#EMD2024

EMD

EUROPEAN MARITIME DAY

Svendborg

30-31 May 2024

European Commission

Svendborg Kommune

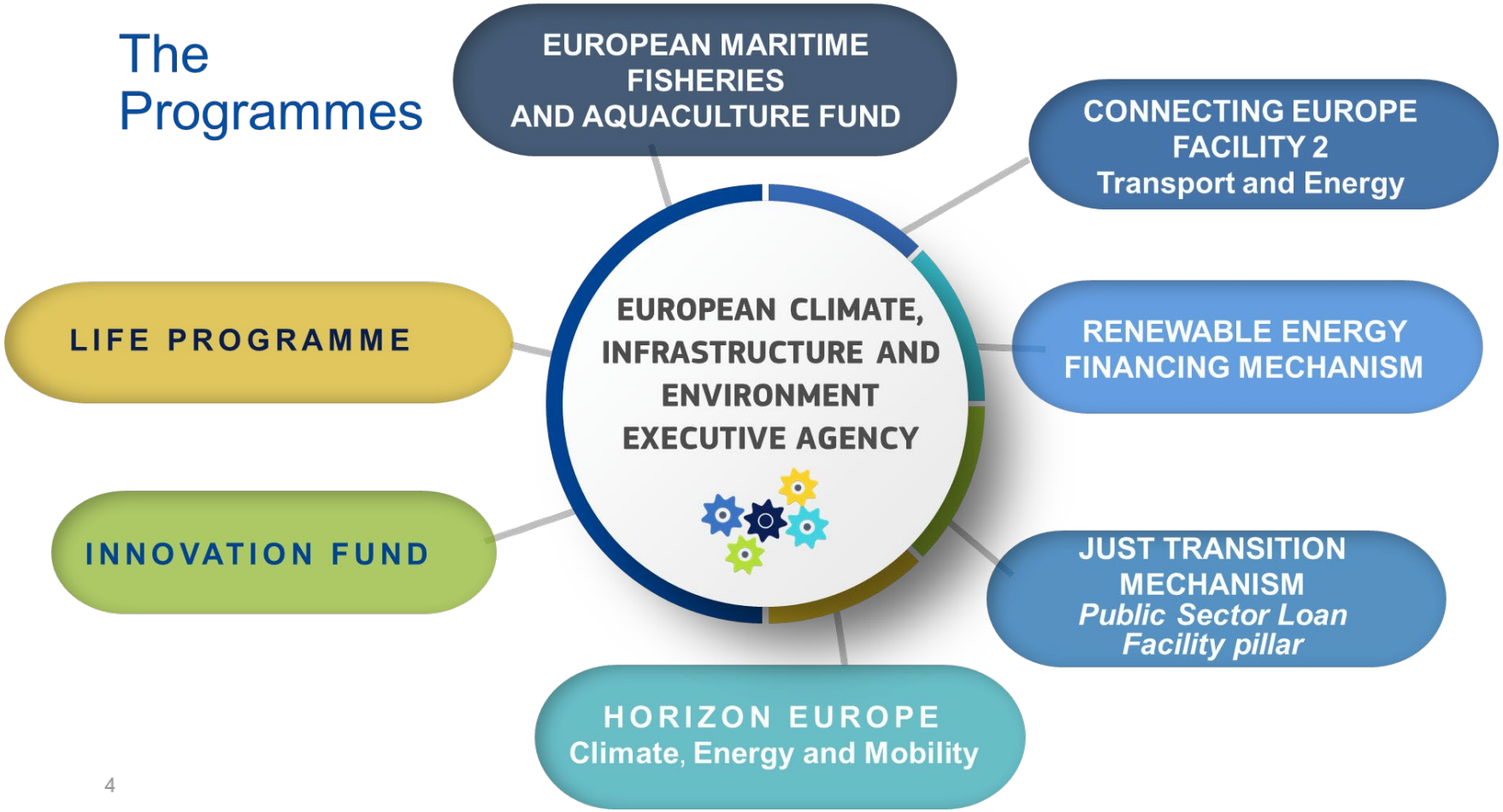
Danish Maritime Authority

Supporting the Greening of the Maritime Sector: Project examples from CINEA managed programmes in Denmark

Introduction

Mr. Vincent Favrel
Head of Unit,
Sustainable Blue Economy,
CINEA

Introduction | About CINEA



EMFF programme: POWERFLEX

Peter Castberg Knudsen
PowerCon A/S

PowerFLEX

Agenda

1. Who are PowerCon?
2. What is the PowerFLEX project about?
3. Which were the achievements?
4. Why EU funding was beneficial?

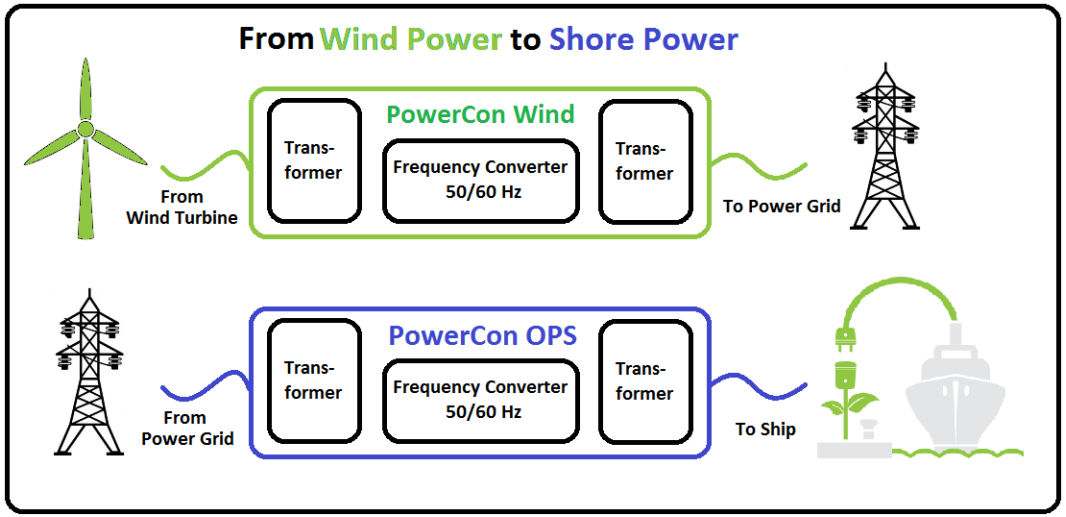
Who are PowerCon?

