

Powering Scotland's East Coast

BREAKFASTS

North Queensferry • Musselburgh • Dundee • Aberdeen

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BUSINESS



Powering Scotland's East Coast

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BREAKFASTS

BUSINESS

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Isla Robb Offshore Wind Specialist – Scottish Enterprise Friday 20th September 2019





HOUSEKEEPING

- Scheduled fire alarm tests at
- If the fire alarm does sound and it is not a test, please evacuate using the clearly signposted exits
- Mobile phones on silent. BUT feel free to contribute to social media

#ForthTayOffshore # FTOBusinessBreakfasts #SREF19

BUSINESS BREAKFASTS



PROGRAMME

Registration 08:00 08:45 Welcome & Event Intro **Offshore Wind Industry Update** 09:00 **Business Perspectives** 09:20 **Offshore Wind Growth Partnership** 09:40 **Floating Offshore Wind Competition** 09:55 **Services to Support Your Business** 10:05 10:20 **Q** & A **Closing Remarks** 10:30 10:45 **Networking** 11:00 Close

Isla Robb, Scottish Enterprise Alan Duncan, EDF Richard Yemm, Quoceant Stephanie Mann, OREC Hannah Evans, Carbon Trust Isla Robb Isla Robb

Why a Cluster approach to Offshore Wind?



Delivering Prosperity and Productivity in Coastal Areas through Clean Growth



Place: Transforming coastal communities

FORTH & TAY OFFSHORE

- Regional hubs attracting new industries
- Synergies of collaboration between business & academia
- Higher standard of living and increased prospects in areas of low employment
- Incubation spaces for new technology

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Cluster Approach – Why Forth & Tay?



- 1 of 2 Clusters agreed in Scotland (7 in UK)
- c3.75GW capacity by 2030 (12% of UK capacity) / 2GW consented / 450MW moving into construction
- Playbook Established capability Balance of Plant (cabling, foundations and substations), Operations, Maintenance & Service and Skills (including R & D and training)
- Track record of working together in this space East Coast Renewables
- Regional Strategic Drivers:
- **Tay Cities Deal** greater regional working / ambition to create a world-class renewable energy & decommissioning capability.
 - Edinburgh & South East Scotland City Deal





SUPPLY CHAIN CAPABILITY



Forth & Tay Offshore Steering Group















Our cluster is not geographically exclusive, as we take in key areas across the central belt, covering developers and innovative institutions ensuring all parts of the industry are represented; playing a part in advancing the sector for Scotland.

Our Aims

- **<u>Promote</u>** the regional supply chain to Tier 1s in the offshore wind sector
- Develop <u>collaborative</u> working throughout the industry
- Work with our world-renowned colleges and universities to deliver innovative new solutions within the sector
- Share and develop knowledge of the offshore wind sector
- Support members who want to compete for contracts across the UK and internationally
- Invest in infrastructure which will establish the cluster's offshore proposition as one of the UK's prominent renewable energy hubs.





Activity to date





Cluster formation & Industry events







Working with Developers & Other Clusters

We're Exhibiting



Promoting Supply Chain Capability

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Why should my business get involved?



- Companies in clusters have better innovation performance, are more competitive. Collaborate more
- Information and updates
- Promotion
- One-to-one meetings and introductions
- Case studies
- Networking opportunities
- Working with and for you the more you put in, the more you get out









Objectives:

- Size of the prize
- Here today here tomorrow
- Latest industry trends

UK - 2019

- 8.5GW across UK
- 7,200 direct jobs
- On track to generate 10% of UK electricity next year
- Major part of energy sector
- Contract for Difference Allocation Round 3
 - Results just announced
 - Up to 6GW of projects could have been supported
 - Gone from projects receiving ~300% of wholesale price to ~3% 'top up'







