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EUROPEAN UNION



Llywodraeth Cymru
Welsh Government

**Cronfeydd Strwythurol a
Buddsoddi Ewropeaidd**
European Structural
and Investment Funds



Llywodraeth Cymru
Welsh Government

EU Structural Funds in Wales 2000-2023 – Research and Innovation

Introduction

EU funds have helped drive forward Wales' global competitiveness and productivity by supporting businesses to develop, test and launch new and improved commercial products, processes and services, including those relating to low carbon. Funding has also supported the development of world class research capacity in Wales, building on existing strengths to attract further private and competitive research funding.

3 EU funds celebration

As the largest employer in Ceredigion, **Aberystwyth University**, has led many major projects in the mid Wales region. Supported by £23.1m EU funds the creation of the **AberInnovation** Campus at Aberystwyth University, home to world-leading facilities including a Biorefining Centre, Future Food Centre, Advanced Analysis Centre and Seed Biobank as well as ample event space, training facilities, laboratories and office accommodation. Research and development at AberInnovation is helping address some of the 21st Century's most pressing grand challenges, including climate change mitigation, sustainability and food and energy security and is one of 5 similar centres supported by the Biotechnology and Biological Sciences Research Council throughout the UK. This is the direct result of EU funded support, so is an exemplar of how EU funding has attracted world class research investment, with the cutting-edge research and innovation available through these facilities playing a critical role in supporting a sustainable knowledge-based bioeconomy in Wales.

In 2021, Dr Rhian Hayward MBE, Chief Executive Officer of AberInnovation said:

“EU funds have been instrumental in delivering the AberInnovation facilities. Our new capabilities will underpin the expansion of collaborative research and development between industry and Aberystwyth University, creating high value jobs and exciting new products from Wales. There is already a healthy pipeline of product development activities lined up for our laboratories and processing spaces in food and drink, biorefining and agri-tech. We look forward to AberInnovation contributing to economic growth in Wales as a key infrastructure asset.”



AberInnovation campus, Aberystwyth

4 EU funds celebration

Winner of the RegioStars 2014 award for 'Sustainable Growth – Green Growth and Jobs through Bio-economy', **BEACON's** network of scientific expertise has developed new green products and services from natural sources, reducing reliance on fossil fuels. Led by Aberystwyth University in partnership with Bangor and Swansea Universities and the University of South Wales, the £40m EU funded project has collaborated successfully with hundreds of companies to develop and trial ideas, building integrated green supply chains to produce new environmentally friendly products and services using biomass rather than oil.



BEACON project



BEACON project

5 EU funds celebration

Backed by almost £2.4m EU funds, **Advanced Media Production** is a bi-lingual post graduate training scheme at the University, ensuring that Wales has the high-level technical and practical skills and ability to exploit new media and digital technologies in the creative economy and creative, cultural, heritage and arts industries.

A partnership between Aberystwyth and Swansea Universities. **BiolInnovation Wales**, backed by £1.2m EU funds, tackled skills shortages within the bio-based industry, providing online Postgraduate Training for Welsh Agri-Food and Biotech Industries while increasing research and innovation in those businesses to increase their competitiveness and sustainability. The projects legacy has also been to create a more commercial model ensuring the substantial investment in developing the BiolInnovation Wales modules was not lost at the end of the programme, and its high quality, online learning materials will remain on offer to Welsh and other participants beyond the lifetime of the project.



BiolInnovation Wales Graduates

£3m EU funds also enabled Aberystwyth University to refurbish a building providing modern, fully equipped, state-of-the-art laboratories and office spaces for the leading research institute for animal health in Wales at the university, called the **VetHub1** project. The project has worked with industry to produce new products, tests and approaches to improve animal health and welfare and reduce loss in the livestock industry along with further development of pharmaceutical, animal health care businesses including veterinary practice, biotechnology and natural product companies, animal feed manufacturers and other allied industries. The hub also collaborates closely with the Ser Cymru II ERDF funded Centre of Excellence for Bovine Tuberculosis for Wales and research chair, Glyn Hewinson.