PowerCon is an international, medium-sized Danish engineering and manufacturing company, specialized in electrical power conversion, especially the development and production of full-scale electric power converters.

Established in 2009, PowerCon emerged from the world leading Danish wind industry that had a need for extremely reliable power conversion technology to work in extremely harsh conditions inside off-shore wind turbines for decades without significant maintenance.

In 2014 PowerCon realized that this technology was perfect for the emerging shore power market. Since then, it moved on to become one of the world's leading manufacturer of shore power systems, installing over 60 systems globally and prevent the release of more than 350,000 tonnes of CO2 annually

Today it has 175 employees in PowerCon, with the head office in Denmark and sales offices in Spain, UK and US.



What is the PowerFLEX project about?

PowerFLEX
Low-cost and flexible onshore power supply for containerships and future onboard battery charging

Background
Containerships rely on the highly pollutant marine fuel to operate, contributing to 50-60% of all ship emissions. Onshore power supply (OPS) is the delivery of shore side electrical power to a ship at berth so its main and auxiliary engines can be turned off. In the cases where the electricity comes from renewables, OPS is a local mitigation measure that eliminates all CO2, air pollutants, noise, and vibration at the port terminal.

PowerCon pushing the boundaries
The main objective of this project was to advance the technological and market readiness of a competitive OPS solution – to provide electricity to containerships when at berth to supply their consumers and charge future onboard batteries.

Which were the achievements?

- ✓ Working system in the Port of Kristiansand Norway and the Port of Hamburg in Germany
- ✓ Achieved the technical and cost expectations for the system having a very competitive solution
- ✓ Since the beginning of the PowerFLEX project in 2020, PowerCon has hired more than 100 new employees, and thereby almost tripled the number of employees over the three years project period
- ✓ Achieved a market entry for OPS systems to container ports in Barcelona (Spain), Hamburg and Bremerhaven (Germany)
- ✓ Besides these now ongoing projects for Container ships – PowerCon has won several other OPS systems creating an important interaction to many of the biggest ports in Europe and the US. Projects won within the last year to a total value of more than 75mio Euro and +200mio Euro in sales pipeline

Why EU funding was beneficial?

EU funding is necessary for accomplishing the product demonstration. Product demonstration is costly but difficult to convince a customer to pay for.

Product demonstration is essential when a company wants to make a market entry with a new high-tech solution. At the same time, it's important that the management of the company also realises what is needed to make the product a succeed in the market and support the scalability of the company.

EU funding, and the process of achieving the funding, drives a company and the management to consider and understand the key parameters for a successful market entry. At the same time, it also questions if the company is ready for scaling up and take on the challenges that follows.

CEF-T programme: Blue Gateway to European Offshore Wind Expansion, 21-DK-TG-BLUE.EU.WIND, 101079528, Blue Gateway to European Offshore Wind Expansion

Jacob Hansen, Deputy Manager, Sales
Odense Port

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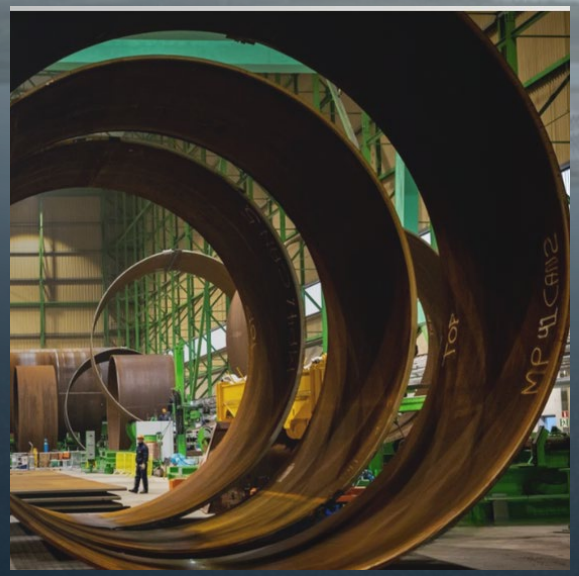
THE LARGEST PORT EXPANSION IN EUROPE

ABOUT THE PROJECT

- European Wind Charter: 300 companies and the European Commission signed a charter that raise the EU's offshore renewable energy target for 2030 to 111 GW
- This target corresponds to 20.000+ grid-connected wind turbines
- The wind turbine components increase in size manufactured and shipped out from European port infrastructure and will become a bottleneck if no investments are carried
- This is the main driver for Odense Port to have initiated the CINEA EU Project – to develop Europe´s largest port expansion and dredging of a new fairway



