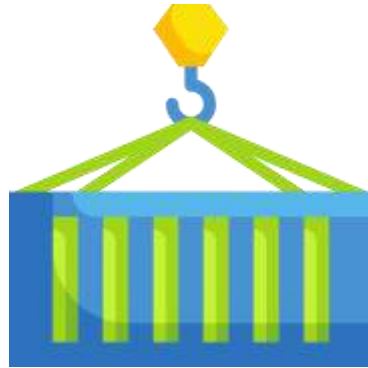


5 SERVICES PER WEEK: Fos - Valence - Lyon



PORT OF MARSEILLE FOS' MASTER PLAN 2020-2024

Green Port and Blue Economy



→ **Combining environmental excellence and competitiveness for a better attractiveness**

MARSEILLE FOS 

le French smartport *in med*

A collaborative action initiated by



Supported by



With major companies



3 fields / 4 operational objectives

Smart & efficient logistics



**Industrial & energy excellence to
improve environmental efficiency**



Best-in-class digital offer



A fluent port



A green port



A positive energy port



An innovative and job-creating port



The CCS connects up all entire supply chain with smart door-to-door goods tracking



FastLane



Interoperability



Activity Monitoring



Business intelligence



User centric





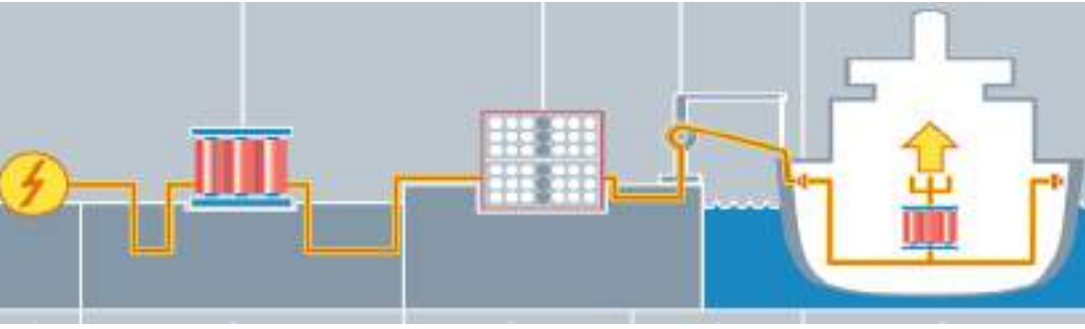
Integrated Intelligent Multimodal Transport

A Tool for Optimal Coordination Of Cargo & Equipment



Shore-to-ship power

Marseille 1st Port in Mediterranean to plug ships on a regular basis



**In progress for
shiprepair and cruise:
A 20M€ investment plan
to 2025**



Marine geothermal energy

2 power plants providing heating, hot water, air conditioning

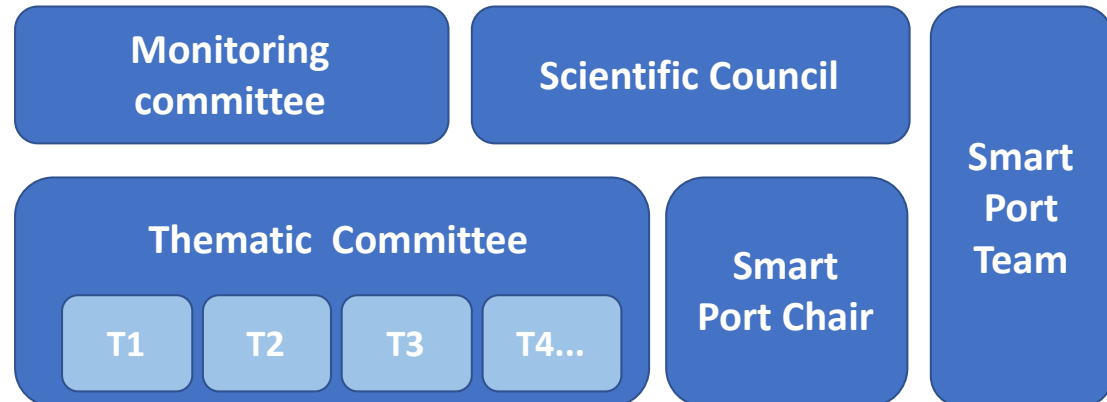


BRAIN PORT COMMUNITY

Partnership agreement focused on projects

The Brain Port Community brings together the academic community of the Aix-Marseille metropolitan area to work on mid and long term issues faced by economic partners:

