

# Seagreen Offshore Wind

Meet the Buyer events  
5-7 November 2019  
Inverness, Aberdeen & Dundee

# AGENDA

<b>10:00am</b>	<b>SSE Welcome &amp; Format of the day</b>
<b>10:10am</b>	<b>Seagreen – Project Overview</b>
	<b>Principle Contractors</b>
<b>10:35am</b>	<b>MHI Vestas - Turbines</b>
<b>10:50am</b>	<b>Petrofac – Offshore Transmission module</b>
<b>11:05am</b>	<b>Linxon – Onshore/Offshore Substation</b>
<b>11:20am</b>	<b>Nexans – Offshore/Onshore Cables</b>
<b>11:35am</b>	<b>ORE Catapult</b>
<b>11:50am</b>	<b>Q&amp;A</b>
	<b>Lunch will be available between 12:00pm – 13:00pm</b>
<b>12:30pm</b>	<b>121 sessions will commence</b>
	<b>12:30pm – 17:00pm</b>



## **Seagreen Offshore Wind farm – Project Overview**

**John Casserly, Head of Major Projects –  
Procurement & Commercial**



# SSE RENEWABLES

- SSE is a home-grown Scottish company with our headquarters in Perth
- SSE Renewables is the UK's leading developer and operator of renewable energy.
- We aim to treble our renewable energy output by 2030, making a significant contribution to the UK and Scotland's net zero climate change targets.
- We have worked hard over last decade to develop the Scottish supply chain and create local jobs on our renewable energy projects, and will continue to work to create real value for local communities.
- The challenge of reaching net zero emissions for the UK and Ireland in the next 30 years is upon us, and we're ready to build on our experience to deliver the offshore wind we'll need to get there.

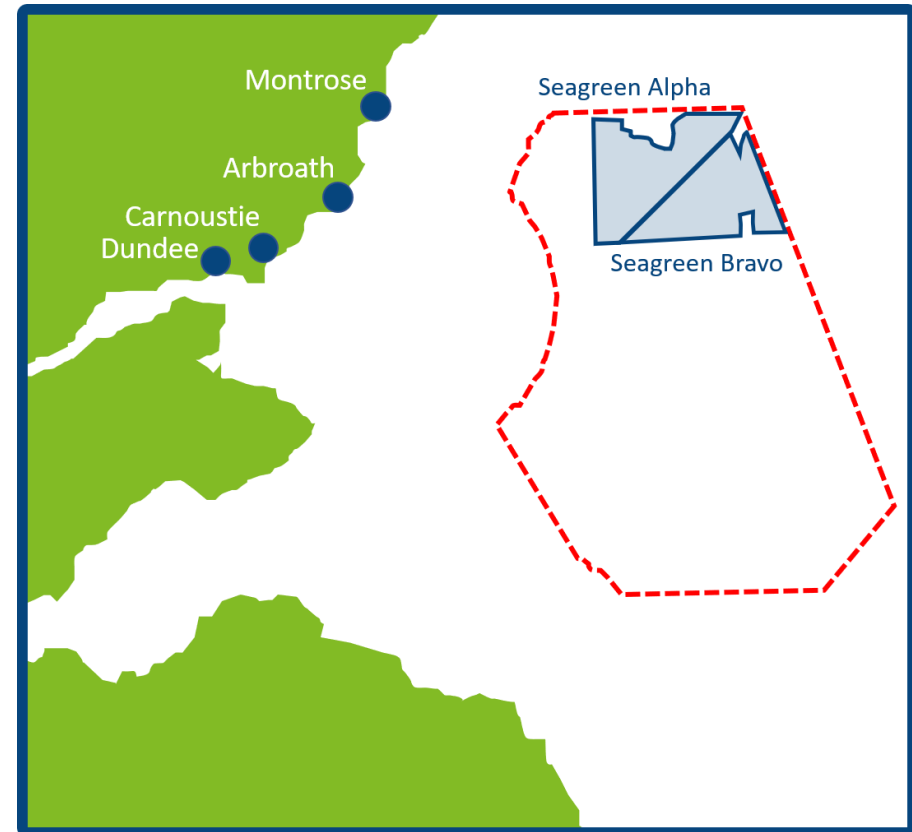
# SSE RENEWABLES

- SSE Renewables is very proud of our success in the UK's 3<sup>rd</sup> Contract For Difference (CfD) allocation round securing:
- Doggerbank - 3No 1.2GW contracts totalling 3.6GW
- Seagreen – 454MW contract towards the 1,075MW Phase 1 Project
- This is the largest volume of low carbon contracts secured by any developer
- Working with our project partners and the wider supply chain, we have now turned our focus in the months ahead to mobilising Doggerbank and Seagreen towards financial close and construction



# Seagreen Zone : Firth Of Forth

- Total area: 2,865km<sup>2</sup>
- Distance offshore: 27km – 80km
- Water depth: 30 - 70m
- Development area (< 50m) ~ 1,000km<sup>2</sup>
- Development capacity Seagreen One – 1,075MW
- 114No Turbines providing new low carbon renewable energy for around 1,000,000 homes
- Avoids around 1.6 million tonnes of CO<sub>2</sub> emissions per year
- Seagreen could contribute £2bn to UK economy of which £1bn could be in Scotland



# Seagreen One

- The meet the buyer events enables businesses to gear up to bid for contracts for Scotland's most significant construction project ever undertaken, Seagreen
- All three events give businesses of all sizes, across a wide range of disciplines, a chance to meet with the Seagreen project team and its principal contractors, including MVOW, Nexans, Linxon, Petrofac and Montrose Harbour to discuss their service offerings and hear more about the opportunities available.
- The format of the three events also fulfils our commitment to local suppliers that Seagreen would facilitate the Lower Tier suppliers engagement with Tier One suppliers at the earliest practical opportunity to influence their selection
- SSE Renewables and our announced Tier One suppliers for Seagreen present here today will work together to continue to develop and engage with Scottish and UK supply chain to maximise Scottish and UK content where practical
- Contracts awarded by Seagreen will offer local opportunities in both the construction and operational phases



# Beatrice Offshore Windfarm Limited Impact

**Beatrice is delivering transformative socio-economic benefits to UK and Scotland not just during construction but for decades to come.**

Socio-economic impact report (July 2019) produced by BIGGAR  
Economics confirmed :

- At £2.5bn Beatrice is the largest ever private sector investment in Scottish history, providing electricity for 450,000 homes
- During construction UK companies secured **£1.2bn** of contracts of which **£610m** of contracts secured by Scottish companies
- In addition it is estimated that over the 25 year operational life of Beatrice **£2.0bn** will be spent with UK companies of which **£1.4bn** will be spent with Scottish companies
- Over the lifetime of the Beatrice projects UK companies will secure a total of **£3.2bn** of which **£2bn** will be spent with Scottish companies





# SSE Renewables Summary

As a leading developer involved in every phase of an offshore wind project, from early development through construction and to long-term operations, we will use our unique opportunity to apply these learnings so we are continually building for the future. This means we will:

- collaborate with partners with complementary skills and experience to overcome the inevitable challenges that come with these enormous endeavours;
- pursue ways to make our large-scale infrastructure projects contribute a long-term social legacy;
- use our influence to encourage future joint ventures to adopt best international standards to protect the rights of people working in our supply chains; and
- work with governments, other developers and supply chain companies to identify and encourage the domestic opportunities that will deliver the most value to the UK and Scotland.

# Potential Suppliers - SSE

[SSE.COM](#) [POTENTIAL-SUPPLIERS](#)

## POTENTIAL SUPPLIERS


SSE is one of the UK's biggest companies with a supply chain value of over £2bn.

