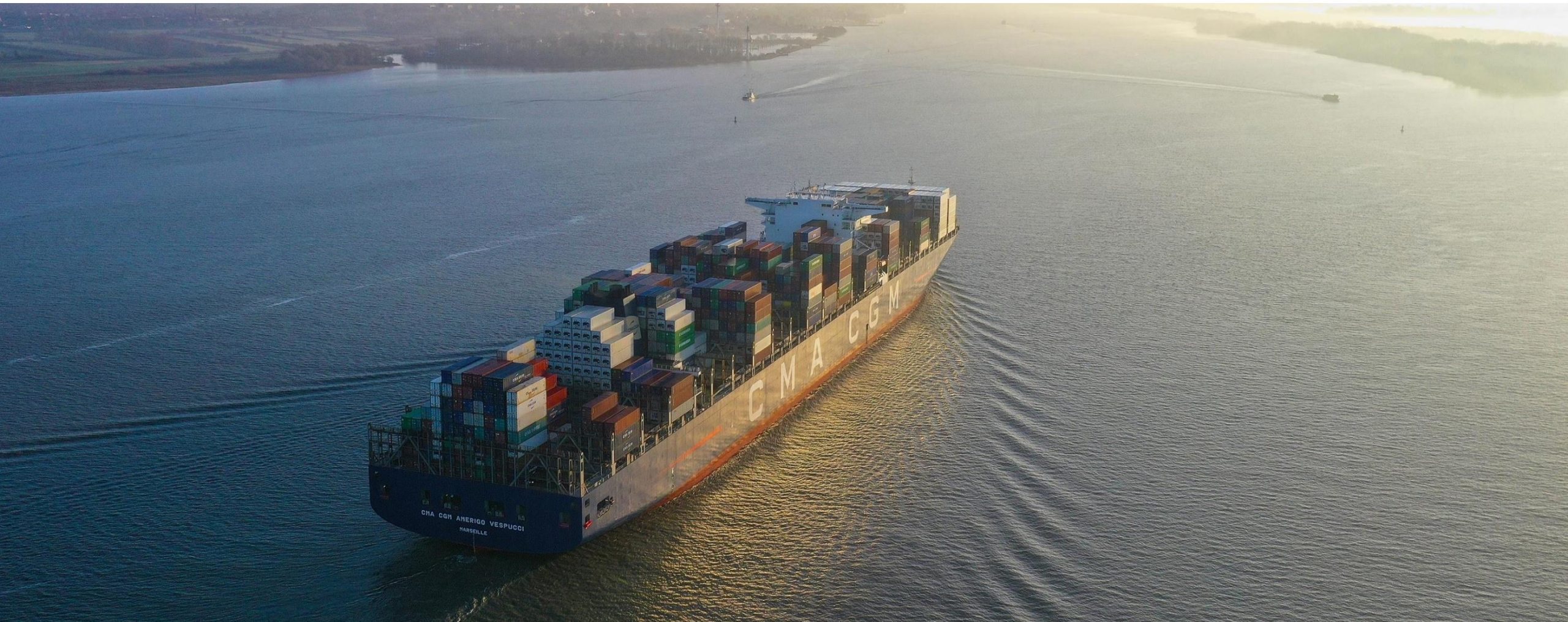


Blue Supply Chains – Supporting Port Authorities and Port Operators to Decarbonise Port Operations



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#BlueSupplyChains

Blue Supply Chains aims at fostering Port Authorities' role...