- Research and development issues
- Training issues



THE SMART PORT CHALLENGE FOR OPEN INNOVATION



Green Mobile Energy for reefer



Energy recovery from cruise ships' wastewater



Facilitation of eco-friendly navigation practices



Demonstrator of the environmental aspects of
"Interxion River Cooling"



Interactive promotion of the sustainable initiatives in
the port of Marseille Fos



Control of ships and port infrastructures based on IoT



Making Smart Containers secure



Video images, AI and port fluidity

Go to → www.lefrenchsmartportinmed.com

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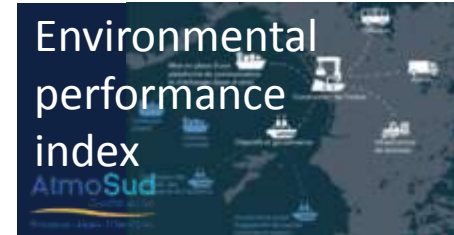
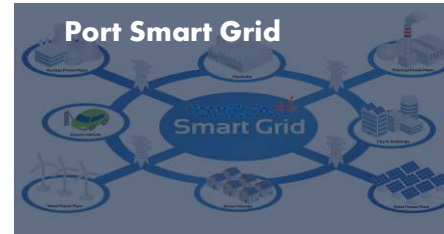
Topics

12

Labeled projects

+50

Active partners



SMART PORT OBJECTIVES & UN SDG'S



A fluent port

 <p>9 INNOVATION AND INFRASTRUCTURE</p>	 <p>17 PARTNERSHIPS FOR THE GOALS</p>	 <p>15 LIFE ON LAND</p>
 <p>13 CLIMATE ACTION</p>	 <p>11 SUSTAINABLE CITIES AND COMMUNITIES</p>	 <p>3 GOOD HEALTH</p>
 <p>7 RENEWABLE ENERGY</p>	 <p>9 INNOVATION AND INFRASTRUCTURE</p>	 <p>13 CLIMATE ACTION</p>
 <p>9 INNOVATION AND INFRASTRUCTURE</p>	 <p>8 GOOD JOBS AND ECONOMIC GROWTH</p>	 <p>4 QUALITY EDUCATION</p>

A green port

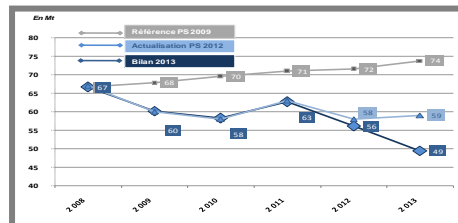
A positive energy port

An innovative and job-creating port

The energy transition as a green growth driver

Refinery industry Context :

- -20% of traffic since 2008 => -20MT
- Losses of added value for the port
- Structural changes for the future



Emergency to :

- Maintain and develop our historical activities (circular economy, innovation),
- Find new sources of growth for the port authority and its territory
- Pressure to reduce our environmental footprint

Strategic view of the port:

The port supports diversification and **energy transition in a territorial cohesion approach, in favor of regional employment**

- **Energy transition as the port's new strategic business for diversification and sustainability**
- **Renewable energies and H2 opportunities ... !**

(Already involved in these new activities => 120 MW renewables, circular economy, CO2 recycling, etc ...)

