European flagship Action for coLd ironING in ports

APDL PORT AUTHORITY DOURO • LEIXÕES • VIANA

QUADRANTE

Co-financed by the Connecting Europe Facility of the European Union

FEED STUDIES FOR THE INSTALLATION OF OPS

PORT OF LEIXÕES

1 Introduction

2 SEE Positions

3 Estimated Budget

4 Conclusion | Q&A

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1 Introduction

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36

Months

EALING Action number 2019-EU-TM-0234-S is a 36 months long Connecting Europe Facility project aiming at proposing a common EU harmonised and interoperable framework for the transition to electrification for at least 16 EU maritime ports in different sea basins.

16

Ports

16 EU Ports belonging to different sea basins - Mediterranean, Black Sea and Atlantic Sea – are the pilot sites for the studies defining the technical, legal and regulatory framework to accelerate the implementation of OPS solutions.

22

Partners

Representing the maritime community with Port Authorities, consulting companies in power system, energy and engineering, logistics, research and development bodies, IT suppliers.

1

Global project

EALING Studies are the first phase of the Global project “European flagship action for cold ironing in ports” (EALING) that aims at accelerating the effective deployment of OPS solutions in the EU maritime ports, including the Action “EALING Works Valenciaport” and a further phase to implement at least 30 installations in at least 16 EU ports of the Consortium.

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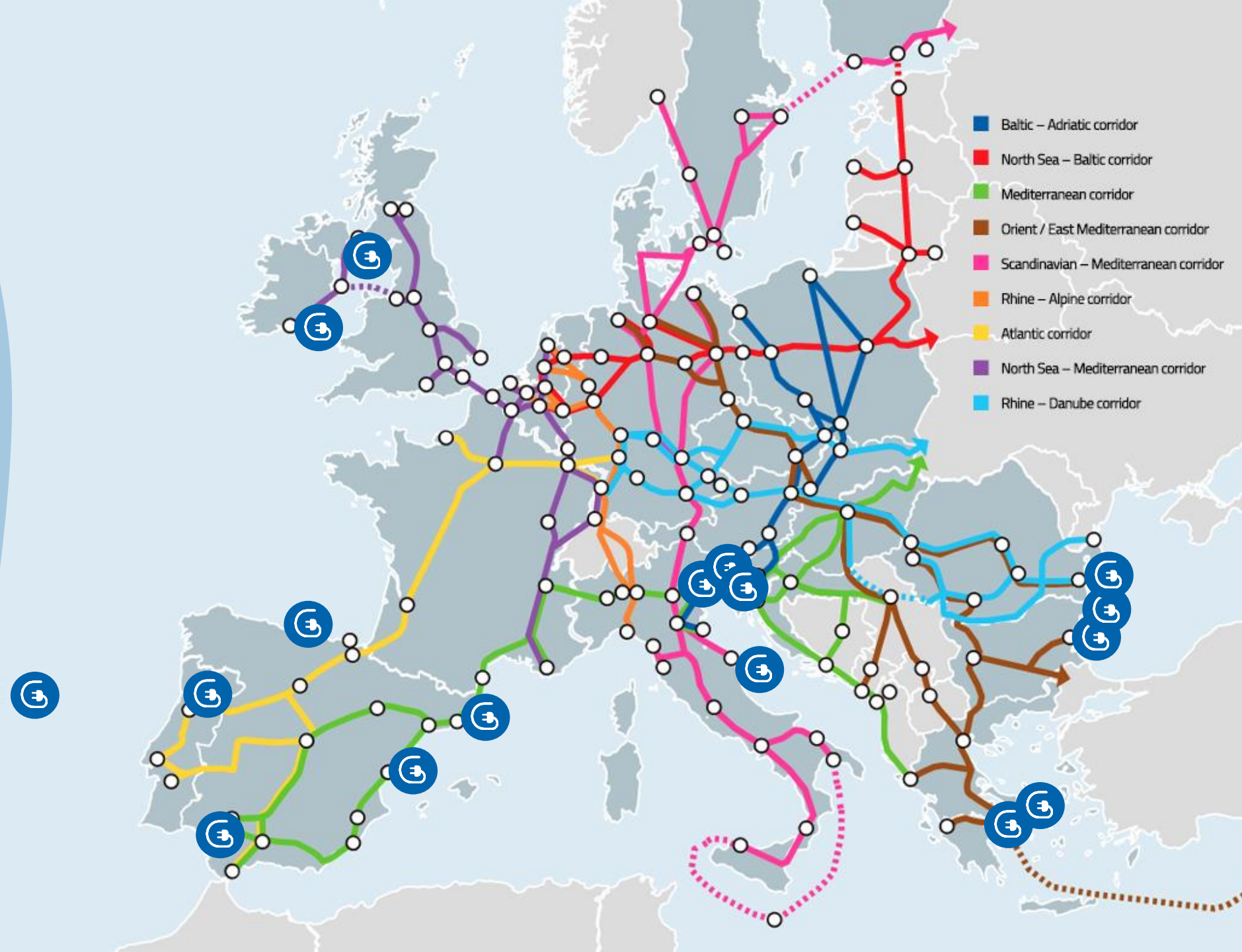
EALING

