

# Research, innovation, facilities, and skills for offshore energy

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# Introduction

**At Newcastle University we are working towards a better and fairer world, addressing challenges and creating a more sustainable future, protecting our planet for the benefit of all.**

As a civic university, we're proud of our role and responsibility in advancing the health, wealth and wellbeing of our region and beyond. Newcastle and the North East of England have a long and rich history with the offshore sector. Today the region is a global leader in offshore renewables and we're delighted to be members of both NOF and Energi Coast.

Through research, education, innovation, and skills, we're proud to be playing a leading role in the offshore renewables sector and the drive toward net-zero.





# Research

## Our researchers are developing new knowledge and insights to tackle some of the most pressing problems facing the world today.

We undertake a wide range of research relating to offshore wind and the wider energy sector, including:

- autonomous vehicles and robotics
- digital twins
- energy materials
- energy storage and batteries
- fluid dynamics
- hydrogen
- Industrial Internet of Things (IIoT)
- offshore geotechnics and structures
- marine science, ecology, and consenting
- power electronics, drives, and controls
- sensors, electromagnetics, and underwater acoustics
- subsea power cable dynamics
- tidal power

If you would like to know more about opportunities for collaborative and contract research, please email [business@newcastle.ac.uk](mailto:business@newcastle.ac.uk)



## Floating offshore wind systems

Our School of Engineering is studying the complex interactions of wind, wave, current, water depth, geotechnics, and cabling.

The CableDyn project is a consortium of universities and businesses working to develop tools and guidance that will develop safe, reliable and cost-effective cabling for floating offshore wind.



Image credit: Offshore Renewable Energy (ORE) Catapult

# Developing skills and accessing talent

**Solve business challenges and attract your future team by working with our student body. Develop your team with postgraduate study, short courses, and higher and degree apprenticeships.**



## Working with our students

Whether you're a developer, OEM, contractor, infrastructure provider or regulator, there is a way to get our students involved.

If you are new to engaging with students, we will work with you to understand your interests. Then we'll recommend the best opportunities for you.

By working together, students and your business both benefit from:

- fresh perspectives and problem solving
- brand development and profile raising
- exchange of knowledge and insight
- cost-effective recruitment

## Developing your team

We offer a broad range of courses that can support technical and professional roles at different career stages. All courses draw from the latest research and are designed to help your team reach their full potential.

### Postgraduate study

We offer a wide range of postgraduate courses that can support the offshore energy sector including:

- Data science MSc
- Leadership in climate change and sustainability MSc
- Marine conservation and sustainability MSc
- Marine technology education consortium (MTEC) MSc
- Renewable energy, enterprise and management MSc

### Higher and degree apprenticeships

Higher and degree apprenticeships combine workplace training with study. They help to grow talent in your workforce that's tailored to your business needs. Programmes available are:

- Level 7 MSc Digital Technology Solutions Apprenticeship
- Level 7 Senior Leader Apprenticeship
- Level 6 BEng Product Design and Development Engineer Apprenticeship
- Level 5 Operations Manager Apprenticeship

### Short courses (CPD)

We offer a broad range of short professional development courses. Some of our CPD courses are delivered online, while others are delivered in person, on campus. Short courses available include:

- Reliability and integrity management of marine systems
- Global Navigation Satellite Systems (GNSS)
- Geomechanics and soil modelling



## Growing the offshore wind workforce

We're working with the Sofia Offshore Wind Farm and others to inspire and inform our students about opportunities in offshore wind.

For several years, our partnership has supported students across engineering, marine science, data science, climate change, and leadership with research, projects, workshops, site visits, careers events, and guest lectures.

We also lead the National Battery Skills Training Academy and the Institute for Electrification and Sustainable Advanced Manufacturing.




# Facilities, equipment, and services

**Our laboratories and technical experts are on-hand to help with your testing and investigation needs.**

From marine science to power engineering, our laboratories and expert staff can help with R&D, testing and investigations in:

- chemical and surface analysis
- gear technology and mechanical power transmission systems
- hydrostatic and hyperbaric pressure testing
- marine hydrodynamics, propulsion and coatings
- marine science and consenting





## Design Unit: gear technology

The Design Unit is a specialist centre with expertise in **mechanical power transmission systems**. It is also home to the National Gear Metrology Laboratory, the UK's National Measurement System designated institute for gear measurement .

For more than 50 years the team has provided design, development, and consultancy services to industrial engineering customers around the world. Services include:

- gear stress analysis, design and specification
- transmission design and development
- mechanical testing
- failure analysis
- metrology



## RV Princess Royal

The University's research vessel, Princess Royal, is available for commercial charter.