...to support **greening of port operation** activities

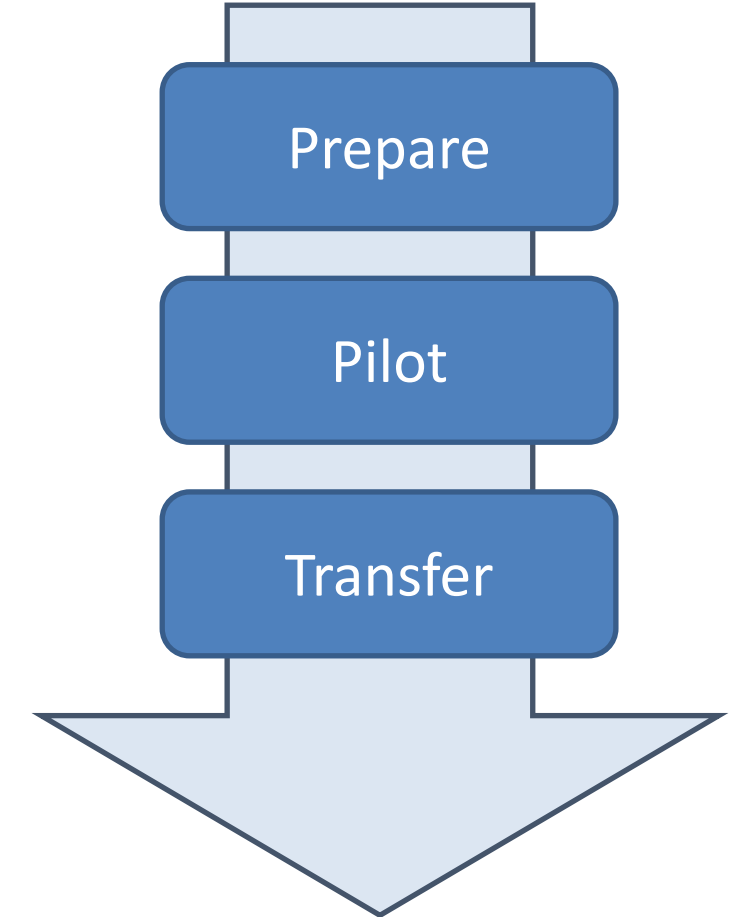
- Mobile on-shore power supply solution (DK)
- Retrofitting concept - diesel RTGs towards alternative fuel powered RTGs (PL)

...in **green energy supply** for transport chains

- Regional green energy supply concept for the port of Umeå (SE)
- Zero-emission inland waterway between Klaipeda and Kaunas (LT)

...in **the set-up of green transport chains** between BSR ports

- Proof-of-concept on cooperation pushing green combined transport solutions between Baltic ports leading to an improved rail ferry service and preparations for necessary adjustments in the ports of Rostock & Trelleborg (SE | DE)
- Start-up pitches to find new green transport solutions (LV)



Project Partners & Associated Organisations

SWEDEN

CLOSER



POLAND



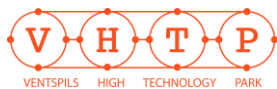
DENMARK



ESTONIA



LATVIA



LITHUANIA



KLAIPĖDA SCIENCE AND
TECHNOLOGY PARK

NORWAY



GERMANY



Associated Organization (selection)



