

Moving ahead of the energy curve



OFFSHORE 2011
AMSTERDAM
ORGANISED BY EWEA

Event Guide

EWEA OFFSHORE 2011
Conference and Exhibition
29 November - 1 December 2011
Amsterdam, The Netherlands

EWEA Events: The Winning Formula



EWEA 2012
COPENHAGEN
EUROPE'S PREMIER WIND ENERGY EVENT
16 - 19 APRIL



OFFSHORE 2013
FRANKFURT
ORGANISED BY EWEA
19 - 21 NOVEMBER



EWEA
THE EUROPEAN WIND ENERGY ASSOCIATION

**Book your stand today for
the upcoming EWEA events.**

**Visit EWEA stand:
No 9130, Hall 9**

EWEA Events: organised for the industry by the industry.

The exciting growth of the wind industry has been accompanied by an increasing number of related events. Whenever you consider education, networking or company visibility, be sure to make the right choices.

EWEA has 20 years of experience in organising events that are customised to meet the

industry's needs and contribute to its further development.

Benefit from the highest standard conferences, international exhibitions and incomparable networking opportunities, all under one roof while supporting the association's work.

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WELCOME MESSAGE

EUROPE'S INDUSTRY GATHERS SPEED



Much of Europe, with its extensive coastlines, has always looked outwards to the rich resources and promise of the sea. Today the seas around Europe are the focus of Europe's

most promising and quickly maturing industry, offshore wind energy. Amsterdam, once a fishing village which became one of the most important ports in the world, is a fitting place for the industry to meet at the European Wind Energy Association OFFSHORE 2011 event.

The huge potential of offshore wind energy is exciting for those of us linked to the industry. It is also an exciting opportunity for investors. EWEA's new Offshore report, available at the EWEA stand (Hall 9, stand 9130) and the EWEA Publication Point (Hall 11, stand 11680) shows that 142GW of offshore wind capacity – nearly fifty times what is currently installed – is already consented or planned in Europe's seas, from the Baltic to the Mediterranean. The report also provides an in-depth look at every aspect of the supply chain from cables to port requirements. This is a multi-faceted industry which is gathering speed.

Indeed, the many issues and questions surrounding the sector – from the political to the financial and the scientific – will be part of the discussions between the 7,000 industry representatives, political decision-makers, technical experts and more expected to attend EWEA OFFSHORE 2011. News, photos and videos from the event will be continuously updated on the event website, www.ewea.org/offshore2011.

One of the most crucial discussions will centre on the EU's recently published draft legislation on electricity infrastructure. In this context EWEA, alongside Europacable and Eurelectric and 15 supporting associations, has launched a statement (see page 62) highlighting the need for a European power grid and functioning single electricity market so that the massive amounts of power that can be produced offshore can be transported to consumers. You can find out more on www.freedomforelectricity.eu and support the statement at the EWEA stand.

EWEA's new report shows that by 2030, Europe could have 150GW of offshore wind energy capacity, meeting 14% of our power demand, representing €17 billion of investments and providing work for nearly 300,000 people. The 142GW already planned today is proof that this is a realistic and achievable target providing we have a power grid and market which are up to the job. As the industry gathers to do business and exchange news during the next few days, we must bear in mind both the tremendous possibility at our fingertips, and the steps that must be taken so that we can seize it.

I wish you a very successful and stimulating EWEA OFFSHORE 2011.

A handwritten signature in black ink, appearing to read 'Arthouros Zervos'. The signature is fluid and cursive, with a long horizontal stroke at the end.

Arthouros Zervos
President, European Wind Energy Association (EWEA)

CONFERENCE CHAIR FOREWORD

TIME FOR STRONG LEADERSHIP AND ROBUST POLICY



With a build rate of 1GW per year and 4000MW to be installed by the end of 2011, Europe leads the way on offshore wind. We now need to consolidate this leadership position

and use it as a platform to drive the growth of renewables over the next decade and beyond. We must not let the current economic climate dampen our ambition. The need to drive the rate of growth was one of the reasons SSE, along with a number of industry colleagues, called for 25% internal emission reduction targets by 2020. Unlike the North Sea oil and gas industry that is in decline after 50 years, Europe's political and business leaders have the opportunity to build a sustainable energy industry that will outlive oil and gas, providing benefits for many generations into the future.

Establishing Europe's 2020 goals, backed up by robust national action plans, has provided the strong political leadership and confidence that the industry needs to build and invest in the supply chain. Our ambition and optimism about the transformation of energy provision across Europe must not end when these targets are met, and they certainly shouldn't end in 2020 when the policy gap between current targets and 2050 becomes a chasm.

We need robust, transparent policy beyond 2020 that will provide the certainty for investors to commit capital to our offshore projects, and to invest in networks and supply chain. For an industry that is truly sustainable in every sense, we need the right target for the right year. I would therefore take this opportunity to challenge our political leaders to look beyond 2020 and set a legally binding target for Europe for renewable energy for 2030.

The offshore wind industry has enjoyed a 25% annual growth rate to date. If we are to maintain this, we have significant obstacles to overcome.

We need to put in place the regulatory and planning regimes that will allow us to build out the networks with confidence. There needs to be an increase in R&D expenditure to push down the cost of turbines and increase their efficiency and reliability. We need access to finance that will enable us to build our capacity to reduce bottlenecks in the supply chain, such as subsea cables and specialised vessels.

We have the technical capability to address these challenges, and European utilities and suppliers are also up for the challenge. We need the political support to establish the right binding targets in the right timeframe to provide the foundation for success.

The prize for Europe is immense. In the current economic climate, employment is moving to the top of the agenda. The offshore wind sector alone is forecast to employ over 150,000 people by 2020. With the right political framework, that could double to 300,000 by 2030. It brings with it the opportunity to develop our ports that have been in decline for years. By clustering renewable manufacturing technologies, financed through public and private initiatives, ports will be rejuvenated as new technology manufacturing centres rather than property development sites. Most importantly, we will make a significant contribution to one of this century's key challenges – the provision of clean sustainable energy that will provide energy security to Europe for decades to come. I challenge all attending this conference to provide the leadership necessary to make this happen.

Ian Marchant

*Chief Executive Officer, SSE Renewables,
United Kingdom and EWEA OFFSHORE 2011
Conference Chair*

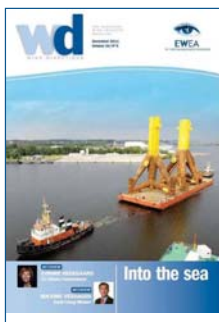
Don't miss out at EWEA OFFSHORE 2011

The 'Free Movement of Electricity' campaign

As the European Union debates the 'infrastructure package' on financing and permitting Europe's grids in the next few months, EWEA and the other supporters of the 'Free Movement of Electricity' statement (opposite) are highlighting the urgent need for a single internal power market and a network infrastructure to facilitate it.

Support the campaign at EWEA OFFSHORE 2011 at the EWEA stand, 9130, in Hall 9.

More information: www.freedomforelectricity.eu



New publications at EWEA OFFSHORE 2011 – discover the latest research

On the first day of EWEA OFFSHORE 2011, EWEA is launching its major new offshore report. The report shows that 141 GW of offshore wind energy capacity is planned in Europe – around 50 times what is currently installed. That is huge investor interest.

On the second day of EWEA OFFSHORE 2011, the latest issue of EWEA's magazine, *Wind Directions*, will be published. It contains a special feature on offshore wind energy and on substructures. It also features interviews with the Dutch Energy Minister and EU Climate Commissioner Hedegaard.

Pick up a copy of the report on Tuesday, and of *Wind Directions* on Wednesday, at the EWEA stand (Stand 9130 in Hall 9) and the EWEA Publication Point (Stand 11680 in Hall 11).

Keep up at EWEA OFFSHORE 2011

There's a lot going on at EWEA OFFSHORE 2011 and it's impossible to be in two places at once! Keep up to speed with the latest news, blog posts, photos and videos from the sessions and the exhibition on www.ewea.org/offshore2011.

You can also follow what's going on – and who's commenting on what – on EWEA's Facebook page – go to www.ewea.org/fb





CONFERENCE

Conference sessions, Quick Fire session,
poster presentations, pre-event seminar
and workshops

CONFERENCE PROGRAMME

TUESDAY 29 NOVEMBER

08:00 – 10:00 REGISTRATION + WELCOME COFFEE

Welcome coffee will be served in the Poster Area

10:00 – 12:00 OPENING SESSION

PLENARY AND PANEL SESSIONS

ROOM: AUDITORIUM

Leading political and industry figures will address the question of whether the European offshore wind power industry will replicate the success of onshore wind technology, in terms of market deployment, cost-competitiveness and technology maturity? Through keynote speeches and moderated debates, speakers will consider the prospects for growth and discuss which facilitators are needed from Governments, the European Union, industry itself and the financial sector.

CONFERENCE

WELCOME MESSAGE



Jaap Bond
Vice-Governor
of the Province
of Noord Holland



Ian Marchant
Chief Executive Officer,
SSE Renewables, United Kingdom
and EWEA OFFSHORE 2011 Conference Chair

INTRODUCTION TO EWEA OFFSHORE 2011

KEYNOTE SPEECHES



Günther Oettinger
European
Commissioner
for Energy
(video message)



Arthouros Zervos
President, European
Wind Energy
Association



Fergus Ewing
Minister for Energy,
Enterprise and
Tourism, Scotland

PANEL DEBATE – SPEAKERS



MODERATOR
Alex Puissant
Journalist and
independent
conference
moderator



Jean Huby
Chief Executive
Officer, AREVA Wind,
Germany



Christian Kjaer
Chief Executive
Officer, European
Wind Energy
Association



Jan Kjaersgaard
Chief Executive
Officer (EMEA),
Siemens Wind Power,
Denmark



**Poul Nyrup
Rasmussen**
President, Lindoe
Offshore Renewable
Centre, Denmark



Eddie O'Connor
Chief Executive
Officer, Mainstream
Renewable Power,
Ireland



Anders Søre-Jensen
President,
Vestas Offshore,
Denmark



Mike Winkel
Chief Executive
Officer, E.ON Climate
and Renewables,
Germany



CONFERENCE PROGRAMME TUESDAY 29 NOVEMBER

12:00 – 14:00 PRESS CONFERENCE + LUNCH

Lunch will be served in catering areas, Halls 8 and 11

14:00 – 15:30 TECHNOLOGY CHOICES (PANEL)

PLENARY AND PANEL SESSIONS

ROOM: AUDITORIUM

A key issue for many in the offshore sector is which technologies will enable the European offshore wind power industry to replicate the success of onshore wind energy over the coming decade? Several concepts currently exist, but how do they compare in terms of quality, reliability, supply and cost? This panel session will focus on a major issue for the offshore industry, namely the use of direct drive technology versus gearboxes, and the bearing this choice has upon turbine weight, cost and maintenance.



CONFERENCE

PANEL DEBATE – SPEAKERS



MODERATOR

Hanne May
Editor in Chief,
new energy
magazine



Stefan Lammens
Chief Sales
and Marketing
Officer, Hansen
Transmissions,
Belgium



Finn Strøm Madsen
President, Vestas
Technology R&D,
Denmark



Henrik Stiesdal
Chief Technology
Officer, Siemens
Wind Power,
Denmark



**Antonio de la
Torre Quiralte**
Product Development
Director, Gamesa,
Spain



Frank Zimmermann
President Offshore,
REpower, Germany

15:30 – 16:00 COFFEE BREAK

Coffee break areas, Halls 9, 10 and 11

CONFERENCE PROGRAMME

TUESDAY 29 NOVEMBER

16:00 – 17:30 BREAKING DOWN THE BARRIERS TO AN OFFSHORE SUPERGRID

GRID AND INFRASTRUCTURE

ROOM: FORUM

LEAD CHAIR

Adam Bruce

Mainstream Renewable Power, United Kingdom

CO-CHAIR

Ana Aguado

Friends of the Supergrid (FOSG), Belgium

In this session a panel of industry experts will identify the main barriers to the delivery of a large-scale meshed electricity network in the EU, looking at the regulatory and market structures that will be needed to deliver multilateral interconnection. With significant recent advances in the technology and supply chain to deliver the Supergrid, this session will concentrate on the political and regulatory developments that are planned or required for delivery.

OPENING PRESENTATIONS

OPTIONS FOR EUROPE: EU POWER MARKET DESIGN TO SUPPORT OFFSHORE GRID PLANNING AND OPERATIONS

Karsten Neuhoff

Climate Policy Initiative/DIW Berlin, Germany

DEVELOPING A NEW EUROPEAN REGULATORY REGIME FOR OFFSHORE TRANSMISSION INFRASTRUCTURE

Olivia Woolley

University of Groningen, The Netherlands

PANEL DEBATE

Alison Kay

National Grid, United Kingdom

Teun Van Biert

ENTSO E WG North Sea, The Netherlands

Fay Geitona

Agency for the Cooperation of Energy Regulators (ACER)

Gus Schellekens

PricewaterhouseCoopers, United Kingdom

16:00 – 17:30 SUPPORT STRUCTURE CONCEPTS

HARDWARE

ROOM: AUDITORIUM

LEAD CHAIR

Christian Nath

GL Renewables Certification, Germany

CO-CHAIR

Allan MacAskill

MacAskill Associates, United Kingdom

This session will offer insights into the different support structure concepts for deep water. The session will provide an in-depth view into various concepts for deep water offshore substructures and the comparison of results for a tripod structure in 30m water depth. There will be three presentations on foundation designs: one for a floating solution, one on gravity foundations and a third on jackets and monopiles, all for deep water. The fourth presentation will be on the comparison of design analysis and measured data for the tripod foundation at the German test site Alpha Ventus.

SPEAKERS

FLOATING WIND TURBINES AND THEIR ASSOCIATED RISKS

Charles Briggs

SgurrEnergy Ltd, United Kingdom

CONCRETE GRAVITY FOUNDATIONS FOR DEEPER WATER: GIVING THE INDUSTRY MORE CHOICE

Gordon Jackson

Arup, United Kingdom

FIRST EVALUATION AND VERIFICATION OF MEASUREMENT DATA, OF THE TRIPOD SUPPORT STRUCTURE AT THE 'ALPHA VENTUS' WIND FARM

Jan Quappen

University of Stuttgart, Germany

ADVANCED DESIGN METHODS FOR MONOPILES OF LARGE WIND TURBINES IN DEEPER WATERS

Marc Seidel

REpower Systems SE, Germany



CONFERENCE PROGRAMME TUESDAY 29 NOVEMBER

16:00 – 17:30 SCANNING WIND THE GREAT OUTDOORS: ASSESSING THE RESOURCE

ROOM: ELICIUM

LEAD CHAIR

Stephan Barth

ForWind – Center for Wind Energy Research, Germany

CO-CHAIR

Jan Willem Wagenaar

Energy Research Center of the Netherlands (ECN),
The Netherlands

Understanding the impact of external conditions, i.e. wind and waves, in offshore conditions requires a different approach to those applied to onshore sites. However, in recent years, tremendous progress has been made in the development and application of remote sensing techniques. Ranges have been extended and ground-based systems have been modified for installation on nacelles and buoys. A large-scale integration of such systems and techniques could lead to a quantum leap when it comes to quantifying and qualifying the overall wind picture. Presentations within this session will share the latest developments and findings relating to the development and use of such technologies.

SPEAKERS

OCEAN RADAR FOR REAL-TIME CURRENT AND WAVE MEASUREMENTS AND IMPROVED FORECASTS

Cedric Taillandier

Actimar, France

NACELLE LIDAR POWER PERFORMANCE MEASUREMENT IN THE CONTEXT OF THE IEC 61400-12-1 STANDARD

Rozenn Wagner

Risø DTU, Denmark

VERTICAL WIND SHEAR MEASURED WITH A NACELLE-BASED LIDAR SYSTEM AND ITS IMPACT ON MECHANICAL LOADS

Oliver Bischoff

University of Stuttgart, Germany

VALIDATED MEASUREMENTS OF A FLOATING LIDAR DEVICE BASED ON MECHANICAL STABILIZATION AND SOFTWARE CORRECTION

Thomas Duffey

3E, Belgium

NORSEWIND: THE STORY SO FAR

Andrew Oldroyd

Oldbaum Services Limited, United Kingdom

CONFERENCE

17:00 – 18:00 SIEMENS STAND PARTY

Siemens stand (Hall 10, stand 10111)

➔ See page 52 for details

Sponsored by:

SIEMENS

19:00 – 21:30 OPENING RECEPTION

Beurs Van Berlage, Damrak 243, 1012 ZJ Amsterdam

➔ See page 52 for details

Sponsored by:



Rabobank

CONFERENCE PROGRAMME

WEDNESDAY 30 NOVEMBER

08:00 – 09:00 REGISTRATION + WELCOME COFFEE

Welcome coffee will be served in the Poster Area

09:00 – 10:30 OFFSHORE GRID TECHNOLOGY

GRID AND INFRASTRUCTURE

ROOM: FORUM

LEAD CHAIR

Michael Nørtoft Frydensbjerg
Siemens Wind Power, Denmark

CO-CHAIR

Peter Jørgensen
Energinet.dk, Denmark

This session will examine the technical aspects and methods related to the offshore grid and the connection of offshore wind power plants. Presentations will deal with the connection of wind turbines to an oil platform in a small isolated offshore system and also focus on the connection of a large-scale offshore wind power plant to the grid. The session will also examine HV/DC and offshore cabling technologies, and consider how they can be used for wind power plant connections. Finally, the session will look at the grid code requirements for offshore wind power plants and discuss how they differ from onshore requirements.

SPEAKERS

THREE CASE STUDIES OF OFFSHORE WIND FARMS RATED AT 20MW, 100MW AND 1000MW INTEGRATION WITH OIL AND GAS PLATFORMS

Wei He and Jorun Marvik
Statoil ASA & SINTEF Energy Research, Norway

NETWORK CODE REQUIREMENTS FOR CONNECTION OF OFFSHORE WINDFARMS

Torsten Haase
50Hertz Transmission, Germany

DC GRIDS FOR INTEGRATION OF LARGE SCALE WIND POWER

Nicolaos Cutululis
Risø DTU, Denmark

OUT OF TROUBLED WATERS – GETTING A GRIP ON OFFSHORE CABLING

Thomas Boehme
Det Norske Veritas (DNV), United Kingdom

09:00 – 10:30 NEW BIG TURBINE CONCEPTS

HARDWARE

ROOM: AUDITORIUM

LEAD CHAIR

Jan van der Tempel
TU Delft, The Netherlands

CO-CHAIR

Athanasia Arapogianni
European Wind Energy Association (EWEA), Belgium

Offshore wind developments tend to choose the newest, biggest turbines. Now that 5MW is the standard, turbine manufacturers are preparing the launch of larger systems, aiming to reach 10MW and beyond. In this session, 5 turbine manufacturers will give an insight on their most daring plans. In a short, 7 minute pitch, each manufacturer will promote their concept, with a focus on technical detail.

An expert panel of developers, scientists, designers and certifiers will use a first round of questions to clarify issues and unearth further details. In the second half of the session, the chairs will moderate a discussion between the manufactures, the expert panel and the audience. Before and after this discussion, the audience will be asked to vote for their most promising turbine solution.