With safety, sustainability and responsibility at the heart of all we do, we're keen to establish strong relationships with our suppliers because we know how critical they are to our business.


We want to build and develop our supplier network and welcome any new engagement from suppliers who share our core values. Our simple step approach to working together incorporates the key engagement steps with our Suppliers - Registration, Tender Management & Contract Engagement.

The first step in building a relationship with us, irrespective of which part of SSE you wish to work for, is to register using our Supplier Registration System which is hosted by Achilles Information Limited. For requirements that are subject to EU Procurement regulations, suppliers will be selected from Achilles UVDB in the United Kingdom or Achilles Supplyline in Republic of Ireland as this ensures your able to work with and support our teams safely and responsibly.


### OUR PATH TO WORKING TOGETHER

REGISTRATION  


>

TENDER EVENTS  


>

CONTRACT AWARD  


Whilst our primary supplier selection process will utilise Achilles, for requirements that are subject to the EU procurement rules, Tender events will be published via OJEC/OJEU and suppliers will be able to participate directly and the procurement team leading the event will be able to advise and support you in joining the event via Emptoris.

For the second and third key steps we have introduced the Emptoris system to manage & facilitate our core sourcing process. Emptoris is an online, cloud based solution which enables our procurement teams to create tender events, invite suppliers to participate and manage contract negotiation and award. We will be introducing Emptoris across SSE through the beginning of 2017 and we have provided further information on how to use and access the system in the dedicated section of this page.

<http://sse.com/potential-suppliers/>



**MHI Vestas – Turbine package provider**

**Gary McGougan, Service Manager**

# MHI Vestas UK footprint

- Nearly 1000 direct staff, and a growing offshore wind industry supply chain delivering value right across the UK
- UK is c.50% of MHI Vestas installed base
- 570 turbines installed including 88 V164s making the UK MHI Vestas' leading competence centre for the V164



**NOTE: Yellow supply chain dots on map are combination of MHI Vestas supply chain & Renewable UK offshore wind supply chain data**

# Our Pipeline

2,859.5 MW of firm orders, in line to supply more than 3 GW

## Under Installation / Unconditional Orders

### NORTHWESTER 2

23 x V164-9.5 MW  
(224 MW)  
Parkwind, Belgium  
2019

### BORSSELE III/IV

77 x V164-9.5 MW  
(731.5 MW)  
Consortium, Netherlands  
2020

### BORSSELE V

2 x V164-9.5 MW  
(19 MW)  
Consortium, Netherlands  
2020

### KINCARDINE

5 x V164-9.5 MW  
(50 MW)  
Cobra Group, Scotland  
2020

### TRITON KNOLL

90 x V164-9.5 MW  
(860 MW)  
Consortium, United Kingdom  
2021

### MORAY EAST

100 x V164-9.5 MW  
(950 MW)  
Consortium, United Kingdom  
2022

### WINDFLOAT ATLANTIC

3 x V164-8.4 MW  
(25 MW)  
WindPlus, Portugal  
Not disclosed

## Conditional Orders

## Preferred Supplier

### VINEYARD WIND

84 x V164-9.5 MW  
(800 MW)  
Consortium, USA  
2021

### ZONE 27

Turbines not disclosed  
(100 + 452 MW)  
CIP, Taiwan  
2021 + 2023

### BALTIC EAGLE

52 x V174-9.5 MW  
(476 MW)  
Iberdrola, Germany  
2022

### GROIX & BELLE ILE

3 x V164-9.5 MW  
(28.5 MW)  
Consortium, France  
2022

### XI DAO

Turbines not disclosed  
(48 MW)  
CIP, Taiwan  
2024

### ZONE 29

Turbines not disclosed  
(300 MW)  
CSC, Taiwan  
2024

### SEAGREEN

Up to 114 turbines  
(1,075 MW)  
SSE, Scotland  
Not disclosed


IN BLACK – floating technology  
Information on this page is subject to change



# Seagreen Phase One and MHI Vestas

- MHI Vestas selected as Preferred Supplier
- Installing up to 114 turbines at SSE Renewable's Seagreen Phase One project, 27km off the Angus Coast in the Firth of Forth
- 'Plug and play' – towers, blades and nacelles are stockpiled and pre-assembled onshore
- MHI Vestas has a 15 year contract with Seagreen for service and maintenance of the turbines
- Montrose Port to be used for a shared Service facility
- Project is due to be operational in 2024/25





## Plug and play installation

Saving resources through our pre-assembly concept


- **Nacelles arrive fully assembled**, tested together with PCM and ready for installation from the factory
- **Blades delivered in a sea fastening**, no extra handling between the factory and installation
- **Power Converter Module (PCM) installed** in the bottom tower section fully assembled and tested from the factory
- **Towers fully assembled** before load out

# MVOW UK Footprint: More than blades

## Network of competitive UK suppliers; MVOW UK Supplier Heroes




**Our UK supplier heroes.**




**Rexroth**  
Bosch Group

**New design and assembly with Rexroth**  
We are delighted to have been selected by MVOW to supply the Rexroth hydraulic systems for the new MVOW offshore wind farm. Rexroth has a long history of supplying high-quality hydraulic systems to the offshore wind industry.

**Bosch Rexroth**  
We are delighted to have been selected by MVOW to supply the Rexroth hydraulic systems for the new MVOW offshore wind farm. Rexroth has a long history of supplying high-quality hydraulic systems to the offshore wind industry.



**Our UK supplier heroes.**



**MSA Manufacturing**  
The company has supplied additional production capacity, equipment and trained staff to new sites.

**13 positions created to support MVOW**




**Our UK supplier heroes.**

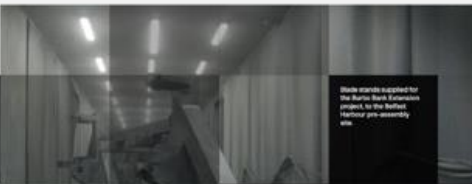


**3sun Group**  
The company has supplied additional production capacity, equipment and trained staff to new sites.

**10 positions created to support MVOW**



**Our UK supplier heroes.**



**Hutchinson Engineering**  
The company has supplied additional production capacity, equipment and trained staff to new sites.

**10 positions created to support MVOW**



**Our UK supplier heroes.**



**InCom Group**  
The company has supplied additional production capacity, equipment and trained staff to new sites.

**10 positions created to support MVOW**



**Our UK supplier heroes.**



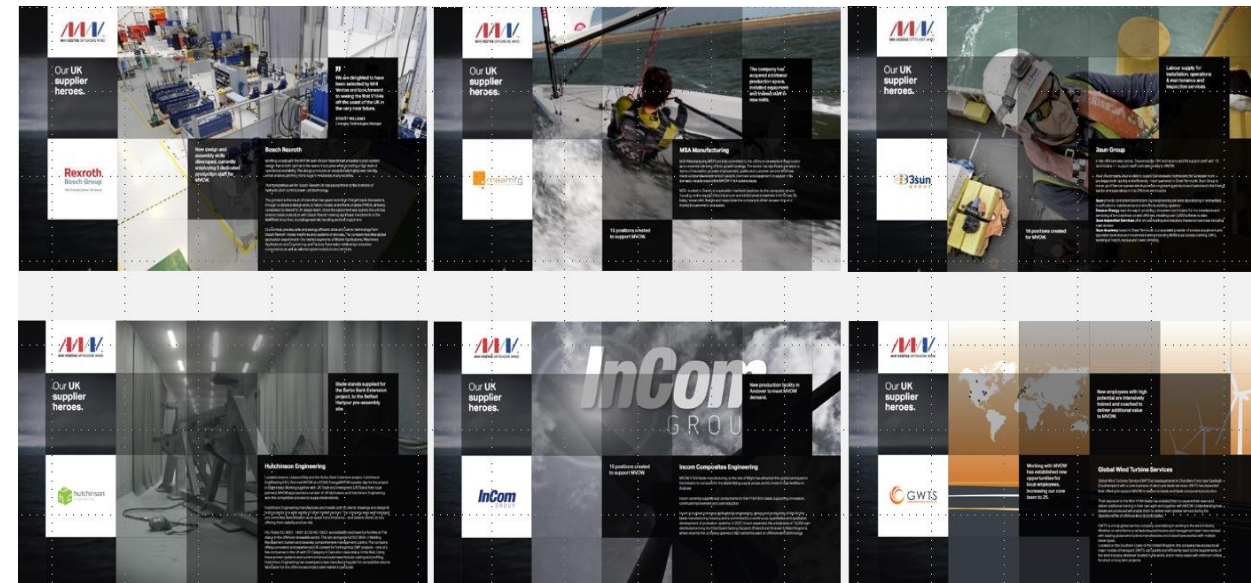
**GWTS**  
The company has supplied additional production capacity, equipment and trained staff to new sites.

