



# Aura Centre for Doctoral Training Conference

in Offshore Wind Energy & the Environment

**1<sup>st</sup> -2<sup>nd</sup> November 2022**

***Transitioning to clean energy***

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## Welcome from our hosts



I am delighted to welcome you to the Aura CDT Conference 2022. The Aura Centre for Doctoral Training in Offshore Wind Energy and the Environment was awarded by UK Research and Innovation (EPSRC-NERC) in 2018. In partnership the universities of Hull, Sheffield, Durham and Newcastle are delivering the programme, which has now recruited 50 PhD candidates over four cohorts since 2019. Through joint EPSRC-NERC funding our programme is enabling transdisciplinary work on the solutions to real-world issues at the interface of clean energy and environmental sustainability, supporting both the Offshore Wind Sector Deal and the Net Zero: Build Back Greener Strategy.

The Aura CDT programme is centred in development of future leaders in Offshore Wind Energy, who understand the multi-disciplinary challenges to the delivery of a sustainable net-zero future. Key to this has been embedding both EDI principles and research collaboration at the heart of the CDT. This has resulted in diverse recruitment and fostering of inclusive and supportive learning environments. At this conference there will be the opportunity to engage with current

leaders in offshore wind from academia, industry and government, and our future leaders – hearing their solutions, ongoing research and ideas. I also welcome you to join our future leaders as they showcase interactive knowledge exchange activities they have developed.

I warmly welcome you today and I hope that you enjoy the presentations of cutting-edge research undertaken by our students, colleagues and partners.

**Dr Rob Dorrell**  
**Director, Aura CDT**  
**Energy & Environment Institute,**  
**University of Hull**

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## Guest speakers

### WILL APPS



#### **Head of Marine Development, The Crown Estate**

Will joined The Crown Estate in 2009 and was appointed Head of Marine Development within The Crown Estate's Marine team in June 2021. In this role Will leads the team developing the long-term plan for all seabed activity, working with our market and customer facing teams in Marine, to help the nation deliver on ambitious national

growth, environmental, and green transformation objectives with sights set on 2050 and Net Zero. Working together with our Planning team, this involves cross-sector collaboration with a wide range of external stakeholders from government, statutory bodies, NGOs and market participants. Will is a Chartered Civil Engineer with a varied experience of managing infrastructure projects and investment programmes in the water and power industries, both in the UK and overseas.

### CHRIS BRIGGS



#### **Regional Innovation Manager for Siemens Gamesa Renewable Energy, UK**

Chris is responsible for facilitating and managing collaborations between external innovation partners including universities, technology developers and industry bodies, and internal technology groups across the company, covering all aspects of Wind across the TRL range.

Chris has worked in the Energy industry for 36 years, starting his career in conventional power generation in 1986, working in various engineering, marketing and management roles for Siemens in the UK, Germany and USA. He moved into the Wind industry in 2010 working in Strategy and Business Development, moving into Innovation Management in 2016.

## Guest speakers

### JANE COOPER



#### **Offshore Wind Director, RenewableUK**

Jane started with RenewableUK as Director of Offshore Wind in September 2022. In this role, Jane leads the team delivering the Offshore Wind Sector Deal. Having worked at Orsted for ten years, Jane has a proven track record in the industry with a deep understanding of the challenges faced by the sector to meet its targets for 2030 and beyond. Currently serving on the Government's Green Skills Delivery Group and the ECITB Board, Jane holds an MSc

from City University and is a Chartered Mechanical Engineer. Jane previously worked at Rolls Royce and Orange and is passionate about equality, diversity and inclusion.

### JOHN HARRIS

#### **Director of Research and Innovation, HR Wallingford**



John is a Technical Director in the Coasts and Oceans group at HR Wallingford and is both a Chartered Engineer and Chartered Marine Scientist. He has over 30 years' experience in the application of numerical models for river, estuarine, coastal and offshore studies. He also has specialist knowledge of hydraulic, sediment transport and wave modelling techniques, and in particular scour and boundary layer processes and is one of

the UK's authorities on marine scour. Over the last 18 years John has worked on various aspects of offshore wind farm developments and has worked on around 80% of built or currently planned wind farms in the UK.