6 EU funds celebration

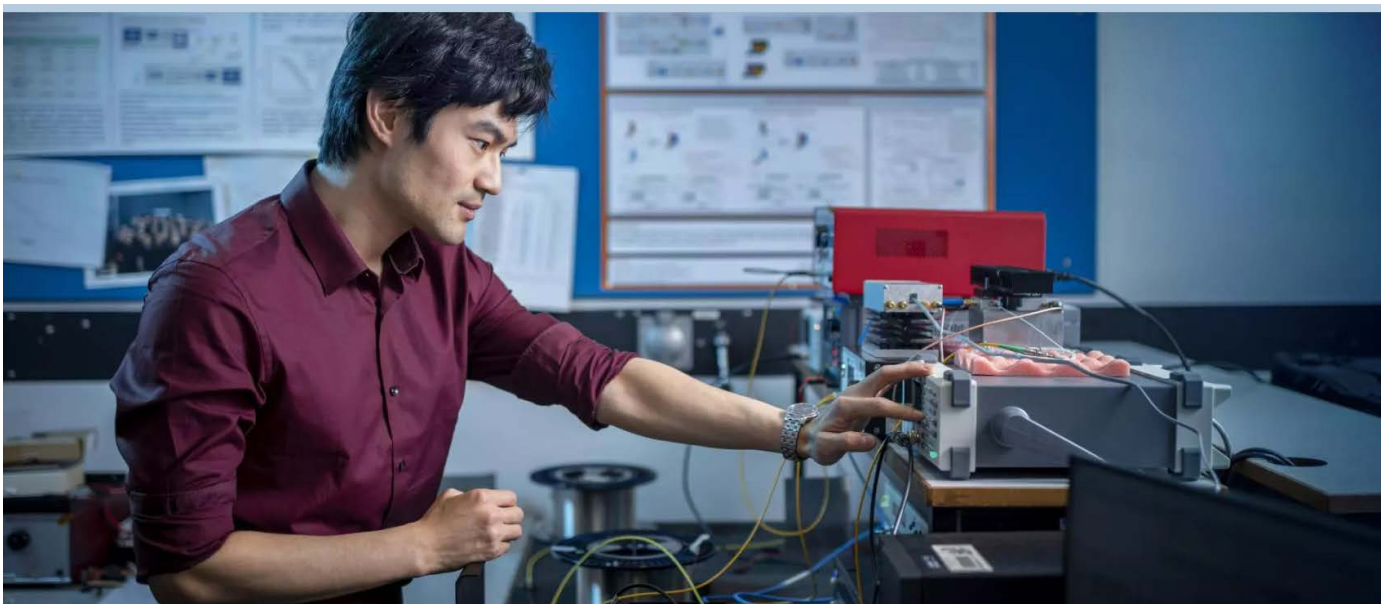
Ser Cymru II supported fellowships in research relevant to the three pillars in the Science for Wales Strategy, with particular focus on smart specialisation and innovation. The programme has produced research in energy materials, environmental science and biotechnology and life sciences. Over £30 million in EU funds has helped support 12 research chairs, 11 rising stars, 115 research fellowships and 340 PhD and post-doctorate studentships. The programme has generated more than £180 million in research grant income, increasing Wales' research outputs, efficiency and impact.

Future Foods, a successful collaboration of public and private sector, was led by Aberystwyth University in partnership with BIC Innovation and backed by £2.48m EU funds, delivered world-class expertise in food science, technology and nutrition, it promoted the engagement of Welsh food businesses with research and development to develop new and improved healthier products.

With a projected worth of almost £2 billion per year in Wales, the use and application of data from space technologies, and earth observation products is largely unknown to many businesses. As a result, the university's **Geographical Data and Earth Observation for Monitoring (GEOM)** project, worth £1.6m EU funds, provided collaborative research and development activities that businesses would otherwise be unable to undertake, GEOM has provided a wide range of benefits in over 70 collaborative projects such as new products, processes, and procedures, increased levels of business turnover, increased employment and investment, upskilled staff, the promotion of environmental sustainability and greater market competitiveness.