**10 positions created to support MVOW**



## What can you do to understand our challenges and position yourself for success?

1. Ensure compliance to minimum requirements:
  - a) Compliance to Quality and HSE requirements
  - b) Compliance to category specific requirements (e.g. Labour Hire and Cranes)
2. Assess and promote your capabilities:
  - a) Clear description of what you offer
  - b) Proven track record, if any
  - c) First contact to MVOW, Email: [contact@mhivestasoffshore.com](mailto:contact@mhivestasoffshore.com)
3. Be competitive:
  - a) Attractive pricing from a total cost perspective
  - b) Available capacity
  - c) Proactive collaboration



## Supplier assessment/ requirements: for non-routine suppliers

### Rating of suppliers:

40% points awarded for having the following management systems in place:

- ISO 9001 or equal system for Quality Management
- ISO 14001 or equal system for Environmental Management
- ISO 18001 or equal system for Occupational Health and Safety Management
- 40- 60% points when also showing **evidence** that the systems are **followed and improved**
- Above 60% points when at the same time aiming for **World Class Performance** by having a concrete **plan** for how to improve and get there

Rating	Recommendation
N/A	Supplier not recommended
<40%	Supplier not recommended
>40% and <60%	Lower rated supplier, specific recommendations for contractual and operational mitigations to be given by MVOW Auditor
>60%	Recommended for engagement

### Important pre-requisites:

- Training requirements working offshore (Labour Hire)
- Compliance requirements (Cranes)



## Potential Opportunities

### Installation, Commissioning and Operations & Maintenance

Boom lift for installation vessel	Lifting equipment	Portakabins
Catering and beverages	Labour hire	PPE and clothing
Cleaning and laundry	Local training providers	Tool suppliers (hand and power)
Cranes	Laundry facilities	Transport inc taxis
Electrical wholesalers	Metal work fabrication and turning	Transfer vessels
Fencing/Security	Office equipment	Waste disposal
Fork lift hire	O&M vessels	
Fuel supply	Plant hire	
Hotels/accommodation		



Let's move the horizon.  
Register your interest at  
[www.mhivestasoffshore.com/partnerships](http://www.mhivestasoffshore.com/partnerships)



## **Petrofac – Offshore Transmission module**

**Ram Jeyaraman**

# Introducing Petrofac

## Introducing Petrofac

- Petrofac is an international service provider to the oil & gas and renewables industry, with around 11,500 employees across the world
- We have 38 years' of international experience and a track record of several hundred projects across our key markets of the Middle East, Russia and the CIS, Africa, Asia Pacific, Europe and UK Continental Shelf
- Our capabilities span the oil & gas and renewables value chain; offering life of field services from concept to EPC, through to operations and maintenance and decommissioning underpinned by our substantial training capability
- We provide our services on a standalone basis but also offer our capabilities as integrated services to enable our customers to develop their assets
- We deliver with commercial flexibility to align to the needs of our clients



## Petrofac - Strong track record; deep capability

Petrofac 

**#20** ENR **THE TOP 250**

ENR Top 250 International  
contractors of the world



**+200**

Major projects delivered

**11,500**

worldwide employees



**10 million**

Annual engineering  
man-hours

**US\$2 billion**

procurement spend  
(on average per year)