A PORT EXPANSION AT 1,000,000 SQM

1,4 kilometers of new quay

There will be heavy load quays with dynamic loads around 120 tons per sqm

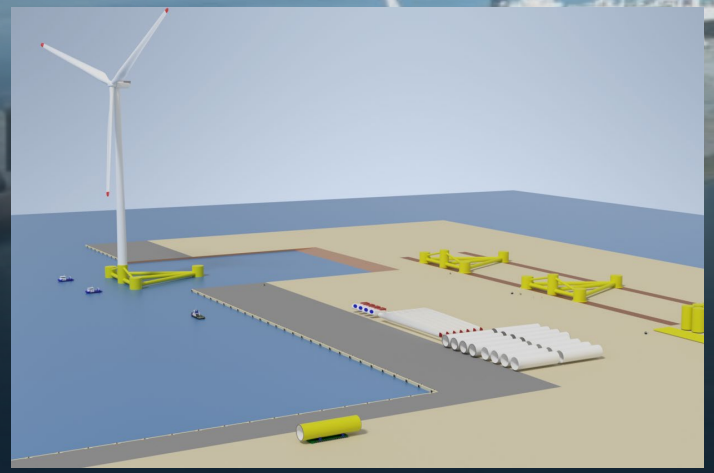
New fairway for entering of larger and new generations of offshore wind vessels

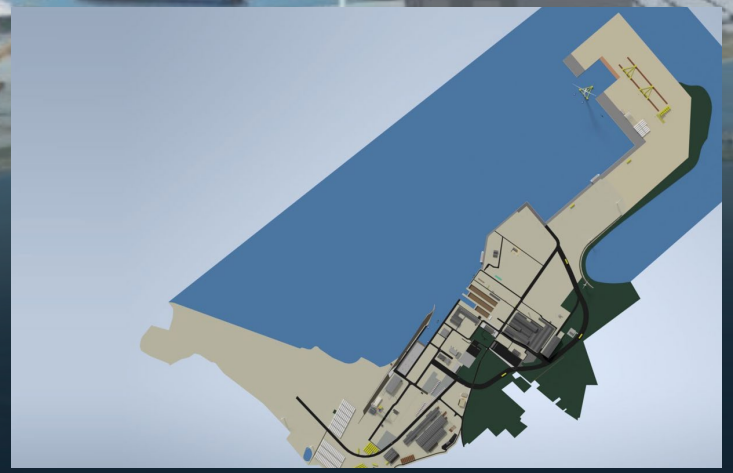
The fairway will be dredged to 12,3 meters (water depth)

The expansion is "sustainable" as the filling and build-up of land is reused dredged material from the fairway

BENEFITS OF THE EU FUNDING

- The EU funding initiated the studies that are crucial to realize the project. It kick-started the project
- Odense Port carried out studies for 30 million DKK (15 million DKK EU funding)
- The EU funding for the Study project has created awareness and recognition
- When you receive EU funding it is a clear message to the industry and society in general: this is an important project that needs to be realized





THE ACHIEVEMENTS

- We have carried out all environmental and infrastructural studies
- We are in the EIA-process based on all needed studies to get a building permit for construction of the port expansion and dredging of the fairway
- We have applied for a WORKS application through CINEA CEF program with the goal to receive the critical funding needed to execute the project

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THANK YOU
FOR YOUR TIME

CEF-E programme: North Sea Wind Power Hub

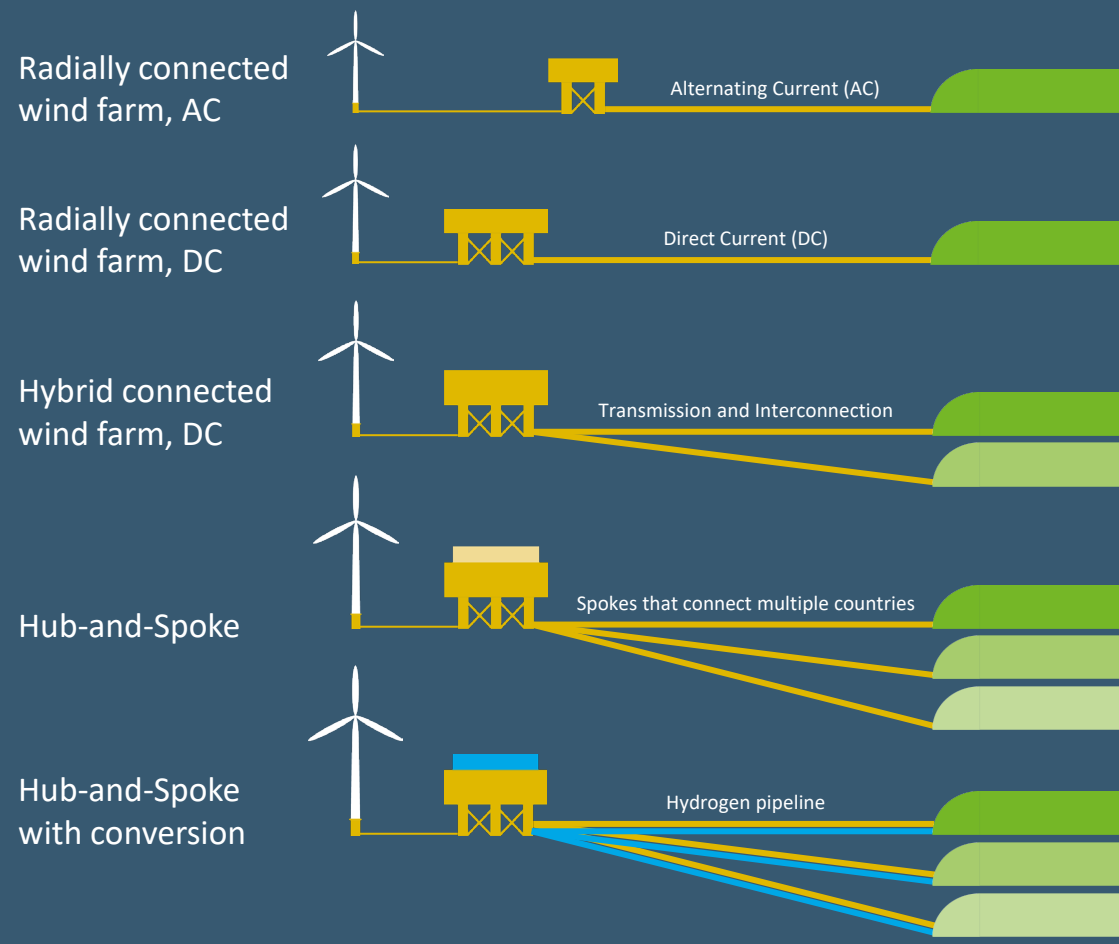
Michel Dubbelboer
Advisor North Sea Wind Power Hub