Scotland - 2019



- Scotland is home to leading international developers:
 - SSE Renewables; ScottishPower Renewables; EDPR Renewables; EDF Renewables; Red Rock Power;
- And key parts of supply chain:
 - SeaWay7; Wood; Shepherd and Wedderburn; CS Wind; Foundocean; Global Energy; Windhoist; Briggs Marine; Oceaneering
- Limited growth for the Scottish supply chain, understandable given only 10% (891MW) of deployment to date is in Scottish waters:
 - Robin Rigg (E.ON) 180MW 2010
 - EOWDC (Vattenfall) 93MW 2018
 - Hywind 2 Floating Demonstrator (Equinor) 30MW 2018
 - Beatrice (SSE/RRP) 588MW 2019

Scotland to 2024



Consented Pre-Construction



Developer: EDP Renewables Capacity: 800MW (max 85

Distance to shore: 23km

turbines)

Status: Unsuccessful, round 3 TBC

Forecast online: 2025 at earliest

Moray West



Inch Cape

Developer: Red Rock Power

Capacity: 784MW (max 72 turbines)

Distance to shore: 15km

Status: Unsuccessful, round 3 TBC

Forecast online: 2025 at earliest



Seagreen A&B

Developer: SSE

Capacity: 1500MW (max 150 turbines)

Distance to shore: 27km

Status: circa 500MW awarded CfD3

Forecast online: 2024/5

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Tomorrow – Sector Deal

- Bi-annual Contract for Difference rounds delivery of 1-2GW pa
- By 2030:
 - 30GW in operation = 30% UK power needs
 - 60 per cent UK content
 - 30% women in workforce
 - Increase exports x5 to £2.6bn
- £250m supply chain development fund



Sector Deal (2)

Key conclusions:

- Industry-Govt Compact avoid stop-start
- £40bn to be invested to 2030
- Support for firms to grow/enter sector
- Stimulation of coastal communities via clusters concept
- Developers part of industrial strategy
- Structures to hold to account!
 Scottish Offshore Wind Energy
 Council(SOWEC) seeking to maximise
 benefits in Scotland





Looking Further Out...

ScotWind and Round 4







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Policy Context

- Net Zero enshrined in law by UK and Scottish Governments
- Need to de-carbonise heat and transport through either:
 - Electrification
 - Hydrogen
- => Significantly more offshore wind!
- 75GW offshore wind by 2050...?!



Developers: Purpose of Clusters



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Conclusions



- Significant local, national and international opportunities now and in future
- Cluster here to support you take those
- Want your views on how we best do that







SMEs in Offshore Renewables

Richard Yemm

Who we are

<u>Pelamis</u>

- 17 years @ Pelamis, 6 machines, 5 different mooring designs, 4 different connection methods, catenary, synthetic line, dynamic cables, wet-mates, diverse range of vessels & equipment used etc
- In house design, procurement, assembly, offshore ops etc
- SME with ~40 core employees
- Worked very closely with a number of large companies
- String of world-firsts, still hold records...

Quoceant

- Team of 10 with over 150 years experience in offshore renewables
- Diverse skill set covering all main engineering disciplines
- Wave Energy Scotland Knowledge Capture projects good body of experience/information – see <u>https://library.waveenergyscotland.co.uk/</u>
- Involved in a range of fixed and floating tidal projects
- Working with several wave technologies
- Structural advisory in fixed offshore wind, framework agreement in floating
- Working on enabling technologies for all offshore renewables
- Case studies on our website <u>www.quoceant.com</u>



Small Enterprises – doesn't mean small projects!





SMEs

- Good at what we do:
 - Focussed, creative, entrepreneurial, hungry, light-footed, risk taking...
- But...
 - Short term focus, can reinvent wheel, weak processes, overprotective of IP, suspicious of other's motives, small reserves, all contract risks are existential...
- Large companies are good at what they do too:
 - Deep pockets, patient capital, longer term focus, strong balance sheet, robust management, strong processes & systems...
- But...
 - Work on difference time scales, slow to respond, can be technology riskaverse, looking for steady progress rather than lightning bolt...

