



MERMAID

mermaidproject.eu

Seventh Framework Programme

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"Innovative Multi-purpose off-shore platforms: planning, design and operation"

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End user conference

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1 Public Summary

We actually planned two end-user conferences. The first one was cancelled due to terrorist threat in Brussels. However, after the cancellation we successfully planned a second end user conference in Denmark at the Technical University of Denmark about three weeks later.

2 End user conference November 26th 2015 in Belgium: Cancelled

Due to the terrorist threat in Brussels we were forced to cancel/postpone the MERMAID end user conference on November the 26th 2015. This was the information we send out to all participants.

From: event_mermaidconference-owner@mermaidproject.eu on behalf of Final <event_mermaidconference@mermaidproject.eu> Sent: ma 23-11-2015 13:12
To: event_mermaidconference@mermaidproject.eu
Cc:
Subject: MERMAID end user conference (25-26th November): CANCELLED

Dear Sir/Madam,

The terrorist threat for Brussels is being kept at the maximum level.

For this reason and the resulting practical problems, we are forced to cancel/postpone the MERMAID end user conference the 26th November and the preconference Steering Board Meeting the 25th.

We keep you informed and thank you for your understanding of this unforeseen situation.

We will look into possibilities for new dates etc. for the end-user conference as soon as possible.

Yours sincerely,

On behalf of the MERMAID conference Organising Committee

Prof. Erik Damgaard Christensen
DTU Mechanical Engineering
Technical University of Denmark
Coordinator MERMAID project

2.1 Programme

Here is the programme that was planned and confirmed on the day.

MERMAID Conference on Multi-Use Offshore Platforms Brussels, 26 November 2015



Programme

- 9:00 **Welcome and introduction**
Moderation: Quentin Cooper, BBC Radio 4
- 9:10 **Welcome address**
Bart Tommelein, Belgian Secretary of State for the North Sea
- 9:15 **Importance and opportunities for R&D on multi-purpose offshore platforms**
Sieglinde Gruber, Head of the Marine Resources Unit, DG Research & Innovation – EC
- 9:25 **The MERMAID approach: main tools, results and recommendations**
Erik Damgaard Christensen, MERMAID project coordinator, Technical University of Denmark
- 10:00 **A point of view by the industry**
Cooperation between industries and science in aquaculture
Arne Fredheim, SINTEF – Norway
The integration of the offshore wind farm with aquaculture farming turns the conflict into cooperation
Geirr Haarr, STATOIL – Norway
- 10:30 Coffee break
- 11:00 **Regional opportunities**
Baltic Sea site
Ole Svenstrup Petersen, DHI Water x Environment x Health – Denmark
Wadden Sea – North Sea site
Jan-Joost Schouten, Deltares – The Netherlands
Atlantic Ocean site
Raúl Guancho, University of Cantabria – Spain
Mediterranean Sea site
Barbara Zanuttigh, Università di Bologna – Italy & Delft University – The Netherlands
- 12:00 **The role of Maritime Spatial Planning in facilitating MUPs.**
Stephen Jay, School of Environmental Sciences, University of Liverpool – UK
- 12:20 Networking lunch & fair

**MERMAID Conference
on Multi-Use Offshore Platforms
Brussels, 26 November 2015**



13:30 Break-out sessions

Assessing the financial, economic and social effects of offshore platforms for investors, policy makers and general public

Chair: Phoebe Koundouri, Athens University of Economics and Business - Greece & Marian Stuiver, University and Research Centre – The Netherlands

Technical challenges for offshore engineering

Chair: Jan-Joost Schouten, Deltares – the Netherlands

Wind and wave energy: synergies and opportunities

Chair: Raúl Guanche, University of Cantabria – Spain

Large-scale offshore aquaculture: environmental impacts

Chair: Øivind Bergh, Institute of Marine Research – Norway

15:00 Coffee break

15:30 Complementary EU- initiatives related to MERMAID

Presentation of TROPOS

Joaquin Hernandez Brito, PLOCAN – Spain

Introduction to MARIBE

Gordon Dalton, University College Cork – Ireland

16:00 Multi-Use Offshore Platforms: Challenges and Opportunities for Europe

Wrap up of breakout sessions

Panel discussion

Sieglinde Gruber, Erik Damgaard Christensen, Arne Fredheim, Geirr Haarr and Stephen Jay