**200 million**

Annual Direct construction  
man-hours managed

**38 year**

track record

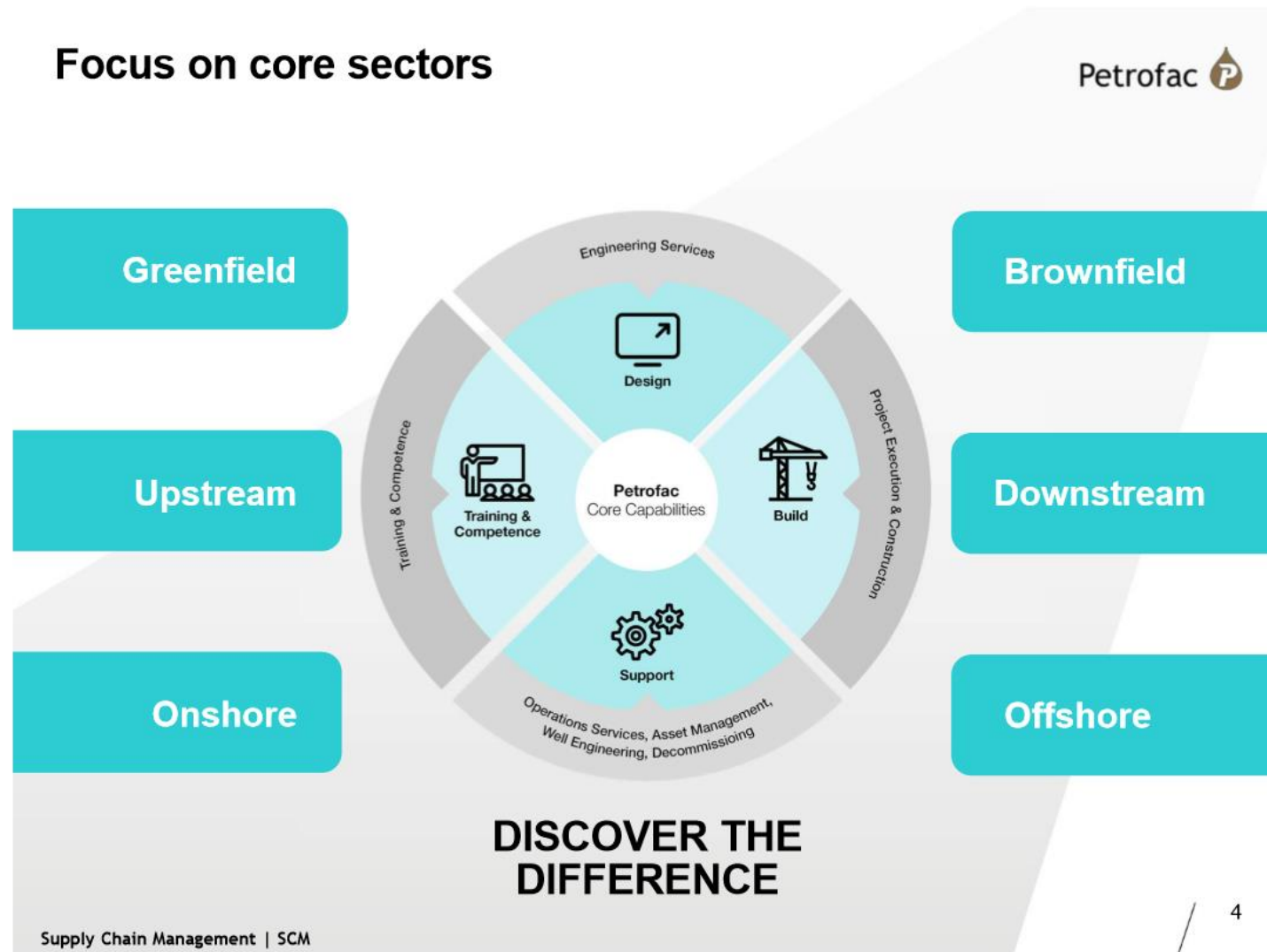


**31 offices**


worldwide in 29 countries



## Focus on core sectors



## Global footprint, local capability

Petrofac 



## Required Services & Capabilities

Petrofac 

- ✓ Permits & consents coordinators
- ✓ Helicopter services
- ✓ Offshore logistics service provider– like meet & greet, visas, local assist for hotel, transport etc...
- ✓ Offshore personnel – OIM, Marine Mammal Observing, Scaffolding, Rigging & Technicians
- ✓ Scour consultants
- ✓ Environmental Consultants
- ✓ Noise Mitigation Consultancies
- ✓ Vessel Owners – W2W Vessel, Jack Up barges, Supply Vessels, Guard Vessels
- ✓ Waste Management services / Disposal



## Our role in the Seagreen Project

Petrofac 

Petrofac / Linxon consortium are due to deliver the Substation package which includes :

- **Offshore Substation Platform with Seagreen Alpha / Bravo Development Zone**
  - ✓ Engineering (Design), Supply, fabrication & Installation of Offshore Substation platform consisting of Piled Jacket type support structure and Substation topside, consisting of 66kV/220kV HV Transformers, 66kV/220kV GIS and related equipment
- **Onshore Grid Connection Substation at Tealing**
  - ✓ Engineering (Design), Supply & construction of Enabling works, Civil foundations, structures and control buildings for the installation of a 3 ea circuit grid connection substation consisting of 275kV AIS, Dynamic reactive compensation, Power Transformers, Shunt Reactors, Harmonic Filters, Protection & Control Panels and balance of Plant

...wherein Petrofac is responsible for the Offshore Substation platform in whole along with the HV expertise of Linxon.



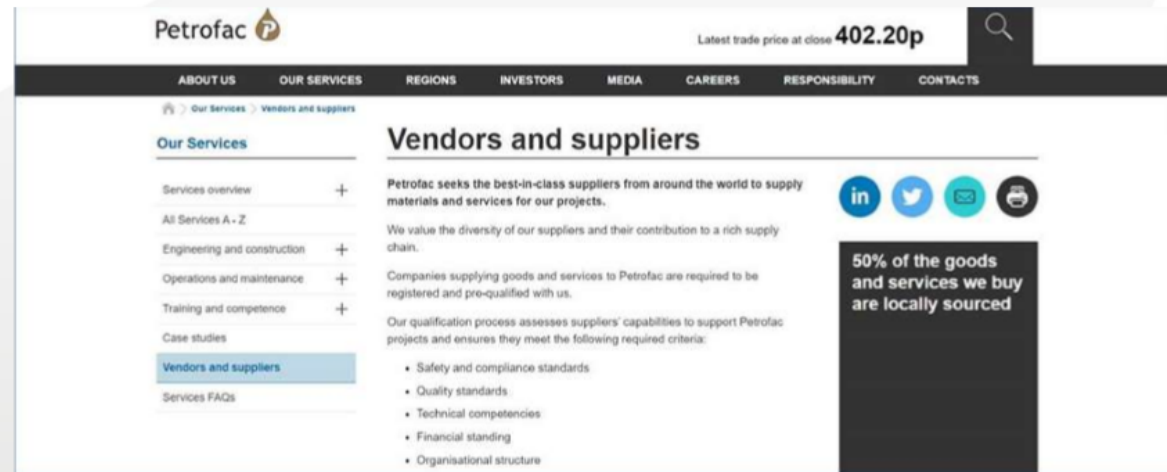
## Suppliers registration and pre-qualification



For Registration with Petrofac please visit,

[www.petrofac.com](http://www.petrofac.com) >> Our Services >> Vendors & Suppliers:

<http://www.petrofac.com/en-gb/our-services/vendors-and-suppliers/>





# Global vendor management system



1

## Vendor registration

Interested suppliers to register via our global portal: [www.petrofac.com/vendors](http://www.petrofac.com/vendors)

2

## Potential vendors

Upon completion of the registration process, the profile is assessed and if approved, the vendor will be listed as a potential vendor to Petrofac

3

## Prequalification assessment

Quality	HSSE
Financial	Compliance
Supply Chain	Labour rights

4

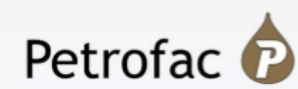
## Operational suppliers

- Potential suppliers undergo a prequalification including quality, financial, HSSE, supply chain and compliance assessment
- Once approved, the vendor becomes an operational vendor for Petrofac

# Thank You

For further details contact:

Chris Avison  
Director, Business Development – Offshore  
[Chris.Avison@petrofac.com](mailto:Chris.Avison@petrofac.com)  
Tel: +971 6 574 0999





## **Linxon – Offshore & Onshore Substations**

**John Toone, Seagreen Project Director**

**<https://www.youtube.com/watch?v=0CB3IKbcxbs>**

We combine ABB's deep technological knowledge and SNC-Lavalin's project management expertise to create a company dedicated to turnkey electrical AC substations

... we are Linxon.

linxon

We work to shape energy solutions

to empower

sustainable connectivity



## Our global presence

500  
employees

4  
hubs

North America  
Europe  
Middle East  
Asia Pacific

linxon





## Renewable generation

- Completed several onshore and offshore wind substation projects – leveraging our experience from around the globe
- Supporting our customers achieve return on investment with competitive and optimized solutions as the costs of wind and solar energy come down
- Significant experience in delivering grid connection substations combined with electrical BOP competence
- Addressing demand for grid stabilization and energy storage with innovative solutions
- Clear focus upon maintaining project schedule to ensure our customers meet their commercial generation obligations

linxon



4

# Our role in the Seagreen Firth of Forth Project

Petrofac / Linxon are due to deliver the Substation package which includes:

- **Onshore Grid Connection Substation at Tealing**
  - Engineering (Design), Supply and Construction of; Enabling Works, Civil foundations, structures and control buildings for the installation of a 3 circuit gird connection substation consisting of 275kV AIS, Dynamic Reactive Compensation, Power Transformers, Shunt Reactors, Harmonic Filters, Protection & Control and balance of plant.
- **Offshore Substation Platform within the Seagreen Alpha/Bravo development zone**
  - Engineering (Design), Supply and Installation of a 3 circuit electrical substation inclusive of 66kV/220kV GIS, 66/220kV Transformers, Protection and Control, bus-ducts and cabling within the offshore platform topside to be constructed by Petrofac (Linxon's consortium partner).

linxon





## Required Services & Capabilities

### Site Accommodation & Welfare;

- Waste Management Services / Disposal
- Cleaning Services
- Site Security Personnel