The **Centre for Photonics Expertise**, led by Glyndwr University in collaboration Bangor University, Aberystwyth University, and the University of South Wales has supported Welsh businesses through collaborative innovation, offering technological solutions to businesses across Wales, it has been involved in more than 80 collaborative Research and Investment projects with over 70 new or improved product innovations developed through the application of photonics technology.

Computer technology has been developing exponentially, with the speed of internet requirements getting ever faster. Technology and infrastructure that will ensure its sustainability is being developed by the **Digital Signal Processing Centre (DSP) Centre of Excellence**. Its world-class team's research in optical and wireless networks has achieved cutting-edge techniques which will transform existing and future communication networks to provide extra functionalities.



DSP Centre optical sensing laboratory

7 EU funds celebration

A cutting-edge facility and research division within the School of Natural Sciences at Bangor University, the **Centre for Environmental Biotechnology (CEB)** brought together leading academics and researchers in microbiology, genomics, and enzyme chemistry, within newly improved EU funded research facilities to develop innovative solutions for sustainable use of natural resources. The project received wider, international recognition and publicity for its work to support monitoring of the coronavirus in wastewater during the COVID-19 pandemic, highlighting how the facility and its resources could be rapidly deployed to combat emerging health issues.

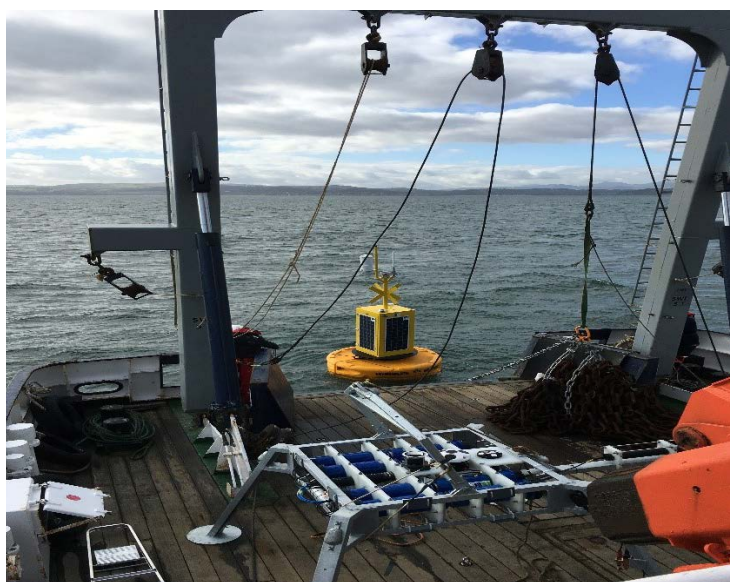
Leading pioneering research in shellfish aquaculture, the University's **Shellfish Research Centre** was a 4-year project collaborating with business to support the development of the shellfish industry in Wales. Focussing on shellfish farming, one of the most sustainable forms of food production it has helped secure a resilient and sustainable future for shellfish production.

More than £27m of EU funds supported the **SEACAMS** and **SEACAMS 2** projects involving Bangor, Aberystwyth and Swansea Universities to develop the coastal marine economy and environments of Wales and support economic opportunities in Low Carbon, Energy and Environment through research and innovation in marine renewable energy and the wider marine economy. SEACAMS worked with over 160 partners and brought over £2m in additional private investment to support research and innovation in marine renewable energy and climate change resilience in Wales.

Speaking in 2021, Professor Lewis LeVay, Director of the SEACAMS project at Bangor University's Centre for Applied Marine Sciences at the School of Ocean Sciences, said:

"SEACAMS has been helping to unlock the potential of marine renewable energy in Wales through collaborative research partnerships with the renewables industry."

"Wales is well-placed to be a world leader in the development of low-carbon energy generation from its coastal and offshore waters and EU funding has underpinned collaboration between industry and university researchers, bridging the gap between innovation and applied marine research. This has supported the development of the marine renewable energy sector by addressing a wide range of key research questions in up to 80 collaborative projects."



SEACAMS seabed observatories



SEACAMS project

8 EU funds celebration

Supporting the Tidal Stream energy industry and backed by £5m EU funds, the **Marine Characterisation Research Project (MCRP)** led by Menter Mon, has enabled the development of methodology to gather research on the effects of tidal stream devices on the Marine Environment, in line with regulator requirements.