17:00 Reception

2.2 Participant list

The status of November the 4th 2015 128 people have signed up for the conference:

| Last Name | First Name | Title | Name of institute/company |
|------------------|-------------------|--------------|---|
| Airoldi | Laura | Prof | University of Bologna |
| Andrusaitis | Andris | Mr | The joint Baltic Sea research and development programme |
| Angell-hansen | Kathrine | Mrs | JPI Oceans Research Council Norway |
| Bardocz | Tamas | Mr | AquaBioTech Ltd. |
| Baş | Bilge | Dr | Istanbul Technical University |
| Beckers | Steve | Mr | Asicon, division of Geometius BV |
| Bellotti | Giorgio | Prof | Roma Tre University |
| Birkeland | Mads Joakim | Mr | DHI |
| Blanc | Sarai | Mrs | European Ships and Marine Equipment Association |
| BLANCHARD | Loïc | Mr | EASME - European Commission |
| Bolding | Karsten | Dr | Bolding & Bruggeman |
| Bonakdar | Lisham | Dr | Leichtweiss-Institut für Wasserbau, Technische Universität Braunschweig |
| bossier | peter | Prof | Lab Aquaculture & Artemia Reference Center |
| Brandenburg | Willem | Dr | Wageningen UR Agrosystems research |
| Brennan | Andrew | Dr | University of Dundee |
| Carlberg | Lena Kristina | Mrs | DTU Mechanical Engineering |
| Christensen | Erik Damgaard | Prof | Technical University of Denmark |
| Christine | Röckmann | Dr | Institute for marine resources and ecosystem studies |
| Claus | Simon | Mr | Flanders Marine Institute |
| CONESA ALCOLEA | Ivan | Mr | European Commission |
| Coolen | Joop | Mr | IMARES Wageningen UR |
| Copejans | Evy | Mrs | Flanders Marine Institute |
| Crawley | Peter | Mr | European Commission |
| Dalsgaard | Niels | Mr | Musholm |
| David | Cox | Mr | Belgian Science Policy Office |
| De Maeyer | Jeroen | Dr | Ghent University |
| De Mesel | Ilse | Dr | Royal Belgian Institute of Natural Sciences |
| Derison | Olivier | Mr | Royal IHC |
| Diaz Simal | Pedro | Dr | Universidad de Cantabria |
| Dobbelaere | Ingrid | Mrs | Flanders Marine Institute (VLIZ) |
| Draisma | Marlies | Mrs | Stichting Noordzeeboerderij |
| Elginoz | Nilay | Dr | Istanbul Technical University |
| Enachioiu | Camelia | Mrs | Ocean Energy Europe |
| Enrico | Di Lauro | Mr | Second University of Naples |
| Escribano | Daniella | Dr | University of Dundee |
| Fazekas | Andreas | | DG MARE |
| Fockedeey | Nancy | Dr | Flanders Marine Institute |
| Forster | Rodney | Dr | Institute for Estuarine & Coastal Studies, Univ Hull |
| Fredheim | Arne | Dr | SINTEF Fisheries and Aquaculture |
| FRENTZOS | THANASIS | Mr | KEFALONIA FISHERIES |