SPEAKERS

BIG IS BEAUTIFUL ... WHY LARGER WIND TURBINES IMPROVE COST OF ENERGY FOR OFFSHORE WIND

Anders Bach Andersen
Vestas Wind Systems, Denmark

EXTRA LIGHT ROTORS WITH HIGH AERODYNAMIC EFFICIENCY

Mario Jimenez de Lago
Gamesa Innovation & Technology, Spain

PERMANENT MAGNET GENERATOR DESIGN FOR OFFSHORE APPLICATIONS

César Muñoz-Casais
Alstom Wind, Spain

NEW 6.0MW DIRECT DRIVE OFFSHORE WIND TURBINE ESPECIALLY SUITABLE FOR LARGE OFFSHORE WIND FARMS

Jesper Moeller
Siemens Wind Power, Denmark

FROM 1ST TO EFFICIENCY GENERATION: DEMANDS AND EXPECTATIONS ON OFFSHORE WIND TURBINES

Morten Schaap-Kristensen
Nordex Energy GmbH, Germany



CONFERENCE PROGRAMME WEDNESDAY 30 NOVEMBER

LOGISTICS: GETTING THEM THERE
AND KEEPING THEM RUNNING

09:00 – 10:30 HEALTH AND SAFETY

ROOM: ELICIUM

CO-CHAIRS

Johannes Schiel

Verband Deutscher Maschinen- und Anlagenbau (VDMA), Germany

Garth Greyling

Siemens Wind Power, Denmark

This session will seek to answer the main health and safety concerns associated with offshore wind deployment as the market grows and spreads to diverse locations across Europe. Best practices, lessons learned and transfer of knowledge from the mature markets will be discussed with the aim of ensuring prevention of environmental damage, tackling safety challenges and anticipating accidents.

This session will also inform developers about the need for marine coordination systems: management of vessels and personnel, and finding effective solutions to meet increasing demand whilst ensuring sufficient safety requirements are in place. Finally, historical key performance indicators will form the basis of learning points relating to risk management throughout an offshore project's lifetime (namely during design, construction and O&M stages).

SPEAKERS

PRESENTATION OF GLOBAL WIND ORGANISATION (GWO)

Lars Odby

Vestas Wind Systems A/S, Denmark

SAFETY MANAGEMENT IN OFFSHORE WIND FARM PROJECTS

Gundula Fischer

GL Garrad Hassan Deutschland GmbH, Germany

OFFSHORE WINDPARK EGMOND AAN ZEE:
6 YEARS ACCIDENT-FREE

Alan Chivers

Project Management Support Services Limited (PMSS), United Kingdom

MARINE COORDINATION – MARITIME SAFETY AND HEALTH AND SAFETY

Peter Eade

VisSim AS, Norway

RISK BASED HEALTH AND SAFETY SYSTEM FOR OFFSHORE WIND FARMS, LESSONS LEARNED

Charlotta Norén

ABS Consulting, United Kingdom

SAFETY IN OFFSHORE ENGINEERING – AN ACADEMIC COURSE COVERING SAFETY IN OFFSHORE WIND

David Cerda Salzmann

Delft University of Technology, The Netherlands

10:30 – 11:00 COFFEE BREAK

Coffee break areas, Halls 9, 10 and 11

THEIR PRESENTATION IN YOUR HANDS! The new Quick Fire session gives delegates the power to vote for what they want to hear about.

Turn over to find out more...



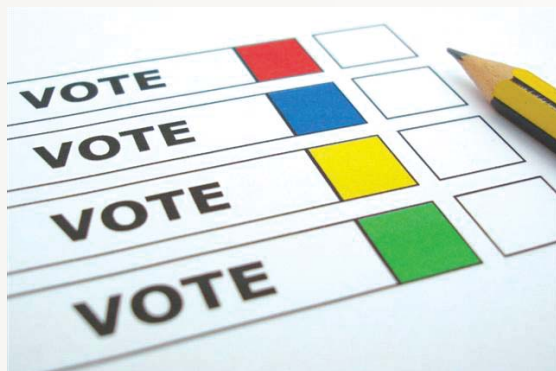
CONFERENCE PROGRAMME WEDNESDAY 30 NOVEMBER

11:00 – 12:30 QUICK FIRE SESSION

ROOM: FORUM

NEW

You choose! Tell us what you want to hear about in the new **QUICK FIRE SESSION.**



The Quick Fire session is a new kind of session for EWEA OFFSHORE 2011 which is designed to give delegates the opportunity to preview a number of ideas and choose those they want to hear more about. Each presenter will give a brief one-minute, one-slide summary of their presentation, and the audience will then vote for the four they would like to hear in full.

The 17 presentations are drawn from the Hardware, Logistics and Wind Farm Experience tracks, where many high quality abstracts were received that we were not able to accommodate in the main programme. This session gives those presenters an opportunity to get their subject on stage and compete for a full presentation slot, and will provide an opportunity for networking between the speakers and delegates.



CONFERENCE PROGRAMME

WEDNESDAY 30 NOVEMBER

MODERATORS

Jan van de Tempel

Ampelmann/TU Delft, The Netherlands

Bruce Douglas

3E, Belgium

SPEAKERS

POWER PERFORMANCE ASSESSMENT USING LIDAR

Charles Briggs

SgurrEnergy Ltd, United Kingdom

OPTIMISED DESIGN OF MULTI-MEMBER SUPPORT STRUCTURES FOR OFFSHORE WIND TURBINES

Tim Camp

GL Garrad Hassan, United Kingdom

AN INDUSTRY PERSPECTIVE ON FOUNDATION DESIGN FOR THE OFFSHORE WIND SECTOR

Lisa Kirwan

University College Dublin, Ireland

MEASURING AND MODELLING PITCH BEARING DEFORMATION

Wouter Engels

ECN, The Netherlands

TILT: SMART LOGISTICS TOOL FOR OFFSHORE WIND FARM INSTALLATION

Jelte Kymmel

KCI, The Netherlands

ARTIFICIAL NEURAL NETWORKS FOR SCADA DATA BASED LOAD RECONSTRUCTION

Claudia Hofemann

TU Delft, The Netherlands

STATISTICAL ANALYSIS AND COMPARISON OF HARMONICS MEASURED IN OFFSHORE WIND FARMS

Lukasz Kocewiak

DONG Energy, Denmark

CONCEPTUAL DESIGN OF A DOT GENERATOR STATION

Dimitris Michailidis

TU Delft, The Netherlands

ANALYSIS OF PITCH GEAR DETERIORATION USING INDICATORS

Jannie Nielsen

Aalborg University, Denmark

THE SELF INSTALLING WIND TURBINE (SIWT): COMPLETE WIND TURBINE INSTALLATION USING STANDARD MARINE EQUIPMENT

Mark Riemers

SPT Offshore, The Netherlands

SIMULATION SOFTWARE ADDS A BIG BOOST IN ACCURACY TO WIND FARM LOGISTICS PLANNING

Erica Simmons

Siemens PLM Software, United States of America

ENERGY CONSIDERATIONS FOR WIND TURBINES WITH HYDRAULIC TRANSMISSION SYSTEMS

Bjørn Skaare

Statoil ASA, Norway

INVESTIGATIONS ON SCOUR AT TRIPOD FOUNDATION STRUCTURES IN THE GERMAN OFFSHORE TEST SITE ALPHA VENTUS

Arne Stahlmann

Leibniz University Hanover, Germany

IMPROVED PLANNING FOR OFFSHORE WIND FARM CONSTRUCTION

Nico Stolk

Ecofys, The Netherlands

FUTURE OFFSHORE WIND INSTALLATION TECHNIQUES WITHOUT UNDER WATER NOISE

Sytske van den Akker

Stichting De Noordzee, The Netherlands

RESOURCE OPTIMIZATION TOOL FOR OPERATIONS AND MAINTENANCE FOR OFFSHORE WIND FARMS

Cassandra van den Berg

Siemens Wind Power, Denmark

FEA OF GROUDED CONNECTIONS – STATUS REPORT ON THE TECHNICAL APPROVAL PROCEDURE FOR CERTIFICATION OF GROUDED CONNECTIONS

Marc Mittelstaedt

Germanischer Lloyd Industrial Services GmbH, Germany

CONFERENCE PROGRAMME

WEDNESDAY 30 NOVEMBER

**11:00 – 12:30 QUANTITY AND QUALITY
OF MODELLED WIND**

**THE GREAT OUTDOORS:
ASSESSING THE RESOURCE**

ROOM: AUDITORIUM

LEAD CHAIR

Pep Moreno

Vortex, Spain

CO-CHAIR

Stefan Ivnell

Gotland University, Sweden

In recent years, wind turbine technology has developed towards a real offshore wind power penetration. Major engineering obstacles have been overcome, and now a more specific and detailed spatial planning of the offshore resource is required to support the anticipated increase of offshore wind power production.

This session will address current trends in offshore resource assessment on a variety of scales, from mesoscale modelling being used to assess the resource of large offshore areas to site-specific remote measurement technologies.

Speakers will provide their experiences of the extent to which the offshore resource can be estimated using atmospheric modelling downscaling, and how the influence of complex phenomena like wakes or waves upon future wind production is being estimated using cutting-edge techniques. This session should appeal to a technical audience with any interest in current resource and siting challenges.

SPEAKERS

WINDS IN THE SOUTH BALTIC SEA – WORKING TOWARDS
A WIND ATLAS

Alfredo Peña

Risø DTU, Denmark

OCEAN WAVE EFFECTS ON WIND POWER PRODUCTION

Alastair Jenkins

Uni Research, Norway

EVALUATION OF TWO NOVEL WAKE MODELS FOR
INTRA- AND INTER-WINDFARM WAKE EFFECTS OFFSHORE

Jorge Garza

DONG Energy, Denmark

FLUX-PROFILE CHARACTERIZATION OF THE OFFSHORE ABL
FOR THE PARAMETERIZATION OF CFD MODELS

Javier Sanz Rodrigo

National Renewable Energy Centre
of Spain (CENER), Spain



CONFERENCE PROGRAMME

WEDNESDAY 30 NOVEMBER

11:00 – 12:30 NORTH AND SOUTH: MAKING AN EU OFFSHORE GRID A REALITY

GRID AND INFRASTRUCTURE

ROOM: ELICIUM

LEAD CHAIR

Frans Van Hulle

European Wind Energy Association (EWEA), Belgium

CO-CHAIR

Teun Van Biert

TenneT, The Netherlands

Connecting Europe's huge offshore wind power potential in a timely and cost-effective manner to the onshore power system is a major precondition for meeting Europe's energy policy goals. Expected benefits such as improved interconnections between different electricity markets and connecting to the Norwegian hydro reservoirs reinforce the business case for a European offshore grid. How this can contribute to making an EU offshore grid a reality is introduced by 4 presentations.

The session brings together the results of two different techno-economic study approaches to a staged offshore grid development: the IEE OffshoreGrid project and the Friends of the Supergrid Feasibility Study Phase 1. Furthermore, the possibilities and limitations of better integrating the Norwegian hydro storage in the European power supply are investigated. The case of the South is highlighted in a presentation that explores needs, options and challenges for offshore transmission and connection of wind power in the Mediterranean area.

SPEAKERS

AN OFFSHORE GRID IN EUROPE: FINAL CONCLUSIONS AND RECOMMENDATIONS FROM THE IEE PROJECT OFFSHOREGRID

Jan De Decker

3E, Belgium

CHANGES IN THE UTILISATION OF THE NORWEGIAN HYDRO RESERVOIR BY BALANCING THE NORTH SEA OFFSHORE WIND

Steve Vøller

Norwegian University of Science and Technology, Norway

PHASE 1 OF THE EUROPEAN SUPERGRID – A FEASIBILITY STUDY

Heather Laurie

Mainstream Renewable Power, Ireland

TOWARDS WIND POWER TRANSMISSION AND TRANSCONTINENTAL INTERCONNECTIONS IN MEDITERRANEAN

George Caralis

National Technical University of Athens (NTUA), Greece

12:30 – 14:00 LUNCH

Catering areas, Halls 8 and 11

CONFERENCE PROGRAMME

WEDNESDAY 30 NOVEMBER

14:00 – 15:30 EU OFFSHORE WIND: RACE OR HARMONY?

THE SOFT SECTOR AND HARD CASH

ROOM: FORUM

LEAD CHAIR

Stephanie Ropenus

German Wind Energy Association (BWE), Germany

CO-CHAIR

Jacopo Moccia

European Wind Energy Association (EWEA), Belgium

Offshore wind energy has the potential to significantly contribute to the objectives of European energy policy, namely competitiveness, sustainability and security of supply. EU Member States apply different support schemes to promote the deployment of offshore wind in their waters. The type of support scheme and the level of support are crucial for investment certainty and for the attractiveness of national offshore wind markets for project developers.

This session seeks to explore competing offshore wind programmes and support policies, ranging from feed-in tariffs and tender schemes to green certificate markets. Presentations of practical country examples from France, Germany and the United Kingdom will illustrate lessons learned and examine the current situation. An overall discussion will evolve around whether we are striving for harmony or running a race in the development of offshore wind policies across Europe.

SPEAKERS

THE FRENCH CALL FOR TENDER: A WAY TO FACILITATE THE DEVELOPMENT OF OFFSHORE WIND FARMS?

Fabrice Cassin

CGR LEGAL, France

JOINT SUPPORT SCHEMES AND EFFICIENT OFFSHORE INVESTMENT: MARKET AND TRANSMISSION CONNECTION BARRIERS AND SOLUTIONS

Sascha Thorsten Schroeder

Risø DTU, Denmark

HOW IS GOVERNMENT POLICY GOING TO ENSURE FUTURE OFFSHORE WIND ENERGY TARGETS ARE ACHIEVED?

Laure Kaelble

Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, Germany

FINANCIAL AND NON-FINANCIAL SUPPORT POLICIES FOR OFFSHORE WIND DEPLOYMENT IN THE UK

Duarte Figueira

The Department of Energy and Climate Change (DECC), United Kingdom

14:00 – 15:30 HOT TOPICS IN OFFSHORE TURBINES

HARDWARE

ROOM: AUDITORIUM

LEAD CHAIR

Thomas Buhl

Risø DTU, Denmark

CO-CHAIR

Vincent Schellings

GE Power & Water, Germany

This session will cover the newest trends in offshore wind turbines. Bringing down the cost of energy for offshore wind turbine installations is an aim for the entire wind industry. This can be achieved through a variety of means, including upscaling, improved reliability and new concepts – all of which are covered in this session. Speakers will investigate flutter of large wind turbines, an instability that can become critical in upscaling. They will also examine improvements in drive train reliability and introduce innovative new concepts to the industry, by looking at a two bladed concept with partial pitch.

SPEAKERS

DESIGN OF RELIABLE DRIVE TRAINS FOR LARGE OFFSHORE WIND TURBINES

Andreas Vath

Bosch Rexroth, Germany

LOAD REDUCTIONS FOR A TWO-BLADED UPWIND TURBINE WITH PARTIAL PITCH

Taeseong Kim

Risø DTU, Denmark

POWER SYSTEM ARCHITECTURE: FINDING THE BEST SOLUTION FOR A 5MW OFFSHORE WIND TURBINE

Rain Byars

Nextwind Inc., United States of America

PREDICTION OF FLUTTER SPEED ON A 10MW WIND TURBINE

Lars Frøyd

Norwegian University of Science and Technology, Norway



CONFERENCE PROGRAMME WEDNESDAY 30 NOVEMBER

14:00 – 15:30 KEY LOGISTICS CHALLENGES AND INNOVATIVE SOLUTIONS

LOGISTICS: GETTING THEM THERE AND KEEPING THEM RUNNING

ROOM: ELICIUM

LEAD CHAIR

Morten B. Keller
MAKE Consulting, Denmark

CO-CHAIR

Kaj Lindvig
A2SEA, Denmark

This session will discuss the key logistics challenges related to offshore wind project installations and aim to provide the audience with suggestions on how to overcome them. As the offshore industry grows, new challenges will appear, such as port availability and the installation of both wind turbines and foundations. The session will include a 360-degree view on the logistics challenges that the industry will meet in the coming 3-5 years. This will be followed by a discussion of each key issue by leading industry professionals.

SPEAKERS

THE CHALLENGES PRESENTED TO SUPPLY CHAIN TO MEET FUTURE DEMAND OF OFFSHORE WIND POWER PLANT DEVELOPMENT ACROSS EUROPE

Thomas Karst
MAKE Consulting, Denmark

INNOVATIVE LOGISTICAL CONCEPTS FOR OFFSHORE WIND PARKS BY NETWORKING OF PORT LOCATIONS

Frank Schnabel
Brunsbüttel Ports GmbH, Germany

MATURING THE INSTALLATION SETUP FOR THE EUROPEAN OFFSHORE MARKET

Henrik Fomsgaard Lynderup
Siemens Wind Power, Denmark

ACCELERATING FOUNDATION INSTALLATION, THE REAL FOCUS POINT FOR OFFSHORE WIND LOGISTICS

Edwin van de Brug
Ballast Nedam Offshore, The Netherlands

15:30 – 16:00 COFFEE BREAK

Coffee break areas, Halls 9, 10 and 11

CAPE SPIN

WEDNESDAY
NOVEMBER 30
17:30
Forum Room



AN AMERICAN POWER STRUGGLE

THE FILM CHRONICLES THE RIVALRY BETWEEN THE PRIVATE AND PUBLIC SECTORS AS THEY FIGHT TO BRING OFFSHORE WIND TO THE U.S. COASTS. CAPES PIN: AN AMERICAN POWER STRUGGLE IS PRODUCED BY NEIL JEFFERY AND JIM GORDON. CASTING BY JIM GORDON. COSTUME DESIGNER: JIM GORDON. MUSIC BY JIM GORDON. EDITOR: JIM GORDON. EXECUTIVE PRODUCERS: JIM GORDON AND NEIL JEFFERY. PRODUCED BY NEIL JEFFERY AND JIM GORDON. WRITTEN BY NEIL JEFFERY AND JIM GORDON. DIRECTED BY NEIL JEFFERY AND JIM GORDON.

**Wednesday 30 November
17:30
Forum Room**

SPECIAL FILM PREVIEW – CAPE SPIN: AN AMERICAN POWER STRUGGLE

Join the producers of Cape Spin: An American Power Struggle (www.capespin.com), for a special EWEA OFFSHORE 2011 sneak preview on Wednesday 30 November 2011 at 17:30 in the Forum Room. A true game-changer for the offshore wind industry, Cape Spin chronicles the saga of the Cape Wind Project, America's first proposed offshore wind farm and one of the decade's most confounding political battles.

Before the screening, Neil Jeffery from Renewable World will give a brief talk on *Mapping out successful corporate responsibility for the renewable energy industry*. The renewable energy industry is quickly developing,

growing and maturing – but success also brings new challenges. As stakeholders hold the industry to account in increasingly stringent ways, it is crucial for the wind industry to develop a professional approach and manage the social dimension of running a successful business.

After the screening the filmmakers will hold court with Jim Gordon, the president of Cape Wind Associates, and several other experts to explore the lessons of Cape Wind and what it takes to develop large-scale offshore wind along America's densely populated coastlines.

This special screening takes place right after the session "Not in my back water!": Public planning and social acceptance" in the Forum Room (see overleaf for session details).