Vision NSWPH Consortium

The hub-and-spoke project offers a solution to the challenge of integrating offshore wind

- North Sea offshore wind could produce significantly more electricity than the average demand of bordering countries
- Countries must come together, it is time for an ambitious next step
- Post-2030 energy strategies enable decisions and planning towards 2050
- The hub-and-spoke concept has become more concrete

Hub-and-spoke is a next step in the evolution of offshore wind connections



North Sea Wind Power Hub Consortium: a multi-year programme built on collaboration

NSWPH in a nutshell

Consortium of leading **TSOs** on offshore developments for **electricity** and **gas** in Europe

ENERGINET gasunie TenneT

- Set out to making the **hub and spoke** concept a **reality**
- In **2019** the North Sea Wind Power Hub (NSWPH) received **Project of Common Interest** (PCI) status
- This paved the way for NSWPH to receive **Connecting Europe Facility (CEF) funding**
- Through this CEF funding we have made **substantial progress** in **shaping** the **hub and spoke concept** and making **headway** towards the realisation of the first hub and spoke projects in the North Sea.

Our impact over the last four years

Credible voice and knowledge builder in North Sea **offshore wind** development

+40 publications of technical **studies** and discussion **papers**

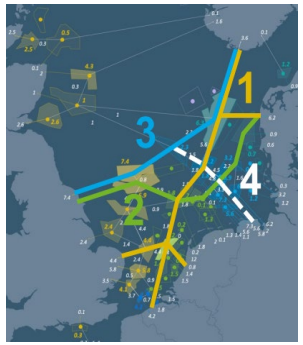
+50 presentations at international events and conferences

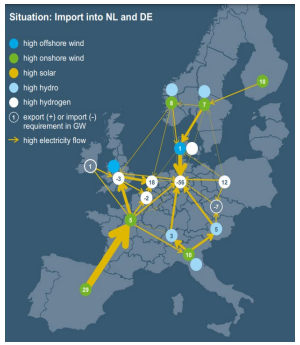
+200 engaged **stakeholders** across Europe

NSWPH achieved the acceptance and implementation of hub and spoke thinking at National governments

System Integration

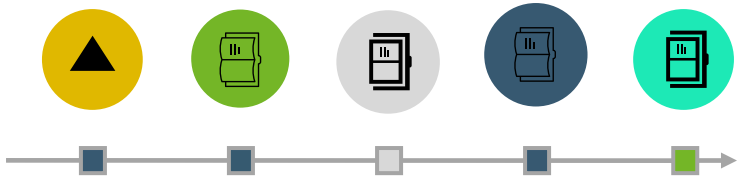
First fully integrated modelling of Electricity and Hydrogen on a European scale



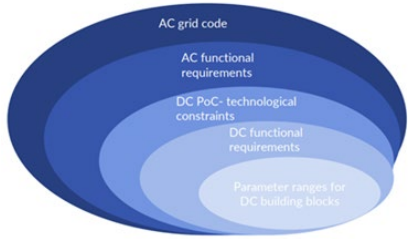


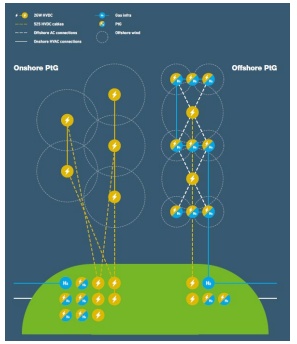
Cost & Benefits

New insights in CBA approach for projects.

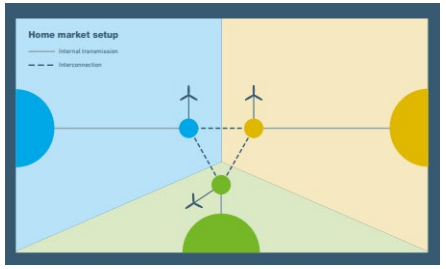


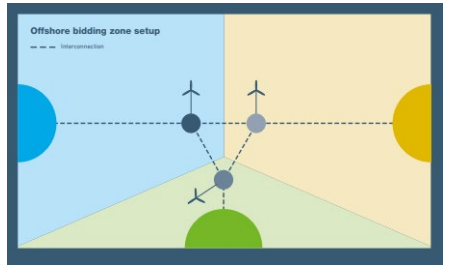
Technical feasibility





Regulation & Market Design





Horizon Transport Programme: GAMMA

Kristina Floche Juelsgaard
Market Development Director Ballard Europe

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GAMMA (nº 101138620)