RESULT?

- SMEs tend to work with SMEs birds of a feather... safety in numbers...?
- Large companies tend to seek large advisors / partners C.Y.A...?

Need to address this



oceant





Renewables

- Renewables has made huge progress in last 20 years
- 11GW by 2018 from ~3GW in 2008, 70% of Scotland's demand
- £4.5bn turnover really is the second industrial revolution!
- Fantastic progress in capacity
- Less progress in delivering aspirations for jobs and the economy
- But have hugely creative & experienced SME technology & knowhow base
- Reality is we are installing imported technology using imported processes most created & commercialised by European SMEs
- Compare this with the oil & gas sector now exporting homegrown technology using homegrown processes
- The key difference is the word "*homegrown*", and SMEs have had a key role
- Large oil producers & contractors developed a different relationship with SMEs
- Understood, embraced & worked with each other's strengths and weaknesses

We can learn from this



Closing thoughts



- We have a world leading SME renewable technology platform, particularly offshore
- Oil & Gas SMEs need new opportunities & markets for their creativity & technology
- I think we need to learn from Oil & Gas, and work to build a clearer, stronger relationship between large and small enterprises in Scotland to deliver on our potential

THANK YOU! richard.yemm@quoceant.com



Joceant





Forth and Tay Offshore Wind Briefing Event

20/09/2019 Stephanie Mann, Innovation Manager







Our Mission:

Accelerate the creation and growth of UK companies in the ORE sector

- Reduce the cost of offshore renewable energy
- Deliver UK economic benefit







Impact Stats 18/19







158 SMEs supported in 2018/19 Innovation challenges **597 SMEs** supported since 2013 **Providing SMEs** with industry-

Commercialising technology with SMEs


Innovation support programmes



ore.catapult.org.uk

ORE Catapult Product/ Service mapping















Offshore wind technical issues

OEMs and utility companies have:

- Confidential engineering challenges to solve with no time to explore markets
- Low exposure to companies outside the offshore wind supply chain

A platform for solving industry challenges

Technical solutions from other sectors

Solution providers find it difficult to:

- Find the right person within a target customer's organisation
- Prove the value proposition of products
- Understand customer's time constraints

OWiX – Impact and get involved



TURBINES

Developing the next generation of offshore wind turbines, incorporating all the technology that forms the structural and operational elements of the wind turbine generator.



SUBSTRUCTURES

Innovations in fixed and floating wind turbine foundations and substructures, including transition pieces.



ELECTRICAL INFRASTRUCTURE

Moving to next generation electrical infrastructure including array cabling, power transmission, grid integration, and onshore & offshore substations.



O&M AND WINDFARM LIFECYCLE

Optimising and future-proofing all services associated with offshore wind, including site development, installation, wind farm 0&M, condition monitoring, and decommissioning.

69 challer

Applications across seven challenges in two competitions 20

UK Companies given the opportunity to pitch their ideas to and OEM and utility company



Companies progressing with demonstration projects with OEM and utility company (further two pending)

Businesses now developing technology funding applications (four with ORE Catapult)

https://offshorewindinnovationhub.com/get-involved/

Current Challenges: GE Robotics Challenge



∃ CATAPULTS



KTN iX Challenge: Generator Pole Shoe Inspection and Tightening

The generator pole shoe bolt connection on the GE Haliade-X units need to be inspected within an interval of 36 months after commissioning is complete. Companies are required to develop a semi or fully autonomous device that is capable to perform the inspection of the pole shoe connection.



KTN iX Challenge: Blade Inspections & Repairs

The harsh environmental conditions that apply to an offshore wind turbine create the need for regular inspections, maintenance and repair of the blades and its subcomponents. GE seeks an inspection method that eases the job by eliminating human resource exposure to rope climbing.