CONFERENCE PROGRAMME

WEDNESDAY 30 NOVEMBER

16:00 – 17:30 NOT IN MY BACK WATER!:

PUBLIC PLANNING AND SOCIAL ACCEPTANCE

THE SOFT SECTOR AND HARD CASH

ROOM: FORUM

LEAD CHAIR

Anne-Bénédicte Genachte

European Wind Energy Association (EWEA)

Successful deployment of large-scale offshore wind in the coming years requires additional preparation and adaptation of the current planning framework, in order to ensure an optimum integration of projects in the marine environment. Successful management of the sea space – ensuring that offshore wind energy proposals are properly considered within the context of the many other interests and claims of space, including environmental concerns – will be crucial to ensuring broad social acceptance and removing barriers to offshore wind development. This session will exchange best practices in marine spatial planning, explore the interactions with other sea users, and make the link with public acceptance of offshore wind farms and consequent risk mitigation.

SPEAKERS

IMPROVING THE PLANNING FRAMEWORK FOR OFFSHORE WIND ENERGY IN EUROPE – RESULTS FROM THE SEANERGY 2020 PROJECT

Karina Veum

Energy Research Center of the Netherlands (ECN), The Netherlands

MAKING BLUE ENERGY GREEN – BIODIVERSITY RISKS AND OPPORTUNITIES OF OFFSHORE WIND FARMS

Sabrina Luitjens

E.ON, Germany

PUBLIC ACCEPTANCE: DOES PERCEIVED FAIRNESS PLAY A ROLE?

Jeremy Firestone

University of Delaware, United States of America

EFFECTIVE MARITIME SPATIAL PLANNING – CASE STUDY OF GERMANY

Andreas Wagner

Stiftung Offshore-Windenergie, Germany

MARITIME SPATIAL PLANNING IN THE EU

Haitze Siemers

European Commission, Belgium

CONFERENCE

16:00 – 17:30 OPERATION-BASED LESSONS
LEARNED TO BRING DOWN COSTS OF ENERGY

WIND FARM EXPERIENCE, LESSONS
LEARNED AND WHAT NOT TO DO

ROOM: AUDITORIUM

LEAD CHAIR

Heiko Ross

Windreich, Germany

CO-CHAIR

Erwin Coolen

OutSmart, The Netherlands

After the realisation of offshore wind projects in Denmark, Ireland, UK, Belgium, the Netherlands and Germany, it is a timely moment to discuss the operational experience gained within those projects and elaborate on how to reduce the cost of developing offshore wind.

Leading experts in the sector will provide delegates with an insight into how the design of turbines and foundations, grid layouts, logistics, installation and operation influence the total cost of offshore wind, and how further projects can be improved to realise the common objective: driving down the cost of offshore wind energy. Participants will be able to voice their opinion on the results presented and share their own experiences during the session.

SPEAKERS

EXPERIENCE IS A HARD TEACHER; PAYING FOR THE SAME MISTAKE TWICE IS OPTIONAL...

Bernard van Hemert

2EQ, The Netherlands

MUST-WIN BATTLES IN OFFSHORE WIND OPERATIONS TO SUCCEED IN 2020

Lars Thaaning Pedersen

DONG Energy, Denmark

THE OFFSHORE MARKET – LEARNINGS AND CURRENT CHALLENGES

Georg Friedrichs

Vattenfall Europe Windkraft GmbH, Germany

LESSONS LEARNT OF 5 YEARS OPERATION 108MW OFFSHORE WINDFARM EGMOND AAN ZEE

Bart Hoefakker

NoordzeeWind, The Netherlands



CONFERENCE PROGRAMME WEDNESDAY 30 NOVEMBER

16:00 – 17:30 HOT TOPICS IN SUPPORT STRUCTURE DESIGN

HARDWARE

ROOM: ELICIUM

LEAD CHAIR

Henrik Carstens

Ramboll, Denmark

CO-CHAIR

Marc Seidel

REpower Systems SE, Germany

This session will focus on some of the “hot” technical issues in relation to support structure design and how to deal with them. There will be two presentations related to the recent challenges with grouted connections, one describing how a developer of a major offshore wind farm dealt with the challenge in an on-going project when the problem surfaced and one presentation offering an alternative connection method instead of the grouted connection. Likewise, there will be two soil centric presentations, one focusing on the cyclic behaviour of axially loaded piles and one focusing on quantification of the soil damping for a monopile foundation from actual measurements. An increase in the actual damping compared to the value allowed by the standards today might help to push the monopile into deeper waters or make it feasible for the next generation of multi-megawatt turbines.

SPEAKERS

THE FUTURE OF MONOPILE GROUTED CONNECTIONS IN OFFSHORE WIND FARMS – A CLIENT’S PERSPECTIVE

Julian Garnsey

RWE Innogy, United Kingdom

SLIP JOINT, SOLVING THE GROUT PROBLEM

Jan van der Tempel

TU Delft, The Netherlands

ANALYSIS OF AXIAL-CYCLIC LOADED PILES FROM THE CERTIFIER’S VIEW

Marc Mittelstaedt

Germanischer Lloyd Industrial Services GmbH, Germany

SOIL EFFECT ON THE VIBRATIONAL DAMPING OF A MONOPILE BASED OFFSHORE WIND TURBINE

Willem Geert Versteijlen

TU Delft & Siemens Wind Power, The Netherlands

CONFERENCE

17:30 – 19:00 POSTER SESSION

Poster Area

Hundreds of poster presentations are available for viewing throughout the event in the poster area. This dedicated poster session is an opportunity for all delegates to meet with the poster presenters and discuss the presentations in more detail.

➔ See page 24 for details

17:30 – 19:00 EXHIBITION RECEPTION

Exhibition Halls 9, 10 and 11

➔ See page 53 for details

17:30 – 19:00 SPECIAL FILM PREVIEW: Cape Spin: An American Power Struggle

Forum

➔ See page 17 for details

19:30 – 23:00 CONFERENCE DINNER

Sponsored by:

Het Scheepvaartmuseum, Kattenburgerplein 1, 1018 KK Amsterdam

➔ See page 53 for details

 **INVEST**
IN MECKLENBURG-VORPOMMERN

CONFERENCE PROGRAMME

THURSDAY 1 DECEMBER

08:00 – 09:00 REGISTRATION + WELCOME COFFEE

Welcome coffee will be served in the Poster Area

09:00 – 10:30 SHOW ME THE MONEY – HOW TO RAISE CAPITAL FOR OFFSHORE WIND THE SOFT SECTOR AND HARD CASH

ROOM: FORUM

LEAD CHAIR

Mortimer Menzel

Augusta & Co, United Kingdom

CO-CHAIR

Justin Wilkes

European Wind Energy Association (EWEA), Belgium

How do the private capital markets view offshore wind in these turbulent times? This session will provide a detailed look at both debt and equity for offshore projects in Europe – how to get it, who is lending, who is investing and at what price, and how to put the capital together to achieve success.

SPEAKERS

IS FINANCING OFFSHORE WIND ON A NON-RECOURSE BASIS SIMPLY TOO RISKY?

Marc Schmitz

Rabobank International, The Netherlands

Frank Coenen

Belwind, Belgium

DEVELOPMENT IN EKF OFFSHORE WIND POWER FINANCING

Jorgen Kragh

Eksport Kredit Fonden (EKF), Denmark

Sean Klimczak

Blackstone, United Kingdom

PROJECT FINANCE IN OFFSHORE WIND – WHAT ROUTE WILL THE MARKET TAKE?

Jérôme Guillet

Green Giraffe Energy Bankers, France

09:00 – 10:30 NEXT GENERATION OF DEMONSTRATION SITES

WIND FARM EXPERIENCE, LESSONS LEARNED AND WHAT NOT TO DO

ROOM: AUDITORIUM

LEAD CHAIR

Jos Beurskens

Energy Research Center of the Netherlands (ECN), The Netherlands

CO-CHAIR

Steffen Schleicher

WAB Windenergie Agentur Bremerhaven/Bremen e.V., Germany

Offshore wind energy projects are not without risks, and the most important risks are technology-related. The conditions of the extremely hostile environment in which offshore wind turbines have to operate cannot be simulated in the laboratory or on land-based test sites.

Operational verification can also be performed to reduce the technical risks, testing turbines under representative external conditions on demonstration sites before deployment on a large scale. During this session a number of offshore test sites will be presented and the usefulness of these facilities will be critically reviewed.

SPEAKERS

FLOW: DUTCH R&D FOR OFFSHORE WIND COST PRICE REDUCTION

Ernst van Zuijlen

FLOW, The Netherlands

Gareth Craft

Crown Estate, United Kingdom

NAREC: THE UK'S TRANSLATIONAL RESEARCH AND DEMONSTRATION FACILITY

Andrew Mill

National Renewable Energy Centre (NAREC), United Kingdom

RAVE AND BEYOND: TEST SITES OR TESTING AT SITES?

Bernhard Lange

Fraunhofer IWES, Germany



CONFERENCE PROGRAMME

THURSDAY 1 DECEMBER

LOGISTICS: GETTING THEM THERE
AND KEEPING THEM RUNNING

09:00 – 10:30 OPTIMISING RELIABILITY AND O&M

ROOM: ELICIUM

LEAD CHAIR

Dolf Elsevier van Griethuysen

Ballast Nedam Offshore, The Netherlands

CO-CHAIR

Giles Hundleby

Ricardo UK Ltd, United Kingdom

High reliability and optimal operations and maintenance are becoming a key success factor for the future development of offshore wind generation. In this session you will hear the latest developments on improving reliability, and substantially cutting the cost of O&M.

Participants will be provided with an overview based on practical experience from multiple wind farms. They will also hear about developments in refining condition monitoring to identify the most critical areas for improvement, as well as developments in design and fabrication of hardware, and for structuring information on OPEX, planning and documentation.

This session will help participants to better understand and control the critical issues in operational costs, to ensure offshore wind farms run more effectively and efficiently.

SPEAKERS

THE IMPORTANCE OF HIGH RELIABILITY AND EFFICIENT O&M AS SEEN FROM A UTILITIES PERSPECTIVE

Bent Johansen

Vattenfall Vindkraft A/S, Denmark

VALUE ADDING REFERENCE SYSTEM FOR FUTURE WIND POWER PLANTS TO THE BENEFIT OF ALL WIND PARK PARTICIPANTS

Ulrik Brandt

DONG Energy, Denmark

DESIGN FOR RELIABILITY

Vincent Schellings

GE Wind Energy, Germany

DRIVETRAIN LIFE MONITORING FOR IMPROVED O&M PLANNING

John Coultate

Romax Technology Ltd, United Kingdom

A PRACTICAL APPROACH TO THE USE OF SCADA DATA FOR OPTIMIZED WIND TURBINE CONDITION BASED MAINTENANCE

Christopher Gray

Uptime Engineering GmbH, Austria

10:30 – 11:00 COFFEE BREAK

Coffee break areas, Halls 9, 10 and 11

CONFERENCE PROGRAMME

THURSDAY 1 DECEMBER

11:00 – 12:30 REDUCING RISK IN PROJECT DEVELOPMENT

THE SOFT SECTOR AND HARD CASH

ROOM: FORUM

LEAD CHAIR

Geert Palmers
3E, Belgium

CO-CHAIR

Fintan Whelan
Mainstream Renewable Power, Ireland

Developing wind farms offshore generally involves more risk than onshore. This is due to the sizeable funding requirements, extreme marine conditions, logistical and O&M complexities, and the relative immaturity of the sector. As such projects become larger, move further offshore and are deployed in ever deeper waters, the risks become even bigger. This session aims to explore the technical, resource, financial and logistical risks associated with developing offshore wind farms and highlight potential solutions.

SPEAKERS

THE “REAL” CAPITAL EXPENDITURES –
HOW VARIOUS RISK EVENTS WILL CHANGE
YOUR PROJECT COSTS

Wilhelm Heckmann

GL Garrad Hassan Deutschland GmbH, Germany

OFFSHORE WIND PROJECT RISKS: EXPERIENCE,
ASSESSMENT AND REDUCTION

Bart Ummels

BMO Offshore, The Netherlands

OFFSHORE WIND RESOURCE ASSESSMENT
TECHNIQUES: THEIR EVOLUTION AND IMPACT
ON CONTRACTING AND FINANCING

Liesbet Mijlemans

3E, Belgium

Jens Goesswein

KEMA Consulting, Germany

11:00 – 12:30 LESSONS AND INNOVATIONS APPLIED IN UPCOMING WIND FARMS

WIND FARM EXPERIENCE, LESSONS LEARNED AND WHAT NOT TO DO

ROOM: AUDITORIUM

LEAD CHAIR

Jakob Lau Holst
Danish Wind Industry Association, Denmark

CO-CHAIR

Gordon Edge
RenewableUK, United Kingdom

Offshore wind is on a steep learning curve to bring down costs of energy. The speakers in this session will show how lessons learned in past offshore wind power plant projects have led to new innovation, and will describe solutions to be implemented in future offshore wind projects.

SPEAKERS

20 YEARS OF EXPERIENCE – WHEN YESTERDAY’S
CHALLENGES MAKE WAY FOR TOMORROW’S SOLUTIONS...

Michael Hannibal

Siemens Offshore, Denmark

HOW LESSONS LEARNED IN ABB TURNED INTO
ORGANISATIONAL CHANGES, CAPACITY INCREASE AND
INNOVATIVE DESIGNS FOR LARGE OFFSHORE WIND
PROJECTS

Peter Sandeberg

ABB, Sweden

BUILDING BUITENZEE THE CHALLENGES TO OVERCOME
REALISING THE NETHERLANDS NEXT AND PERHAPS LAST
OFFSHORE WIND FARM

Daniel Brickwell

BARD Holding GmbH, Germany

CONCEPT AND REALIZATION OF GWYNT Y Môr –
ONE OF EUROPE’S LARGEST OFFSHORE WIND FARMS

Toby Edmonds

RWE Innogy, United Kingdom



CONFERENCE PROGRAMME

THURSDAY 1 DECEMBER

11:00 – 12:30 OPTIMISATION OF OPEX, CAPEX AND SAFETY BY LIFE CYCLE LOGISTICS

LOGISTICS: GETTING THEM THERE AND KEEPING THEM RUNNING

ROOM: ELICIUM

LEAD CHAIR

Dick Schaap

Orbital Technologies BV, The Netherlands

CO-CHAIR

Edwin van Druenen

KCI The Engineers, The Netherlands

For offshore wind turbines, operation and maintenance costs are substantial, and can be expected to increase when wind farms are placed at deeper water depths and in harsher environments. Wind turbine availability is critically dependent on their inherent reliability and the ability for technicians to quickly, safely and cost-effectively service them in severe environments.

This session will address challenges associated with offshore wind energy development, focusing on maintaining turbine availability at a reasonable cost via innovative marine access, transportation and logistics technologies. Speakers will present and discuss state-of-the-art techniques to optimise OPEX, CAPEX and safety through life cycle logistics, based upon and compared with operator experiences.

SPEAKERS

LIFE CYCLE COST AND PROFIT ANALYSIS FOR OPTIMIZATION OF OPERATION AND MAINTENANCE STRATEGIES FOR OFFSHORE WIND FARMS

Francois Besnard

Chalmers University of Technology, Sweden

UK OFFSHORE WIND EXPERIENCE: PREPARING FOR THE CHALLENGE OF GOING FURTHER OFFSHORE

Donald Brown

Det Norske Veritas Ltd, United Kingdom

OFFSHORE ACCOMMODATION PLATFORMS – THE SOLUTION FOR OPTIMAL OPERATION AND MAINTENANCE PERFORMANCE?

Michael Andersen

DONG Energy, Denmark

RISK-BASED OPERATION AND MAINTENANCE FOR OFFSHORE WIND TURBINES

John Dalsgaard Sørensen

Aalborg University, Denmark

12:30 – 14:00 LUNCH

Catering areas, Halls 8 and 11

14:00 EXHIBITION CLOSES

POSTER PRESENTATIONS

POSTER SESSION

Wednesday 30 November
17:30 – 19:00

Location: Poster Area

➔ A detailed Poster Area plan with the locations of all posters can be found on page 38.

➔ See the location of the Poster Area on the venue plan (inside back cover).

Hundreds of poster presentations are available for viewing throughout the event in the poster area. This dedicated poster session is an opportunity for all delegates to meet with the poster presenters and discuss the presentations in more detail.

Drinks and canapes will be served throughout the poster session.

WIND FARM EXPERIENCE, LESSONS LEARNED AND WHAT NOT TO DO

LESSONS LEARNED I (FROM THE FIRST “DEMO FARMS” 1990-2006)

- PO.1** THE OFFSHORE WIND INSTALLATION CHALLENGE AND LESSONS LEARNED
Tom Verhoeven, Seaway Heavy Lifting, The Netherlands
- PO.2** RISING TO THE OFFSHORE CHALLENGE
Michael Hannibal, Siemens Wind Power, Denmark
- PO.3** RISK MANAGEMENT TECHNIQUES FOR OFFSHORE WIND SAFETY CHALLENGES – LESSONS LEARNT FROM OIL AND GAS
David Fagan, DNV, United Kingdom

LESSONS LEARNED II (THE NEW WIND FARMS, BRILLIANT SOLUTIONS AND STUPID IDEAS 2007-2011)

- PO.6** VALIDITY OF INTEGRATED SIMULATION MODELS OF OFFSHORE WIND TURBINES VERIFIED BY “ALPHA VENTUS” MEASUREMENTS
Jan Quappen, University Stuttgart, Germany
- PO.8** UNITING AGAINST SOLIDARITY: FAST TRACKING CABLE REPAIRS
James Hunt, Intertek METOC, United Kingdom
- PO.9** CONCEPT AND REALIZATION OF NORDSEE OST – GERMANY’S FIRST LARGE-SCALE COMMERCIAL OFFSHORE WIND FARM
Thierry Aelens, RWE Innogy, Germany
- PO.12** LEARNING FROM EXPERIENCES OF THE GERMAN OFFSHORE WIND INDUSTRY
Johannes Schiel, VDMA, Germany
- PO.14** OVER ONE YEAR GERMAN OFFSHORE WIND PARK ALPHA VENTUS – RAVE INSTRUMENTATION AND SENSOR DATA PROCESSING OF AV07
Thomas Neumann, DEWI GmbH, Germany

PO.15 LESSONS LEARNED: HOW TO AVOID COSTLY PROBLEMS WITH YOUR SUBSEA CABLE INSTALLATION AND MAINTENANCE
Andy Readyhough, Global Marine Systems Limited, United Kingdom

PO.16 MARINE ORDNANCE – A NEW TOOL TO AVOID AN EXPLOSIVE SITUATION
Huw Powell, Emu Limited, United Kingdom

AVAILABILITY, THE REAL STORY

- PO.17** AVAILABLE, OR NOT AVAILABLE: HOW TO DEFINE, MEASURE AND GUARANTEE THE PERFORMANCE OF OFFSHORE WIND TURBINES
Jens Goesswein, KEMA Consulting GmbH, Germany
- PO.18** WHAT DOES AVAILABILITY REALLY MEAN?
Frank Wiersma, Ecofys, The Netherlands

RESULTS OF MEASUREMENT CAMPAIGNS

- PO.19** MEASURING THE OFFSHORE WIND RESOURCE USING A GROUND-BASED WIND LIDAR
Wei He, Statoil ASA, Norway
- PO.20** FATIGUE LOAD MONITORING FOR A TRIPOD SUPPORT STRUCTURE BASED ON STANDARD WIND TURBINE SIGNALS
Jan Quappen, University of Stuttgart, Germany
- PO.21** ARTIFICIAL NEURAL NETWORKS FOR SCADA DATA BASED LOAD RECONSTRUCTION
Claudia Hofemann, TU Delft, The Netherlands
- PO.22** APPLICATION OF OPERATIONAL MODAL ANALYSIS METHODS TO MEASURED DATA FROM AN OFFSHORE WIND TURBINE
Philipp Brosche, Fraunhofer IWES, Germany
- PO.23** INVESTIGATIONS ON SCOUR AT TRIPOD FOUNDATION STRUCTURES IN THE GERMAN OFFSHORE TEST SITE ALPHA VENTUS
Arne Stahlmann, Leibniz University Hanover, Germany

POSTER PRESENTATIONS

PO.24 STATISTICAL ANALYSIS AND COMPARISON OF HARMONICS MEASURED IN OFFSHORE WIND FARMS

Lukasz Kocewiak, DONG Energy, Denmark

PO.26 VERIFICATION OF OFFSHORE WIND TURBINES AT ALPHA VENTUS – OVERVIEW ON FIRST MEASUREMENT ANALYSES

Martin Kuehn, ForWind – Center for Wind Energy Research, Germany

PO.27 GEOPHYSICAL AND ENVIRONMENTAL OFFSHORE WIND FARM SURVEY FROM A SURVEY CONTRACTORS POINT OF VIEW

Nils Ingvarson, MMT Group, Sweden

UPCOMING LESSONS (NEW PROTOTYPES, DEMONSTRATION PROJECTS AND R&D PROGRAMMES)

PO.28 COMBINING OFFSHORE WIND AND MARINE (WAVE/TIDAL) CONVERTERS – THE ANSWER TO COST REDUCTIONS?