- Port of Valencia (Spain)
- Port of Barcelona (Spain)
- Port of Huelva (Spain)
- Port of Gijon (Spain)
- Port of Venice and Chioggia (Italy)
- Port of Ancona (Italy)
- Port of Trieste & Monfalcone (Italy)
- Port of Burgas (Bulgaria)
- Port of Constanta (Romania)
- Port of Piraeus (Greece)
- Port of Rafina (Greece)
- Port of Varna (Bulgaria)
- Port of Koper (Slovenia)
- **Port of Leixões (Portugal)**
- Portos dos Açores (Portugal)
- Port of Dublin and / or Cork (Ireland)



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The port of Leixões

- Strategic position in Europe, faciliting maritime trade with other regions worldwide
- Main port in the north of Portugal
- Different specialised terminal
  - **Containership**
  - **Ro-Ro**
  - **Cruises**
  - General Cargo
  - Cruises
  - Liquid Bulk
  - Solid Bulk
  - Oil tankers

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Description of the Studies

Next steps towards the implementation of Shore Side Electricity (SSE)

Three positions:

- North 1 Dock (Ro-Ro)
- South Container Terminal
- North Container Terminal (studies in progress)

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2 SEE Positions

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Description of SEE Positions

Different criteria:

- Vessel Type
- Berthing position
- Energy demands of each vessel

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North 1 Dock (Ro-Ro)

- Supply S/S: existing APdL (*)
- Vessel Type: Ro-Ro
- Voltage levels (kV): 6.6/11
- Frequency: 50/60Hz
- Máx Vessel demand power (MW): <3.15

South Container Terminal

- Supply S/S: existing APdL (*)
- Vessel Type: Container
- Voltage levels (kV): 6.6
- Frequency: 50/60Hz
- Máx Vessel demand power (MW): <7.5

North Container Terminal

- Supply S/S: new APdL 60/30/15kV
- Vessel Type: Container
- Voltage levels (kV): 6.6
- Frequency: 50/60Hz
- Máx Vessel demand power (MW): <7.5