### Site Landscaping

### Civil Services

### General Site Labour

### Consultancy Services

### Local Studies

### Local Accommodation / Restaurants

### Hardware supplies / plant hire



## How to view/respond to our opportunities

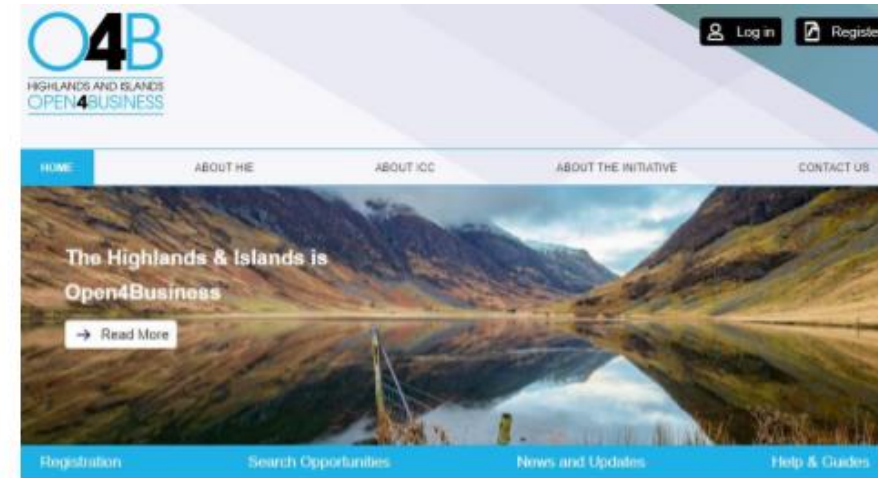
Linxon and/or its chosen Sub-Suppliers will utilise the Open4Business portal to advertise contract opportunities for SME businesses located in the North of Scotland.

Potential packages of goods/works/services shall be posted in due course.

Please visit the Open4Business portal to register your organisation and view Linxon opportunities:

[www.o4b-highlandsandislands.com](http://www.o4b-highlandsandislands.com)

linxon



### Welcome to Open4Business Highlands & Islands (O4B H&I)

Highlands and Islands Enterprise (HIE) has a significant role to play in contributing to the economic and sustainable development of the communities and supply chain operating within the Highlands and Islands. Through O4B H&I and in partnership with Inverness Chamber of Commerce (portal operators), key Project Developers and Tier 1 organisations, HIE is committed to achieving the highest levels of local supply chain content in major regional projects and maximising the benefits to the Highlands and Islands.

O4B H&I is the primary advertising platform for local businesses to be made aware of supply chain opportunities within the Highlands and Islands region, cover key sectors such as: Energy, Construction, Aquaculture and Life Sciences.

#### Seagreen Project Supply Chain Events -Booking up quickly!

October 28, 2019

Seagreen Supply Chain Events SSE are holding three supply chain events for the Seagreen project in the Firth of Forth ...

[Read more](#)

#### Seagreen Offshore Windfarm Ltd - CCTV System Opportunity Posted

October 16, 2019

Seagreen Offshore Wind Farm Ltd has posted an opportunity for a CCTV system. To find out more, log onto the ...

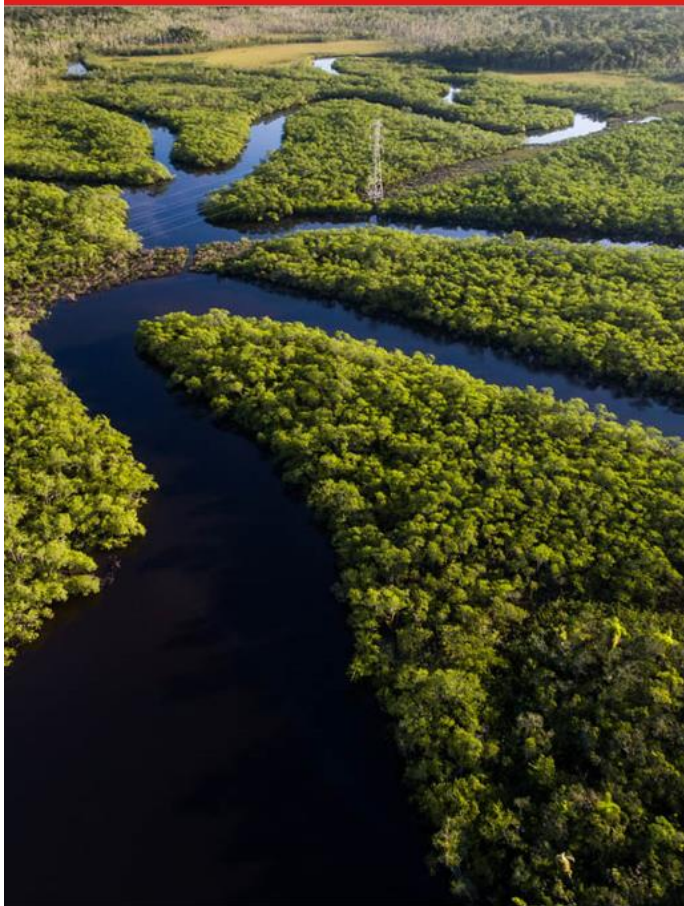
[Read more](#)





**Nexans – Offshore & Onshore Cables**

**Laure Tavernier, Project Purchasing Manager**

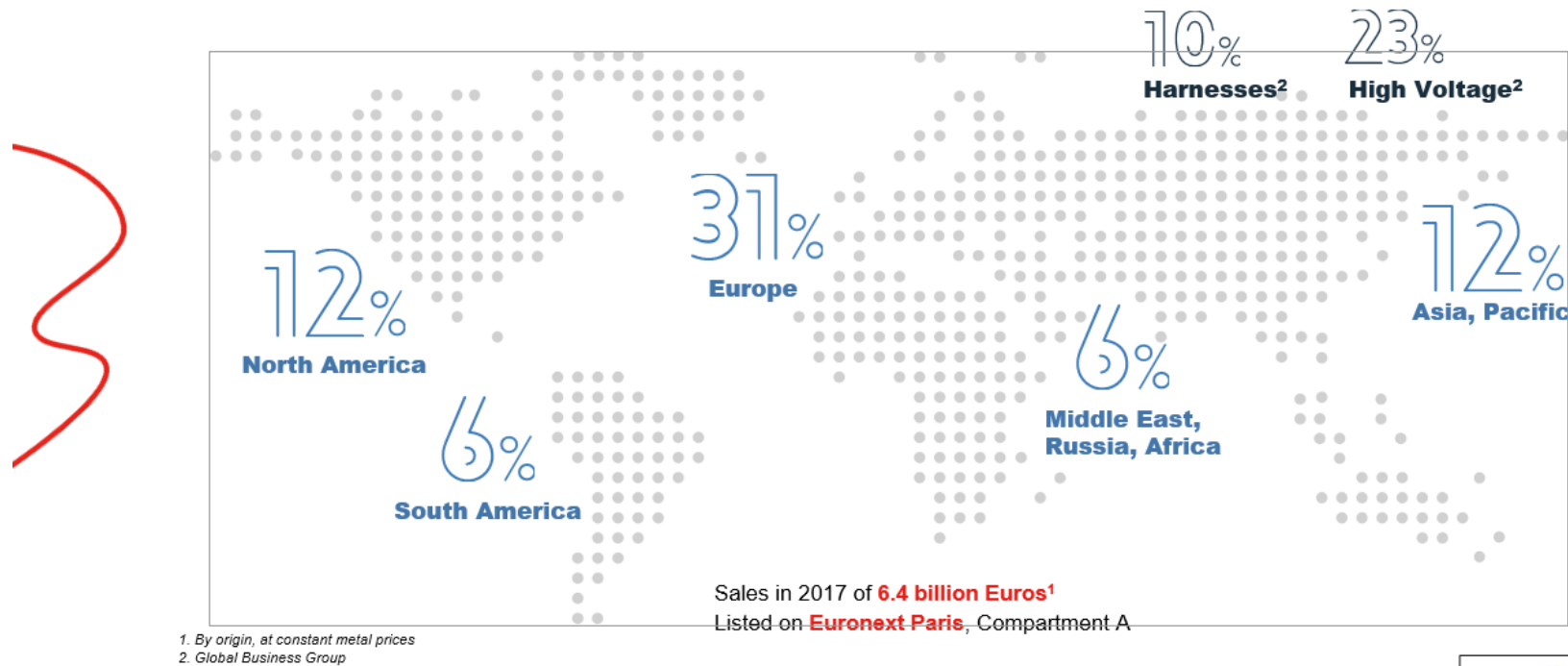


## Global presence



- Serving customers on **all continents**
- Industrial footprint **in 34 countries** and commercial activities **worldwide**
- **26,000** local experts