| | | | |
|-------------|---------------|--------------|--|
| Fritz | Jan | Dr | KDM German Marine Research Consortium |
| Fuchs | Jacques | Dr | European Commission |
| Garção | Rita | | Chalmers University of Technology |
| Giannakis | Elias | Dr | The Cyprus Institute |
| Giannouli | Amerissa | | Athens University of Economics and Business |
| Golmen | Lars | MR | Norwegian institute for water research |
| Groenendaal | Bert | Dr | SIOEN Industries |
| Guanche | Raul | Dr | IH Cantabria - University of Cantabria |
| Haarr | Geirr | Mr | Statoil ASA |
| Hadadpour | Sanaz | Mrs | Dept.of Hydromechanics & Coastal Engineering, Leichtweiß-Institute for Hydraulic Engineering & Water Resources,TU Braunschweig |
| Hansen | Krien | | Natuurpunt vzw |
| Hanssen | Jan Erik | Dr | 1-Tech s.p.r.l. |
| Harkamp | Thorbjørn | Mr | Musholm A/S |
| Hasager | Charlotte | Dr | DTU Wind Energy |
| He | Wei | Dr | Statoil ASA |
| HUYGENS | MARC | Dr | DEME-group |
| Iglesias | Marta | Mrs | European Commission |
| Jenny | Norrman | Dr | Chalmers University of Technology, Department of Civil and Environmental Engineering |
| Jimenez | Carlos | Dr | The Cyprus Institute |
| Karasszon | Anna | Mrs | European Commission, DG ENV |
| Keersebilck | Nathalie | Mrs | Flanders Marine Institute (VLIZ) |
| Kirca | Özgür | Dr | Istanbul Technical University |
| Klar | Robert | | University of Innsbruck |
| Kortenhaus | Andreas | Prof | Ghent University |
| Koundouri | Phoebe | Prof | Athens University of Economics and Business, LSE, ICRE8 |
| Kramer | Dirk | Mr | DC-Offshore Energy BV |
| Kringelum | Jon | Mr | DONG Energy Wind Power A/S |
| KRONTIRA | YUKIKO | Mrs | KEFALONIA FISHERIES |
| La Riviere | Inge | Drs. Ing. | WUR Alterra (DLO) |
| Le bouler | Gaëlle | | EASME/EC |
| Lekkas | Anastasios | Dr | JPI Oceans/NTNU |
| Linssen | Vivian R. F. | Prof | International Multidisciplinary Neuroscience Research Center - NewPOL Network |
| Loosvelt | Lien | Dr | Development Agency of West-Flanders |
| Maes | Johan | Mr | Deme |
| Maes | Pieter | Mr | Flanders Marine Institute (VLIZ) |
| Mailli | Evdokia | Mrs | University of Athens |
| MAILLI | EVDOKIA | Mrs | National and Kapodistrian University of Athens |
| MALACHE | Jacques | Mr | International PRESS Agency |
| MASSET | Jean-Francois | Mr | IFREMER |
| Mathys | Mieke | Mrs | International Marine and Dredging Consultants |
| Mayorga | Pedro | Mr | EnerOcean S.L. |
| Menna | Mariano | | European Commission |