VIEW >



Lightning Protection System Inspection

Develop an innovative, cost-effective solution for inspecting blade lightning protection systems.

VIEW >



https://ore.catapult.org.uk/work-with-us/smes/innovation-challenges/

ORE Catapult Power Available Hackathon





£10,000 Prize Pot

"Provide an accurate wind farm Power Available (PA) measurement using data that is already available at operational wind farms"

- Teams of up to six
- Any background: data, wind, researchers, businesses

- Registrations open till 18th October
- Opportunity to pitch technologies to ScottishPower Renewables

https://ore.catapult.org.uk/stories/offshore-wind-hackathon/







Intro to the Launch Academy





THE TOP 20 REASONS STARTUPS FAIL

">50% of start ups fail in the first four years"

Source: https://www.entrepreneur.com/article/307724



















Programme content









">50% of start ups fail in the first four years"

Source: https://www.entrepreneur.com/article/307724

Aberdeen Bay Project

Vattenfall – EOWDC (Aberdeen Bay)

- 11 turbine array 2.5km from beach (2 x 8.8MW & 9 x 8.4MW)
- Unique opportunity for UK Innovators to work with ORE Catapult to bring new technologies to the market through testing in a real-world environment
- Collaboration to advance cost reduction and improve safety in offshore wind.
- ORE Catapult submit innovation concepts for selection, demonstration and review annually



Technology demonstrations approved by Vattenfall



Fit 4 Offshore Renewables – National Programme

The National F4OR programme is currently under development (building on the success of the Scottish Pilot)



- National Programme Launch is planned for Oct/Nov 2019 ٠

SME Support Case Study: Synaptec





TECHNOLOGY **EIS FUND**

A unique collaboration between Foresight Group and Williams Advanced Engineering





Commercialisation Journey

- Innovation challenge winner
- Introduction to end users
- £250k i:UK grant secured with ORE Catapult as partner
- Trial at 7MW turbine
- Offshore trial with end user
- Joined ORE Catapult Gamechangers
- Introduction to Williams Foresight ٠ resulted in £2.1m investment





OWGP Intro

OWGP Launch Draft





A long-term business transformation programme

Objectives

Increased competitiveness of UK supply chain leading to:

- Increased UK content in UK projects.
- Increased exports to global markets.

Funding

• OWIC (offshore wind developers) are funding OWGP.

Delivery

Budget of £100m over ten years to provide:

- Analysis strategic capability assessments
- Services expert advisory services to supply chain
- Grants for innovation and prototypes

Funded by









Targeting high growth potential companies

Who?

- ✓ work in offshore wind sector
- ✓ create new sustainable jobs
- ✓increase exports to global markets
- ✓ develop UK owned IP
- ✓ bring cross-sector skills and experience

What?

Support to participants through a series of interventions

How?

- National programme with reach via clusters
- Engagement with OWIC members



tshore

ership

Four core strands of activity





B D Pilot calls launch in September 2019



	Target: Innovation in manufacturing/fabrication		
Business	 Objective 1: Encourage companies to explore new ways of working 		
Competitiveness	 Objective 2: Build ecosystem of delivery partners 		
	Delivery: Access to manufacturing advisory services*		

	• Target:	Next generation products and services
Supply Chain	• Objective 1:	Enable technology development planning
Futures	Objective 2:	Engage with developers and Tier 1s at early stage
	 Delivery: 	Grant funding for feasibility studies

C Building the roadmap to 60% UK content

Strategic Capability Assessment

- Identifying strong growth areas
- Capability
- Capacity
- Competitiveness
- Market attractiveness

Leading to roadmap to 60% UK content





Want further help or advice? Get in touch!

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Floating Wind Technology Accelerator

Hannah Evans Carbon Trust



Floating Wind Technology Acceleration Competition



- Objective is to support the development of technologies which will accelerate the deployment of floating offshore wind in Scotland.
- Project is supported by the Floating Wind JIP: 14 leading offshore wind developers & Carbon Trust, supported by Scottish Government.
- Looking to address four main challenges but also open to other technology ideas under 'Miscellaneous' category.