(*) future in the new S/S APdL 60/30/15kV

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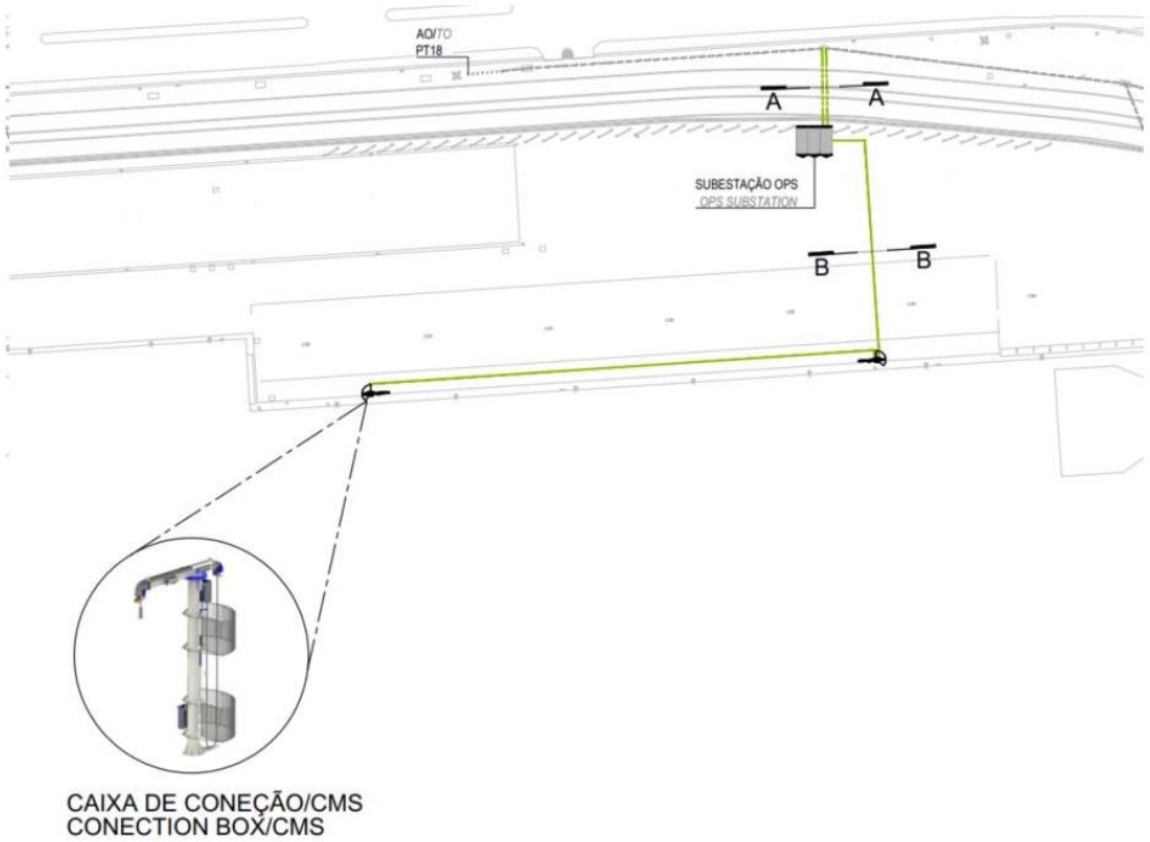
North 1 Dock (Ro-Ro)

- Incoming MV Switchgear
- Outgoing MV Switchgear
- MV/LV Transformer (15kV/LV FCV)
- LV/MV Transformer (LV FCV/ 6.6/11kV)
- Frequency Converter (4MVA, 50/60Hz)
- Protection, Control and Monitoring System
- SCADA system



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North 1 Dock (Ro-Ro)

- Two Shore Connection Point
- Fixed-type CMS

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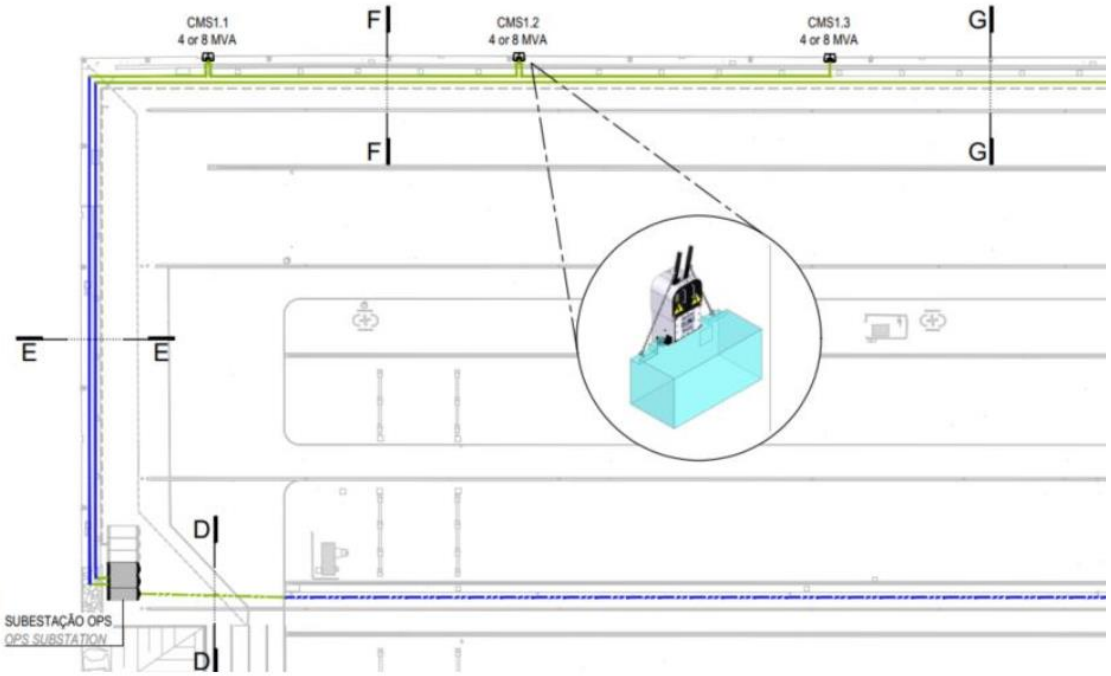

