EALING General Overview

IAPH Sustainability Awards 2024
European Flagship Action for Cold Ironing in Ports

Accelerate the effective deployment of OPS solutions in EU maritime ports
PARTNERS & LOCATION

- **13 Port Authorities** (Valencia, Barcelona, Huelva, Gijón, Venice&Chioggia, Trieste&Monfalcone, Ancona, Piraeus, Rafina, Koper, Constanta, Leixoes, Açores)

- **2 Port & Maritime Public Institutions** (Bulgarian Ports Infrastructure Company (→ ports of Burgas, Varna); Marine Institute (→ port of Cork)

- **7 Port & Shipping related entities** (Fundación Valenciaport, Circle, Ocean Finance, Symbios Funding & Consulting, Protasis, Hydrus Engineering, Fincantieri SI)
**MAIN PROJECT DATA**

- **CEF call**: Motorways of the Sea (wider benefit)

- **Grant Agreement**: 2019-EU-TM-0234-S

- **Project duration**: June 2020 – December 2023 (GA signed in November 2020)

- **Total budget**: 6,960,240 € (50% funded)
OBJECTIVES

- Bringing forward a **common harmonised and interoperable framework** to facilitate the implementation phase of OPS infrastructures in the ports of the consortium.

- Facilitating the **port to vessel compatibility in the TEN-T Maritime Network**, for vessels calling at the ports of the consortium.

- Leading all the **technical, financial, legal and environmental studies** necessary to launch the works for OPS equipment and infrastructure after the end of the Action.
PROJECT STRUCTURE

- Maritime fleet adaptation
- Harmonised Framework for the electrification of the participating TEN-T maritime ports
- Technical, financial, legal and environmental studies at 16 EU ports

Communication and Dissemination
Management
HARMONISED FRAMEWORK FOR THE ELECTRIFICATION OF THE PARTICIPATING TEN-T MARITIME PORTS

- Internal reviews/analyses and engineering work
- Questionnaires to Ports, Shipping lines, Classification Societies and Flag Administrations
- Workshops with ports associations, ports, shipping lines, energy suppliers, and OPS technology providers
- Interactions with key actors and members of the Stakeholders Platform

Detailed Analysis on the existing regulations related to OPS
Final recommendations for a harmonised framework on OPS in the EU ports
Analysis of the standards relevant to shipside installation for OPS for the vessels operating in the ports of the consortium
Identification of the relevant technical and regulatory elements to facilitate adaptation / connection of ships to OPS
HARMONISED FRAMEWORK FOR THE ELECTRIFICATION OF THE PARTICIPATING TEN-T MARITIME PORTS

→ Detailed Analysis on the existing regulations related to OPS

- INTERNATIONAL REGULATORY FRAMEWORK (standards, classification societies class notations, IMO)
- EUROPEAN REGULATORY FRAMEWORK (existing and future regulations affecting OPS, EMSA)
- NATIONAL, REGIONAL AND LOCAL REGULATORY FRAMEWORK - EALING PORTS:

Port structure and administrative issues
Power supply and electricity distribution
Environmental impact & Noise Pollution
Industrial installations
Safety and security measures, including occupational risks prevention

Fields under study for the comparative analysis at national and regional level

General Urban Development Plans
City Council Regulations
Distribution System Operators (DSO) - Technical Specifications -

Fields under study for the comparative analysis at local level

Co-financed by the Connecting Europe Facility of the European Union
Final recommendations for a harmonised framework on OPS in EU ports → 40 recommendations

**POLICY & LEGAL**
- Responsibilities of the different actors, administrative burden, public funding, tax exemptions, involvement of port authorities in the development and operation of the electricity distributions systems

**ECONOMIC**
- Cost-Benefit Analysis, demand studies, funding mechanisms, specific rates, energy communities, price of energy

**SOCIAL**
- Interaction with stakeholders, public involvement, working groups, training for port workers, new professional profiles

**TECHNICAL**
- Technical harmonisation, tender processes, IEC/IEEE 80005, training, regulatory sandboxes, demand assessment studies, load forecasting models, public repositories of OPS-ready vessels, etc.