| | | | |
|-----------------|-------------|------|--|
| Mialocq | Gabriel | | European commission INEA |
| Mostrey | Ingrid | | Institute of Research into Fields that have gone out of Fashion |
| Nauwelaerts | Steven | | Laminaria |
| Overmeire | Ann | ir | Flanders' Maritime Cluster |
| ÖZgürel | Ilgar | Mr | - |
| PALOMAR | Armando J | Mr | Paisa bvba |
| Pedersen | Aksel Hauge | Mr | DONG Energy Wind Power |
| Petersen | Casper | Mr | Hvalpsund Net |
| Peyhorgue | Stephane | Mr | EIE Poitou-Charentes |
| Pycke | Benny | Dr | eCOAST Marine Research |
| Rappé | Karen | Mrs | Flanders Marine Institute |
| Reubens | Jan | Dr | Vlaams Instituut voor de Zee |
| Rocabado | Ivan | Dr | Antea Group |
| Rodriguez | Sebastián | Dr | European Commission |
| Romano | Alessandro | Dr | University of Roma Tre |
| Rosén | Lars | Prof | Chalmers University of Technology |
| Rousseau | Diederik | Prof | Ghent University Campus Ktrijk |
| Rousseau | Nathalie | Mrs | Windfire |
| Rumes | Bob | Dr | Royal Belgian Institute of Natural Sciences - Management Unit of the North Sea Mathematical Models and the Scheldt estuary |
| Sansoglou | Paris | Mr | European Dredging Association |
| Santillan | Filipinas | Mrs | QS Queensolver bvba |
| Sarmiento | Javier | Mr | Universidad de Cantabria |
| Scheide | Günter | | Transidee University Innsbruck Austria |
| Schellekens | Tim | Dr | ECOAST Marine research |
| Schouten | Jan-Joost | ir | Deltares |
| Seys | Jan | Dr | Flanders Marine Institute |
| Skold Palmquist | Alexandra | Mrs | Executive Agency for Small and Medium-sized Enterprises |
| Soede | Matthijs | Dr | European Commission |
| Stoops | Giada | Mrs | Moverim Consulting |
| Stuiver | Marian | Dr | Wageningen University and Research Centre |
| Sumer | B. Mutlu | Prof | Technical University of Denmark |
| Tadeo | Fernando | Prof | University of Valladolid |
| Taramelli | Andrea | Prof | ISPRA |
| Trachet | Nick | Mr | Freel lance |
| TROIANOS | DIMITRIOS | Mr | KEFALONIA FISHERIES |
| van den Burg | Sander | Dr | LEI Wageningen UR (Stichting DLO) |
| Van der Meer | Rene | Mr | GDF Suez E&P Nederland BV |
| Van der Zande | Dimitry | Dr | Royal Belgian Institute of Natural Sciences |
| Van Gaever | Saskia | Dr | FPS Health, food security and environment, DG Environment |
| Van hal | Jaap | Dr | The Energy Research Center of the Netherlands |
| Van Nieuwenhove | Kris | Mr | Strategische Adviesraad voor Landbouw en Visserij |
| Vandeputte | Filip | ir | DEME |
| Vanderschueren | Marc | Mr | OCAS & Metal Structures Centre |

| | | | |
|-------------|---------|------|-----------------------|
| Vanderveken | Joris | Mr | AquaScrew |
| zagonari | fabio | | University of Bologna |
| Zanuttigh | Barbara | Prof | University of Bologna |

3 End user conference December 15th 2015 in Denmark

Bearing in mind the short planning time of 3 weeks, we were very satisfied with the programme and number of participant for this second conference, which was held in Lyngby at the Technical University of Denmark. Around 60 people signed up for this conference.

3.1 Programme

MERMAID Conference on Multi-Use Offshore Platforms Denmark - 15 December 2015



Programme

- 9:00 **Welcome and introduction**
Moderation: Quentin Cooper, BBC Radio 4
- 9:10 **Welcome address**
Henrik Caspar Wegener, Provost/Executive Vice President, Technical University of Denmark
- 9:15 **Importance and opportunities for R&D on multi-purpose offshore platforms**
Ivan Conesa Alcolea, Policer Officer, DG Research & Innovation – European Commission
- 9:25 **The MERMAID approach: main tools, results and recommendations**
Erik Damgaard Christensen, MERMAID project coordinator, Technical University of Denmark
- 10:00 **A point of view by the industry**
Integration of offshore wind with offshore oil and gas installations
Henrik O. Madsen, Former Group President & CEO at DNV GL – Denmark
The integration of the offshore wind farm with aquaculture farming turns the conflict into cooperation
Geirr Haarr, STATOIL – Norway
- 10:40 Coffee break
- 11:10 **Regional opportunities**
Baltic Sea site
Ole Svenstrup Petersen, DHI Water × Environment × Health – Denmark
Wadden Sea – North Sea site
Jan-Joost Schouten, Deltares – The Netherlands
Atlantic Ocean site
Raúl Guanche, University of Cantabria – Spain
Mediterranean Sea site
Replacement of Barbara Zanuttigh, Università di Bologna: Phoebe Koundouri, Athens University of Economics and Business – Greece
- 12:00 Networking lunch & fair