South Container Terminal

- Incoming MV Switchgear
- Outgoing MV Switchgear
- MV/LV Transformer (15kV/LV FCV)
- LV/MV Transformer (LV FCV/15kV)
- Frequency Converter (4+4MVA, 50/60Hz)
  - Future: +4MVA
- Protection, Control and Monitoring System
- SCADA system

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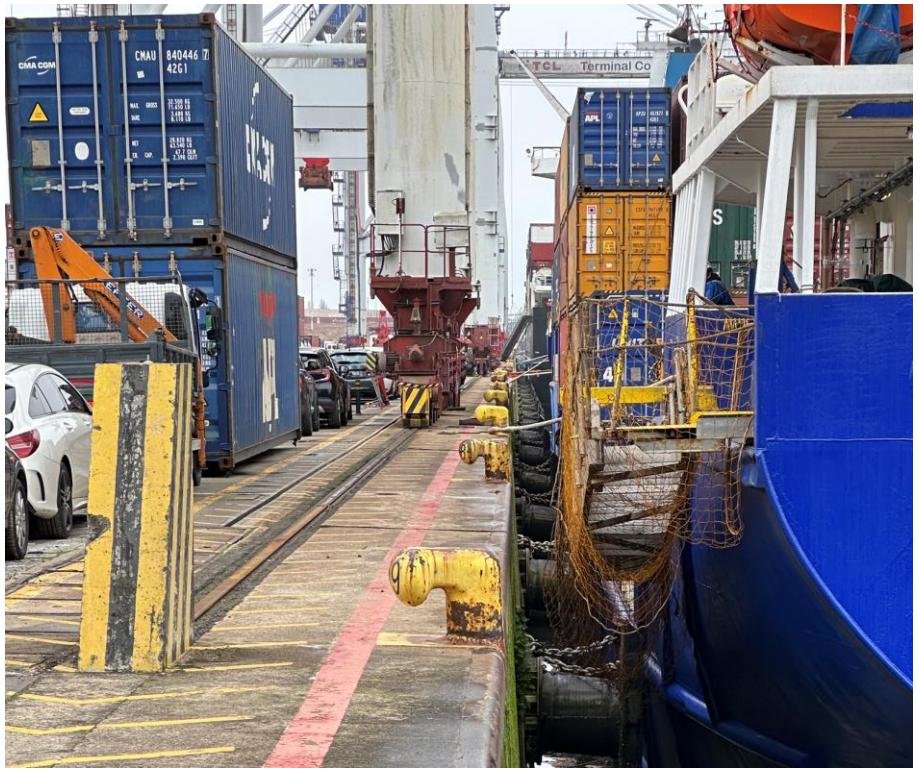
South Container Terminal