The University of South Wales' **Centre of Excellence in Mobile and Emerging Technology (CEMET)** was supported by £8.85m EU funds to increase the University's research in mobile and wireless technologies in Wales. Undertaking research into emerging technologies it worked in partnership with businesses in Wales to develop R&D projects, turning academic knowledge and research into the development and commercialisation of new or improved products and services.

Many Cardiff University projects have been supported by EU funds including £4.6m for the **CUBRIC** centre which has become one of Europe's top facilities for brain imaging. This investment brings together world-leading expertise in brain mapping with the very latest in brain imaging and brain stimulation. The centre is playing a pivotal role in the global endeavour to better understand the causes of neurological and psychiatric conditions such as dementia, schizophrenia and multiple sclerosis. CUBRIC's MRI machine has produced the world's most detailed scan of the brain's internal wiring by revealing the fibres which carry the brain's thought processes. Doctors hope it will help increase understanding of a range of neurological disorders and could be used instead of invasive biopsies.

In 2021, Professor Derek Jones, Director of CUBRIC, said:

"The EU Funds allowed us to realise our ambition of developing one of the largest and best equipped neuroimaging research centres in Europe. This massively accelerated our research programme, allowing us to strengthen our international reputation for developing unique methods deploying cutting-edge equipment to make robust measurements of structure, function and physiology in the living human brain.

"In turn, this has led to many additional benefits, including a strategic partnership with Siemens Healthcare to explore the future directions of MRI scanners, an influx of highly talented early career researchers moving to Cardiff with International Research Fellowships, and a growing network of international collaborators performing experiments that are only possible with the equipment housed within the Centre. As such, EU funds have helped to put Wales firmly on the global map for world-leading neuroimaging research."



CUBRIC building

9 EU funds celebration

Led by Cardiff University in conjunction with Aberystwyth University, Bangor University, Swansea University and the University of South Wales, **FLEXIS** created a world class energy systems research capability in Wales. It brought together research experts specializing in energy networks, infrastructure, resources, storage, load management, demand and safety management and adopted a systems approach to energy challenges, both within Wales and internationally.

FLEXISApp, the commercial development arm of FLEXIS brought together academia, local government and industry to develop innovative energy technologies to achieve net zero targets by 2050, contributing to relevant Welsh Government and UK strategies, including 'Science for Wales', 'Innovation Wales', and the UK's 'Clean Growth Strategy'.



Flexis project



Flexis project

Opened in July 2022, Cardiff University's **Translational Research Hub (TRH)** is now the home for two leading EU funded research projects, the **Institute for Compound Semiconductors (ICS)** and **Cardiff Catalysis Institute (CCI)** the hub is designed to foster collaboration to develop and test new cleaner, greener products and processes.



Cardiff University's Translational Research Hub opening

10 EU funds celebration

£13.1m EU funding enabled the specialist fit out of the **Institute for Compound Semiconductor (ICS)**, providing a laboratory, cleanroom and equipment, along with skilled personnel to deliver the research support for the development of new products, processes and services.

Established in 2008 as part of the School of Chemistry at Cardiff University, £3.65m EU funds has enabled **Cardiff Catalysis Institute** to deliver large-scale research grant programmes in catalysis research, aid retention and recruitment of staff and students of international standing, driving new research-led discoveries with a wide range of industrial low-carbon transition applications, and consolidate and expand collaborations with academic and industry partners across the world.



Cardiff Catalysis Institute – Electron Microscopy Facility

11 EU funds celebration

Delivered in conjunction with Swansea, Bangor and Aberystwyth Universities and working with over 100 partners on research projects, **Supercomputing Wales** built on the success of the original HPC Wales under the 2007-2013 Programme, has provided enhanced high performance computing services and expertise in new areas of research and at a scale previously unavailable, enhancing the quality and impact of Welsh research.