MERMAID Conference on Multi-Use Offshore Platforms Denmark - 15 December 2015



13:00 Break-out sessions

Assessing the financial, economic and social effects of offshore platforms for investors, policy makers and general public

Chair: Phoebe Koundouri, Athens University of Economics and Business – Greece

Technical challenges for offshore engineering

Chair: Jan-Joost Schouten, Deltares – the Netherlands

14:00 Break-out sessions

Wind and wave energy: synergies and opportunities

Chair: Raúl Guanche, University of Cantabria – Spain

Large-scale offshore aquaculture: environmental impacts

Chair: Øivind Bergh, Institute of Marine Research – Norway

15:00 Coffee break

15:30 Complementary EU- initiatives related to MERMAID

Presentation of TROPOS

Thomas Lockhart, Offshore technology solutions, DCNS – France

Introduction to MARIBE

Gordon Dalton, University College Cork – Ireland

16:00 Multi-Use Offshore Platforms: Challenges and Opportunities for Europe

Wrap up of breakout sessions

Panel discussion

Erik Damgaard Christensen, Henrik O. Madsen, Geirr Haarr, Phoebe Koundouri, Jan-Joost Schouten, Raúl Guanche, Øivind Bergh, Charles de Monchy

17:00 Reception

3.2 Participant list

Around 60 people signed up for the second conference which only was planned in 3 weeks.

MERMAID Conference on Multi-Use Offshore Platforms Denmark - 15 December 2015



List of participants

| | | | |
|--------------------------|---------------|---|----------------------------------|
| Andrew | Brennan | University of Dundee | a.j.brennan@dundee.ac.uk |
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| Jensen | Jørgen | Technical University of Denmark | jjj@mek.dtu.dk |
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| Kazimierowicz-Frankowska | Krystyna | Institute of Hydroengineering of the Polish Academy of Sciences | krystyna@ibwpan.gda.pl |
| Kirca | V.S. Ozgur | Istanbul Technical University | kircave@itu.edu.tr |
| Kofoed | Jens Peter | Aalborg University | jpk@civil.aau.dk |
| Koundouri | PHOEBE | Athens University of Economics and Business | phoebe.koundouri@icre8.eu |
| Kringelum | Jon | DONG Energy Wind Power A/S | jonvk@dongenergy.dk |

MERMAID Conference on Multi-Use Offshore Platforms Denmark - 15 December 2015



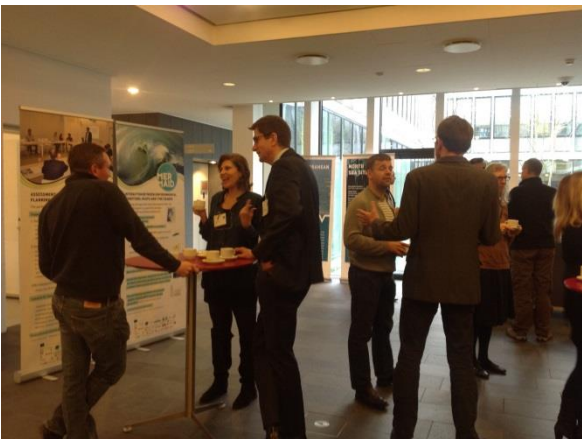
| | | | |
|------------------|------------------|-----------------------------------|----------------------------------|
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| Madsen | Henrik | DNV GL | henrik.o.madsen@dnvgl.com |
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| Petersen | Ole Svenstrup | DHI | osp@dhigroup.com |
| Pilskog | Martin Ytterland | Technical University of Denmark | pilskog.martin@gmail.com |
| Pirlet | Hans | Flanders Marine Institute | hans.pirlet@vliz.be |
| Randa-Boldt | Emil | Technical University of Denmark | s092106@student.dtu.dk |
| Rappe | Karen | Flanders Marine Institute | karen.rappe@vliz.be |
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| Torgersen | Thomas | Institute of Marine Research | thomast@imr.no |
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Figure 1 Group photo of the participants at the end user conference at DTU. Photo by Flemming Jørgensen (DTU)



Figure 2 Photos from the end user conference. Photos by Lisbeth Lassen (DTU)



4 Outcome

At the end of the day a panel discussion was summing up the breakout sessions, as well as, discussing other topics. The overall outcome is also visible in D7.3 which is book made and handed out at the conference.