## Guest speakers

### IAN LIVINGSTON

**Project Manager, Equinor**



Ian is a Project Manager for Equinor's low carbon activities in the UK with a focus on the Humber region. Ian co-ordinates Equinor's Industrial Decarbonisation Challenge activities for Zero Carbon Humber, H2H Saltend and Humber Industrial Cluster Plan. He is a Chartered Engineer with a broad energy industry background in operations & technical leadership and project development across petrochemicals, oil & gas and gas storage

and is now applying that experience to industrial decarbonisation and the energy transition.

### JUERGEN MAIER

**Ex-CE of Siemens UK, Vice-chair of Northern Powerhouse Partnership**



Juergen Maier is Chair of the Digital Catapult, is the co-founder of vocL – a platform for responsible business voices, and is Vice-Chair of the Northern Powerhouse Partnership where he supports the drive for the green re-industrialisation of the North of England. Juergen is the former Chief Executive of Siemens UK. Over his 33-year career with Siemens he held a number of senior roles within Siemens in the UK and Germany.

Juergen takes a strong leadership role for UK's industrial and manufacturing community. He is a passionate advocate for a new post-covid politics and economics; one that provides much stronger leadership and support for innovation led, high productivity, green 'frontier industries'.



## Guest speakers

**ROSS WIGG**

**Consultant, Vercity Consultancy**



Ross is a Specialist in offshore renewable energy and net zero technology. Over 25 years of experience in the Energy & Maritime sectors, starting off in traditional construction roles in shipyards, Ross moved onto working on some of the largest offshore energy projects in both Oil & Gas and Offshore wind.

More recently, he is focused on the development & adoption of net zero strategies & their implementation, working with wide range of industry stakeholders including developers, utilities, investors, academia, including the Supergen ORE Hub programme.

## Programme

Tuesday 1 <sup>st</sup> November		Agenda – Day 1	
Registration			
08:00 – 09:00	Registration and breakfast		
09:00 – 09:15	<b>Welcome</b> Dr Danielle Smith, Programme Manager of Aura Centre for Doctoral Training, University of Hull Eamonn Tuton, Chair of Aura CDT Student Committee		<b>Main Theatre</b>
INDUSTRY			
09:15 – 9:40	<b>Industry speaker</b> – Will Apps, Crown Estate <b>It’s not just about the Energy</b>		<b>Main Theatre</b>
09:40 – 10:05	<b>Industry speaker</b> – Ian Livingston, Equinor <b>Developing a hydrogen economy in UK</b>		
BREAK			
10:05-10:15	Short break to move to parallel session		
PRESENTATION SESSION 1			
10:15 – 11:15	Research presentations- parallel sessions		
1a	<b>Theme: Manufacturing: Infusing the Next Generation</b> Prof Jim Gilbert, <b>Building bigger and better turbines and blades</b> , University of Hull Hannah Marsden, <b>Textile waste to produce new wind turbine blades</b> University of Hull Oliver Morgan-Clague, <b>Numerical modelling of wind turbine manufacture</b> University of Hull		<b>Main Theatre</b>
1b	<b>Theme: Transmitting the Energy Revolution</b> Dr Bezhad Kazemtabrizi, <b>Large-scale Renewable Resource Integration into the Power System: A power system computational modelling perspective</b> , Durham University Emily Settle, <b>Where is all the energy going, and what can a Digital Twin do to help?</b> Durham University Siti Hamzah, <b>Security and control in the Multi-Terminal HVDC SystemS</b> , Durham University		<b>Tech Demo</b>