Fiona Buckley, Tractebel Engineering, Belgium

PO.29 DENMARK – SUPPLIER OF COMPETITIVE OFFSHORE WIND SOLUTIONS

Jakob Lau Holst, Danish Wind Industry Association, Denmark

PO.30 ID STAT: INNOVATIVE TECHNOLOGY FOR ASSESSING WILDLIFE COLLISIONS WITH WIND TURBINES

Bertrand Delprat, Calidris, France

PO.31 WIND FARM STUDY

Ryo Amano, University of Wisconsin, United States of America

PO.32 HIGH RESOLUTION DIGITAL PHOTOGRAPHY FOR OFFSHORE AERIAL BIRD SURVEYS

Kate Lee, APEM Ltd, United Kingdom

PO.33 WAKE LOADS AND FATIGUE LOAD CERTIFICATION IN OFFSHORE WIND FARMS

Björn Schmidt, Germanischer Lloyd Renewables Certification, Germany

PO.34 RAVE – A MILESTONE IN OFFSHORE WIND ENERGY RESEARCH

Michael Durstewitz, Fraunhofer IWES, Germany

PO.35 INTEGRATED OPERATIONS – A SUCCESS STORY FROM THE OIL AND GAS INDUSTRY

Anders Valland, MARINTEK, Norway

PO.36 DEVELOPMENT AND SIMULATION OF SONAR TRANSPONDERS TO PREVENT SUBMARINES FROM COLLISIONS WITH OFFSHORE WIND FARMS

Moritz Fricke, Leibniz Universität Hannover, Germany

PO.38 MITIGATING TECHNICAL RISKS IN OFFSHORE WIND FARMS BY IMPROVED SYSTEM INTEGRATION

Johannes Rosen, RWE Innogy, Germany

PO.39 MOTIONS OF FLOATING OFFSHORE WIND TURBINES IN AN ARRAY, CONSIDERING THE INFLUENCE OF WIND AND WAVES

Maxime Philippe, Laboratoire de Mécanique des Fluides CNRS UMR 6598, France

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PO.25 WINDFARM INSTALLATION BARGE – INNOVATIVE AND COST EFFECTIVE METHOD FOR INSTALLING OFFSHORE WINDTURBINE FOUNDATIONS

Paal Stromstad, Ingenium AS, Norway

PO.251 SAFE WORKING ENVIRONMENT WHEN LOADING AND INSTALLING OFFSHORE WIND TURBINES FROM A LARGE JU VESSEL

Asbjorn Mortensen, Keppel Offshore & Marine Technology Centre, Singapore

PO.252 SEABREEZE INSTALLATION VESSELS – RWE INNOGY'S PERSPECTIVE FOR MANAGING OFFSHORE CHALLENGES

Michael Neumaier, RWE Innogy, Germany

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SUPPLY CHAIN

- PO.254** SUBSEA CABLE INSTALLATION AND BURIAL – DEVELOPING THE RIGHT TOOLS AND EXPERTISE FOR THE JOB
Stephen Wilson, CTC Marine Projects Limited, United Kingdom
- PO.255** LOGISTICS FOR OFFSHORE WIND ENERGY – ANDREAS WELLBROCK, MANAGING DIRECTOR BLG WINDENERGY LOGISTICS
Andreas Wellbrock, BLG Logistics Solution GmbH, Germany

PLANNING

- PO.257** TILT: SMART LOGISTICS TOOL FOR OFFSHORE WIND FARM INSTALLATION
Pascal Ferier, KCI, The Netherlands
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Erica Simmons, Siemens PLM Software, United States of America
- PO.259** IMPROVED PLANNING FOR OFFSHORE WIND FARM CONSTRUCTION
Pim Rooijmans, Ecofys, The Netherlands

OPERATION AND MAINTENANCE

ACCESS

- PO.264** RESOURCE OPTIMIZATION TOOL FOR OPERATIONS AND MAINTENANCE FOR OFFSHORE WIND FARMS
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- PO.266** OFFSHORE WIND INFORMATION PROVISIONING USING THE IEC 61400-25 STANDARD AND RESTFUL WEB SERVICES
Trinh Nguyen, University of Agder, Norway
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Colin Pearce, Houlder, United Kingdom
- PO.270** INNOVATIVE TRANSFER SYSTEMS AND VESSELS FOR IMPROVING THE AVAILABILITY OF LARGE FAR-SHORE WIND FARMS
Phil De Villiers, Carbon Trust, United Kingdom

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Jan Van der Tempel, Ampelmann, The Netherlands

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Slim Soua, TWI Ltd, United Kingdom
- PO.273** EXPERIMENTAL DESIGN OF A FEASIBILITY STUDY FOR REMOTE INSPECTION OF WIND TURBINES
Øyvind Netland, Norwegian University of Science and Technology, Norway
- PO.274** NEW METHODS FOR BALANCING OFFSHORE WIND TURBINE ROTORS INCLUDING BLADE ANGLE MEASUREMENTS
Anke Grunwald, BerlinWind GmbH, Germany
- PO.275** WIRELESS TRANSMISSION OF THE CLAMPLOAD
Frank Scheuch, Intellifast GmbH, Germany
- PO.277** POWER PERFORMANCE ASSESSMENT USING LIDAR
Charles Briggs, SgurrEnergy Ltd, United Kingdom

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- PO.279** OPTIMISATION OF MAINTENANCE STRATEGIES FOR OFFSHORE WIND FARMS
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Bruce Hamilton, Navigant, United States of America
- PO.281** A FRAMEWORK AND MODEL FOR OPTIMIZING MAINTENANCE AND LOGISTICS ACTIVITIES
Matthias Hofmann, SINTEF Energy Research, Norway
- PO.282** ESTIMATING THE COST OF OFFSHORE MAINTENANCE AND THE BENEFIT FROM CONDITION MONITORING
Julian Feuchtwang, University of Strathclyde, United Kingdom
- PO.283** LOT: HEALTH MONITORING OF OFFSHORE WTGS: ONLINE FAULT DETECTION AND IDENTIFICATION MODULE TEST CASE: PITCH OFFSET
Nevena Perišić, LAC Engineering, Denmark

POSTER PRESENTATIONS

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- PO.289** CONDITION MONITORING WITH ORDINARY SCADA DATA – A NEURO FUZZY APPROACH
Meik Schlechtingen, EnBW Erneuerbare Energien GmbH, Germany
- PO.290** COST-EFFICIENT LOAD MONITORING FOR O&M OPTIMISATION
Theo Verbruggen, ECN, The Netherlands
- PO.291** BEARING CRACK DETECTION ON WIND TURBINES
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- PO.292** IMPLEMENTING CORROSION SENSORS IN AN ASSET MANAGEMENT SYSTEM
Johan Van Malsen, TNO, The Netherlands
- PO.293** PLANT RELIABILITY – WHICH TURBINE NEEDS INTERVENTION, AND WHEN?
Anders Valland, MARINTEK, Norway
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- PO.295** ANALYSIS OF PITCH GEAR DETERIORATION USING INDICATORS
Jannie Nielsen, Aalborg University, Denmark
- PO.298** SELF ORGANISING MAP CHARACTERISATION OF WIND TURBINES FOR CONDITION MONITORING
Simon Catmull, RES Offshore, United Kingdom

SUPPLY CHAIN ISSUES

- PO.305** REFLECTIONS ON REFLEXIVITY: CRITICAL MATERIAL SUPPLY CHAIN PROBLEMS WITHIN AN ACTOR-NETWORK OF OFFSHORE WIND ENERGY
Gabriel Bonfanti, University of Amsterdam, The Netherlands

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- PO.307** ZERO HARM A COMPANY WIDE INITIATIVE
Christopher Walsh, Siemens windpower, Denmark
- PO.308** DESIGN RISK ANALYSIS APPLIED TO LARGE OFFSHORE WIND PROJECTS
Alan Chivers, PMSS, United Kingdom
- PO.309** SAFE GUARDING SCARCE RESOURCES – TRANSFERRING TECHNICIANS IS NOT JUST A TAXI RIDE OVER WATER
Sue Crothers, Gardline Marine Sciences Limited, United Kingdom

THE GREAT OUTDOORS: ASSESSING THE RESOURCE

FORECASTING AND MODELLING

MEASURING

- PO.310** MEASUREMENT OF HIGH FREQUENCY PRESSURE FLUCTUATIONS AT GERMAN OFFSHORE PLATFORM FINO3
Andreas Jeromin, Forschungs- und Entwicklungszentrum FH Kiel GmbH, Germany
- PO.311** SOUNDING OUT RISK USING ACOUSTIC INVESTIGATION TECHNOLOGY
Moya Cahill, PanGeo Subsea, Denmark
- PO.312** FLUXES ESTIMATION AND THE DERIVATION OF THE ATMOSPHERIC STABILITY AT THE OFFSHORE MAST FINO1
Beatriz Canadillas, DEWI GmbH, Germany
- PO.313** RE-DEFINING BIOTOPES FOR OFFSHORE PARTICULATE SEDIMENTS
Peter Barfield, Emu Limited, United Kingdom
- PO.314** PROPOSAL OF NEW CLASS AND CATEGORY FOR WIND CONDITIONS IN IEC 61400-1
Hiroshi Imamura, Wind Energy Institute of Tokyo, Japan
- PO.315** OFFSHORE WIND PROFILES FROM MET. TOWERS COMPLEMENTED BY LIDAR MEASUREMENTS
Detlef Kindler, GL Garrad Hassan Deutschland GmbH, Germany
- PO.316** ITALIAN OFFSHORE WIND POTENTIAL EVALUATION THROUGH GIS TOOLS AND DATA
Davide Airoidi, RSE S.p.A., Italy
- PO.317** A FULLY INTEGRATED GROUND MODEL FOR SITE-WIDE WIND FARM GEOTECHNICAL CHARACTERISATION
Lorraine O'Leary, Fugro GeoConsulting Limited, United Kingdom
- PO.319** REGIONAL GEOLOGICAL MODELLING AS A TOOL FOR ARCHAEOLOGICAL PALAEO LANDSCAPE ASSESSMENT
Dafydd Lloyd Jones, Marinspace Ltd, United Kingdom
- PO.320** RESPONSE ANALYSIS OF A WIND TURBINE TOWER AT DIFFERENT OPERATING CONDITION
Francesco Poggi, University of Genova, Italy

POSTER PRESENTATIONS

- PO.321** ON-SITE MEASUREMENTS FOR OFFSHORE WIND PROJECT RISK REDUCTION: CONVENTIONAL VS. INNOVATIVE SOLUTIONS
BC Ummels, BMO Offshore, The Netherlands
- PO.322** REMOTE SENSING BEST PRACTICE
Charles Briggs, SgurrEnergy Ltd, United Kingdom
- PO.323** INFLUENCE OF ATMOSPHERIC STABILITY ON WIND TURBINES (WT) POWER PERFORMANCE AT ALPHA VENTUS OFFSHORE WIND PARK
Thomas Neumann, DEWI GmbH, Germany
- PO.324** METEOROLOGICAL MEASUREMENTS AT FINO1 BEFORE AND DURING THE EXISTENCE OF THE WIND FARM ALPHA VENTUS
Thomas Neumann, DEWI GmbH, Germany
- PO.325** OPTIMIZATION OF OFFSHORE WIND RESOURCE ASSESSMENT
Mark Young, DNV, United Kingdom
- PO.326** USE OF GEOGRAPHIC INFORMATION SYSTEMS TO MANAGE DATA IN OFFSHORE WIND DEVELOPMENTS
David Rushton, Fugro GeoConsulting Limited, United Kingdom
- PO.327** REMOTE SENSING ON MOVING OFFSHORE PLATFORMS
Mark Young, DNV, United Kingdom
- PO.328** CASE STUDY: THE VALUE OF FLOATING LIDAR TECHNOLOGY DURING THE DIFFERENT PHASES OF OFFSHORE WIND FARM DEVELOPMENT
Thomas Duffey, 3E, Belgium
- PO.330** INCREASING EFFICIENCY IN THE FIELD OF OFFSHORE SUBSOIL INVESTIGATIONS
Florian Meier, Fraunhofer IWES, Germany
- PO.331** DESIGN AND IMPLEMENTATION OF A BUOY-BASED LIDAR VALIDATION – INITIAL RESULTS
Matthew Filippelli, AWS Truepower LLC, United States of America
- PO.332** IMPLEMENTING OFFSHORE REMOTE WIND SENSING TECHNOLOGIES INCLUDING PROTOCOLS FOR THE EVALUATION, SELECTION, AND VALIDATION
T. Arnold (Arn) Boezaart, Grand Valley State University, Michigan Alternative and Renewable Energy Center, United States of America
- PO.333** THE CHALLENGE OF MEASURING OFFSHORE
Andrew Oldroyd, Oldbaum Services Limited, United Kingdom
- PO.334** STUDY ON THE EFFECT OF FLOW FIELD DISTORTION ON MEASUREMENTS MADE BY ANEMOMETERS ON THE FINO3 METEOROLOGICAL MAST
Matthew Stickland, University of Strathclyde, United Kingdom
- PO.335** FEASIBILITY STUDY OF USING A LIDAR IN THE COMPLEX FLOWFIELD OF AN OFFSHORE PLATFORM, TO MEASURE WIND SHEAR PROFILE
Matthew Stickland, University of Strathclyde, United Kingdom
- PO.336** COMPARISON OF ZEPHIR AND WINDCUBE MEASUREMENTS IN THE SAME COMPLEX FLOWFIELD
Matthew Stickland, University of Strathclyde, United Kingdom
- PO.338** SPATIAL CORRELATION AND COHERENCE OF ATMOSPHERIC WIND CHARACTERISTICS AT FRØYA TEST SITE
Gursu Tasar, Norwegian University of Science and Technology, Norway
- OFFSHORE WIND**
- PO.339** INTEGRATION OF THE 1000MW WIND FARM WITH BOTH A WAVE FARM AND AN AQUACULTURE FARM
Wei He, Statoil ASA, Norway
- PO.342** IMPROVED PRACTICAL ICE LOAD DESIGN METHODS FOR OFFSHORE WIND FOUNDATIONS
Helge Gravesen, Grontmij, Denmark
- PO.343** LONG-TERM WIND STATISTICS ON YELLOW SEA, SOUTH KOREA
Seunggun Hyun, Korea Institute of Energy Research, Republic of Korea
- PO.344** CHARACTERISING WIND FARM YIELD FLUCTUATIONS IN THE CENTRAL MEDITERRANEAN SEA – A CASE STUDY FOR THE MALTESE ISLANDS
Robert N. Farrugia, University of Malta, Malta
- PO.345** PLANNING OF AN OFFSHORE WIND FARM IN THE SOUTHWEST COASTAL REGION
Moonseon Jeong, Mokpo National University, Republic of Korea

POSTER PRESENTATIONS

- PO.346** LONDON ARRAY OFFSHORE WIND FARM, UK – BEST PRACTICE OPERATIONAL METEOCEAN FORECAST IN A COMPLEX ESTUARY
Mads Nistrup Madsen, DHI, Denmark
- PO.347** PROVISION OF METEOCEAN DATA FOR DESIGN OF OFFSHORE WIND FARMS – IS THE INDUSTRY READY FOR A PARADIGM CHANGE?
Henrik Kofoed-Hansen, DHI, Denmark
- PO.349** HOW FAR MODELLED DATA SETS AND REMOTE SENSED DATA PRODUCTS CAN BE APPLIED WITHIN THE OFFSHORE RENEWABLES SECTOR
John Mitchell, Met Office, United Kingdom
- PO.350** ASSEMBLING SURFACE ATMOSPHERIC-OCEAN MODELLING COMPONENTS: DO WE MODEL BETTER OFFSHORE THAN ONSHORE?
Gil Lizcano, Vortex, Spain
- PO.351** WIND RESOURCE MAPPING OVER THE NORTH SEA USING SATELLITE SAR
Merete Badger, Risø DTU, Denmark
- PO.352** SPATIAL AND TEMPORAL VARIABILITY OF WIND RESOURCES OFF THE COAST OF SOUTH CAROLINA, USA.
Ralph Nichols, Savannah River National Laboratory, United States of America
- PO.353** PLANNING FOR SAFE MARINE OPERATIONS AND NAVIGATION WITHIN LARGE WIND FARMS
Michael Starling, BMT Group, United Kingdom
- PO.354** PERFORMANCE ASSESSMENT OF OFFSHORE WIND FARMS
Frank Wiersma, Ecofys, The Netherlands
- PO.355** UNCERTAINTY IN THE APPLICATION OF THE MEASURE-CORRELATE-PREDICT METHOD IN WIND RESOURCE ASSESSMENT
Sundus Cordelia Ramli, DONG Energy, Denmark
- PO.356** UNDERSTANDING MARINE CONDITIONS, WORKING LIMITS AND DOWNTIME
Chris Mooij, Intertek METOC, United Kingdom
- PO.357** PRELIMINARY ANALYSIS OF WIND PROFILES OFF THE EAST COAST OF ENGLAND
Rolando Soler-Bientz, Loughborough University, United Kingdom
- PO.358** STUDY OF ATMOSPHERIC CHARACTERISTICS FOR WIND ENERGY APPLICATIONS OFFSHORE OF THE NORTH COAST OF THE YUCATAN PENINSULA
Rolando Soler-Bientz, Loughborough University, United Kingdom
- PO.359** PRELIMINARY MESOSCALE MODELLING OF THE OFFSHORE WIND OFF THE EASTERN COAST OF ENGLAND
James Hughes, Loughborough University, United Kingdom
- PO.360** ATMOSPHERIC STABILITY DEPENDENCE OF SAR WIND SPEED RETRIEVAL IN JAPANESE COASTAL AREAS
Yuko Takeyama, National Institute of Advanced Industrial Science and Technology, Japan
- PO.361** MCP IN THE REAL WORLD
Charles Briggs, SgurrEnergy Ltd, United Kingdom
- PO.362** GETTING IT RIGHT PRE-CONSTRUCTION
Charles Briggs, SgurrEnergy Ltd, United Kingdom
- PO.364** OFFSHORE WIND FIELD: APPLICATION OF A MODEL OUTPUT STATISTICS (MOS) AS A SPATIAL VALIDATION TECHNIQUE
Paulo Costa, LNEG, Portugal
- PO.365** RINGING WAVE LOADS ON BOTTOM FIXED OFFSHORE WIND TURBINE FOUNDATIONS
Bo Terp Paulsen, Technical University of Denmark, Denmark
- PO.367** OFFSHORE WIND FARM PERFORMANCE MONITORING
Athanasios Kyriazis, 3E, Belgium
- PO.368** IMPROVING OFFSHORE WIND RESOURCE ASSESSMENTS USING A DATA ASSIMILATION TECHNIQUE
Paulo Costa, Laboratório Nacional de Energia e Geologia, Portugal
- PO.369** ON THE UTILIZATION OF MESO-SCALE MODELS FOR OFFSHORE WIND ATLASES
Erik Berge, Kjeller Vindteknikk, Norway
- PO.370** CORRECTION AND SPATIAL EXTRAPOLATION OF ONSHORE MAST WIND DATA FOR OFFSHORE WIND APPLICATIONS
Hakim Mouslim, Ecole Centrale de Nantes, France
- PO.371** OFFSHORE FREE FLOW DESIGN TURBULENCE
Niels Jacob Tarp-Johansen, DONG Energy, Denmark
- PO.372** COMPARISON OF ICE LOAD MODELS IN ICE-STRUCTURE INTERACTION SIMULATION FOR OFFSHORE WIND TURBINES
Jaakko Heinonen, VTT Technical Research Centre of Finland, Finland
- PO.373** DEVELOPMENT OF WIND POWER FORECAST QUALITY FOR NEW OFFSHORE WIND FARMS
Melih Kurt, Fraunhofer IWES, Germany