**ENVIRONMENTAL**
- Environmental certificates, technical specifications (THETIS MRV and IMO DCS), Clean Shipping Index (CSI)
Interactions with key actors and members of the Stakeholders Platform

Internal reviews/analyses and engineering work

Questionnaires to
- Ports
- Shipping lines,
  Classification Societies and Flag Administrations

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Interactions with key actors and members of the Stakeholders Platform

Detailed Analysis on the existing regulations related to OPS

Final recommendations for a harmonised framework on OPS in the EU ports

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MARITIME FLEET ADAPTATION

Identify and study the relevant electrical standards and general regulatory framework for both ports and vessels.

Choose appropriate vessel types for case studies and study their spatial and electrical arrangements towards recommending best practices for required vessel retrofit.

Provide regulatory and operational recommendations for a harmonised technical, legal and regulatory framework on fleet electrification adaptation.
### MARITIME FLEET ADAPTATION

<table>
<thead>
<tr>
<th>a/a</th>
<th>Vessel type</th>
<th>Capacity</th>
<th>Power requirement (based on ELA)</th>
<th>Distribution system</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Cruise Ship</td>
<td>140,000 GT</td>
<td>&gt;1 MVA</td>
<td>11 kV</td>
<td>60 Hz</td>
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<tr>
<td>2</td>
<td>RoPax</td>
<td>18,600 GT</td>
<td>&gt;1 MVA</td>
<td>380 V</td>
<td>50 Hz</td>
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<tr>
<td>3</td>
<td>Containership</td>
<td>10,000 TEU</td>
<td>&gt;1 MVA</td>
<td>6.6 kV</td>
<td>60 Hz</td>
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<tr>
<td>4</td>
<td>Bulk Carrier</td>
<td>87,000 DWT</td>
<td>&lt;1 MVA</td>
<td>440 V</td>
<td>60 Hz</td>
</tr>
<tr>
<td>5</td>
<td>Tanker</td>
<td>50,000 DWT</td>
<td>&gt;1 MVA</td>
<td>440 V</td>
<td>60 Hz</td>
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Proposed arrangement for the socket boxes

[Diagram of proposed arrangement]
Technical studies for the electrification infrastructure of the participating TEN-T maritime ports.

- Front-end engineering design studies.
- Additional technical studies necessary for the projected works.

Environmental studies, the content and scope of which have depended on the final needs of each port.

- Authorisations from the competent authorities for the construction of the future SSE facilities.

Clean Power Supply Plans at port level to ensure the integration of SSE as key part of the environmental strategy in each of the EALING ports.

Tender documentation for the construction works of the future SSE installations.

Cost-Benefit Analyses to evaluate the future SSE installations in terms of financial and socio-economic performance.

Review and analysis of the available financial and blending schemes to finance the infrastructures.
TECHNICAL AND FEED STUDIES

→ FRONT-END ENGINEERING DESIGN (FEED) STUDIES
to enable ports to launch the works phase after the completion of the Action.

They include:

- Technical specifications for the systems:
  - Shore connection substations (switchgears; transformers; frequency converters; protection, control and monitoring systems; SCADA)
  - Cable management systems
- Costs estimation

→ OTHER NECESSARY TECHNICAL STUDIES (additional studies performed by some of the ports)

- SSE demand analyses
- Studies of grid capacity of the port
- Roadmaps for the electrification of the quays
- Operational model studies for the SSE systems
SOME GLOBAL FIGURES:

• 16 EU PORTS

• More than **245 MVA** of nominal power to be installed
• Environmental Studies performed in the 16 EALING ports

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<tr>
<th>LIKELIHOOD</th>
<th>IMPACT</th>
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<tr>
<td>Rare</td>
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<td>Significant</td>
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• None of the future SSE infrastructures is subject to Environmental Impact Assessment
CLEAN POWER SUPPLY PLANS

DEVELOPMENT OR UPDATING OF THE CLEAN POWER SUPPLY PLANS OF THE PORTS

- Energy consumption in the port: current situation / origin of the energy
  - Port Authority
  - Terminals
  - Ships
  - Other facilities/services

- Future energy demand

- Planned actions to cover the future energy needs → Integration of SSE as a crucial part of the port’s emission reduction strategy.