# Programme

BREAK and POSTERS	
11:15-11:45	Mezzanine and Tech Demo
PRESENTATION SESSION 2	
11:45 – 13:00	Research presentations- parallel sessions
2a	<p><b>Theme: Co-Location: Sharing in Success</b> <span style="float: right;"><b>Main Theatre</b></span></p> <p>Dr Rodney Forster, <b>Co-location:-sharing success and reviving the coast</b>, University of Hull</p> <p>Ethan Clark, <b>Energy from the sea -Macroalgae biofuels to bridge the gap</b>, Newcastle University</p> <p>Gemma Hoyes, <b>Can we see offshore sandbanks using satellites? What does that mean for offshore wind?</b> Newcastle University</p> <p>Morgane Declerk, <b>Cumulative Effects of Offshore Renewables: from pragmatic policies to holistic marine spatial planning strategic tools.</b> University of Aberdeen</p>
2b	<p><b>Theme: Operations &amp; Maintenance: Powering Performance Monitoring</b> <span style="float: right;"><b>Tech Demo</b></span></p> <p>Dr Agota Mockute, <b>How “ticklish” are offshore wind turbines? Influence of wave nonlinearities on monopile fatigue</b>, University of Hull</p> <p>Harry Burton, <b>Brain Inspired Circuits for Fault Detection in Offshore Wind Turbine Blades</b>, University of Hull</p> <p>Sarah Bee, <b>Automating Feature Selection with Multi-task Learning</b>, Sheffield University</p>
LUNCH	
13:00 – 13:45	Mezzanine and Tech Demo
AURA WIND GAME- INTERACTIVE WORKSHOP	
13:45 – 15:15	Tech Demo
BREAK	
15:15 – 15:30	Mezzanine and Tech Demo



## Programme

KEYNOTE SPEAKER		
15:30 – 16:00	Juergen Maier, Ex-CE Siemens UK & Vice-Chair of Northern Powerhouse Partnerships <b>Scaling the Humber's energy green revolution responsibly</b>	Main Theatre
PANEL DISCUSSION		
16:00 – 16:45	<b>TOPIC: Keeping Offshore Wind's leading edge in the global energy transition</b> Juergen Maier, Will Apps, Jane Cooper (Director of Offshore Wind, RenewableUK) and Ian Livingston	Main Theatre
CLOSING		
16:45– 17:00	<b>Closing Summary</b> Dr Rob Dorrell	Main Theatre
NETWORKING EVENT		
17:00- 18:00	Mezzanine and Tech Demo	

## Programme

Wednesday 2 November		Agenda – Day 2	
REGISTRATION			
09:00 – 09:30	Registration and breakfast		
WELCOME			
09:30 – 9:40	Welcome Dr Danielle Smith, Programme Manager of Aura Centre for Doctoral Training, University of Hull		Main Theatre
INDUSTRY			
9:40 – 10:05	Guest Speaker – Chris Briggs, Siemens Gamesa Renewable Energy Future Innovation Challenges for the Wind Industry and beyond		Main Theatre
BREAK			
10:05 – 10:15	Short break to move to parallel session		
PRESENTATION SESSION 3			
10:15 - 11:30	Research presentations - parallel sessions		
3a	Theme: Environmental Changes: Sediment, Scour & the Seabed Prof John Harris, Marine scour: lessons from Nature’s classroom, HR Wallingford Ben Pickett, Searching for Storegga - tsunami deposits on the English East Coast and Potential Risks to Offshore Wind Infrastructure, University of Hull Niall Tracy, Novel Acoustic Methods for Directly Monitoring Seabed Sediment Transport, Geo-hazards & Scour, Durham University Maisy Bradbury, The Efficacy of Scour Mitigation Methods for Offshore Wind Turbines using a Novel Mylar Film Technique, University of Hull		Main Theatre