POSTER PRESENTATIONS

- PO.374** CHARACTERISTICS OF OFFSHORE WIND SPEED SIMULATED WITH WRF IN THE SEAS AROUND JAPAN
Teruo Ohsawa, Kobe University, Japan
- PO.375** DATA MINING OF OFFSHORE WIND DATA GENERATED BY CFD SOLUTIONS
Bahri Uzunoglu, Gotland University, Sweden

WAKES

- PO.377** FARMFLOW: ACCURATE PREDICTION OF POWER LOSSES AND TURBULENCE LEVELS IN OFFSHORE WIND FARMS
Peter Eecen, ECN, The Netherlands
- PO.378** NEURAL NETWORK MODEL FOR NOWCASTING THE WIND DISTRIBUTION INSIDE THE WIND PARK
Alla Sapronova, Uni Research, Norway
- PO.379** COUPLED LARGE EDDY SIMULATION OF DYNAMICALLY CONTROLLED WIND TURBINES
Rupert Storey, University of Auckland, New Zealand
- PO.381** POWER OUTPUT OPTIMISATION FROM AN OFFSHORE WIND FARM
Muyiwa Adaramola, Norwegian University of Science and Technology, Norway
- PO.384** ASSESSING THE INFLUENCE OF NEIGHBOURING WIND FARMS ON ONE ANOTHER
Charles Briggs, SgurrEnergy Ltd, United Kingdom
- PO.385** THE VALIDATION AND REFINEMENT OF WAKE MODELS USING DIRECT 2ND GENERATION LIDAR MEASUREMENTS
Charles Briggs, SgurrEnergy Ltd, United Kingdom
- PO.386** CFD SIMULATIONS AND MEASUREMENTS OF WAKE EFFECTS AT THE ALPHA VENTUS OFFSHORE WIND FARM
Thomas Neumann, DEWI GmbH, Germany
- PO.387** IMPROVED MODELLING OF WAKES: EXPERIMENTAL STUDY AND EXPERIMENTALLY-ANCHORED MODEL
Christian Kress, ETH Zurich, Switzerland
- PO.388** NEAR AND FAR WAKE BLIND TEST STUDY FOR A MODEL TURBINE USING BEM, AD AND FULL ROTOR CFD
Lene Sælen, GexCon AS, Norway
- PO.389** IMPACT OF LARGE NEIGHBOURING WIND FARMS ON ENERGY YIELD OF OFFSHORE WIND FARMS
Gillian Smith, GL Garrad Hassan, United Kingdom

- PO.390** OPTIMUM LAYOUT DESIGN AND ENERGY YIELD OF OFFSHORE WIND FARMS
Gillian Smith, GL Garrad Hassan, United Kingdom
- PO.391** EVALUATION OF TURBINE WAKE MODELS IN OFFSHORE WIND FARMS
Guillaume De Volder, 3E, Belgium

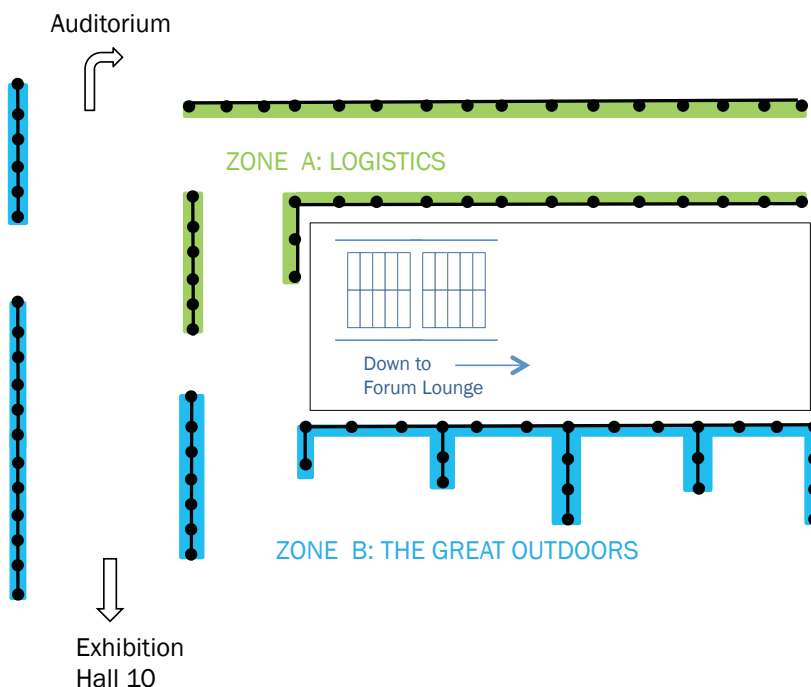
WIND PROFILES

- PO.394** WRF MESOSCALE MODELING AND LIDAR MEASUREMENTS OF TALL WIND PROFILES AT FINO1
Domingo Muñoz-Esparza, Environmental and Applied Fluid Dynamics, von Karman Institute for Fluid Dynamics, Belgium
- PO.395** LONG-TERM VERTICAL WIND SHEAR OBSERVED BY WIND LIDARS AT SEVERAL LOCATIONS IN THE NORTH SEA
Alfredo Peña, Risø DTU, Denmark
- PO.396** VALIDATION OF OFFSHORE WIND SPEED PROFILE MODELS: MONIN-OBUKHOV SIMILARITY THEORY IN THE NORTH SEA
Andrea Venora, Ecofys, The Netherlands
- PO.397** FIRST INSIGHT IN OFFSHORE WIND PROFILES UP TO 250 M UNDER FREE AND WIND TURBINE WAKE FLOWS
Beatriz Canadillas, DEWI GmbH – German Wind Energy Institute, Germany
- PO.398** ‘TALL’ WIND PROFILES AND THE EFFECT OF OFFSHORE ATMOSPHERIC STABILITY
Rogier Floors, Risø DTU, Denmark
- PO.399** FEASIBILITY STUDY FOR ESTIMATING THE OFFSHORE SHEAR LAYER FROM ON SHORE MEASUREMENTS
Matthew Stickland, University of Strathclyde, United Kingdom

POSTER PRESENTATIONS

POSTER AREA PLAN

Ruby Lounge (Level 1)



CONFERENCE

Themes, topics and poster numbers

For a full list of poster presentations, please refer to pages 24-37.

ZONE A: LOGISTICS:

- Off/on-shore installation Harbors (PO.244)
- Vessels (PO.248-PO.252)
- Supply chain (PO.254-PO.255)
- Planning (PO.256-PO.259)
- Access (PO.264-PO.271)
- Inspection (PO.272-PO.277)
- Strategies (PO.279-PO.283)
- Reliability (PO.289-PO.298)
- Supply chain issues (PO.305)
- Health & safety issues (PO.307-PO.309)

ZONE B: THE GREAT OUTDOORS:

- Measuring (PO.310-PO.338)
- Offshore wind (PO.339-PO.375)
- Wakes (PO.377-PO.391)
- Wind profiles (PO.394-PO.399)

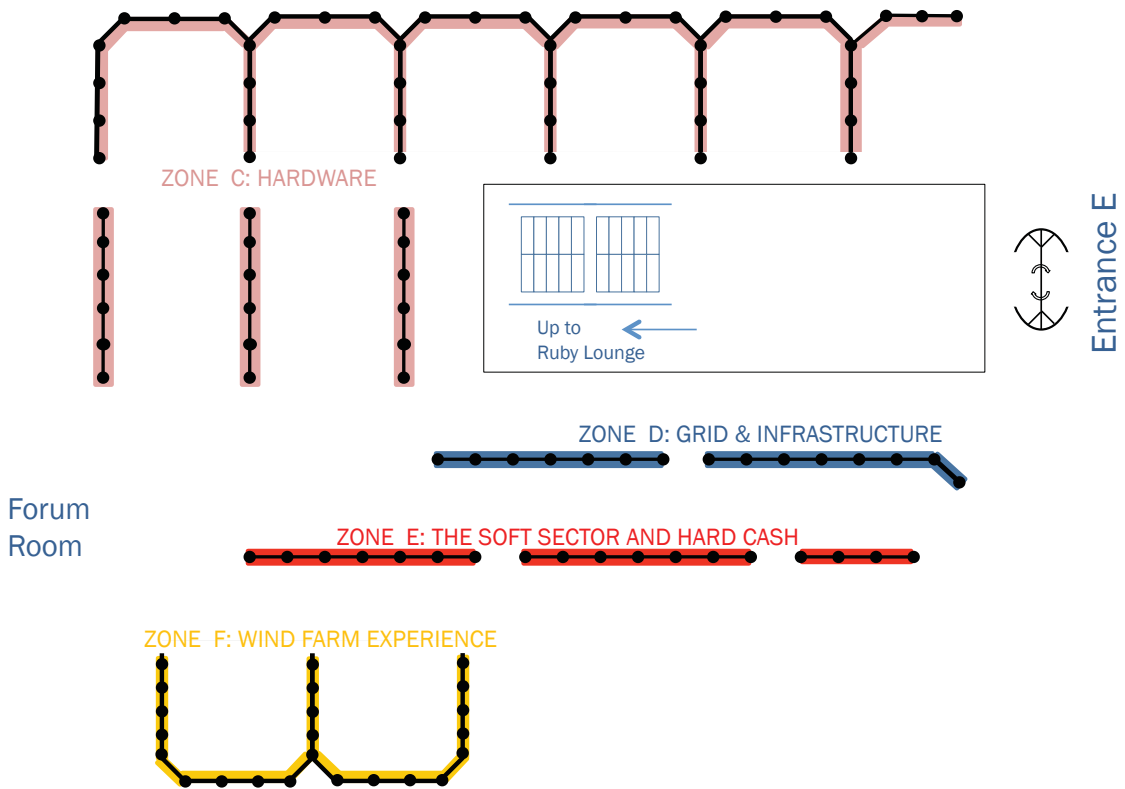
POSTER SESSION 17:30 – 19:00, Wednesday 30 November, Poster Area

Hundreds of poster presentations are available for viewing throughout the event in the poster area. This dedicated poster session is an opportunity for all delegates to meet with the poster presenters and discuss the presentations in more detail. Drinks and canapes will be served throughout the poster session.

Mobile App - you can also check the poster list and other event information using the Mobile App (see page 46 for more information).

POSTER PRESENTATIONS POSTER AREA PLAN

Forum Lounge (Level 0)



Themes, topics and poster numbers

For a full list of poster presentations, please refer to pages 24-37.

ZONE F: WIND FARM EXPERIENCE, LESSONS LEARNED AND WHAT NOT TO DO:

- Lessons learned I (PO.2-PO.3)
- Lessons learned II (PO.6-PO.16)
- Availability, the real story (PO.17-PO.18)
- Results of measurement campaigns (PO.19-PO.27)
- Upcoming lessons (PO.28-PO.44)

ZONE E: THE SOFT SECTOR AND HARD CASH:

- Public funding (PO.46-PO.47)
- Project finance (PO.53)
- Insurance (PO.58)
- Environment (PO.61-PO.71)
- Social acceptance (PO.73-PO.74)
- National and international planning methods (PO.75-PO.80)

ZONE E: THE SOFT SECTOR AND HARD CASH (continued):

- Markets (PO.81-PO.84)
- Human Resources, Training & Education (PO.87-PO.88)
- EU and National policies and programmes (PO.90-PO.92)

ZONE C: HARDWARE:

- New concepts (PO.93-PO.104)
- Aerodynamics (PO.106-PO.112)
- Large Turbines (PO.113-PO.121)
- Direct drives (PO.122-PO.124)
- Control (PO.125-PO.130)
- Electrical systems (PO.131-PO.134)
- Materials (tower, blades) (PO.136-PO.139)
- New concepts (PO.141-PO.151)

ZONE C: HARDWARE (continued):

- Concepts for deep waters (PO.153-PO.162)
- Design optimisation (PO.163-PO.180)
- Soil-pile interactions (PO.181-PO.186)
- Concepts (PO.187-PO.196)
- Anchor/ position keeping (PO.199)
- Dynamics (PO.200-PO.213)

ZONE D: GRID & INFRASTRUCTURE:

- Europe-wide offshore electricity grid and onshore transmission reinforcements (PO.215-PO.221)
- Substations (PO.222-PO.224)
- Wind power plant management and operation on the network (PO.226-PO.230)
- Concepts and technologies for grid connection (PO.231-PO.241)
- Electricity markets (PO.242-PO.243)

PRE-EVENT SEMINAR AND WORKSHOPS

PRE-EVENT SEMINAR: WIND ENERGY – THE FACTS: OFFSHORE

Monday 28 November

09:00 – 15:45

followed by a drinks reception

Location: Emerald Room

Organised by: EWEA

Building on the success of its 'Wind Energy – The Facts' publication, widely considered to be the most reliable reference published to date, EWEA will precede EWEA OFFSHORE 2011 with an introduction to wind energy, with a particular focus on offshore.

The seminar is tailored to anyone new to wind as well as people working in a particular sub-sector or function who want to understand their industry as a whole. Armed with this global view of offshore

wind energy, participants will get even more out of the main conference and exhibition.

Attendance is open to all at very competitive rates and with significant reductions for EWEA members, academics, students and NGOs.

The next edition of the 'Wind Energy – The Facts' pre-event seminar will take place on 15 April 2012 as part of EWEA 2012, Copenhagen, 16-19 April.

For more information visit:
www.wind-energy-the-facts.org

WINDENERGY
THEFACTS



PRE-EVENT SEMINAR AND WORKSHOPS

OFFSHORE GRID CONNECTION REQUIREMENTS: FUTURE CHALLENGES – THE EUROPEAN WIND INDUSTRY’S PERSPECTIVE

Wednesday 30 November

14:00 – 16:00

Location: Room E103

Organised by: EWEA Working Group
on Grid Code Requirements

Connecting wind farms to future offshore grids gives rise to technical challenges that are quite different from doing the same onshore.

The technologies to be applied in transnational offshore networks – notably multi-terminal and meshed HV DC networks – will need an entirely new set of standards, different control and protection methods and operational procedures. Furthermore, future offshore wind power plants have specific electrical connection topologies and technical

characteristics (size, control and protection methods), which influence their power plant capabilities.

As a result, there will be specific network connection requirements offshore. This is already reflected by the specific category for offshore foreseen in the draft European Code for Network Connection by ENTSO-E.

This two-hour workshop is organised by the EWEA Working Group on Grid Code Requirements, which since 2007 has represented the common interests of the wind industry and has striven for a better specification of grid connection requirements for wind power in Europe. Speakers from the Working Group will present relevant technical and operational issues.

Attendance is free of charge for all registered conference delegates, exhibition visitors or exhibitors at EWEA OFFSHORE 2011.

CONFERENCE



INVEST IN LEADING OFFSHORE MARKETS

The United Kingdom's The Crown Estate and UK Trade & Investment, and the economic development agency of the Federal Republic of Germany, Germany Trade & Invest, will each organise a workshop at EWEA OFFSHORE 2011 highlighting the investment and business opportunities available in their respective offshore wind markets.

These events are organised independently of EWEA, and are open to all OFFSHORE 2011 conference delegates, exhibitors and exhibition visitors. For detailed information, or to contact the workshop organisers, please visit www.ewea.org/offshore2011.



GERMANY
TRADE & INVEST

UK OFFSHORE WIND OPPORTUNITY SUPPLY CHAIN WORKSHOP

Wednesday 30 November
09:00 – 12:30, followed by lunch
Location: Emerald Room
Organised by: The Crown Estate
and UK Trade & Investment

The increasing number of offshore wind programmes around the UK and Northern Europe will require the largest planned delivery of offshore generating capacity in the world by 2020. The challenge for the supply chain in meeting this demand is to invest in the right people, products and services at the right time in the best location.

To assist companies understand the potential for business growth, The Crown Estate and UK Trade & Investment have organised a morning event dedicated to supply chain development in the UK. Presentations will highlight the current situation of the UK's offshore wind programme and ongoing work to de-risk development and encourage rapid progress. Case studies from key players working on UK projects will be followed by a series of regional reports focusing on the offerings, opportunities for collaboration and partnerships that could strengthen localisation of the offshore wind supply chain.

The event will be of interest to government and industry trade bodies, wind farm developers and supply chain companies seeking to put the UK's progress into perspective against wider European programmes. New start-ups and expanding enterprises within Europe, including the UK, can hear more about the plans for technology development and business support and planning around all of the UK. Attendees will also hear how UK Trade & Investment can assist companies looking to invest in the UK market.

YOUR NORTHERN EUROPEAN OFFSHORE WIND HUB BUSINESS OPPORTUNITIES IN GERMANY

Wednesday 30 November
15:30 – 17:00, followed by reception
Location: Emerald Room
Organised by: Germany Trade & Invest

Why Germany? What business opportunities lie in the German offshore wind market? How can Germany be utilized as a hub to serve northern European offshore wind markets? The economic development agency of the Federal Republic of Germany, Germany Trade & Invest, and its partners from the federal states of Baden-Wuerttemberg, Brandenburg, Bremen, Hamburg, Lower Saxony, Mecklenburg-Vorpommern and Schleswig-Holstein know the answers. Our teams of industry experts support international companies from market entry to business start-up in Germany. This workshop and networking event will bring together company decision makers, local business players and policy makers to discuss:

- The political framework for offshore wind development in Germany
- Opportunities in the northern European offshore wind market and industry
- German port locations – ready to serve the complete northern European offshore wind industry
- Industry player best market practices

Join this workshop and learn how your business can benefit from Germany's offshore wind market.