- Multiples Shore Connection Point
  - **Connection Box**

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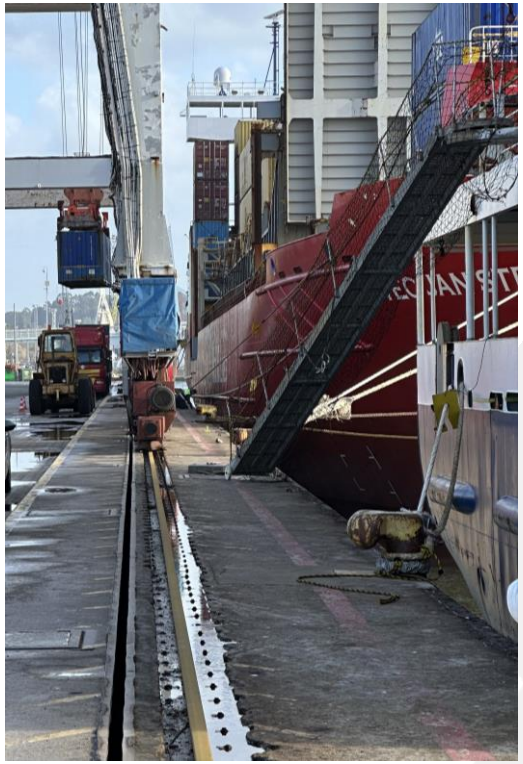
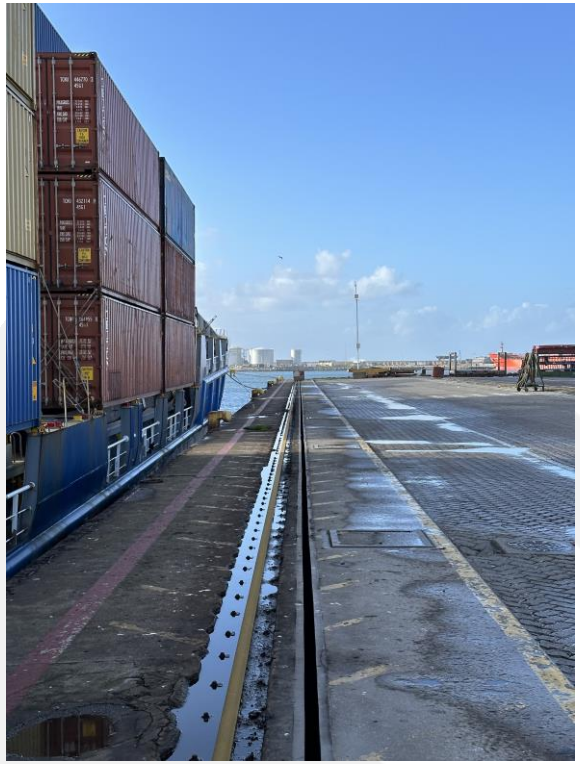
North Container Terminal

- Incoming MV Switchgear
- Outgoing MV Switchgear
- MV/LV Transformer (30kV/LV FCV)
- LV/MV Transformer (LV FCV/ 6.6/11kV)
- Frequency Converter (4+4MVA, 50/60Hz)
- Protection, Control and Monitoring System
- SCADA system





- Multiples Shore Connection Point
  - **Connection Box**

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3 Estimated Budget

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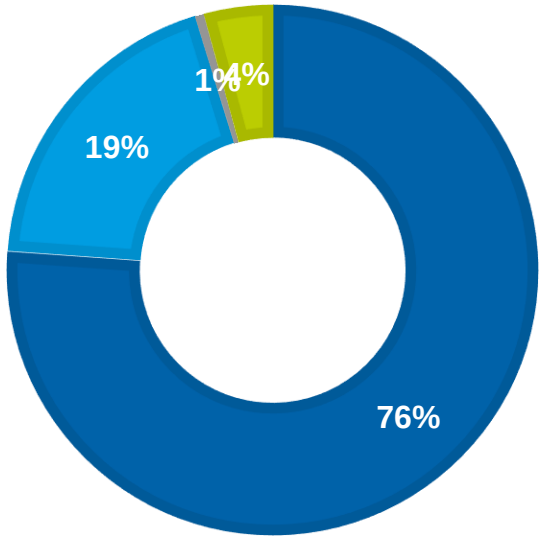
North 1 Dock (Ro-Ro)



OnShore Power Supply
Cable Management System
MV Internal Network
Civil Works

	Cost (€)
OnShore Power Supply	1,500,000
Cable Management System	376,000
Civil Works	82,000
MV Internal Network	11,000
	~ 2,000,000