Data Innovation Accelerator worked directly with Welsh SMEs to help them identify and fulfil opportunities to exploit data for intelligent economic development, with innovation focused on products (e.g., demand and consumer behaviour), services (e.g., online marketing, cybersecurity) and business operations (e.g., high value manufacturing, semiconductors, eco-innovation).

Magnetic Materials and Applications (MAGMA) established a world class research capability which builds on expertise in the processing, characterisation, manufacturing and recycling of these specialist materials to optimise the whole life-cycle and supply chain of electromagnetic applications.



MAGMA labs



MAGMA labs

ACCELERATE led by the Life Sciences Hub Wales in collaboration with Cardiff University, Swansea University and the University of Wales Trinity Saint David, supported the transition of ideas from the healthcare system into new technology, products and services, creating a lasting economic value in Wales.

The **Centre for Artificial Intelligence, Robotics and Human-Machine Systems (IROHMS)**, a multidisciplinary technology centre located at Cardiff University, targeted new opportunities emerging within Artificial Intelligence (AI) and Robotics and Human-Machine Systems (HMS) to create increased research capacity/capability and improved facilities, with state-of-the-art equipment and technologies, building relationships with UK and international research collaborators and funders.



IROHMS Virtual Lab, Cardiff University

12 EU funds celebration

£8.4m EU funds supported TWI Ltd's **Advanced Engineering Materials Research Institute (AEMRI)** project, a private sector state-of-the-art engineering inspection and testing facility based at TWI Wales in Port Talbot. The facility enabled TWI to build on its existing track record of leading cutting-edge industrial research in non-destructive testing in the aerospace, automotive, electronics, and nuclear and energy sectors.



New intercam robot cell



TWI building

The EU funded Innovation Hub is a key element of the new **Swansea University Science and Innovation Campus**, providing world-class facilities for industrial research and development focusing on advanced materials and manufacturing and an environment where industry can work with research teams to develop collaborative research projects and finding technical solutions.

The **ASTUTE 2020+** project led by Swansea University in partnership with Cardiff University, Aberystwyth University, the University of Wales Trinity Saint David, and the University of South Wales, collaborated with industry across Wales to promote sustainable growth through the development and adoption of advanced technologies, to increase their competitiveness. The project has provided support to over 540 Welsh enterprises, created and safeguarded over 1020 jobs, and contributed an economic impact of over £540 million across Wales since its inception in 2010.

The **Computational Foundry** opened in September 2018 following a £17m EU funds investment. A state-of-the-art computer science facility at the heart of Swansea University's new Science and Technology Bay Campus aims to make Wales a global destination for computational scientists and industrial partners.



Swansea University's Computational Foundry facility

13 EU funds celebration

Situated in an award winning building, **IMPACT** provided an innovative materials, processing and research base, while **AgorIP** supported entrepreneurs and businesses in Wales to realise the commercial potential of their ideas, innovations and products. Opportunities were available to academia, University Health Boards and industrial collaborators pan-Wales to maximise benefits to the NHS across Wales and to the Welsh economy.



IMPACT building, Swansea Bay Campus

Backed with £5.7m EU funds and run in partnership with Bangor University, **ION Leadership** delivered by business experts, dealt with the real issues faced by businesses in Wales, developing and enhancing the leadership skills of business owners, managers and key decision-makers.

Reduce Industrial Carbon Emissions (RICE), led by Swansea University in partnership with University of South Wales, focussed on innovative processes to reduce Wales' CO₂ emissions and decrease Welsh Heavy Industry's energy & raw material consumption.

Through accredited STEM courses developed with industry, the **METAL** and **METAL2** projects increased the skills of people working in the field of advanced materials and manufacturing industry to tackle technical skills shortages.