Green Ammonia and Bio-Methanol fuel Maritime Vessels

Kristina Fløche Juelsgaard
Ballard Power Systems Europe A/S
Director of Market Development

Funded by the European Union

GAMMA E-FUELS

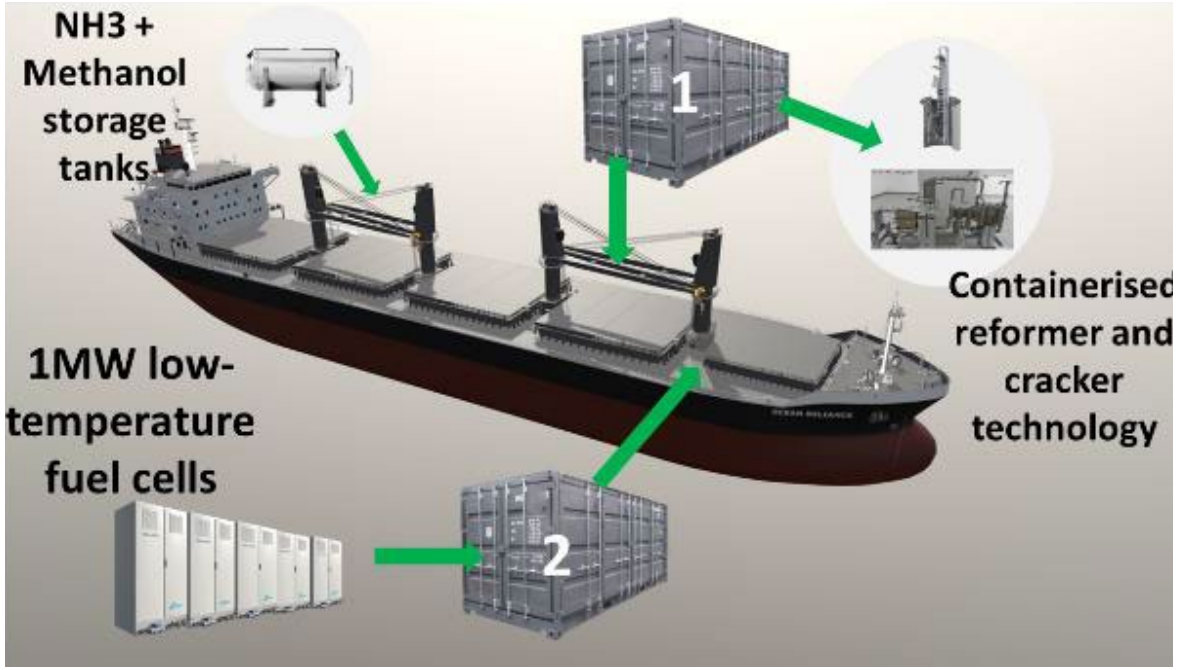
GAMMA E-FUELS - **G**reen **A**mmonia and Bio-**M**ethanol fuel **Ma**ritime Vessels

The GAMMA project goal is to demonstrate two novel e-fuel systems on a 60.000 DWT bulk carrier. The systems enable GHG reductions by producing hydrogen on-board from biomethanol (MeOH) and ammonia (NH3), to then feed a 1 MW LT-PEM fuel cell for electric hotel loads and propulsion.

This work will be developed by a consortium composed by sixteen members from industry and academia.

The target is 30% GHG emissions reduction.

GAMMA is co-funded by European Climate, Infrastructure and Environment Executive Agency (CINEA)



Funded by the European Union


Bio-methanol, ammonia supply/ bunkering
Puerto de Huelva
PORT OF GOTHENBURG
ARM
Safety & Seakeeping
RINA
SEA GREEN ENGINEERING
AURELIA
Project Management
VERKÍS
Aalborg TOPIC
D & C
energy
Fuel Conversion
AMNIS PURA
Fraunhofer IMM
Fuel Cell Engineering
SINTEF
BALLARD
Naval architecture / integration
AURELIA
SEA GREEN ENGINEERING
Aalborg TOPIC
elkon
SOLBIAN
Electrical Engineering / hybridisation (PV+Batteries)
LCI / LCA
VERKÍS
POLITECNICO MILANO 1863
Monitoring and Optimisation / Digitisation
AMETHYSTE

GAMMA by the numbers

Project acronym:	GAMMA
Grant Agreement:	101138620
Call:	HORIZON-CL5-2023-D5-01
Topic:	HORIZON-CL5-2023-D5-01-12
Type of action:	HORIZON Innovation Actions
Granting authority:	European Climate, Infrastructure and Environment Executive Agency (CINEA)
Project start date:	1 January 2024
Project end date:	31 December 2028
Project duration:	60 months
Project Partners:	16
Project Budget:	17 MEuro
Project Grant:	13 MEuro

If you want to know more about GAMMA:

- Kjartan Due Nielsen, Verkís: +354 422 8240, +35 46 99 50 04, kdn@verkis.is
- Jonas Larsen, Energy Cluster Denmark: +45 21 22 43 04, jnl@energycluster.dk
- Kristina Fløche Juelsgaard, Ballard, +45 51580749, kfj@ballardeurope.com