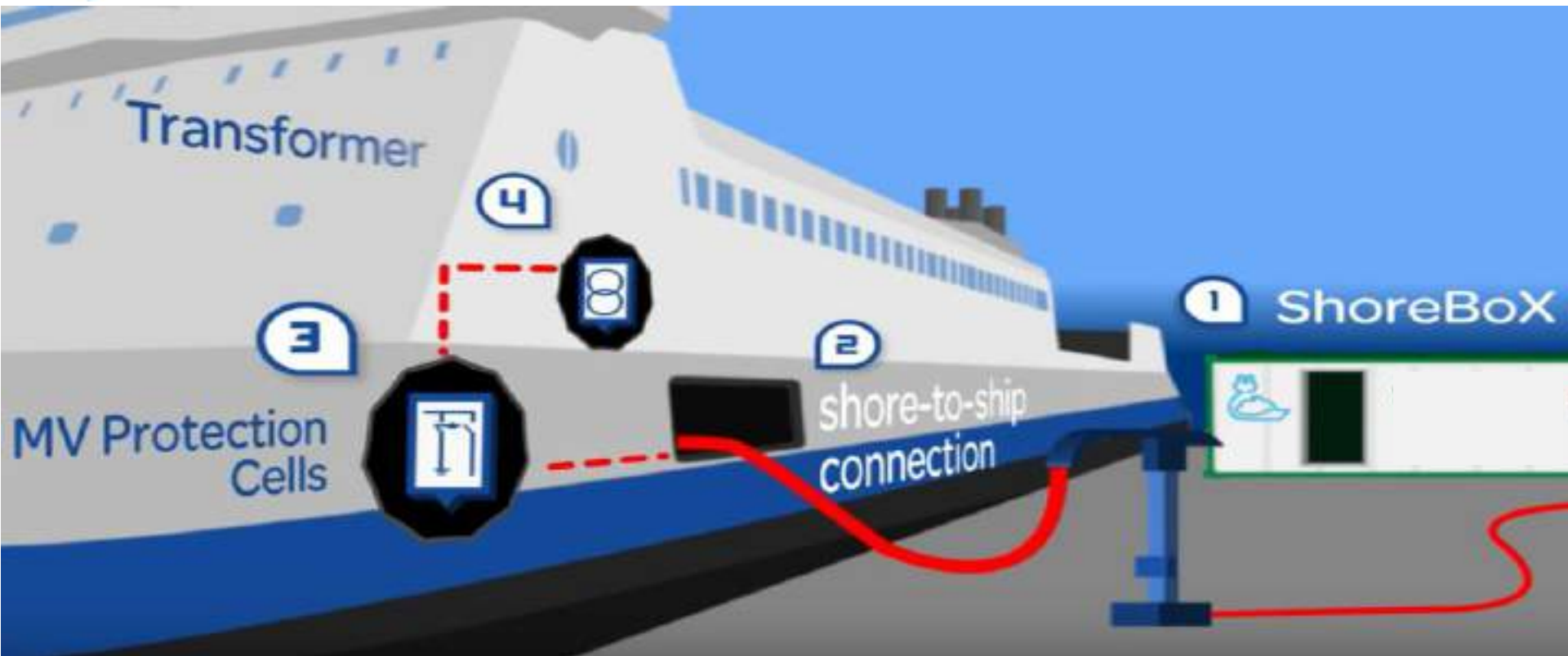




La Méridionale

CORSICA linea

« Laissez vous transporter »

