Decarbonisation strategy of the Port Authority of Valencia

Raúl Cascajo
Head of Environmental Policies

2th April 2022
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1. Valenciaport in figures
2. Need for extra power supply
3. Pillars for the descarbonisation of the port
   1. Renewable Energies
   2. Use of alternative/clean fuels
   3. Energy efficiency
   4. Digitalisation
4. Other projects
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Valenciaport in figures

The PAV runs 3 commercial ports in the Valencian Region

The Port Authority of Valencia (PAV) is a State owned public entity in charge of the management of 3 ports located along 80 kilometres of the eastern border of the Spanish Mediterranean coastline in the Valencian Region: namely, the ports of Sagunto, Valencia and Gandia.
Over 85 million MT handled in 2021...despite Covid 19

PAV CARGO THROUGHPUT - MILLION MT

Valenciaport in figures
Over 5.6 MTEU in 2021…despite Covid19

PAV CARGO THROUGHPUT - TEU

Valenciaport in figures
Valenciaport in figures

Carbon footprint calculation and monitoring

PAV-Port of Valencia Carbon footprint 2008-2019

Verified by Lloyds under ISO 14064 scheme

<table>
<thead>
<tr>
<th>Year</th>
<th>Kg CO2/tm - FE IVACE</th>
<th>Kg CO2/tm - FE IDAE</th>
</tr>
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<tbody>
<tr>
<td>2008</td>
<td>3.19</td>
<td></td>
</tr>
<tr>
<td>2009</td>
<td>2.83</td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td>2.68</td>
<td></td>
</tr>
<tr>
<td>2011</td>
<td>2.58</td>
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<td>2.58</td>
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<td>2013</td>
<td>2.36</td>
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<tr>
<td>2014</td>
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<tr>
<td>2015</td>
<td>2.00</td>
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<tr>
<td>2016</td>
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<tr>
<td>2018</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2019</td>
<td></td>
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</tbody>
</table>

Cargo increase 2008-2016: 36%
CF indicator decrease 2008-2016: 30%

Cargo increase 2016-2019: 15%
CF indicator decrease 2008-2018: 37%
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Around 80 GWh consumed in 2020, (74 GWh Valencia only … and growing)

- Electrification
- Port enlargement
- New bunkering services (OPS)
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PV facilities Port of Valencia

Data:
5,500 kWp rated power
AEP: ≈ 10 GWh/year
PV facilities Port of Valencia

Data:
1,400 kWp of rated power
AEP: ≈ 2.5 GWh/year
Puerto de Valencia wind farm

Minimum installed capacity of 15 MW
Number of wind turbines: min 3
AEP: 50 GWh/year
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Use of alternative/clean fuels

Use of alternative fuels

- LNG for Ro-Pax vessels
Use of alternative/clean fuels

- H2 for port machinery (H2PORTS Project)

General features:
- Total Budget: 4,117,197.5 EUR
- Duration (4 years): 2019-2023

First application of hydrogen technologies in port handling equipment in Europe
Coverage of 50% of ship calls in the Port of Valencia: In 2030, forecast: 14.5 MW - 23 MW
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Energy efficiency

- Substitution of port machinery and car fleets by hybrid and electric
- Enhancing the use of railway
- Electrification of port terminals
- Energy efficiency measures implementation
- Smart grids tools implementation
New Electrical Substation

- Electrical substation in the Port of Valencia for the future OPS

<table>
<thead>
<tr>
<th>CARACTERÍSTICAS GENERALES</th>
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<tbody>
<tr>
<td>Sistema</td>
<td>Corriente Alterna Trifásica a 50 Hz</td>
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<tr>
<td>Tensión nominal (kV)</td>
<td>132</td>
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<tr>
<td>Categoría de la línea</td>
<td>Primera</td>
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<tr>
<td>Longitud total (m)</td>
<td>964</td>
</tr>
<tr>
<td>Nº de circuitos</td>
<td>2 (Doble circuito enterrado)</td>
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<tr>
<td>Origen</td>
<td>ST La Punta</td>
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<tr>
<td>Final</td>
<td>ST APV</td>
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<tr>
<td>Tipología de la línea</td>
<td>Subterránea</td>
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<tr>
<td>Potencia máxima admisibles (MVA x circuito)</td>
<td>755 A en 132 kV (171.41 MVA)</td>
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<tr>
<td>Potencia requerida (MVA x circuito)</td>
<td>30</td>
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<tr>
<td>Tipo de cable</td>
<td>HEPHZI-1200 mm² H172 132 kV</td>
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<tr>
<td>Tipo de canalización</td>
<td>Zanja entubada hormigonada</td>
</tr>
<tr>
<td>Categoría de la red</td>
<td>A</td>
</tr>
</tbody>
</table>
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Digitised energy management, self-consumption, electric mobility and storage
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About 500 m length of breakwater for wave energy converters

Wave energy:
Requirements for port deployment:

✓ Harmless to infrastructure
✓ Easy to fold in case of extreme weather events
✓ Fully accessible
✓ Low O+M costs
✓ Scalable

We have identified so far, at least three options for further research (all based on WAB technology)
Other Projects

Option 1

Martillo Marina

Dique exterior
Option 2
Option 3
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Summary of projects to decarbonise the port of Valencia

- Wind Power Plant - 2024
- New Container Terminal ∞ 2027
- PV Plant 6 MWp - 2022
- New Passenger Terminal - 2023
- PV Plant 1.5 MWp - 2021
- New Electric Substation - 2024
Thank you very much for your attention!!!!

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