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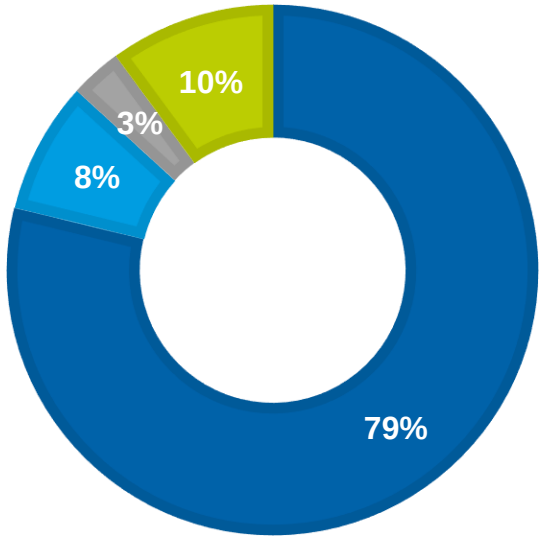
South Container Terminal



OnShore Power Supply
Cable Management System
MV Internal Network
Civil Works

	Cost (€)
OnShore Power Supply	3,000,000
Cable Management System	304,000
Civil Works	382,000
MV Internal Network	120,000
	~ 4,000,000

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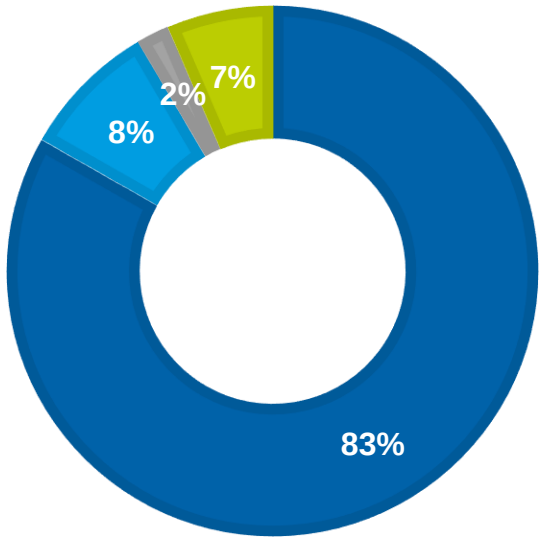
South Container Terminal (+ points + power)



OnShore Power Supply
Cable Management System
MV Internal Network
Civil Works

	Cost (€)
OnShore Power Supply	5,000,000
Cable Management System	500,000
Civil Works	387,000
MV Internal Network	120,000
	~ 6,000,000

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4 Conclusion | Q&A

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Difficulties

- Reduced number of Ports with Shore to Ship installed in Europe and none in Portugal (so far)
- Very diverse requirements and needs due to the diversity of ships and terminals
- Different Companies involved in the Port space
- Port Space very disputed to install equipment
- Port infrastructure not prepared
- High need for installed power
- High setup costs (CAPEX)

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4 Conclusion | Q&A

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Partners

FUNDACIÓN VALENCIAPORT

APDL PORT AUTHORITY DOURO • LEIXÕES • VIANA

RAFINA Port Authority S.A.

PROTASIS engineering & consulting

Circle Touch your ideas

PORTOS DOS AÇORES AUTORIDADE PORTUÁRIA

SYMBIOS

Irish Maritime Development Office

HYDRUS ENGINEERING EXCELLENCE

Puerto de Gijón Autoridad Portuaria de Gijón

Port de Barcelona

BULGARIAN PORTS INFRASTRUCTURE Co.

Central Adriatic Ports Authority
Ports of Pesaro, Falconara, Ancona, S. Benedetto, Pescara, Ortona, Vasto

NORTH ADRIATIC SEA PORT AUTHORITY PORTS OF VENICE AND CHIOGGIA

Port Network Authority of the Eastern Adriatic Sea Ports of Trieste and Monfalcone

Port of Huelva Port Authority of Huelva

FINCANTIERI SI evolving integration

valenciaport Autoridad Portuaria de Valencia

LUKA KOPER Port of Koper

ocean finance

constantza port

ΟΛΠ PIRAEUS PORT AUTHORITY S.A.

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Thanks!

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www.ealingproject.eu

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