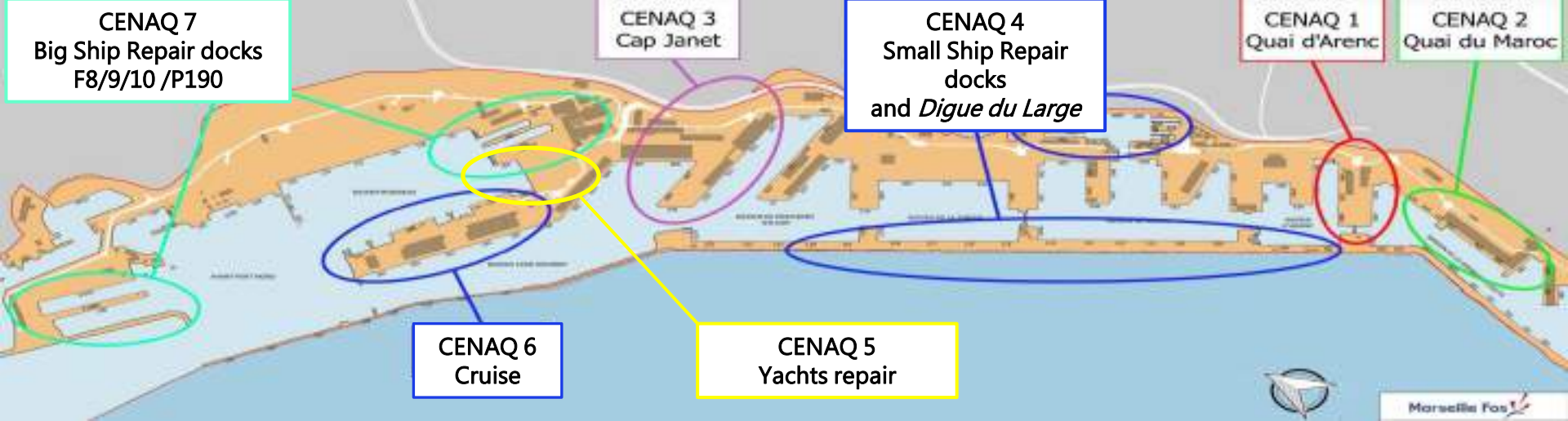


Cold ironing deployment – NEXT STEPS

➤ It is proposed a phasing in 3 stages. The main technical issues are 1) the frequency conversion from 50 to 60 Hz to match that of the ships and 2) the power levels called.

Phases	Targets	Nb of targeted ships	Characteristics of the connections				Number of berths to equip	Nb of simultaneous connections	Total est. investment
			Voltage	Fre-quency	Estimated maximum power per ship	Possible break on connection			
1	Corsica Linea / ships dedicated to the Corsican public service	1 to 4	High	50 Hz	2 MW	No	3 at Morocco Dock	1 to 2	2 M€
1	Ships in small ship repair or long-term parking	Tous	Low	60 Hz	1 MW	Yes	1 mobile converter	1	0,5 M€
2	Ferries of international lines	5	High	50 Hz	3 MW	No	2 to 3 at Cap Janet	1 to 2	3 M€
2	Ships in industrial ship repair	All	High	50/60 Hz	6 MW	Yes	F8, F9, F10, P190	1 to 2	12 M€
3	Cruise ships	12 to 15	High	60 Hz	12 MW	No	2 to 3 at MLG	1 to 2	18 M€





Localisation of cold ironing projects in the port of Marseille...
Cold ironing projects in Fos about to be implemented.



Marseille-Fos – major LNG bunkering hub

- LNG: Very significant reduction of the three main pollutants SO_x, NO_x and particles, though results are less effective on the reduction of greenhouse gas.
- LNG is however a good alternative because it can be used both in navigation, when approaching the port, when maneuvering and at the dock.
- The port of Marseilles Fos, with its industrial partners (suppliers of molecules, industrial tankers, shipowners) puts itself in a position to play a major international role in the LNG bunker supply.



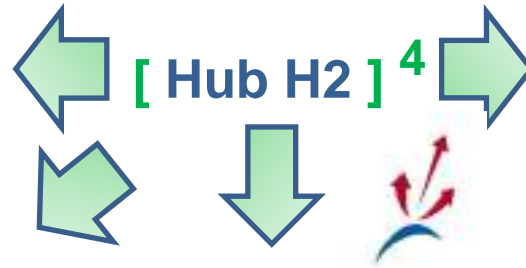
Port of Marseille-Fos Hydrogen VISION => [H2 Hub] in 4D

D1 – PRODUCTION [H2 Hub]

- **Industrial H2 co production** : > 10KT/year
- **Potential H2 production by electrolyse** : Industrial water + available land areas for H2 factories, renewable electricity production (>100 MW)