Greening Port Operations

OPS for Pelagic Vessels



OPS for Pelagic Vessels – Port of Skagen

Goal

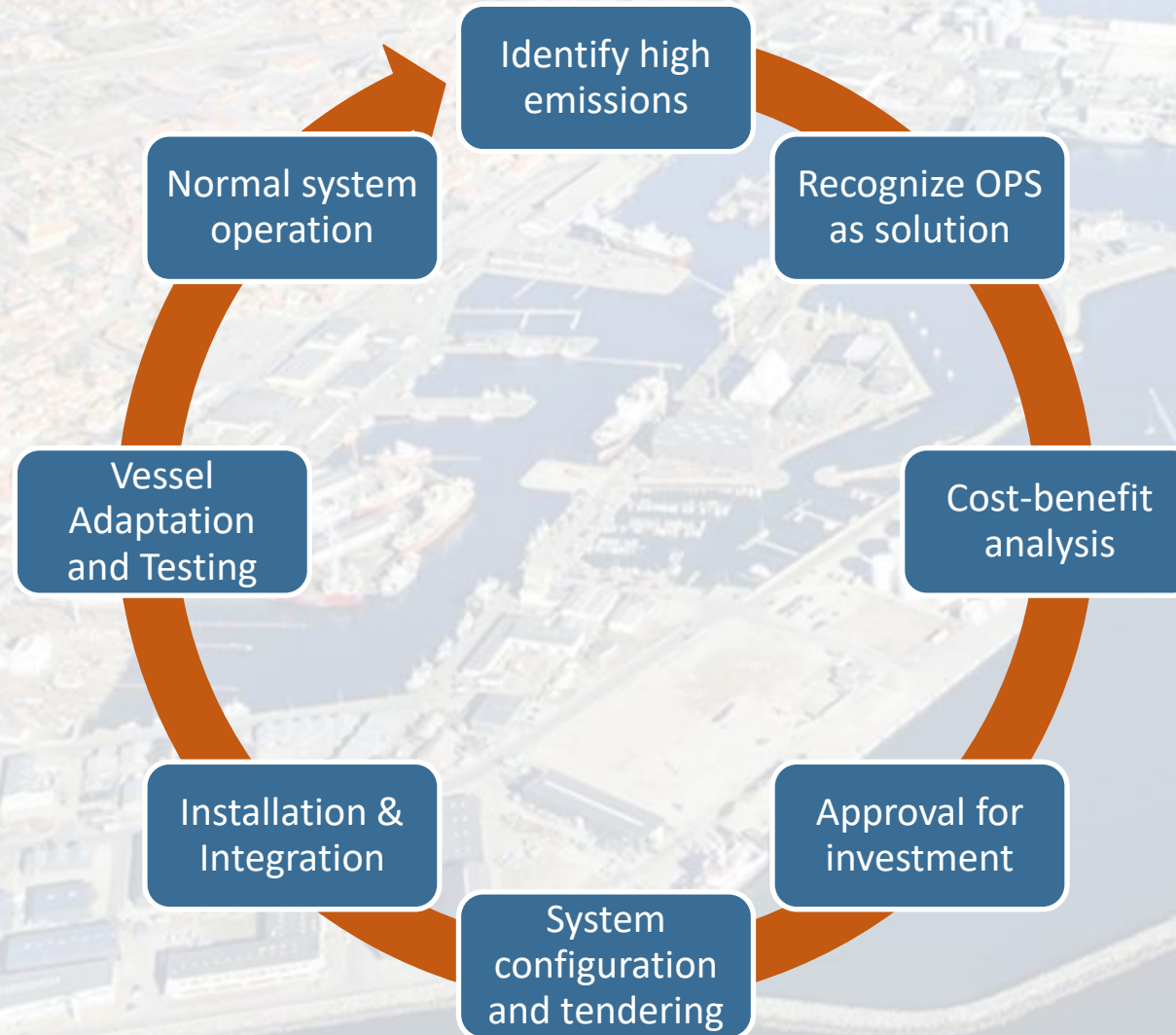
Installed mobile onshore power supply system fully in operation in the Port of Skagen and an implementation report giving guidance for roll-out to other ports.

©Port of Skagen

Feature	Specification
Total Power Capacity	Up to 1,673 kVA ($\approx$ 1,506 kW) at 690V / 1,386 kVA ($\approx$ 1,247 kW) at 400V
Voltage Levels	400V / 440V / 690V
Frequency Support	50Hz and 60Hz
Shore Connections	Two dedicated connection points, each located at FF Skagen, Scandic Pelagic
Connector Type	Cavotec/Proconnect-type 350A connectors, IEC/IEEE 80005-3 compliant
Compliance	Fulfills IEC/IEEE 80005-3 and Danish electrical safety standards