Floating Wind Technology Acceleration Competition



1. Safe and cost-effective exchange of large turbine components offshore 2. Safe and cost-effective disconnection and re-connection of offshore foundation structures





Floating Wind Technology Acceleration Competition



3. Cost-effective monitoring and inspection of large numbers of mooring lines, cables and foundation structures 4. Cost effective manufacturing, installation and maintenance of mooring lines and anchors





- Deadline for Applications is 09:00 on **Tuesday 5th November**
- Shortlisted applications will be invited to present to Floating Wind JIP Developers in London between 3rd and 5th December
- Successful projects will be expected to start by early January 2020 and be completed by end January 2021.
- For further information and to apply please visit: <u>https://www.carbontrust.com/about-us/tenders/floating-wind-technology-acceleration-competition/</u>
- Please send any questions to <u>floatingwind@carbontrust.com</u>





Support for the supply chain

Isla Robb Scottish Enterprise

Scottish Enterprise offshore wind support



 Supply Chain Workshops - Exploring specific supply chain opportunities

 Meet the Buyer Events - Tailored events with leading OEMs and developers



- Energy Markets Expert Support Programme - Up to two days of FREE one-to-one support on market and technology appraisal, plus 4 days 50% funded
 - Offshore wind
 - Heat
 - Water
 - Energy Systems
 - O&G decomm
 - Nuclear decomm
 - Low carbon Transport



Supply Chain Database





Scottish Development International





ENERGY ACTIVITY PLAN



Angola Mission (with ElCand DIT)

Offshore Europe Aberdeen

Nuclear Decommissioning Japan (with DIT)

Ngeria/ Ghana Mission

As ia Offs hore Wind Taiwan (with DIT)

East Africa mission (showcase in hotel)

Mission to AWEA and key US offshore wind states (with partner)

Offshore Technology Days Show (with DIT)

China Wind Power Expo (with Renewable UK)

OTCBrazil (with DIT)

lan Ross ANGOLA

Denise Addie SCOTLAND

TBC JAPAN lan Ross NIGERIA

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Offshore Wind Europe Copenhagen (With Renewable UK Africa Oil Week Capetown ADIPECExhibition (with EIC) Guyana (DITled) India Petrotech (with DIT led by EIC) EGYPS Mexico Mission (DITled) Wind Energy Expo (with EIC) Brazil Mission (DITled) CHINACIPPE (led by partners) Australia Oil and Gas (with EIC) Energy Systems Mission to California (TBC)

Algeria Trade Mission

Adam Swainbank DENMARK

lan Ros s SOUTH AFRICA

Hadi Fawzy ABU DHABI

Marion Murray GUYANA

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Hadi Fawzy EGYPT

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Support



Scottish Investment Bank

helps SMEs access finance and invests alongside private sector partners from across the globe

Brexit support

service with PrepareForBrexit.scot



FORTH & TAY OFFSHORE



R&D Grant supports

RSA

for creating jobs in specific locations

R&D Tax Credits for new products and services





£20 million for innovative energy projects (EIF) SMAS Scottish Manufacturing Advisory Service

Scottish Cyber Voucher

Digital Development Loan







PNDC





UNIVERSITY of STRATHCLYDE POWER NETWORKS DEMONSTRATION CENTRE



<u>NSRI</u>

Edinburgh centre for Robotics

Offshore Renewable Energy Catapult

Renewable Engine

National HVDC Centre



energy technology partnership











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Thank you

One more thing.... stay in touch, stay connected
 <u>www.forthandtayoffshore.co.uk</u>
 <u>www.offshorewindscotland.org.uk</u>

Questions...



Questions, questions, questions.....

....Answers, answers, answers


Thank you



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www.forthandtayoffshore.co.uk