## A worldwide leading expert in advanced cabling and connectivity solutions



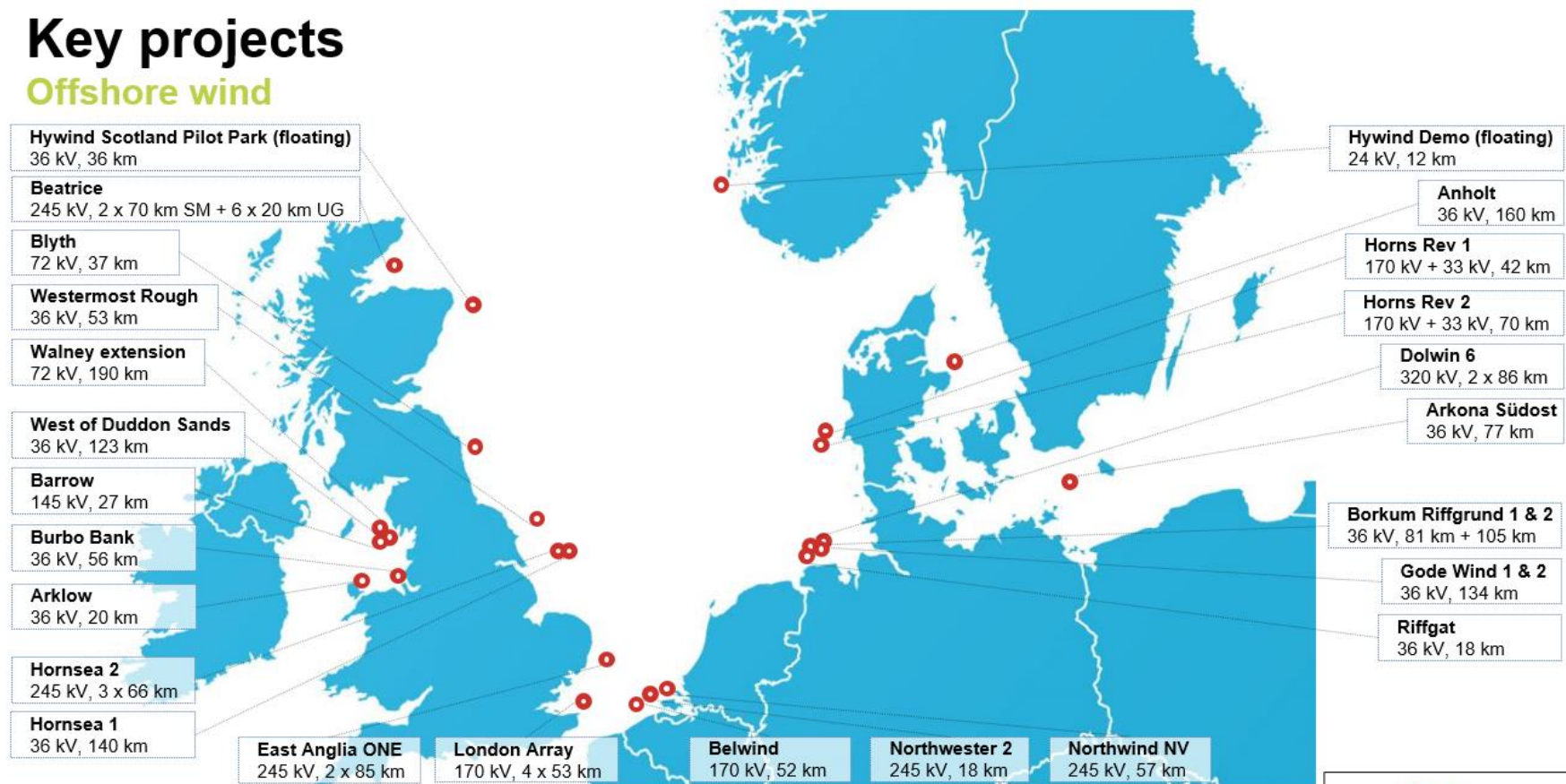
## Locations – Subsea & Land Systems





# Key projects

## Offshore wind



# Beatrice Offshore Wind Farm

Scotland's largest offshore wind farm

**Customer:** Beatrice Offshore Wind Ltd.

**Location:** Scotland

**Year of award:** 2016

## **HVAC subsea and land cabling system**

2 x 70 km of XLPE 245 kV subsea cables and

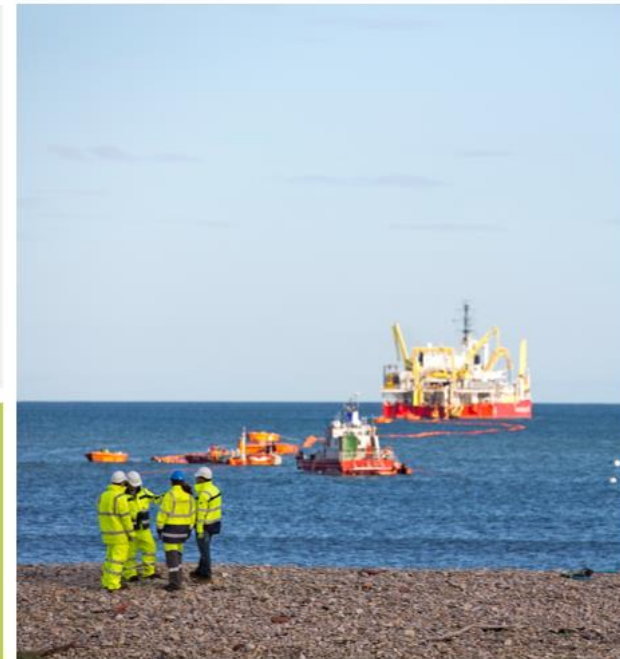
2 x 3x20 km of 245 kV land cables

Max water depth: 150 m

Capacity: 588 MW



Scotland's largest wind farm. Combined output of 84 turbines generates enough electricity to power approx. 450,000 homes.  
Nexans supplied the subsea and land export cables as turnkey contractor.



# East Anglia 1 Offshore Wind Farm

Turnkey contract for export cables

**Customer:** ScottishPower Renewables

**Location:** England

**Year of award:** 2017

**HVAC Subsea export cables**

2 x 85 km of XLPE 245 kV subsea cables

Max water depth: 63 m

Capacity: 714 MW



Upon completion in 2020, East Anglia One Offshore Wind Farm will be made up of 102 wind turbines with a capacity to power around 500,000 homes.





# Hornsea 2 Offshore Wind Farm

Soon to be the world's largest offshore wind farm

**Customer:** Ørsted Wind Power A/S

**Location:** England

**Year of award:** 2018

**HVAC Subsea export cables – Near shore section**  
3 x 66 km of XLPE 245 kV subsea cables

Max water depth: 47 m

Capacity: 1386 MW



Located in the North Sea, approximately 89 km from the Yorkshire coast, the 1.4 GW offshore wind farm will be the world's largest once it starts operating. The wind farm, which is the sister project to Hornsea 1, will provide enough electricity to power over 1.3 million homes. Ørsted is now constructing the project, with completion set for 2022.