Funded by
the European Union

Innovation Fund: SEAWORTHY

Anders Køhler
CEO of Danish Floating Power Plant

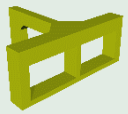
Technology build up for

- Truly renewable Power on-demand delivered as Electricity or Hydrogen

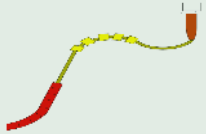
Technology Components

Foundation

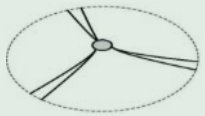
4 to +15 MW wind turbine



Semi-submersible platform



Subsea grid or hydrogen riser

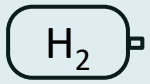


Spread or turret moored

Power addtions

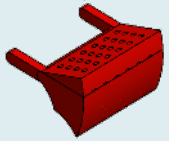
On board batteries for short-term energy storage

and/or



Onboard Hydrogen for export or storage

and/or



Patented WEC
1-3 MW wave power

1: Wave Energy Converter

Commercialisation:

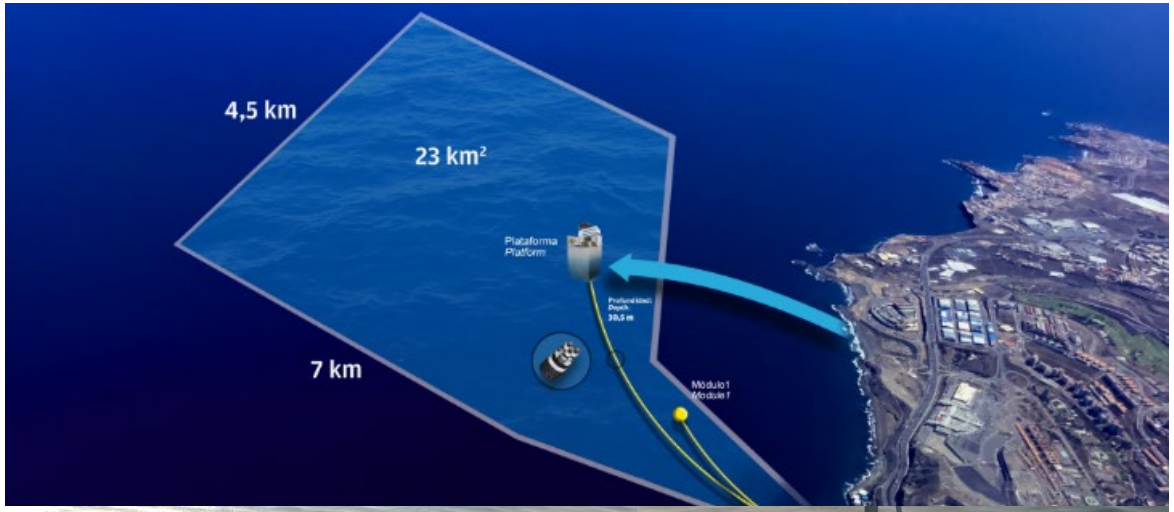
Portfolio of products enabling reliable, renewable power for 3 key markets

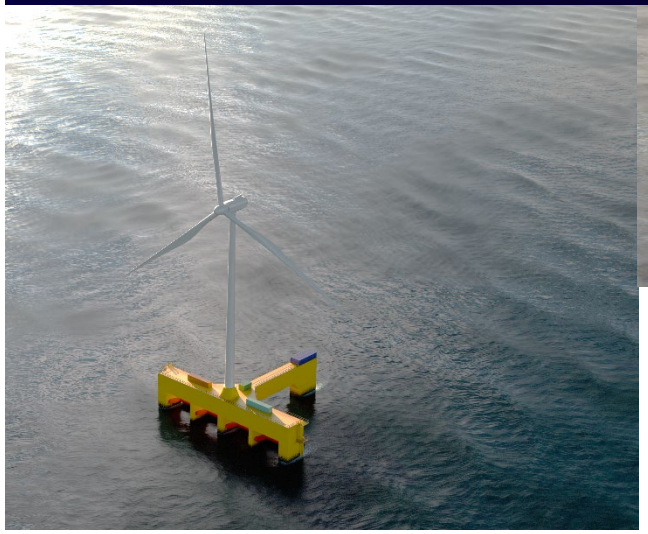
Off-Grid

Weak-Grid

Green Hydrogen Export

SEAWORTHY – AN INNOVATIONFUND PROJECT





Co-funded by the European Union

Partners: Floating Power Plant Canaries SL and Floating Power Plant A/S

Goal:

- Deploy and operate the world's first offshore platform integrating wind and wave energy with a hydrogen system.

Location and Duration:

- 10 years grid connected power production in Gran Canaria

Advancements and Validation:

- **Technological Advancement:** Elevate technologies from TRL (Technology Readiness Level) 7 to TRL 8.
- **Proving Viability:** Demonstrate the technological and financial viability to secure client commitment.
- **Value Chain Validation:** Establish the feasibility and effectiveness of the integrated value chain.

This project not only advances our technology but also showcases its practicality and market readiness.

Project Achievements

Project Kickoff:

- Officially commenced on January 1st, 2024.

Investment and Partnerships:

- Secured a global tier 1 technical cornerstone investor, enhancing project credibility and financial stability (more coming)

Kick of end user advisory board:

- Oil and Gas major, 2 Utilities, Gas producer and off-taker, strategic developer, island network

Team Expansion:

- Our team has already grown, with plans for further expansion to meet project demands.

Progress in Design:

- Design work is advancing as scheduled, ensuring timely project execution.

Local Engagement and Operations:

- Employed local staff in Gran Canaria, local lawmakers and stakeholder engagement and contributing to the development of the local supply chain.

Future Impact and Vision for Our Project:

- The platform is set to generate substantial green power, significantly reducing environmental impact.
- Prove reliable renewable energy provision in traditionally challenging areas, including offshore facilities and island communities.

Environmental Benefits:

- Increases availability of green energy, actively contributing to a cleaner and more sustainable future.
- Reduces dependency on fossil fuels, marking a significant shift towards renewable energy sources.
- Offers a viable green alternative in settings where options are currently limited, expanding the reach of sustainable practices.