D2 – CONSUMPTION [H2 Hub]

- **360° mobility** :
- Trucks = 2 Millions movements / year
- Trains = 7 000 movements / year
- River shuttles = 3 000 movements / year
- Logistics = 3 Millions m2 warehouses
- Maritime = ships and stevedoring
- **Industrial applications** : power to methanol, bio refinery, ...
- **Energy storage** : Power to gas
- **Stationary applications** : ships electrical connections, network services (storage, power smoothing)



D3 – IMPORT / EXPORT [H2 Hub]

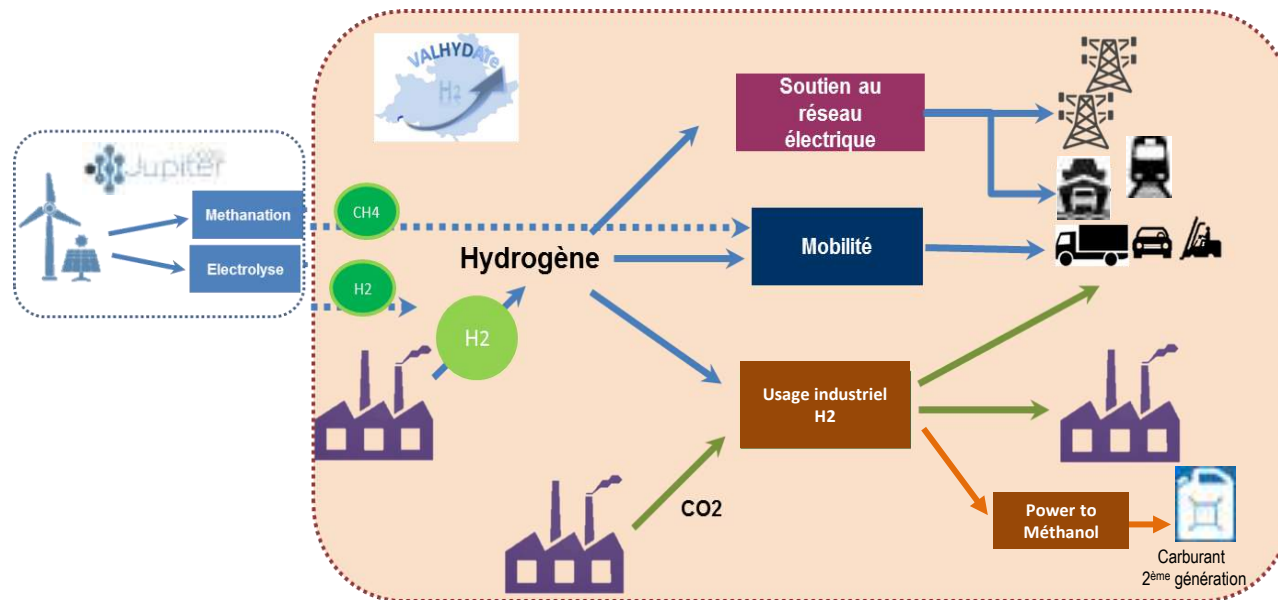
- **Maritime Terminal** : H2 traffic import and export
- **High storage capacity and distribution network potential** in the hinterland

D4 – INNOVATION [H2 Hub]

- **INNOVEX** : incubator of innovation for pre industrial demonstrators (12 ha) => Jupiter 1000, Fuel cells for ship connection and electrical storage, ...