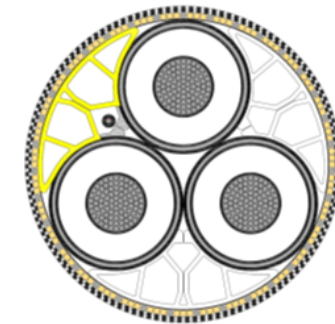




## Nexans' Scope of Work

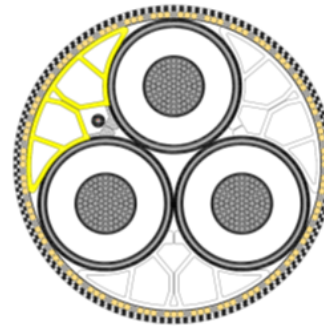
Turnkey Contract for the Subsea and Land Export Cable systems

- Engineering
- Manufacturing
- Civil Work (landfall and land cables)
- Transport & Installation
- Protection
- Termination & Commissioning



## Nexans' Scope of Supply

- 245 kV HVAC submarine cables: 3 x 63 km
- 245 kV HVAC land cables: 3 x 3 x 19 km
- Accessories (Electrical, Mechanical, FO)
  - Terminations
  - Land joints
  - Repair joints
  - Hang-off
  - Armour terminations



Marine section  
OD = 245 mm  
70 kg/m



Landfall section  
OD = 260 mm  
130 kg/m

# Local Partners

## Relevant Onshore procurement:

- Land Civil works
- Landfall Civil works
- Cable pull in operation/Pull-in Pipe Installation
- Steelwork (ODSE Structures / Joint Supports etc.)

## Relevant Offshore procurement

- PLGR
- Guard vessels
- Rock installation & Backhoe dredging
- Diving services
- Marine refraction Works
- UXO Survey

# Get in touch

For SEAGREEN Project, all Purchasing is handled by Nexans Norway AS

More info on [www.nexans.no](http://www.nexans.no) where you can find our [Nexans T&C](#) & Our [Nexans CSR engagement](#)

## **Suppliers**

*Our Purchasing Policy creates a framework for working with high-performing, reliable suppliers that achieve shared business objectives, while respecting all relevant export, environmental and compliance requirements*

If you are interested to work with NEXANS, please send us relevant information with your contact details at : **Projectprocurement\_no@nexans.com**





## **Ore Catapult**

**Andrew Tipping, Commercialisation Manager  
(Tuesday & Wednesday)**

**Hugh Riddell, Regional Partnership Manager  
(Thursday)**

## The Catapult Network

**CATAPULT**  
Offshore Renewable Energy

10

# Innovate UK

Designed to transform the  
UK's capability for innovation

Core grant leveraged with  
industry and other public funding

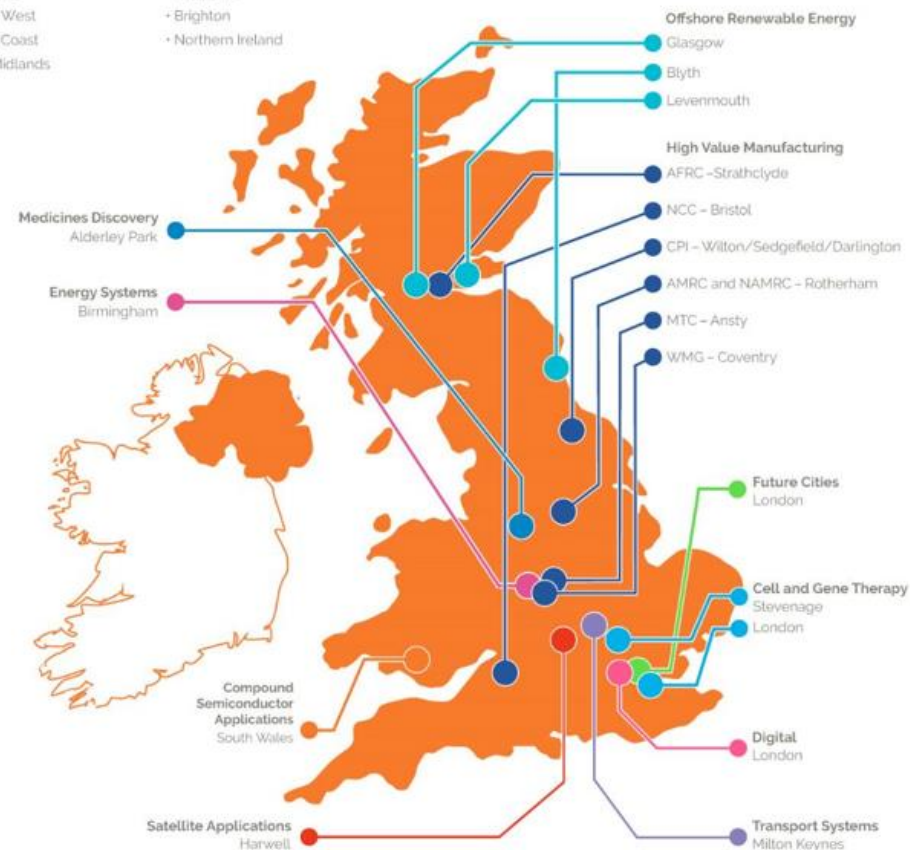
### Regional Centres

#### Satellite Applications

- North East
- Scotland
- South West
- South Coast
- East Midlands

#### Digital

- North East and Tees Valley
- Yorkshire
- Brighton
- Northern Ireland



## Our Mission and Vision



### Our mission

*To accelerate the creation and growth of UK companies in the ORE sector*

### Our vision

*By 2023, ORE Catapult will be the world's leading offshore renewables technology centre*

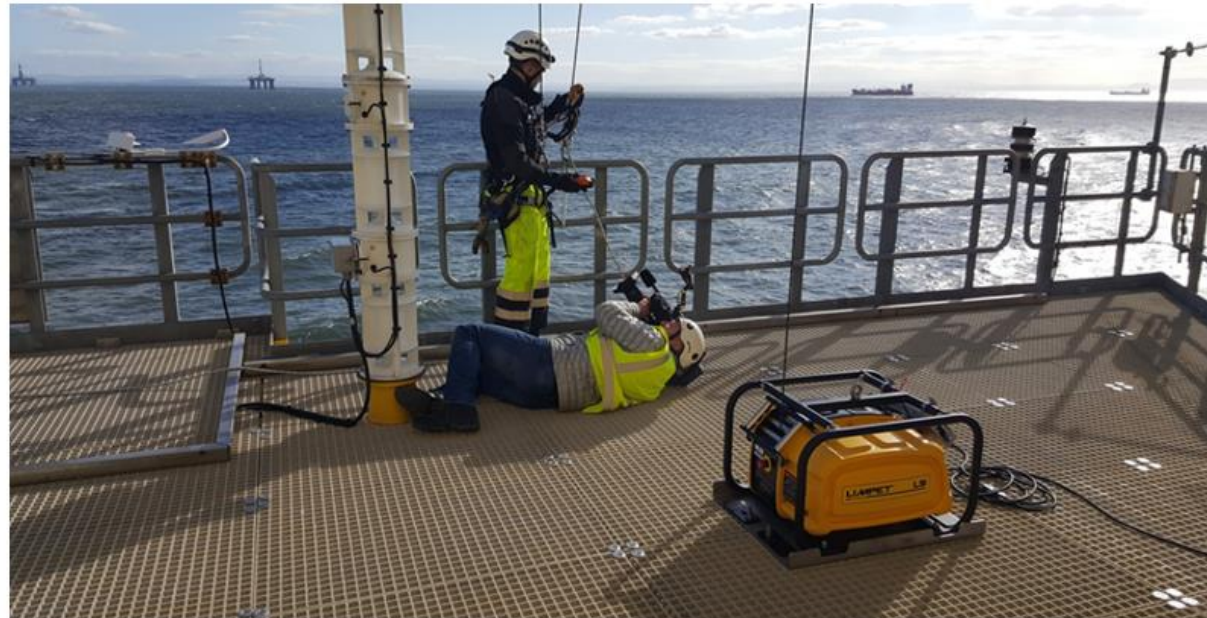
- Centres of Excellence
- Academic Research Hubs  
in partnership with leading universities
- Expanding our assets in Blyth  
and Levenmouth  
the world's foremost open-access facilities