USEFUL INFORMATION

Practical information, mobile application, relaxation area, social events, sustainability

Get the buzz!

Download the EWEA OFFSHORE 2011 Mobile Application



View the entire conference programme



Find exhibitors and consult their profiles



Navigate the floor plan



Select your favourites and create your personal agenda



Share with colleagues



Download the Mobile Application here or visit <http://m.offshorewind2011.info>



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Booth 9128



OFFSHORE 2011
AMSTERDAM
ORGANISED BY EWEA

EVENT VENUE

Amsterdam RAI Exhibition
and Convention Centre
Europaplein 22
NL 1078 GZ Amsterdam
www.rai.nl
Metro station: RAI Europaplein

A

ACCOMMODATION

For last-minute hotel bookings or changes to existing bookings made via the EWEA OFFSHORE 2011 Events Secretariat, please go to the hotel desk in the registration area (entrance G).

AMSTERDAM

If you would like to extend your stay, or require more information about the city, the Amsterdam Tourist Information Office offers information in several languages: www.iamsterdam.com, +31 20 201 88 00

Office can be found at:

Stationsquare, Stationsplein 10 – Amsterdam

Opening hours:

09:00 – 18:00 Monday – Saturday

09:00 – 17:00 Sunday

B

BADGES

All participants are requested to wear their badges throughout the event. Badges are marked according to the type of pass purchased, and participants will not be admitted to the conference or exhibition without their badge. You may also be required to show your badge at some social events.

Should you lose your badge, please go to the registration areas for assistance. An administrative fee may apply.

C

CATERING

Welcome coffee

In the Poster Area:

08:00 – 10:00 Tuesday

08:00 – 09:00 Wednesday and Thursday

Coffee breaks

In the coffee break areas (Halls 9, 10 and 11):

10:30 – 11:00 Wednesday and Thursday

15:30 – 16:00 Tuesday and Wednesday

Buffet lunch

In the catering areas (Halls 8 and 11):

12:00 – 14:00 Tuesday

12:30 – 14:00 Wednesday and Thursday

➔ See the venue plan on the inside back cover and the exhibition floor plans on pages 74-79 for the location of the catering areas.

Conference delegate passes as well as exhibitor staff passes include access to the daily buffet lunch. Only exhibition visitors who bought a ticket online before the event can access the lunch.

Please note that for those participants not entitled to the buffet lunch, it is possible to buy lunch onsite at the Holland restaurant and at 'La Place' snack bar located in the central foyer between Halls 9, 10 and 11. Water is freely available throughout the venue.

CLOAKROOM AND LUGGAGE FACILITY

There are two cloakrooms available free of charge in the registration areas (entrance C and entrance G).

➔ See the venue plan on the inside back cover for their locations.

COMMERCIAL OPENING HOURS IN AMSTERDAM

Banks in Amsterdam open weekdays only, between 09:00 and 16:00.

Shops are open:

09:00 – 18:00 Monday, Tuesday, Wednesday and Friday

09:00 – 21:00 Thursday

09:00 – 17:00 Saturday

12:00 – 17:00 Sunday

Some supermarkets stay open until 20:00 or 22:00 on week nights. Most businesses operate Monday to Friday, 08:30 to 17:00.

PRACTICAL INFORMATION A-Z

CURRENCY AND CREDIT CARDS

The unit of currency in The Netherlands is the EURO. Current exchange rates can be found at www.xe.com/ucc. Cash points are widely available throughout the city. All major credit cards are widely accepted throughout Amsterdam in shops, restaurants, hotels etc. Foreign exchange facilities can be found at the airport, railway station and major banks.

Theft/loss of credit card:

Eurocard-Mastercard: 030 283 5555

Visa: 0800 022 3110

Diner's-Club: 0900 0334

American Express: 020 504 8666

E

EMERGENCIES

Emergency (police, fire service and ambulance service):
112

Police (theft and other queries):
0900-8844

Doctor:
+31 20 4275011

EXHIBITION OPENING HOURS

The exhibition is open during the following times:

10:00 – 18:00 Tuesday
with Siemens stand party (Hall 10, stand 10111)
from 17:00 to 18:00

09:00 – 19:00 Wednesday
with exhibition reception and
poster session from 17:30 to 19:00

09:00 – 14:00 Thursday

F

FILM PREVIEW

Cape Spin: An American Power Struggle

Date: Wednesday 30 November 2011

Time: 17:30

Place: Forum Room

Join the producers of Cape Spin: An American Power Struggle for a special EWEA OFFSHORE 2011 sneak preview of this exciting new film.

➔ See page 17 for more information.

I

INTERNET

A cyber café is available in Hall 10 which provides internet access and printing facilities.

Wireless internet access will also be available, using the following login details:

Login: offshore2011

Password: ewea

➔ See the floor plan on page 76 for the location of the cyber café.

L

LANGUAGE

The conference language, including all presentations, is English.

LOST AND FOUND

For any items lost or found whilst at the venue, please visit the information desks located in the registration areas or the organiser's office located in the foyer between Halls 9, 10 and 11.

M

MEETING ROOMS

If you reserved a meeting room and have any queries, please contact Aleksandra Nowak, anw@ewea.org, +32 2 213 18 00.

MOBILE APPLICATION

A customised Mobile App is offered, free of charge, to all EWEA OFFSHORE 2011 participants to get the most out of the event. This service is optimised for Smartphone use (iPhone, BlackBerry and Android) but the mobile website is also available on all mobile phones that have internet capabilities.

Visit the event website m.offshorwind2011.info to download the EWEA OFFSHORE 2011 Mobile App.

Sponsored by:



Download the application here

O

ORGANISER'S OFFICE

This is located in the Central Foyer between Halls 9, 10 and 11.

P

POSTER SESSION

Hundreds of poster presentations are available for viewing throughout the event in the poster area. The poster session is an opportunity for all delegates to meet with the poster presenters and discuss the presentations in more detail. Drinks and canapes will be served throughout the poster session taking place on Wednesday 30 November at 17:30 in the Poster Area.

➔ See pages 24-37 for a full list of poster presentations.

PRESS

A press conference is scheduled immediately after the opening session on Tuesday at 12:00 in the press conference room (room E108).

A fully-equipped press room (room E107) is at the disposal of journalists throughout the event. Computers, refreshments, background information and press packs are available.

For press queries, please contact Peter Sennekamp, pse@ewea.org, +32 2 213 18 33.

➔ See the venue floor plan on the inside back cover for the location of the press room.

PROCEEDINGS

A full three-day conference delegate pass includes free access to the online conference proceedings website published during the event. Pre-registered delegates will receive an e-mail with their login details to the proceedings on the first day of the conference. Delegates registered on site will receive the link shortly after the conference. The proceedings include all submitted abstracts and PowerPoint presentations, synchronised audio files, video files of selected sessions, poster presentations and full papers (where available).

For more information about the proceedings, please contact Maura Di Ruscio: mdu@ewea.org, +32 2 213 18 60 or visit the event website: www.ewea.org/offshore2011

S

SMS Q&A SYSTEM



Join in! All delegates will be able to submit questions to the speakers via SMS. In each session, a number and special code will be provided. Chairs will then make a selection of the best questions and encourage discussion between speakers and the audience.

All you need to take part is a mobile phone, so make sure you join in!

SPEAKERS AND SESSION CHAIRS

The Speakers' Room (room E104) is available to all speakers who wish to work on or upload their presentations. Staff are on hand to assist with any queries from speakers or session chairs.

Speaker briefings will take place in the Speakers' Room (room E105-106) on the day of your session at the following times:

Morning sessions – all days
(starting at 09:00 and 11:00)
Briefing takes place at 08:30

Afternoon sessions – Tuesday 29 November
(starting at 16:00)
Briefing takes place at 15:30

Afternoon sessions – Wednesday 30 November
(starting at 14:00 and 16:00)
Briefing takes place at 13:30

All session chairs and speakers must be present at the briefing.

The Speakers' Room is open during the following times:

14:00 – 18:00 Monday 28 November

08:00 – 18:00 Tuesday 29 November
Wednesday 30 November

08:00 – 14:00 Thursday 1 December

PRACTICAL INFORMATION A-Z

T

TELEPHONE

The international access code for The Netherlands is +31. Remove the '0' from the city/area code when dialing internationally. The city/area code for Amsterdam is 20.

Delegates may leave their mobile phones switched on during sessions, in order to use the SMS Q&A system. However, please ensure you put your phone on silent mode.

TRAVEL AND TRANSPORT

How to get to Amsterdam RAI Exhibition and Convention Centre

By tram and metro

If you arrive at Amsterdam Central Station, take either the Amstelveen metro 51 (travelling time: 12 minutes, exit at the Amsterdam RAI station) or take tram 4 and get off at RAI Europaplein (travelling time: 30 minutes).

By taxi

Amsterdam's main taxi company is TCA (+32 2 0777 77 77, www.tcataxi.nl/en). Depending on traffic, a taxi can take you to the city centre in half an hour. One ride will cost you approximately 40 euros.

For more information on taxis in Amsterdam, please visit www.taxi.amsterdam.nl

By car

The RAI is ideally suited for visitors who come by car. It is situated alongside the Amsterdam's A10 orbital motorway (exit S109) and has its own underground car parks.

V

VISITOR CATERING

Participants who are not entitled to the buffet lunch can buy lunch and snacks onsite.

A restaurant and a snack bar will be open during the entire event.

Holland restaurant opening hours:

10:00 – 14:30 Tuesday
10:00 – 14:30 Wednesday
10:00 – 14:00 Thursday

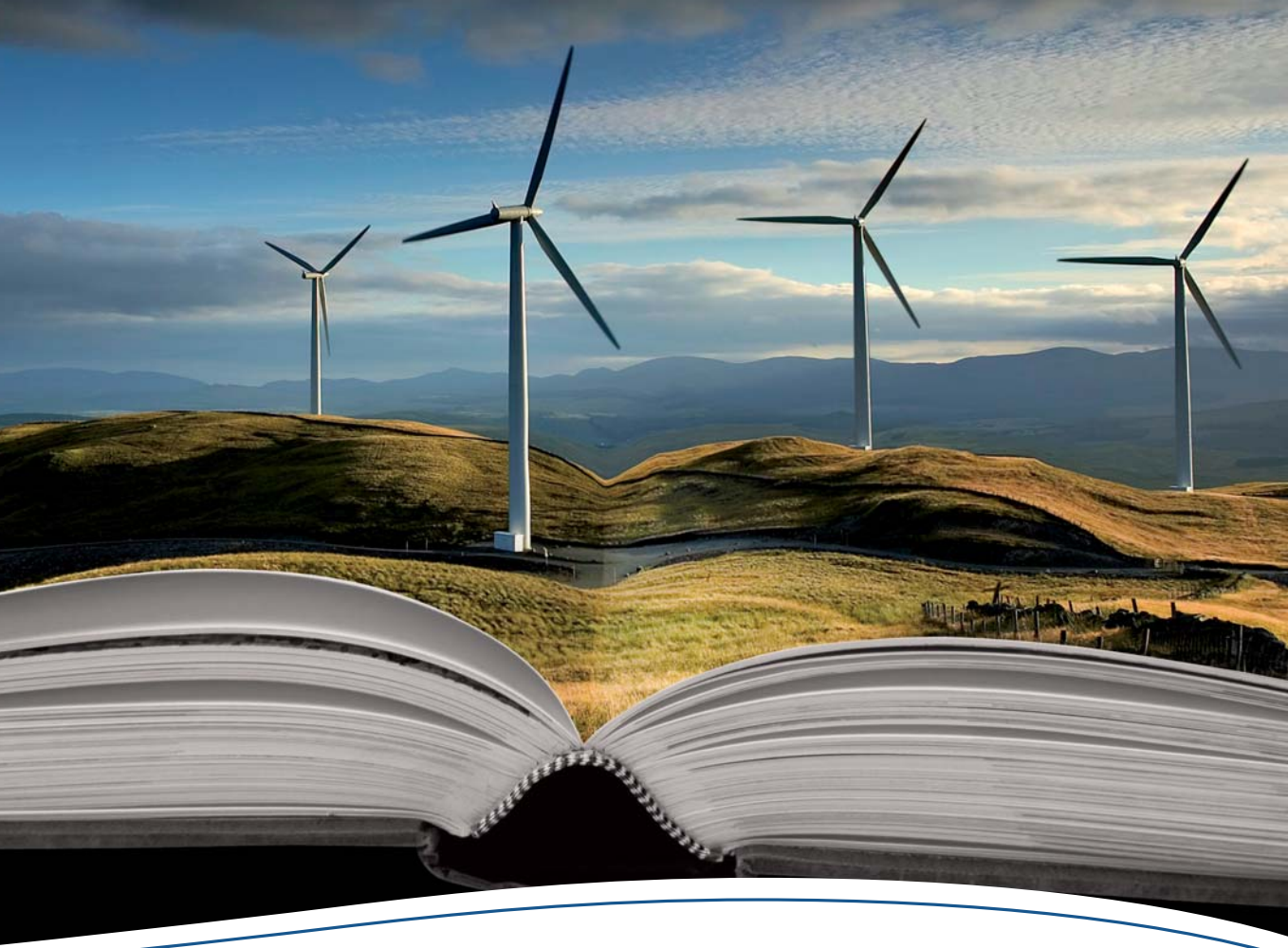
Snack bar 'La Place' opening hours:

08:00 – 18:00 Tuesday
08:00 – 19:00 Wednesday
08:00 – 14:00 Thursday

Sponsored by:

delta lloyd

Can you read the future?



You can now

As the voice of the wind industry, EWEA is in the perfect position to provide readers with reliable, relevant information on the developments and challenges encountered by the sector. If you are looking for reference publications for the wind energy sector, EWEA can offer you, free of charge, its collection of titles: available both in hard copy and digital versions.

Order here: www.ewea.org/order



EWEA

THE EUROPEAN WIND ENERGY ASSOCIATION



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EWEA 2012 - Innovating today, shaping tomorrow

Taking place in the birthplace of wind energy, Denmark, EWEA 2012 will focus on new developments and innovative thinking in all aspects of wind energy.

Don't miss the industry's annual gathering. Benefit from the highest quality **conference**, international **exhibition** and incomparable **networking** opportunities.

EWEA has 20 years of experience in organising "industry for industry" events. By investing in them, you ensure that the right regulatory framework is in place to enable the wind industry to grow further.

SUPPORTED BY:



EWEA 2012
COPENHAGEN
EUROPE'S PREMIER WIND ENERGY EVENT

More information at
www.ewea.org/annual2012

ORGANISED BY:



EWEA
THE EUROPEAN WIND ENERGY ASSOCIATION

Monday 16 - Thursday 19 April 2012 - Bella Center, Copenhagen, Denmark

RELAXATION AREA



Come to the relaxation area (located in the corridor leading to Hall 8) and have a massage to help you relax on a busy event day.

Inner Sense will provide massages during the three event days. Appointments can be made by visiting the relaxation area, and will be taken for the same day only.

09:00 – 18:00 on Tuesday and Wednesday

09:00 – 12:30 on Thursday

➔ See the venue plan on the inside back cover for the location of the relaxation area.

Sponsored by:

Prysmian
Group

SOCIAL EVENTS

SIEMENS STAND PARTY

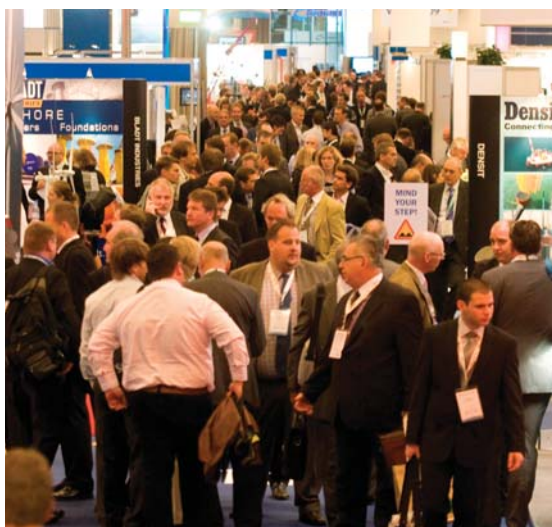
Tuesday 29 November
17:00 – 18:00

Location: Siemens stand
(Hall 10, stand 10111)

Conference delegates, exhibitors and exhibition visitors are invited to the Siemens stand party to network and relax at the end of the first exhibition day.

Sponsored by:

SIEMENS



OPENING RECEPTION

Tuesday 29 November
19:00 – 21:30

Venue: Beurs Van Berlage,
Damrak 243, 1012 ZJ Amsterdam

Dress code: smart

This year's reception is held in the Beurs van Berlage – the former Amsterdam Stock Exchange. A stock exchange is traditionally a place where people from all sectors come together and fittingly, for the first time, in 2011 the opening reception is also open to exhibition visitors and exhibitor staff who purchased a ticket.

The Beurs was built between 1898 and 1903 by the Dutch architect HP Berlage who aimed for a modern, cutting-edge design. What better place in which to kick-off a focused event where ground-breaking ideas are generated for the modern, cutting-edge technology – offshore wind energy?

For more information, including transport arrangements, please see the opening reception invitation. Entrance is reserved for all conference delegates as well as exhibition visitors and exhibitor staff who have purchased a ticket.

Sponsored by:



Rabobank



EXHIBITION RECEPTION AND POSTER SESSION

Wednesday 30 November
17:30 – 19:00

Location: Exhibition Halls 9, 10 and 11 and Poster Area

Gathering together all participants from both the exhibition floor and conference, the exhibition reception allows everyone to relax with an informal drink at the end of a busy day. Drinks and snacks will be served while you take the opportunity to expand your business by making new contacts.

Do not miss the poster session which will take place at the same time in the Poster Area. The EWEA OFFSHORE 2011 Programme Committee reviewed hundreds of abstracts and over 300 of these, representing all topics of the conference, were selected for a poster presentation. These poster presentations are available for viewing

throughout the event in the Poster Area. This dedicated poster session is an opportunity for all participants to meet with the poster presenters and discuss the presentations in more detail.



CONFERENCE DINNER

Wednesday 30 November
19:30 – 23:00

Venue: Het Scheepvaartmuseum, Kattenburgerplein 1, 1018 KK Amsterdam

Dress code: formal

This exclusive seated dinner will be the most popular evening of EWEA OFFSHORE 2011. Not only will you be able to meet professionals from the wind industry and other offshore-related sectors over an excellent meal, but you will also enjoy some inspiring entertainment.

This year's venue, Het Scheepvaartmuseum, is one of Amsterdam's biggest 17th century buildings, a storehouse for the Dutch war fleet dating from 1656.

The National Maritime Museum houses one of the world's biggest collections of nautical art and artefacts. After a four-year renovation, the National Maritime Museum is the perfect setting for the EWEA OFFSHORE 2011 gala dinner.

This event is open to ticket holders only. For more information, including transport arrangements, please see the dinner ticket. If you have not already purchased a ticket, you can enquire about their availability at the registration desks.

Sponsored by:



SUSTAINABILITY

DID YOU KNOW...

...that EWEA has taken a number of actions to minimise the environmental impact of EWEA OFFSHORE 2011?