14 EU funds celebration

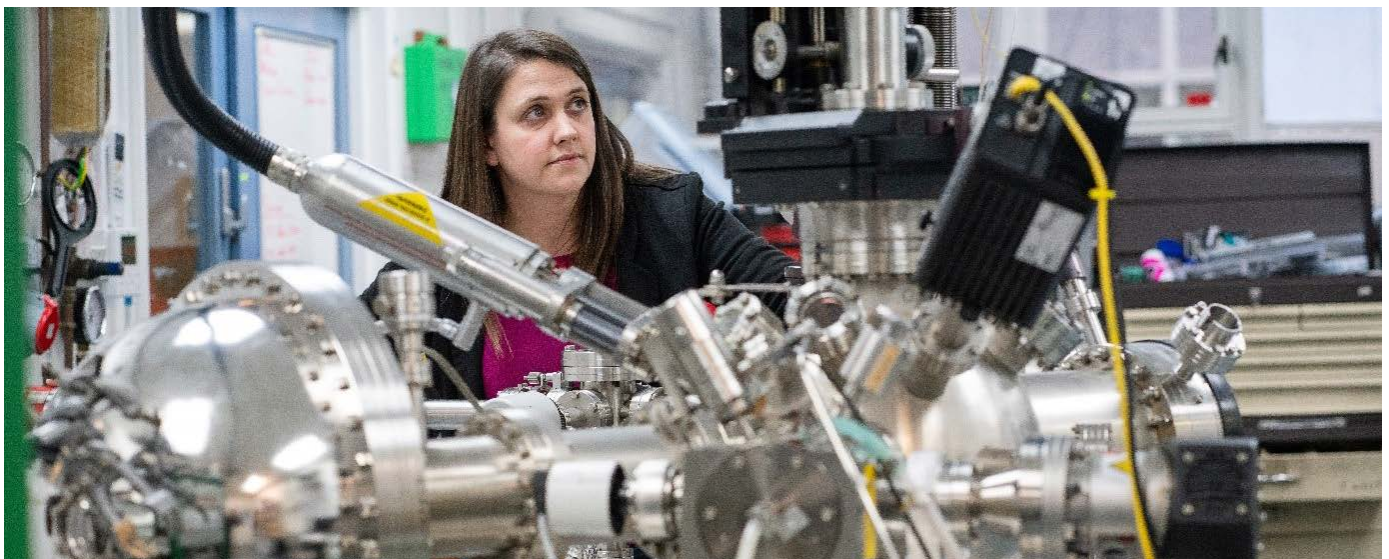
Technocamps, backed by £3.8m of EU funds, led by Swansea University in partnership with University of South Wales and Bangor University, helped young people to continue STEM studies at GCSE and to pursue STEM-related careers. The project also worked with secondary schools which did not offer computer science as an option at GCSE, or where the subject was only recently available. The project also enabled pupils to take part in workshops to build on their existing knowledge and enthusiasm for IT and computing.



Technocamps

Developing the vital links between the research and science skills base in Wales, **Materials and Manufacturing Academy (M2A)** provided support for postgraduate researchers in advanced materials and manufacturing to produce the enhanced technical, analytical and business skills needed by Welsh industry to compete on the global stage.

Building an internationally competitive research and innovation capacity in solar photovoltaic technology in Wales, **SPARC II** developed following the success of the EU funded SPARC I operation. SPARC II brought together 6 research centres from 3 Universities: Swansea, Bangor and Aberystwyth, with Swansea University's Centre for Solar Energy Research (CSER) leading the operation. SPARC II has also worked closely with other EU funded projects, including SPECIFC, IMPACT, Centre for Photonics Expertise (CPE), ASTUTE and FLEXIS, all with a common interest in solar technology. This consortium has enabled partners to develop new areas for innovative technologies and applications in Wales, providing a positive impact on the expanding Welsh solar energy industry through access to world class expertise.