## Levenmouth Demonstration Turbine

**CATAPULT**  
Offshore Renewable Energy

- The largest open access demonstration turbine in the world
- SME technology demonstration access to Levenmouth offshore wind turbine to prove and commercialise innovative new sensing technologies.
- SMEs, such as Limpet Technology, gain access to a full-scale operational turbine



*Limpet Technology Demonstration*



## Test & Validation - Blyth

**CATAPULT**  
Offshore Renewable Energy



**BLADES**

- Test & validate next generation 100m+ offshore wind turbine blades
- Develop and test innovative solutions for rain erosion (e.g. composite materials)
- Accelerate innovative blade designs and materials

**FACILITIES:** 100m and 50m Blade Test Halls  
Blade Erosion Test Rig  
Wind Turbine Blade Test Facility



**POWERTRAINS**

- Test & validate next generation 10MW+ offshore wind turbine powertrains
- Accelerate innovative powertrain technology, from Sub-1MW to 3MW
- Support development of critical powertrain components: bearings, gearbox, generator

**FACILITIES:** 1MW, 3MW, 15MW Powertrain Facilities  
Wind Turbine Bearing Test Facility

## Test & Validation - Blyth

**CATAPULT**  
Offshore Renewable Energy



**ELECTRICAL INFRASTRUCTURE**



**O&M TECHNOLOGY TEST & VALIDATION**

- Test & validate the market's largest cables - 66kV - through ageing, insulation breakdown and failure analysis
- Dynamic cable fatigue testing - for the future development of floating wind

**FACILITIES:** HV and Materials Labs  
Pre-qualification bays  
Dynamic cable rig

- Test robotics & autonomous systems (RAS) using controlled subsea dock environment, training tower (drones) and blades (blade inspection)
- Wet and dry controlled dock environment testing:
  - Cable inspection, protection and connection systems
  - Subsea & topside balance of plant

**FACILITIES:** Subsea docks  
Training tower  
Blade sections



## Floating Offshore Wind – Centre of Excellence

CATAPULT  
Offshore Renewable Energy

**The Vision:** An internationally recognised centre of excellence in floating offshore wind which will work towards reducing the LCOE from floating wind to a commercially manageable rate, cut back development time for FOW farms and develop opportunities for the local supply chain, driving innovation in manufacturing, installation and O&M methodologies in floating wind.



A 'Hub and Node' model, with the Hub based in Glasgow and first nodes in Wales and SW England)



# Offshore Wind Growth Partnership (OWGP)



## 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
- National Programme with reach via Clusters

Funded by



Delivered by

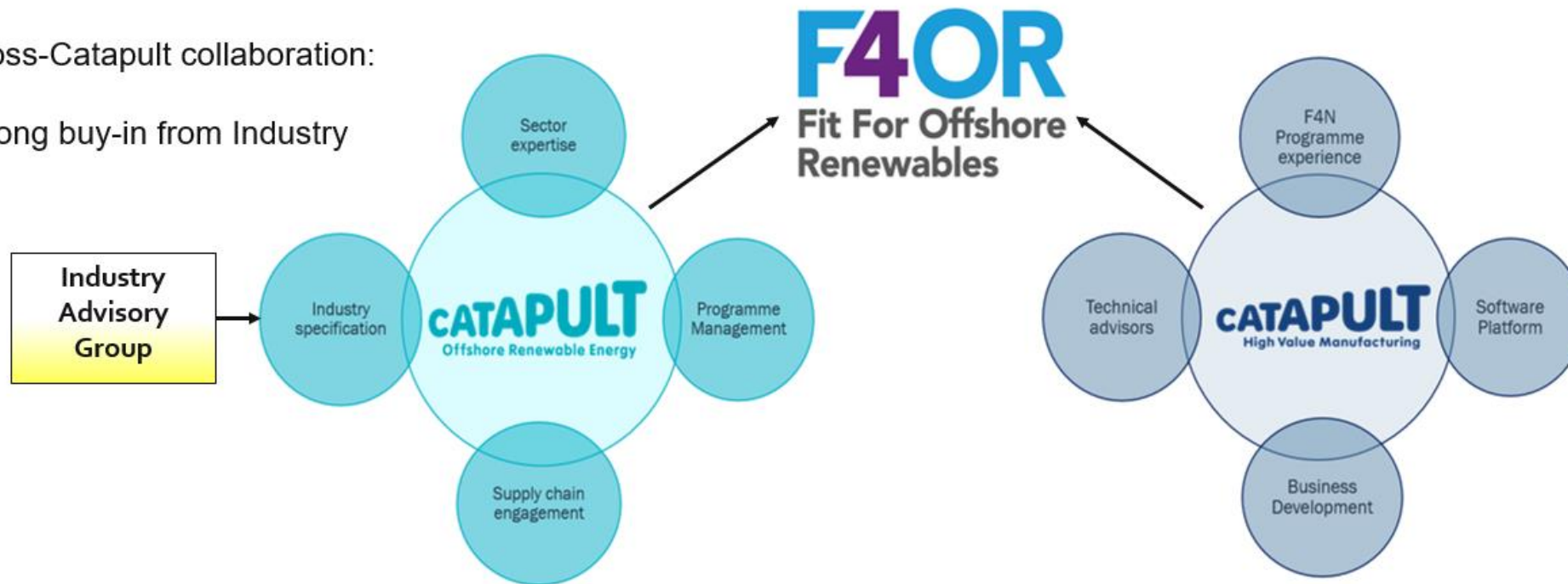




## Fit 4 Offshore Renewables – National Programme

**CATAPULT**  
Offshore Renewable Energy

- 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
- Cross-Catapult collaboration:
- Strong buy-in from Industry



## What is the Launch Academy

**CATAPULT**  
Offshore Renewable Energy

Filtering best solutions

Equipping for growth

New solutions entering the market

Outcomes



9 MONTH PROGRAMME



- ▶ COST REDUCTION
- ▶ INCREASED UK CONTENT
- ▶ UK ECONOMIC GROWTH
- ▶ ENHANCED UK SUPPLY CHAIN

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# Keeping in touch



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# 121 Appointments

<b>Table 1</b>	-	<b>General Support Services</b>
<b>Table 2</b>	-	<b>Environmental</b>
<b>Table 3</b>	-	<b>Turbines</b>
<b>Table 4</b>	-	<b>Offshore Transmission</b>
<b>Table 5</b>	-	<b>Transportation and Installation</b>
<b>Table 6</b>	-	<b>Ports and related services</b>
<b>Table 7</b>	-	<b>Offshore &amp; Onshore substation</b>
<b>Table 8</b>	-	<b>Offshore &amp; Onshore Cables</b>
<b>Table 9</b>	-	<b>Operations &amp; Maintenance</b>