VALHYDATE 2016 : a first collective initiative to structure the H2 opportunities in a global territorial project



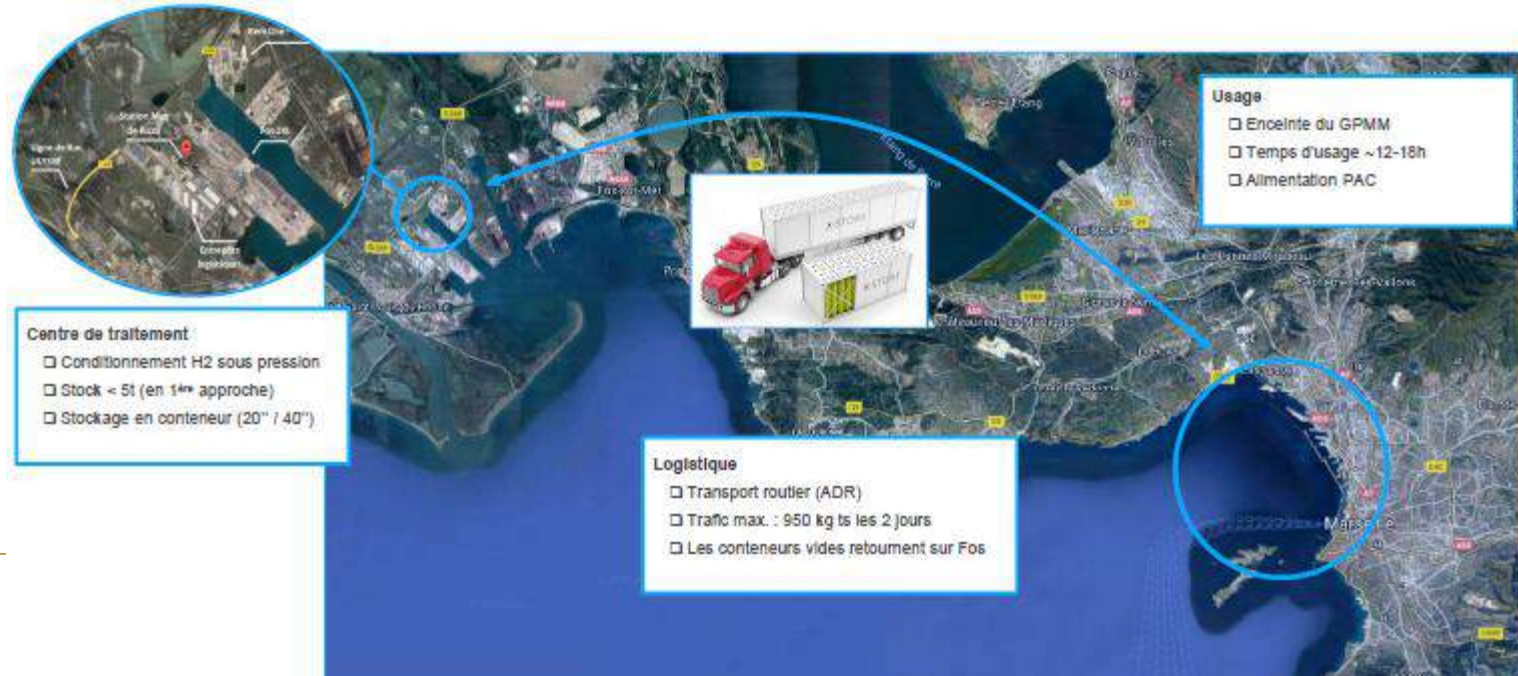
2020 - Several H2 projects are on progress on the port

- **JUPITER 1000 on INNOVEX** : power to gas demonstrator, 1MW electrolyse and 0,5MW methanation
- => First H2 production in july 2019



2020 - Several H2 projects are on progress on the port of Marseille

- **Integrated service demonstrator using containerized H2 fuel cells for mobile applications in the port of Marseille :**
- Ship electrical connection for ferries and ro-ro ships : 2 MW, 6600 and 11000 Volts, 50-60Hz
- Power smoothing for naval reparation issues : 6 MW needed for pumping forms of naval repair
- Electrical smart grid application : PV production and H2 storage facilities needed



2020 - Several H2 projects are on progress on the port

- OTHER H2 PROJECTS UNDER CONSTRUCTION IN FOS / Target 2022 :
- Hydrogen refueling station for trucks, bus and vehicles
- Daily H2 freight train (>50 containers)

**THANK YOU FOR
YOUR ATTENTION**