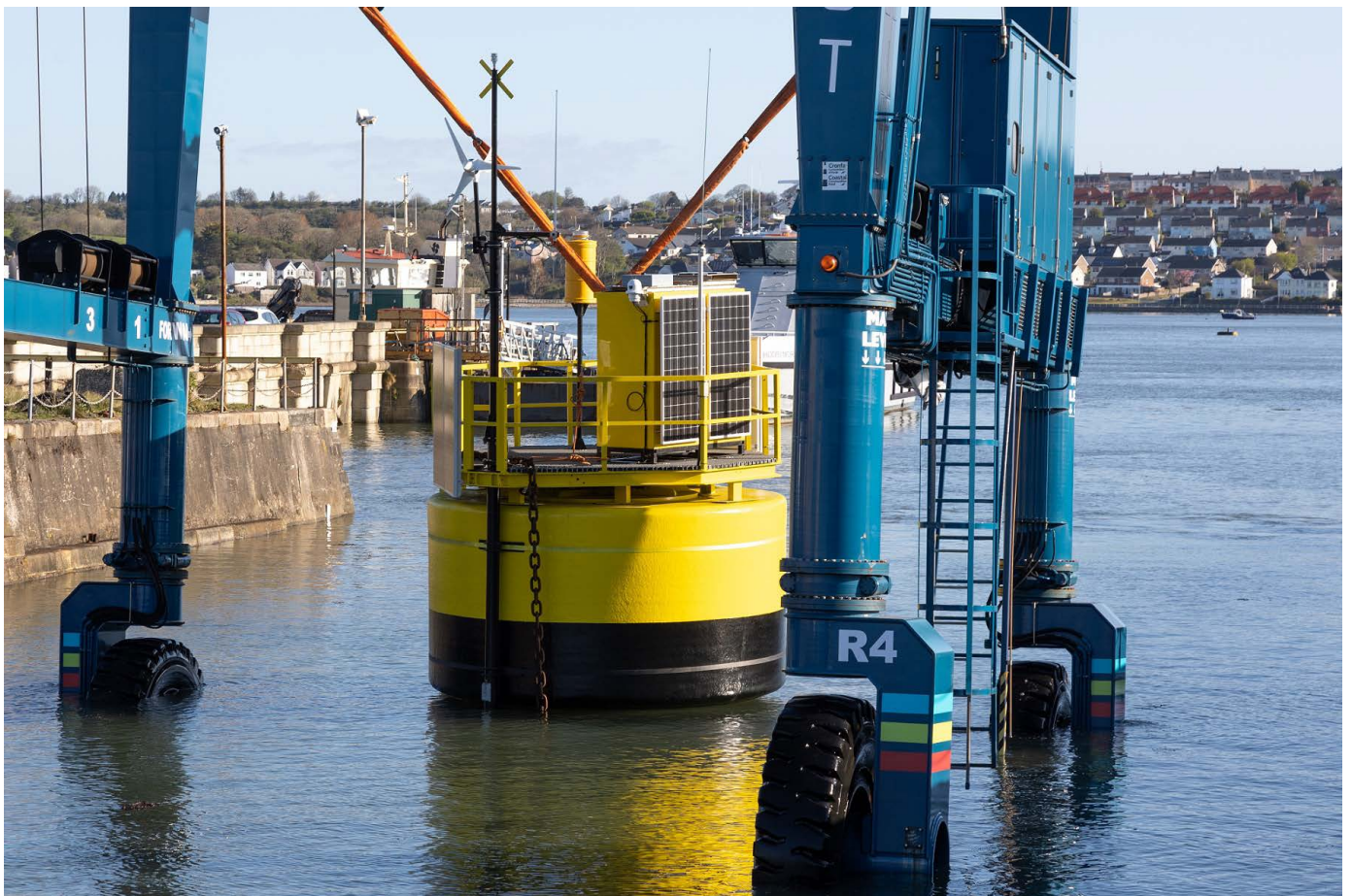
SPARC II, Dr Rachel Cross

15 EU funds celebration

Utilising the opportunities within the marine energy sector in Wales and drawing on the academic strength and support of Welsh universities, the **Marine Energy Engineering Centre of Excellence (MEECE)** based around Pembroke Dock is one part of the UK's Offshore Renewable Energy (ORE) Catapult. It is advancing the research and development of marine energy technology in the supply chain in Wales.

Smartaqua based at Swansea University took the lead for Wales in researching the non-food aquaculture businesses, researching the production of cleaner fish and nutraceuticals from algae. The legacy of Smartaqua will continue as team members work on new projects like the Horizon Europe funded Cure4Aqua and IGNITION projects, building upon the project's research.

Legal Innovation Lab Wales has developed niche infrastructure in legal services and counterterrorism, including a "Legal AI" laboratory, a cyber threats research suite and Legal Innovation centre to support counterterrorism, defence, and security.



MEECE project bouy