OPS for Pelagic Vessels – Port of Skagen

Methodology



OPS for Pelagic Vessels – Port of Skagen

Solution

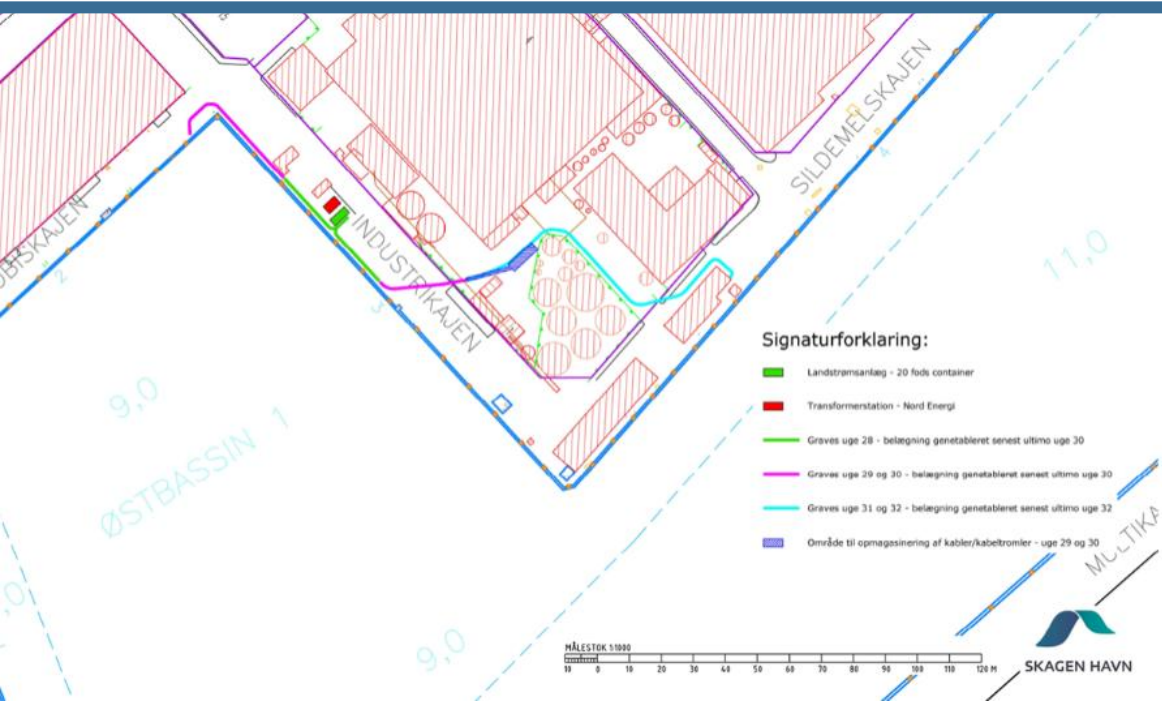
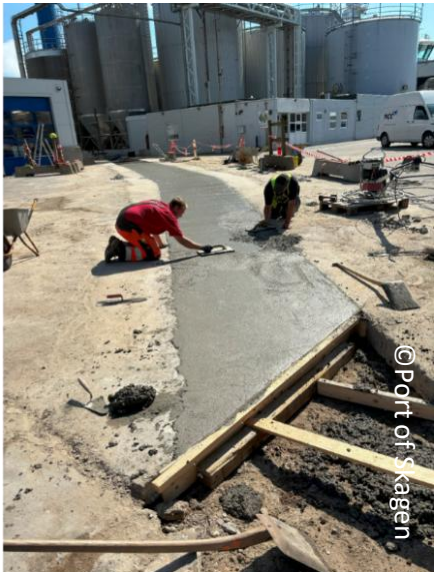


Diagram indicating the location of the OPS unit (green square), the transformer (red square) and underground cable routing to the two pelagic quays