TENDER DOCUMENTATION

PREPARATION OF THE TENDER DOCUMENTS FOR THE PROPOSED SSE INVESTMENTS.
• Cost Benefit Analysis (CBA) to assess the financial and economic performance of the future SSE infrastructures, including monetised environmental externalities, and to enable the investment decisions.

**SOME GLOBAL FIGURES FROM THE 16 PORTS:**

• More than 2.7 million tonnes of CO2eq, 32,000 tonnes of NOx, 8,000 tonnes of SOx and 1,600 tonnes of PMx avoided.

• More than 225 M€ in CAPEX from all the FEED Studies performed.

• Average of 920 k€ per MVA installed.

• Proposal of suitable investment schemes based on the specific features of the SSE investments proposed.
Executive summaries of the results of the technical studies conducted by the 16 EU participating ports:
Project Executive summary, including port sheets with the main results of the studies performed by the 16 EU participating ports.
EALING events

- 4 Workshops:
  - Port associations
  - Shipping companies
  - Energy suppliers
  - Solution providers

- 1 Mid-term Communication Event

- 16 local workshops

- 3 Stakeholders workshops

- 1 Final Communicational event
COMMUNICATION, DISSEMINATION & STAKEHOLDERS ENGAGEMENT

External events

- CEF Days (2024)
- Greenport Congress & Cruise (2023)
- MedCruise General Assembly in Burgas (2023)
- SEAFUTURE – Green & Blue Innovation Hub (2023)
- Baltic and Black Sea Ports & Shipping Conference (2023)
- Mediterranean Ports and Shipping (2023)
- Electrification, Fuel Cell & Battery for Marine Vessels conference (2023)
- OSCE Working Group (2023)
- SIL International Congress (2023)
- HEV-TCP Task 47: Zero-Carbon Freight from Port Electrification (2022)
- EOPSA Conference (2022)
- Transport Research Arena (2022)
- BiLOG – Logistics & Maritime Forum (2022)
- Adriatic Sea Forum (2022)
- EALING Project at the TOC Europe (2022)
- Connecting EU Insights (2021)
- Workshop 4 Ports (2021)
- European Ports Forum (2021)
- Baltic Ports Conference (2021)
COMMUNICATION, DISSEMINATION & STAKEHOLDERS ENGAGEMENT

Papers and articles

Cold ironing for all
by Roos Keuninga, Senior Research Consultant in Maritime and Port Projects, Credo Group, and Rainer Stute, BCG Engineering in Europe and Sustainability, Baltic Ports Agency

European Maritime Action Plan for Cold Ironing in Ports (EALING) is a 36-months long project, co-funded through the Connecting Europe Facility (CEF). In the project, all the necessary technical, economic, and legal measures to prepare and facilitate the implementation of cold ironing in European ports are examined.

The project aims to address the need for promotional and demand-side measures to increase the uptake of cold ironing in EU ports, with a focus on the Baltic region.

Baltic Port Journal

Transport Research Arena (TRA) Conference

EALING project - Exploratory analysis of the future implementation of Onshore Power Supply facilities in European ports and relevant technical aspects for Port Authorities

Papers and articles

TRAPA Conference

GreenPort Congress & Cruise
Website & Social Media

- **53 news published**: Project Workshops, Webinars, Questionnaires, Events participation, Downloadable materials, EALING events
- Files download: **198 users downloaded contents**

Bulletin

- Every six months
- Distributed through official project channels to more than 1,200 industry players, via partners’ Network and via Connecting EU Hub to more than 7,500 operators in the ports and logistics industry.

Stakeholders Platform

- **227 members**

EALING Stakeholder Platform Pie Chart

- Energy: 36%
- Ports: 29%
- Government & public bodies: 9%
- Research & Education: 6%
- Consultancy: 5%
- Transport: 15%
Thanks!

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Discover more at
www.ealingproject.eu

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