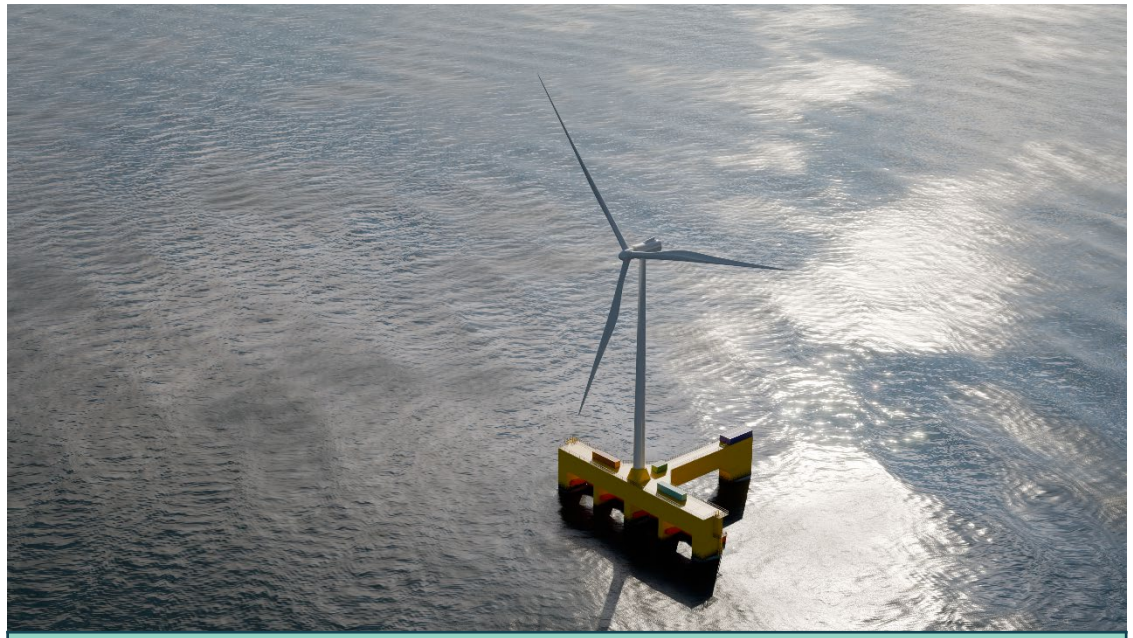
Market and Technological Advancement:

- Paves the way for the emerging hydrogen market, establishing a foundation for future growth and innovation.
- Demonstrates the technological and financial viability of the platform, ensuring confidence among stakeholders and investors.

Strategic Growth:

- Supported by a growing pipeline and targeting an ambitious expansion to a pipeline of 500 MW, equivalent to 33 platforms by 2030, showcasing our commitment to scaling green energy solutions globally.

EU Funding



EU Innovation Fund Scores	
Topic	**FPP's Score**
Degree of Innovation	13/15
Relative Greenhouse Gas Avoidance	5/5
Technical Maturity	5/5
Operational Maturity	4.5/5
Scalability	15/15

EU Stamp of Approval:

- Recognizes and validates our technology at a European level, significantly enhancing our credibility.
- Attracts additional investments and partnerships, essential for growth and development.

Impact of EU Funding:

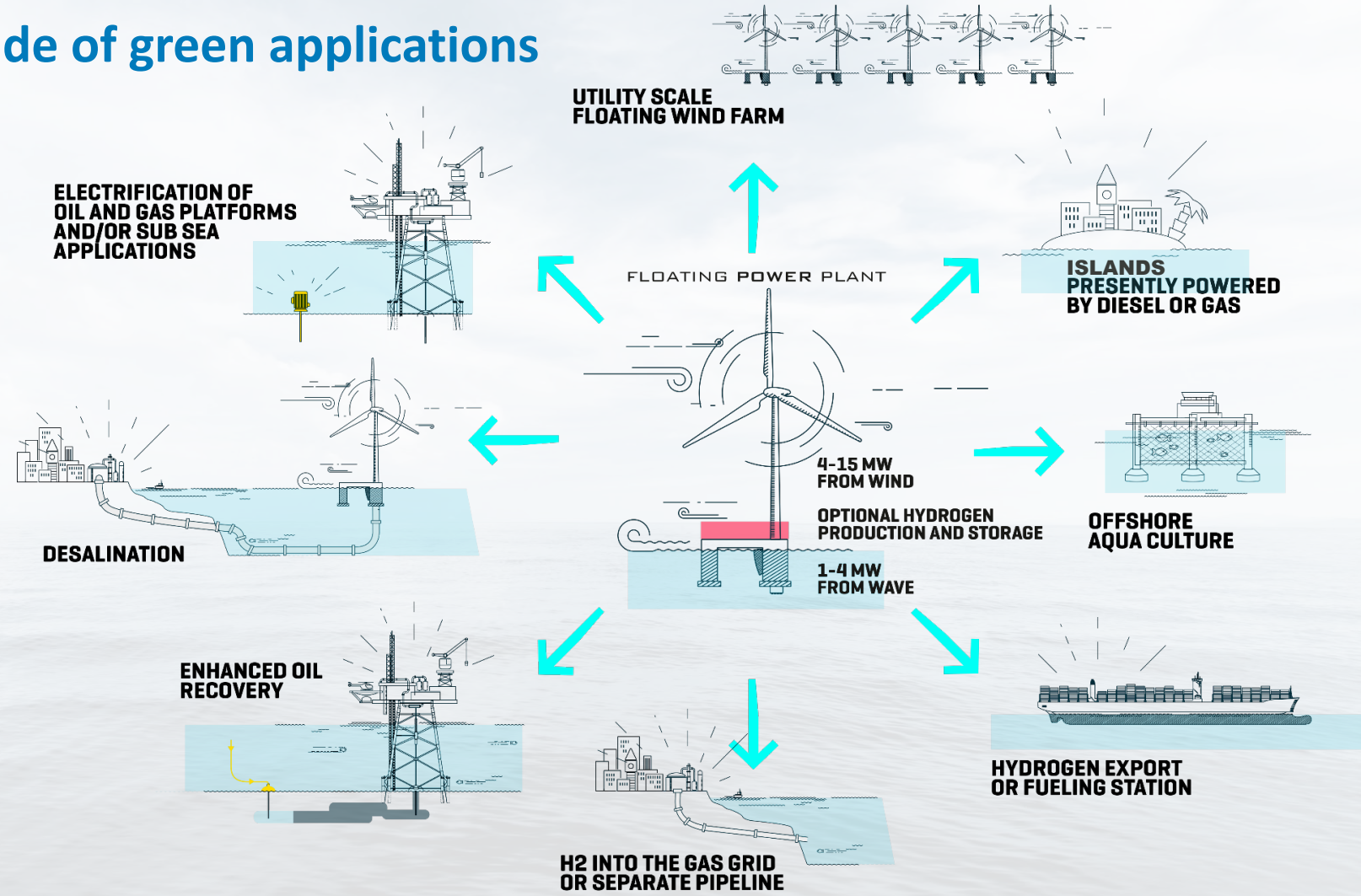
- **Acceleration:** Fast-tracks the scaling of both our technology and company infrastructure.
- **Expansion:** Enables broader implementation of green technologies with a strong base in Europe.