Construction work - cable trenching and routing

OPS for Pelagic Vessels – Port of Skagen

Solution



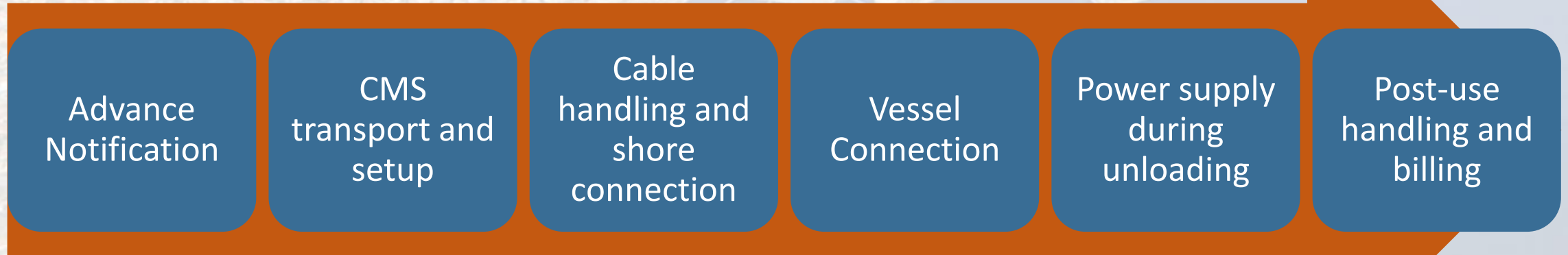
On-Shore Power Station at the Port of Skagen



Cable Management System (CMS) at the quay

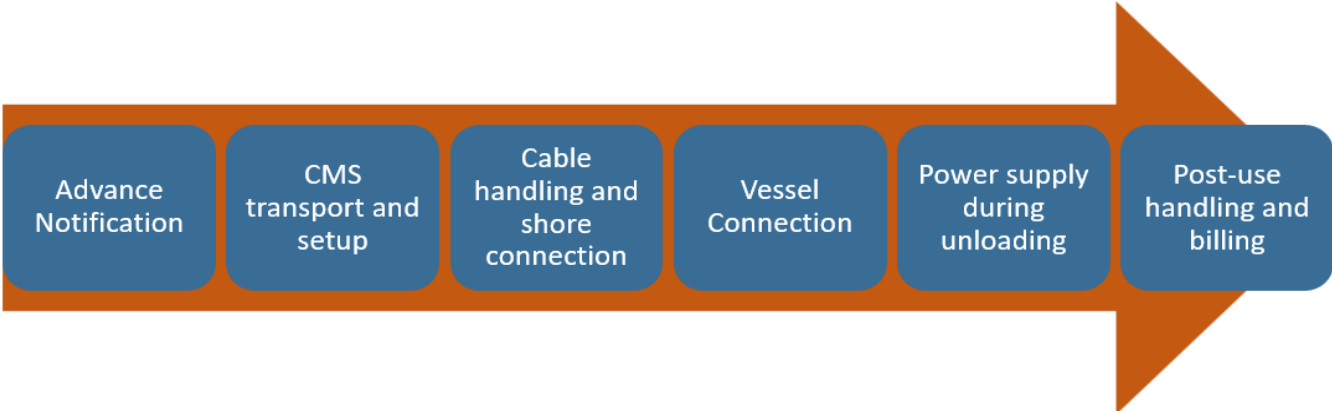
OPS for Pelagic Vessels – Port of Skagen

Operation of the OPS system



OPS for Pelagic Vessels – Port of Skagen

OPS system in Operation



©Port of Skagen

OPS for Pelagic Vessels – Port of Skagen

Key results for two pilot vessels (HG 265 Asbjørn and HM 379 Lingbank)



@Port of Skagen

Indicator	Asbjørn	Lingbank	Total
Annual energy demand at quay (kWh)	443,520	192,000	635,520
CO ₂ emissions – diesel generators (tons/year)	312.8	135.4	448.2
CO ₂ emissions – OPS (tons/year)	42.6	18.4	61.0
Annual CO ₂ reduction (tons)	270.2	117.0	387.2
Annual bunker fuel saved (litres)	88,704	38,400	127,104

OPS for Pelagic Vessels – Port of Skagen

Lessons Learnt



- Understand the purpose – plan accordingly
- Accept the learning curve
- Be strategic: Infrastructure first, then demand
- Standardization where possible
- Allow for technical flexibility
- Predictable pricing matters
- Collaboration is key
- Plan for future proofing

OPS for Pelagic Vessels – Port of Skagen

Outputs

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BLUE SUPPLY CHAINS FOR THE BALTIC SEA REGION

BLUE SUPPLY CHAINS

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Greening Port Operations - OPS for pelagic vessels

03 July 2024

Meeting the demands of Pelagic vessels

Emission reduction from vessels in port is crucial for lowering greenhouse gas emissions and improving environmental outcomes and public health in coastal towns and communities. Ports are implementing various strategies to reduce the environmental footprint of maritime operations, focusing on emissions from vessels during their port stays.