- EWEA tries to select **modern venues** that have good access via public transport and for disabled people
- EWEA has put a **waste management process** into place to recycle as much as possible during the event days, build up and break down. Help us reach it by using the appropriate bins when disposing of your waste.
- The Amsterdam RAI will be 100% powered by sustainable energy sources for the duration of EWEA OFFSHORE 2011.
- 100% of the **carpet** will be recycled after the event.
- The **EWEA stand** has been designed using modular units to allow us to reuse it at future events.
- The shell scheme of all **full service stands** will be reused and recycled at other events by Melville (EWEA OFFSHORE 2011 stand constructor).
- EWEA required the **caterer** to ensure a vegetarian option for all meals, provide reusable equipment, select fair trade products, and use local food where possible.
- EWEA chooses **environmentally friendly items**, wherever possible, such as lanyards made from bamboo, visitor bags made from 100% recycled low density polyethylene (LPDE), pens made from ecological and biodegradable plastic, etc.

- All EWEA printed materials are printed on **FSC certified paper** (Forest Stewardship Council).
- EWEA has heavily reduced the number of **bag inserts** to reduce the amount of paper used and now offers electronic inserts instead.
- EWEA supports the work of **Renewable World** (formerly the Koru Foundation) with a donation of €1 per participant. This donation will be put towards a wind energy project in the developing world. To learn more about the project, visit the Renewable World stand (Hall 9, stand 9015).

Match our efforts by making your own donation!
<http://www.renewable-world.org>

WHAT YOU CAN DO IN ORDER TO SUPPORT THESE EFFORTS...

- If possible, travel to the conference by public transport.
- At the end of the conference, put your badge and bags into the relevant collectors at the exits for them to be donated or reused at future EWEA events.
- Provide EWEA with your feedback to improve future events by emailing events@ewea.org





THANK YOU

Supporting organisations, committees,
secretariat, sponsors and partners

SUPPORTING ORGANISATIONS



“We are very proud to host such an important offshore wind conference and exhibition in the Netherlands. Close to the shores of the North Sea, the place the wind seldom sleeps! The Dutch high tech offshore wind industry and scientific infrastructure has a lot to offer and will be well represented during EWEA OFFSHORE 2011. There will certainly be a lot to tell and even more to show.”

Jaap Warners

President, Netherlands Wind Energy Association (NWEA), The Netherlands



“Investments in the wind power industry and the need to achieve ambitious climate goals can enhance each other. Therefore the Provincie of North Holland is actively involved in creating conditions for renewable energy chain development. Offshore 2011 is the perfect opportunity to display our geographic position at the North Sea and our well equipped deep sea harbours.”

Jaap Bond

Vice Governor, Province of Noord Holland, The Netherlands

Thank you to the following organisations for their support of EWEA OFFSHORE 2011:



Netherlands Wind Energy Association



Global Wind Energy Council



European Union



Sustainable Energy Europe

THANK YOU

Dutch success in offshore wind

The Netherlands has an offshore wind energy sector to be proud of. It is home to leading international companies, which together form a strong industry with experience in all aspects of offshore wind: research, project development, offshore wind suppliers & construction, and operation & maintenance.

Furthermore The Netherlands is strategically situated on the North Sea and has multiple specialised ports. This makes it the perfect base for the construction and maintenance of offshore wind farms in the North Sea.

It is therefore no coincidence that the Dutch offshore wind sector has played a part in every existing offshore wind farm in Europe.

visit www.nwea.nl/windforce11



Initiated by



Wind Force 11 is supported by



Sif Group



COMMITTEES

EWEA would like to thank all committee members for their important contribution to the development of the EWEA OFFSHORE 2011 conference programme.

NATIONAL ADVISORY COMMITTEE

Calling themselves 'The Energizers', this group of Dutch wind energy professionals provided invaluable advice to EWEA regarding the conference programme content and format. A special thanks goes to Jan van der Tempel, who proposed numerous innovations and dedicated a large amount of time and energy to assist with the development of the programme.

Dolf Elsevier van Griethuysen, Ballast Nedam, The Netherlands

Ton Hirdes, NWEA, The Netherlands

Sylvia Scheper, Greenology, The Netherlands

Ton Sledsens, Stichting Natuur en Milieu, The Netherlands

Anouk Stortenbeker, NWEA, The Netherlands

Jan van der Tempel, Amplemann/TU Delft, The Netherlands

Ernst van Zuijlen, Eneco & FLOW, The Netherlands

Chris Westra, ECN, The Netherlands

LEAD SESSION CHAIRS

The lead session chairs are responsible for defining the sessions and proposing speakers and co-chairs. They then liaise with speakers to prepare the sessions and act as moderators during the event.

Grid and infrastructure

Adam Bruce, Mainstream RP, United Kingdom

George Caralis, National Technical University of Athens (NTUA), Greece

Michael Nørtoft Frydensbjerg, Siemens Wind Power, Denmark

Frans Van Hulle, EWEA, Belgium

Hardware

Thomas Buhl, DTU, Denmark

Henrik Carstens, Ramboll, Denmark

Christian Nath, Germanischer, Germany

Jan Van der Tempel, TU Delft, The Netherlands

Logistics: getting them there and keeping them running

Dolf Elsevier van Griethuysen, Ballast Nedam, The Netherlands

Morten Keller, MAKE Consulting, Denmark

Dick Schaap, KCI, The Netherlands

The great outdoors: assessing the resource

Stephan Barth, ForWind – Center for Wind Energy Research, Germany

Mortimer Menzel, Augusta & Co, United Kingdom

Pep Moreno, Vortex, Spain

The soft sector and hard cash

Anne-Bénédicte Genachte, European Wind Energy Association (EWEA)

Geert Palmers, 3E, Belgium

Stephanie Ropenus, German Wind Energy Association, Germany

Wind farm experience, lessons learned and what not to do

Jos Beurskens, ECN, The Netherlands

Jakob Lau Holst, Danish Wind Industry Association, Denmark

Heiko Ross, Windreich, Germany

POSTER COMMITTEE

This committee makes a selection of the highest quality posters from the hundreds of presentations on offer and decides who should receive the four Poster Awards.

Jos Beurskens, ECN, The Netherlands

PROGRAMME COMMITTEE

The programme committee reviews the submitted abstracts, providing scores and recommendations upon which the selection process is based.

Georg Adolphs, Owens Corning, Spain

Frans Aertsen, Smulders Group, The Netherlands

Purwanto Aji, Numeca International, Belgium

Imad Alsyouf, Linnaeus University, Sweden

Christopher Anderson, 4C Offshore Ltd., United Kingdom

Kimon Argyriadis, Germanischer Lloyd Renewables Certification, Germany

Felix Avia, Cener, Spain

Bruce Bailey, AWS Truepower, United States of America

Deok-Je Bang, Delft University of Technology, The Netherlands

Henrik Bang-Andreasen, Seaproof Solutions, Norway

- Stefano Barbati**, Relex Italia, Italy
- Sarah Barber**, BKW-FMB AG, Switzerland
- Stephan Barth**, ForWind – Center for Wind Energy Research, Germany
- Francesco Belfiore**, Golder Associates, Italy
- Marta Benito García-Morales**, EDF R&D, France
- Jos Beurskens**, ECN, The Netherlands
- Michael Bjerrum**, Inwind AS, Norway
- Adam Bruce**, Mainstream rp, United Kingdom
- Thomas Buhl**, DTU, Denmark
- Bernard Bulder**, ECN, The Netherlands
- Rain Byars**, Nextwind, Inc., United States of America
- George Caralis**, National Technical University of Athens, Greece
- Henrik Carstens**, Rambøll, Denmark
- Sebastian Chivers**, PMSS, United Kingdom
- Nath Christian**, Germanischer, Germany
- Carsten Christiansen**, Siemens Wind Power A/S, Denmark
- Werner Coppys**, 3E, Belgium
- Ignacio Cruz**, CIEMAT, Spain
- Jan De Decker**, 3E, Belgium
- Guillaume De Volder**, 3E, Belgium
- Wybren de Vries**, Delft University of Technology, The Netherlands
- John Dewar**, Milbank Tweed Hadley & McCloy LLP, United Kingdom
- Michael Durstewitz**, Fraunhofer IWES, Germany
- Peter Eecen**, ECN, The Netherlands
- Dolf Elsevier van Griethuysen**, Ballast Nedam, The Netherlands
- Mark Ennis**, SSE Renewables, United Kingdom
- Pascal Ferier**, KCI, The Netherlands
- Miguel Ferreira**, Megajoule, Portugal
- Paul Fleming**, National Renewable Energy Laboratory, United States of America
- Michael Nørtoft**, Frydensbjerg, Siemens, Denmark
- Nick Gardiner**, BNP Paribas Fortis, United Kingdom
- Andrew Garrad**, GL Garrad Hassan, United Kingdom
- Palmers Geert**, 3E, Belgium
- Ton Geul**, VSMC, The Netherlands
- Carlos González**, Montes de Oca, ITER, Spain
- Natalie Griggs**, Intertek METOC, United Kingdom
- Rob Grimmond**, Offshore Marine, United Kingdom
- Bogdan Gutkowski**, Polish Wind Energy Society, Poland
- Steinar Haga**, Automasjon og Data AS, Norway
- Ross Heiko**, Windreich, Germany
- Alexander Heitmann**, TUEV SUED, Germany
- Carstens Henrik**, Ramboll, Denmark
- Stefan Hicke**, Deutsche Windguard Offshore GmbH, Germany
- Anna Hilden**, StormGeo AS, Denmark
- Ton Hirdes**, NWEA, The Netherlands
- Jorgen Hojstrup**, Suzlon Energy, Denmark
- Jakob Lau Holst**, Danish Wind Industry Association, Denmark
- Giles Hundleby**, Ricardo UK Ltd, United Kingdom
- Stefan Ivanell**, Gotland University, Sweden
- Holst Jakob Lau**, Danish Wind Industry Association, Denmark
- Bogi Bech Jensen**, Technical University of Denmark, Denmark
- Dorte Buus Jensen**, Dong Energy, Denmark
- Eric Kamphues**, MECAL, The Netherlands
- George Kariniotakis**, MINES ParisTech, France
- Morten Keller**, MAKE Consulting, Denmark
- Patric Kleineidam**, Lahmeyer International GmbH, Germany
- Henrik Kofoed-Hansen**, DHI, Denmark
- Christos Kolliatsas**, Mott MacDonald, United Kingdom
- Henning Kruse**, Siemens Wind Power, Denmark
- Athanasios Kyriazis**, 3E, Belgium
- Oliver Loenker**, Siemens Wind Power A/S, Denmark
- Malte Lossin**, TÜV SÜD Industrie Service GmbH, Germany
- Henrik Fomsgaard**, Lynderup, Siemens Windpower, Denmark
- Pri Mamidipudi**, Catch the Wind Inc., United States
- James Manwell**, University of Massachusetts, United States
- Raul Manzanos**, Acciona Energia, Spain
- Denis Matha**, Stuttgart University – Endowed Chair for Wind Energy (SWE), Germany
- Wim Meeusen**, Hansen Transmissions, Belgium
- Janis Meirans**, Latvian Wind Energy Association, Latvia
- Heinz-Theo Mengelkamp**, anemos Gesellschaft fuer Umweltmeteorologie mbH, Germany
- Mortimer Menzel**, Augusta & Co, United Kingdom
- Geir Moe**, Norwegian University of Science and Technology, Norway
- Xavier Monteau**, Dexia, France

COMMITTEES

Pep Moreno, Vortex, Spain

Markus Mueller, University of Edinburgh, United Kingdom

Michiel Muller, Ecofys, The Netherlands

Christian Nath, GL, Germany

Peter Nielsen, Lindoe Offshore Renewables Center, Denmark

Ivan Oestvik, NorWind, Norway

Geert Palmers, 3E, Belgium

Philippe Pasquet, samtech, France

Pedro Pinheiro, ASM Energia, Portugal

Henk Polinder, Delft University of Technology, The Netherlands

Pep Prats, Alstom Wind, Spain

Gustavo Quiñonez-Varela, Acciona Energia S.A., Spain

Luuk Rademakers, ECN, The Netherlands

Konstantinos Rados, Technological Educational Institute of West Macedonia, Greece

Jens Rauch, FGW e.V., Germany

Paul Reynolds, RenewableUK, United Kingdom

Muhamad Reza, ABB, Sweden

Dominique Roddier, Principle Power

Stephanie Ropenus, German Wind Energy Association, Germany

Heiko Ross, Windreich, Germany

Francisco Royano, Grupo Sodercan, Spain

Jone Saebboe, WindMaster Technologies AS, Norway

Eduard Sala de Vedruna, IHS Emerging Energy Research, Spain

Dick Schaap, KCI, The Netherlands

Peter Schaumann, ForWind – Leibniz University Hannover, Germany

Sylvia Scheper, Greenology, The Netherlands

Thorsten Schneiders, E.ON Climate & Renewables, Germany

Ton Sledsens, Stichting Natuur en Milieu, The Netherlands

John Dalsgaard Sørensen, Aalborg University, Denmark

Robert Staniland, Royal Haskoning, United Kingdom

Anouk Stortenbeker, NWEA, The Netherlands

Benjamin Sykes, Carbon Trust, United Kingdom

Sverre Trollnes, Statoil, Norway

Ioannis Tsipouridis, PPC Renewables SA, Greece

Gurutz Urzelai, CENER, Spain

Gerard van Bussel, TU Delft, The Netherlands

Albert van der Hem, BLIX Consultancy BV, The Netherlands

Jan van der Tempel, Amplemann, The Netherlands

Frans Van Hulle, EWEA, Belgium

Gijs van Kuik, TU-Delft, The Netherlands

Jan-Willem van Wingerden, TU-Delft, The Netherlands

Ernst van Zuijlen, Eneco & FLOW, The Netherlands

Andreas Wagner, Stiftung OFFSHORE-WINDENERGIE (German Offshore Wind Energy Foundation), Germany

Ludwig Wagner, GWU-Umwelttechnik GmbH, Germany

Chris Westra, ECN, The Netherlands

Joel Whitman, Global Marine Systems, United Kingdom

Heikki Willstedt, AEE Spanish Wind Power Association, Spain

Nic Wilson, Vaisala GmbH, Germany

Heike Winkler, AREVA Wind GmbH, Germany

Achim Woyte, 3E sa, Belgium

Rafael Zubiaur, Barlovento Recursos Naturales S.L., Spain

EUROPEAN WIND ENERGY ASSOCIATION (EWEA)