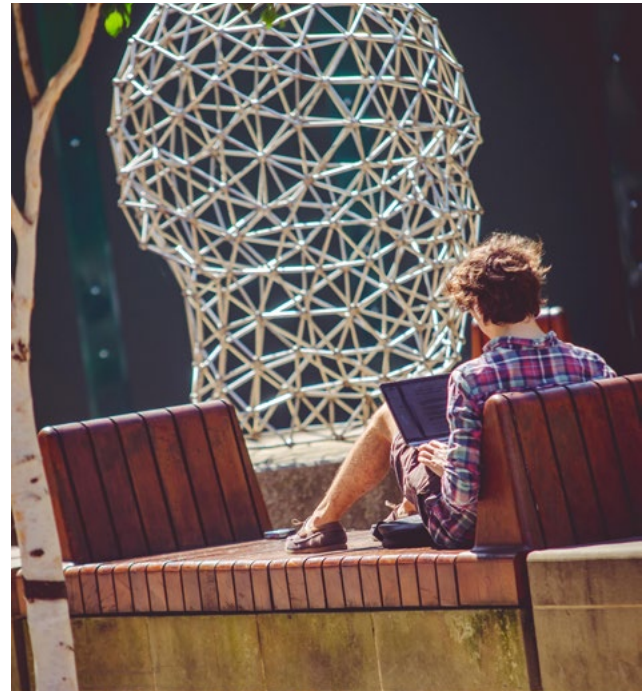
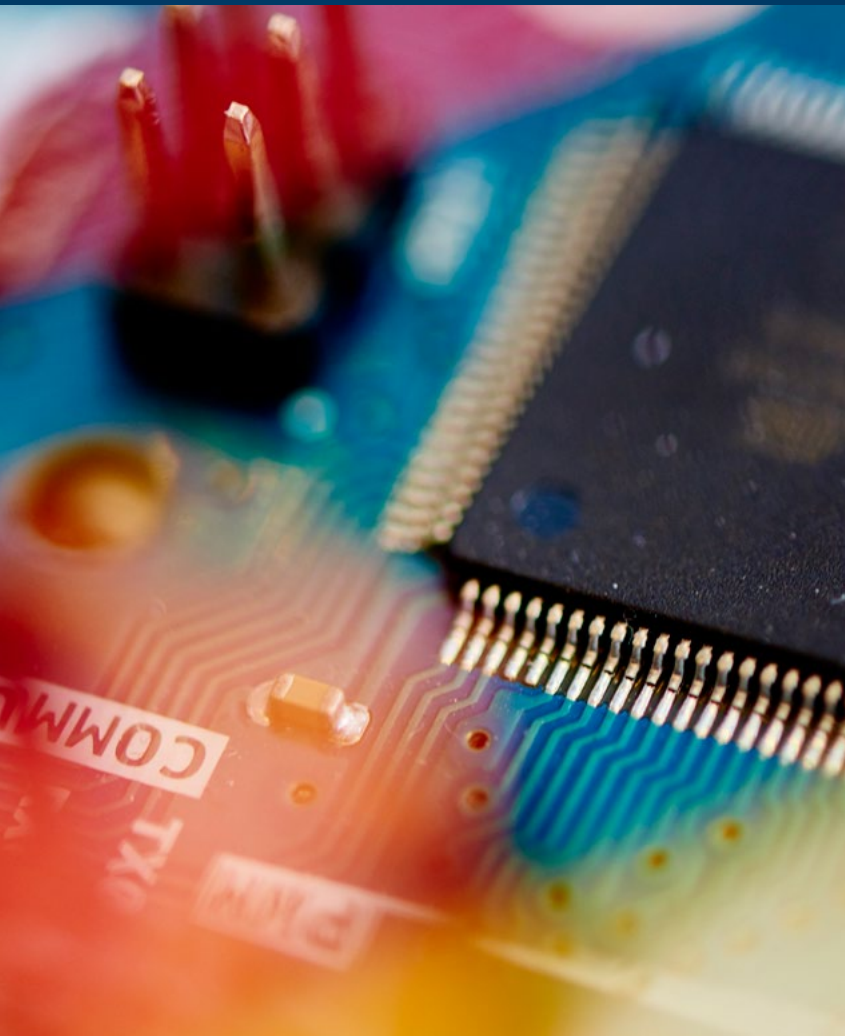
She is ideally suited for wind farm support including:

- marine mammal and bird survey
- servicing of moored oceanographic equipment
- environmental impact assessment such as benthic trawling, sediment sampling, and habitat mapping



## Driving innovation

**We have several schemes that can help your business to innovate. By working together we can develop products, services and supply chains that support offshore energy.**



### Arrow

Arrow is an innovation support programme for SMEs in the North East of England.

Over the last five years Arrow has supported a range of organisations throughout the offshore energy supply chain.

Support may include research and development, one-to-one time with university experts, or access to facilities and equipment at Durham, Sunderland, Northumbria and Newcastle Universities.

[arrowinnovation.org.uk](http://arrowinnovation.org.uk)

### Driving the Electric Revolution Industrialisation Centres (DER-IC)

The DER-IC network reduces the cost and risk of manufacturing power electronics, machines and drives (PEMD), by providing open access to expertise and state-of-the-art manufacturing, test and validation equipment.

We lead the North East centre and can connect you to the other centres in England and Scotland.

[der-ic.org.uk](http://der-ic.org.uk)

## National Innovation Centre for Data

Based at Newcastle University, the National Innovation Centre for Data's (NICD) mission is to transfer data skills to the UK workforce.

Whether your organisation is a public sector body, a small business or a major corporate, the challenge of handling your data can be daunting. NICD's experts sit alongside your team as they complete a data project that brings an immediate return on investment.

[nicd.org.uk](http://nicd.org.uk)



## Underwater acoustics and positioning

**We're making reliable subsea communication technology more affordable and with lower power requirements. This supports the growth of the Internet of Underwater Things (IoUT).**

**By licensing hardware and software from us, companies are bringing new products and services to market. Examples include large scale collection of data from subsea sensors, tracking of divers and underwater robots, and fast location of lost fishing gear.**

**Our latest work combines engineering with marine mammal science. We're developing a passive acoustic sensing tool. It automatically detects, identifies, and reports on marine noises. The tool should provide information for ecological impact assessment and offshore development security.**

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## Newcastle University

Newcastle University exists for the public benefit to advance education, learning and research. Our objective is to build on this core purpose and, in doing so, provide new knowledge and creative solutions that make a positive impact. We aim to work collaboratively with our many external partners to shape brighter futures, grow the economy, and champion social justice.

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[Business and partnerships  
with Newcastle University](#)

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