4.1 Summary of breakout sessions and panel discussions

Here is a summary of the breakout sessions and panel discussions:

4.1.1 Summary of session on financial, economic and social effects

- Non-Financial
- Benefits
- Important in MO space: identify all costs and benefits and make it clear to all stakeholders.
- Non-financial benefits – you need policy convention.
- Subsidise: non-financial (not for investors) – the investors will not be interested
- Quantify, identify and subsidize the users of the ocean space
- Talk to policymakers! Also technological – An easy way: convince the DG to build simple examples and identify – outside the private – shoe the investors the big picture. And the policymakers: subsidizing
- MERMAID assessment tool that allow you to pull things together in monetary flow.
- Make investors feel like pioneers.

4.1.2 Summary of session on technical challenges

- How can aquaculture support structures be designed for harsh offshore conditions and still be economically feasible?
- Directions for designs could be:
 - Flexible structure
 - Able to lower the structure (submerge)
 - Alternative materials (concrete, carbon fibre)
 - Alternative anchoring system (flexible system)
 - Maybe go for big support structure hosting high value products
 - Opt for shielding structures (WECs)
 - Design the shape such that it is able to cope with harsh conditions (for example: shape of a ship)
 - Design process is as following:
 - First make the support structure feasible
 - Then optimize to cope with extreme conditions.

... to look forward to collaborate with co-users in their offshore wind farms - Why???

- Benefits of synergies are not proved to be significant enough (no proven technology)
- Offshore wind is (becoming) a mature sector; most of the offshore aquaculture sector is still immature.
- Grant concessions for offshore wind farms under the forging conditions of multi-use.
- How to go forward?
- Go for pilots to show that:
 - Synergies are significant
 - Aquaculture sector becomes more mature
 - Regulate multi-use from a governmental level.

4.1.3 Summary of session on wind and wave

Immature sector: Wave energy.

- To promote:
- Who should push this forward? Public or private?
 - Conclusions: convincing and show evidence – demonstration projects.
 - Wave: small sectors
- Floating wind and wave – they are feasible.
- When and where? Where should start combining wind and wave energy?
 - Fresh water: try to combine that as well.

4.1.4 Summary of session on aquaculture

- We have theoretical evidence for moving offshore
- The large scale business case is still lacking – but upcoming – happening
- Environmental argument on spatial planning is crucial
- EU+Member states are in a chicken–egg-discussion on who should do what...

4.1.5 Panel discussion - Summary

- Pilots are definitely a solution!
- Comment: DTU: we would like to this kind of projects – but we need the industry to participant.
 - Wind and aquaculture to participant
- Who will be the owner? We will never have the permit. That is the first requirement. This owner has to be identified.
 - How should this be solved:
 - Research projects – e.g. with PhD-students
 - Taxes!?
 - The financial flows everywhere – not just for the investors – subsidize or taxes?

- Competition between investors.
- PP – public private projects
- If consortia is made – can it be tested and build e.g. in 4 years?
 - Two industries that are depending on pilots
 - Permits are very important!
 - Important to have small steps – smaller risks for investors.
- Offshore windfarm often say that there are too many risks to do it with aquaculture.
 - It would be easy to start up with as wind farms are already there
 - It's important for Europe to use the ocean space.
- Most of the windfarms in Europe has a water depth of 30 m, which is not suitable for all kind of aquaculture.
 - Start to combine the MOUP in an existing windfarm – already done in China.
- Not only co-use
- Suggesting: not small steps – optimal steps – we might have to take the big step. But several opinions: it will not work. Not baby steps, but small steps!
 - How big step? Report of Geirr in March 2016. Basic simple things and integrate them in existing things.
 - Why do Statoil do this? And not other windfarms?
- Permits could be a problem when doing it in steps.