Administration

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- Speed up, simplify and better coordinate permitting and planning procedures for electricity infrastructure projects
- Agree new financing mechanisms to support the necessary electricity infrastructure projects
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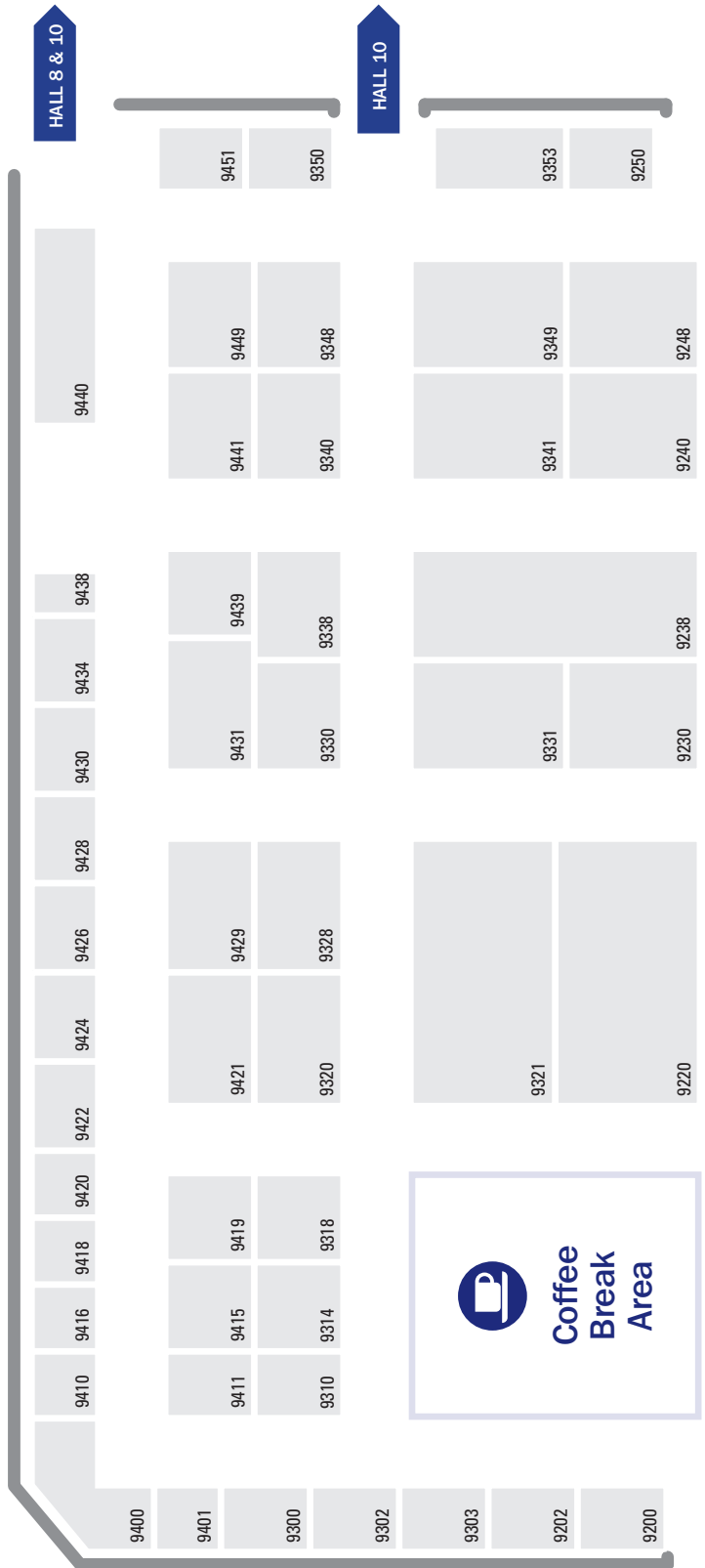
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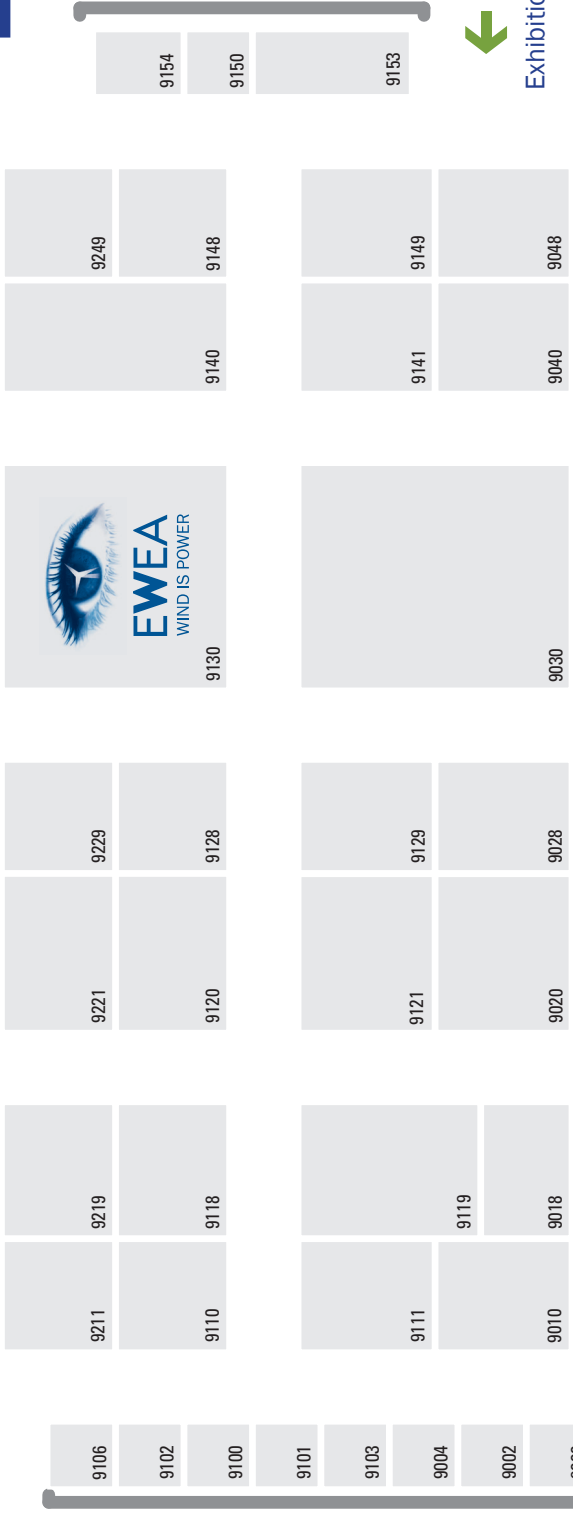
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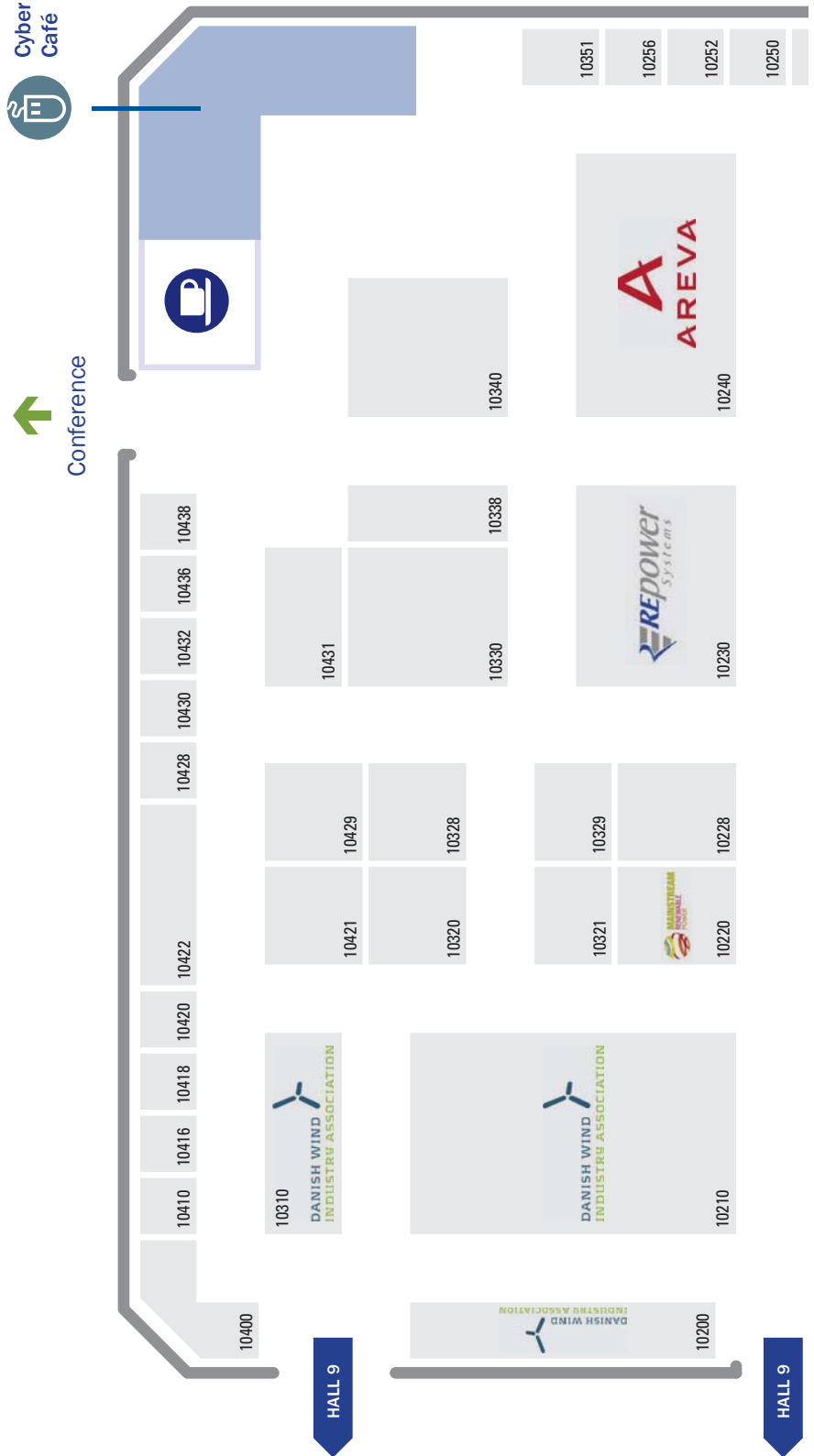


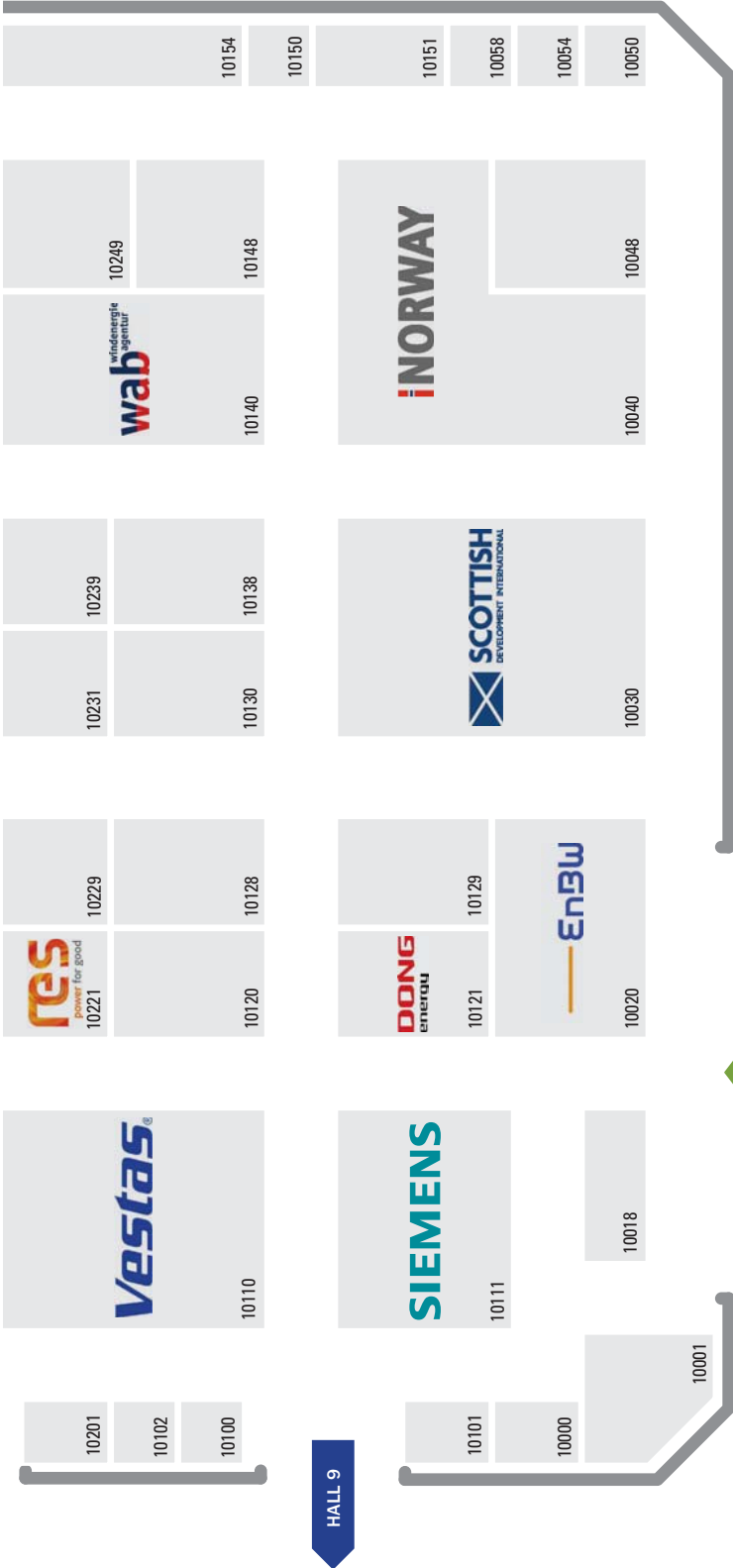
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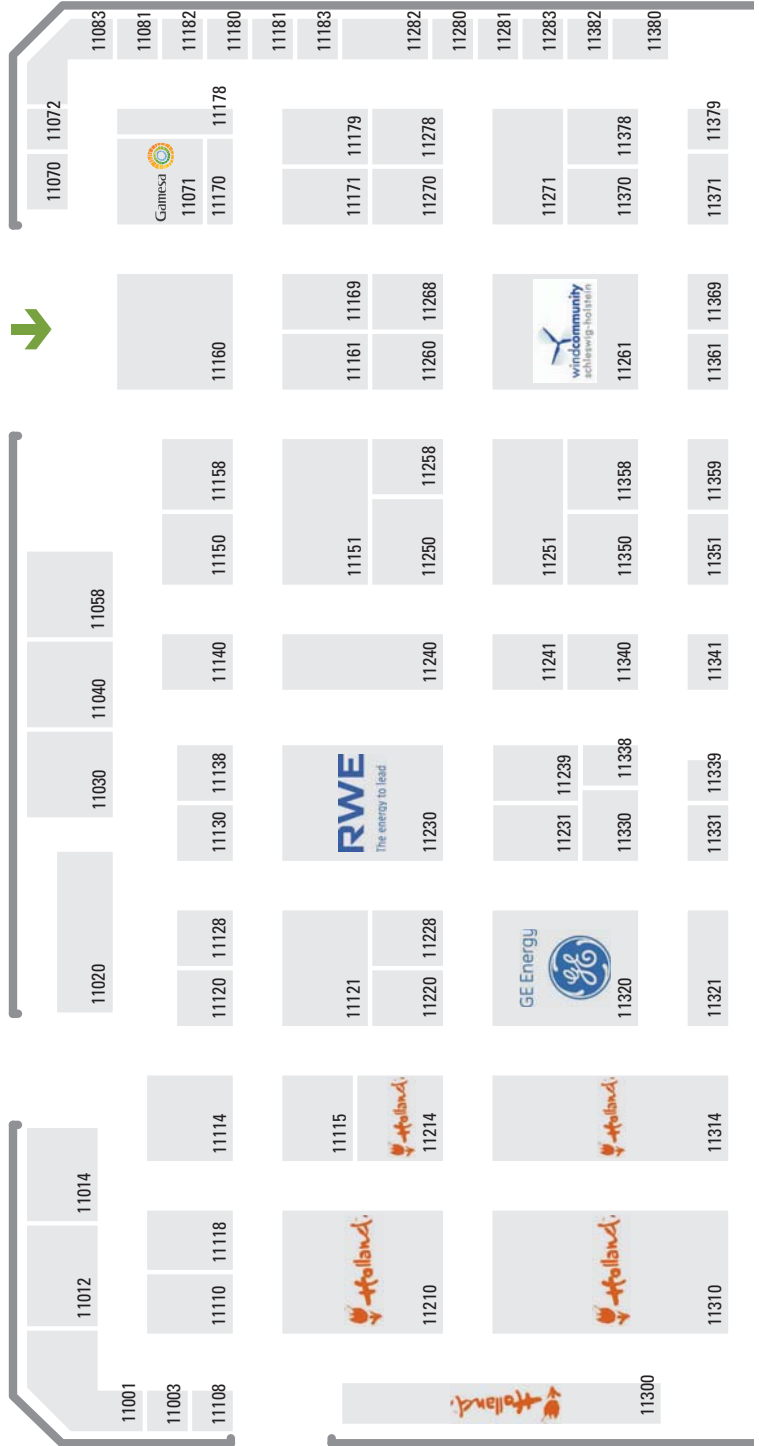
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LEVEL
1

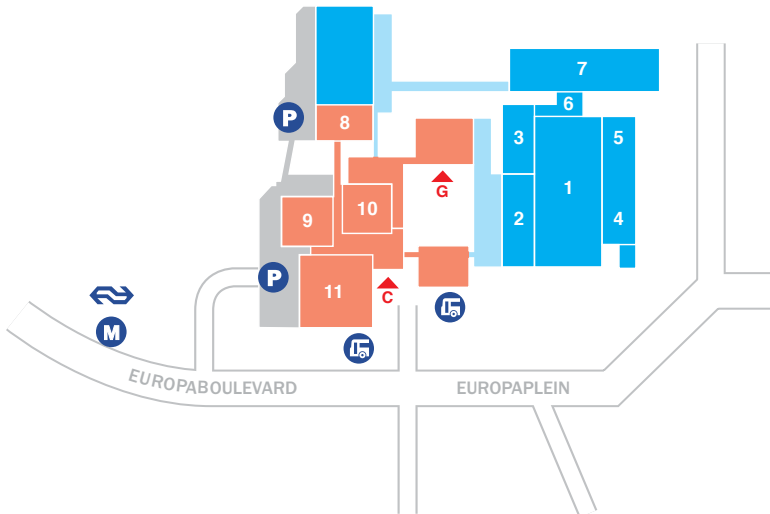



















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|---|---|---|
|  Coffee Break Area |  Cloakroom |  Parking |
|  Lunch Area |  Stairs |  Metro |
|  Cyber Café |  Lift |  Public Transport |
|  Media Point |  Cash Bars |  Social Events –
Shuttle busses / Taxi stop |
|  EWEA Publications |  First Aid | |
|  Sponsors' Corner |  Toilets | |
|  Relaxation Area | | |

Conference

Speakers / Registration

Press

Events

Pre-event seminar (Emerald room)
Invest in Leading
Offshore Markets (Emerald room)
NWEA lunch event (room E102)
EWEA workshops (room E103)

Meeting Rooms

WEDNESDAY 30 NOVEMBER

ROOM	FORUM	AUDITORIUM	ELICIUM
08:00	REGISTRATION + WELCOME COFFEE Welcome coffee will be served in the Poster Area		
09:00	OFFSHORE GRID TECHNOLOGY <i>p. 10</i>	NEW BIG TURBINE CONCEPTS <i>p. 10</i>	HEALTH AND SAFETY <i>p. 11</i>
10:30	COFFEE BREAK Coffee break areas, Halls 9, 10 and 11		
11:00	QUICK FIRE SESSION <i>p. 12-13</i>	QUANTITY AND QUALITY OF MODELLED WIND <i>p. 14</i>	NORTH AND SOUTH: MAKING AN EU OFFSHORE GRID A REALITY <i>p. 15</i>
12:30	LUNCH Catering areas, Halls 8 and 11		
14:00	EU OFFSHORE WIND: RACE OR HARMONY? <i>p. 16</i>	HOT TOPICS IN OFFSHORE TURBINES <i>p. 16</i>	KEY LOGISTICS CHALLENGES AND INNOVATIVE SOLUTIONS <i>p. 17</i>
15:30	COFFEE BREAK Coffee break areas, Halls 9, 10 and 11		
16:00	NOT IN MY BACK WATER!: PUBLIC PLANNING AND SOCIAL ACCEPTANCE <i>p. 18</i>	OPERATION-BASED LESSONS LEARNED TO BRING DOWN COSTS OF ENERGY <i>p. 18</i>	HOT TOPICS IN SUPPORT STRUCTURE DESIGN <i>p. 19</i>
17:30	POSTER SESSION Poster Area <i>p. 24</i>	EXHIBITION RECEPTION Exhibition Halls 9, 10 and 11 <i>p. 53</i>	SPECIAL FILM PREVIEW Cape Spin: An American Power Struggle Forum <i>p. 17</i>
19:30	CONFERENCE DINNER Het Scheepvaartmuseum <i>p. 53</i>		

THURSDAY 1 DECEMBER

ROOM	FORUM	AUDITORIUM	ELICIUM
08:00	REGISTRATION + WELCOME COFFEE Welcome coffee will be served in the Poster Area		
09:00	SHOW ME THE MONEY – HOW TO RAISE CAPITAL FOR OFFSHORE WIND <i>p. 20</i>	NEXT GENERATION OF DEMONSTRATION SITES <i>p. 20</i>	OPTIMISING RELIABILITY AND O&M <i>p. 21</i>
10:30	COFFEE BREAK Coffee break areas, Halls 9, 10 and 11		
11:00	REDUCING RISK IN PROJECT DEVELOPMENT <i>p. 22</i>	LESSONS AND INNOVATIONS APPLIED IN UPCOMING WIND FARMS <i>p. 22</i>	OPTIMISATION OF OPEX, CAPEX AND SAFETY BY LIFE CYCLE LOGISTICS <i>p. 23</i>
12:30	LUNCH Catering areas, Halls 8 and 11		

PROGRAMME OVERVIEW

Full details of the conference programme can be found on pages 6-23. Sessions are grouped according to the following seven thematic tracks:

 **THE GREAT OUTDOORS: ASSESSING THE RESOURCE**

 **WIND FARM EXPERIENCE, LESSONS LEARNED AND WHAT NOT TO DO**

 **GRID AND INFRASTRUCTURE**

 **THE SOFT SECTOR AND HARD CASH**

 **HARDWARE**

 **PLENARY AND PANEL SESSIONS**

 **LOGISTICS: GETTING THEM THERE AND KEEPING THEM RUNNING**

MONDAY 28 NOVEMBER

09:00 **PRE-EVENT SEMINAR: WIND ENERGY – THE FACTS: OFFSHORE**
EMERALD ROOM *p. 40*

TUESDAY 29 NOVEMBER

08:00 **REGISTRATION + WELCOME COFFEE**
Welcome coffee will be served in the Poster Area

10:00 **OPENING SESSION**
AUDITORIUM (open to all participants) *p. 6*

12:00 **PRESS CONFERENCE + LUNCH**
Lunch will be served in the catering areas, Halls 8 and 11

14:00 **TECHNOLOGY CHOICES (PANEL)**
AUDITORIUM *p. 7*

15:30 **COFFEE BREAK**
Coffee break areas, Halls 9, 10 and 11

ROOM	FORUM	AUDITORIUM	ELICIUM
16:00	BREAKING DOWN THE BARRIERS TO AN OFFSHORE SUPERGRID <i>p. 8</i>	SUPPORT STRUCTURE CONCEPTS <i>p. 8</i>	SCANNING WIND <i>p. 9</i>

19:00 **OPENING RECEPTION**
Beurs Van Berlage
p. 52



JOIN IN! SMS Q&A available during all sessions. More details on page 47.

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