Pelagic fishing vessels present a particular challenge for decarbonization. Their unloading operations often run for 10 to 30 hours, requiring continuous energy for pumping, cooling, and hydraulic systems. Traditionally, this energy has been supplied by auxiliary diesel engines, leading to significant emissions and costs.

Cutting emissions, Powering the future

Onshore power supply (OPS) to ships at berth is a well-established technology for certain ship types which helps reduce emissions in ports. It allows ships to shut down their engines and generators and use electricity generated onshore, which have significantly lower air pollutant emissions and, depending on the grid GHG emission factor, often also lower emissions of greenhouse gases. However, the deployment of OPS requires a well-planned infrastructure capable of delivering sufficient electrical power to meet the demands of various vessels. This involves developing grid connections, substations, and, when necessary, frequency converters, along with installing shore connection panels.

Green power at the quay: OPS comes to Skagen

The Port of Skagen has taken a decisive step toward climate-neutral operations with the commissioning of its first Onshore Power Supply (OPS) system. Instead of relying on diesel generators during unloading, vessels can now plug directly into certified renewable electricity. This shift reduces CO₂ emissions, cuts harmful air pollutants, and creates a quieter working environment on the quayside.

The OPS system in Skagen was designed to meet these heavy power demands while ensuring international compliance, safety, and flexibility. Its capacity reaches 1.5 megawatts, enough to cover even the most energy-intensive landing operations. Two connection points have been installed at the port's main landing sites—FF Skagen, which handles fishmeal production, and Scandic Pelagic, which processes fish for human consumption. A semi-automated cable management system extends 45 meters, ensuring vessels of different sizes and quay positions can connect efficiently.

Methodology for introducing OPS in the Port of Skagen for pelagic trawlers

Phase 1: Identify the high emissions generated by pelagic trawlers during unloading in Skagen.

Phase 2: Recognize OPS technology as a potential solution.

Phase 3: Develop a cost-benefit tool to calculate different cost scenarios and technology models.

Several analyses were carried out to confirm the economic sustainability of the investment. The tool also defined a set of KPIs to measure success.

DETAILS

Homepage
Go to project page

Project type
[Core Project](#)

Implementation
January 2023 - December 2025

Status
[Ongoing](#)

Contribution to EUSBSR
Policy Area Transport, Policy Area Ship

TARGET GROUPS

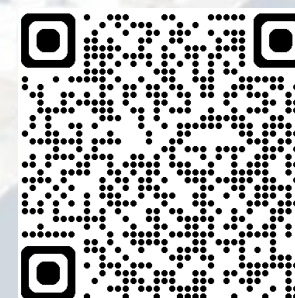
Business support organisation
Infrastructure and public service provider
National public authority

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Onshore Power Supply for Small & Medium Ports

Best Practice from Port of Skagen

Retrofitted Rubber Tyre Gantry Cranes

Best Practice from Gdynia Container Terminal

Greening Supply Chains – Emission Free Inland Waterways

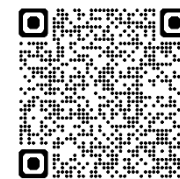
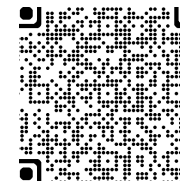
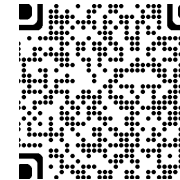
Best Practice from Lithuania

Green Bunkering and Charging Strategy for Ports

Best Practice from Umeå Region

Stakeholder Engagement to set-up Green Transport Corridors

Experiences from the Rostock-Trelleborg Rail Ferry Link



Thank you for your attention!