## Programme

3b	<div>Theme: Innovations in energy storage</div> <div>Prof David Stone, <b>Energy Storage: Technologies and Facilitating the Transition to Net Zero</b>, Sheffield University</div> <div>Rachael Keslake, <b>Coupling offshore wind energy with synthetic fuel production</b>, Sheffield University</div> <div>Daniel Whitt, <b>Wind Sourced Energy Storage– Using Nano Technology to Increase the Efficiency of Hydrogen Production from Offshore Wind Energy</b>, University of Hull</div> <div>Tara Macleod, <b>Energy storage beyond batteries...?</b> University of Edinburgh</div>	Tech Demo
BREAK and POSTERS		
11:30 - 12:00	Mezzanine and Tech Demo	
INTERACTIVE ACTIVITY STATIONS		
12:00 – 13:00	Tech Demo	
LUNCH		
13:00 – 14:20	Mezzanine	
PRESENTATION SESSION 4		
14:20 – 15:50	Research presentations - parallel sessions	
4a	<div>Theme: Under the Sea: Marine Life in a Changing World</div> <div>Dr Krysia Mazik, <b>Challenges to sustainable development of the marine environment</b> University of Hull</div> <div>Sarah Dickson, <b>Novel Acoustic Monitoring of Dolphins and Porpoises at Offshore Wind Farms</b>, University of Newcastle</div> <div>Jordan Burgess, <b>Does wind turbine associated vibration effect marine invertebrates?</b> University of Hull</div> <div>Ellie-Mae Cook, <b>Impacts of Artificial Infrastructure on Marine Benthos</b>, University of Hull</div> <div>Sophie Al-Mudallal, <b>Impacts of offshore wind associated impulsive vibration on polychaete species</b>, University of Hull</div>	Main Theatre

## Programme

4b	<div>Theme: Operations &amp; Maintenance: Optimisation via Digitalisation</div> <div>Tech Demo</div> <div>Louis Deane, VisR</div> <div>Lisa Somerville, <b>Making people feel sick for science - studying the effects of motion sickness on cognitive abilities</b>, University of Hull</div> <div>Victoria Bessonova, <b>Can AI reveal climate change impacts on ocean waves?</b> University of Hull</div> <div>Paul Hambly, <b>Advance condition monitoring solutions for offshore wind generators</b> University of Sheffield</div> <div>Koorosh Aslansefat, <b>Combining Drone-based Monitoring and Machine Learning for Online Reliability Evaluation of Wind Turbines</b>, University of Hull</div>
BREAK	
15:50 – 16:00	Short break to move to main session
PLENARY	
16:00 – 16:45	<div><i>Turning the Tide</i> project demonstration, Freddie Garland and Simon Waldman</div> <div>Main Theatre</div> <div>Keynote Speaker - Ross Wigg, Clean Energy Consultant at Vercity Consultancy</div>
CLOSING	
16:30 - 17:00	<div>Student Prizes</div> <div>Main Theatre</div> <div>Best Student presentation – Sponsored by Siemens Gamesa Renewable Energy</div> <div>Best Student poster- Sponsored by Ørsted</div> <div>Closing Summary</div> <div>Dr Rob Dorrell</div>

## Posters

PHD CANDIDATE	POSTER TITLE	DAY PRESENTING
Adam Brassington	Ultrasonic Guided Waves for Offshore Wind Blade Detection	1
Anna Weatherburn	Taking Inspiration from Nature: Designing a New 3D Woven Material for Wind Turbine Blades	1
Connor Whiteford	The Future is Wireless: A no 'strings' attached approach to offshore wind	1
Dax Blackhorse-Hull	Integration of Wave and Offshore Wind Energies	1
Eamonn Tuton	Digital Twin Logistics: Operations & Maintenance for Offshore Wind Farms	1
Isha Saxena	Data Driven Infrastructure Planning for Offshore Wind Farms	1
Jordan Fuentes Holden	Inspired by nature: The next-generation of wind turbine blades	1
Simon Smith	Can Population-based modelling improve Structural Health Monitoring	1
Will Burton	Systems Science to Manage the Expansion of Offshore Wind in the North Sea	1
Callum Rothon	Machine Learning Assisted UAV-Based Wind Turbine Blade Inspection	2
David Goodman	In-Service Inference on Distributed Blade Loading	2
Ellie Goodfellow	Going with the flow: how do complex flows affect scour at an offshore wind farm	2
Enora Lecordier	Assessing the Potential for Co-Location of Mussel Aquaculture with the Offshore Wind Industry Satellite Remote Sensing	2
Ewan Norris	Digital Twin to Optimise Blade Manufacture	2
Luke Neal	The state, industrial development, and employment relations in North Sea wind energy	2
Nilotpall Dhar	Quantifying-Enhanced Mixing of Seasonally Stratified Shelf Seas by Offshore Wind Infrastructure	2
Wool Naidoo	Spatio-temporal variation of proximate composition in marine species	2

## Sponsors

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