Strategic Benefits:

- **De-risking:** Mitigates technical and financial risks, making the project more appealing to potential investors.
- **Investment Attraction:** Increases funding prospects by showcasing EU confidence in our technology and business model.

This support not only advances our current project but also strengthens our position in the competitive landscape of green technology.

One technology – a multitude of green applications



Want to know more:
Anders Køhler, CEO
Floating Power Plant
ak@floatingpowerplant.com

LIFE Programme: COASTal LIFE

Hanne Bregendahl Pihl
Head of Unit
Coordinator EEN Denmark

Pitch → COASTal LIFE

- COASTal LIFE – Restoration of coastal habitat zones
  - What is the project about
  - Achievements and results
  - Importance of EU funding

Facts:
LIFE21-NAT-DK-COASTal LIFE

CALL: LIFE-2021-SAP-NAT

Period: 70 months

60 pct. co-financing form EU

Billede: Strandenge ved Løgstør bredning

Co-funded by the European Union

NATURA 2000

AAGE V. JENSEN NATURFOND

Ørsted

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COASTal LIFE - Restoration of coastal habitat zones

The MAIN objectives

- Contribute to obtain favourable conservation conditions of 11 protected natural habitat types.
- Improve conservation status for 9 bird species.
- The project is carried out in connection with complementary wetland projects in the four project areas. Completion of the wetlands and the LIFE project will have significant synergy effects in order to secure favourable conservation status for the species and habitats involved.
- Reestablishment of ecosystem services on land and ecological corridors.
- Securing the coastline to avoid erosion, sediment mobilization and loss of land (Coastal squeezing).
- Dissemination the project and the values of the Natura 2000 network in general to raise awareness.
- Increase involvement of stakeholders to raise ownership by arranging, preparing and hosting citizens science events in relation to concrete conservation actions.
- Arrange events, seminars, and workshops to share knowledge and best practice and create awareness about the project and the projects added value.
- Contribution to replication of measures considering reestablishment of eelgrass beds, management of restored salt meadows, and restoration of oyster beds.

COASTal LIFE - Restoration of coastal habitat zones

The project includes:

- Reestablishment of fresh and salty salt marshes.
- Optimizing the natural content of the meadows.
- Reestablishment of the marine habitats and ecosystem services in the shallow marine areas outside the salt marshes. Including establishment of:
  - Eel grass beds
  - Islets
  - Stone reef and areas with stone
  - Oyster- and mussel beds

- Involvement of stakeholders to ensure broad ownership of the project

Expected results (Project is still in its early phase)
The project must contribute to the re-establishment of the natural coastal zone with fresh and salty salt meadows combined with lagoons, beach lakes, eelgrass plantations, islets and smaller rock reefs as well as the ecosystem services that naturally belong to these habitat types.

Re-establishment of eelgrass beds and the marine ecosystems will improve the conditions for many bird species including e.g. light-bellied Brent Goose (*Branta bernicla hrota*) which is badly affected by the lack of foraging areas. This is a so-called National responsibility species (NRS), and Denmark is therefore committed to secure habitats regarding the goose.

- Goal
  - Improved habitats
  - Improved natural dynamics
  - Remove barriers contributing to “coastal squeeze”
  - An increase in selected bird species (and others)

COASTal LIFE - Restoration of coastal habitat zones

Importance of EU- Funding

- Big project → EU- Funding is vital!!
- A project goes from having a local- to a “global” “*anchor*”
  - → Easier to motivate partnerships, raise awareness, raise ownership of stakeholders etc.

Thank you for listening!

(Nature restoration is a global not a local issue)

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Q&A

Conclusions

Thank you!

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CINEA - European Climate, Infrastructure and Environment Executive Agency

CINEATube

Tender Portal CINEA
Funding opportunities