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BeeX, Sulmara and the University of Strathclyde secure international grant funding for a “Targeted Autonomous Inspection Service for Offshore Wind”

An international consortium has been awarded a prestigious Enterprise Singapore – Innovate UK grant to develop a next generation autonomous structural integrity inspection capability.

Autonomous robotics specialist BeeX, offshore survey and inspection specialist Sulmara, and structural integrity specialists at the University of Strathclyde share a vision to deliver an autonomous low carbon solution for windfarm integrity monitoring.

Ultimately the end goal is a Robotics-as-a-Service (RaaS) solution drastically reducing the resources required to conduct essential underwater inspections and asset integrity assessment of offshore wind turbines.

This solution would contribute to meeting Europe's net-zero commitments by slashing energy requirements and emissions related to inspection activities in the wind sector. Large diesel fuelled and carbon intensive vessels are currently required to inspect energy assets, making the introduction of optimised, automated, lower carbon solutions a crucial part of any net-zero future.

Assisted by the grant funding, BeeX will be delivering their next-generation Hovering Autonomous Underwater Vehicle (HAUV) specifically for Offshore Wind; carrying specific survey & inspection payloads suitable for monopile and jacket inspections, piloted by artificial intelligence to automate inspection tasks & deliver repeatable efficient inspection of windfarm monopiles from seabed to the air water interface. This HAUV platform will be enhanced with new features including enhanced endurance and improved sensor payload from critical learnings discovered from BeeX experience with their flagship HAUV, A.IKANBILIS on the Nordsee One windfarm, offshore Germany last year.

“By 2025, we expect BeeX’s fully autonomous systems to help wind farm developers and operators reduce costs and risks to a fraction of today’s, from consenting to end-of-life. This grant funding is a critical piece of financing that unlocks the partners’ abilities to enable safer and clean energy for all, and we look forward to deployments at more wind farms across Europe.”

GRACE CHIA CEO, BEE X

Sulmara's scope will define the vertical asset inspection capabilities and sensor payloads needed for this next generation HAUV to meet the demands of the offshore wind sector as well as managing field trials and demonstration of the system alongside BeeX in 2024, with the ultimate aim to integrate the HAUV into a bespoke Unmanned Surface Vessel. The inspection missions will be optimised based on research by the University of Strathclyde, in developing a Structural Integrity framework to generate risk-based, fit-for-purpose, inspection missions that will feed into the HAUV automated mission control software.

“BeeX next generation HAUV combined with Sulmara USV hosting has the potential to be an industry game changer, cutting costs and drastically reducing carbon emissions.”



Offshore wind is a critical and rapidly expanding sector with UK government targets to deliver 5 GW of floating wind by 2030. Underwater inspections are essential in ensuring its safety. In many cases, these inspections are also mandatory by governments and financial backers. Operations and Maintenance Costs at offshore wind farms remain the biggest operational cost. The costs are largely driven largely by the use of large, specialised Dynamically Positioned (DP2) vessels to deploy work-class remotely operated vehicles (WROVs). With low carbon and reduced cost at the forefront of this project, it is clear that an HUAUV hosted from an Uncrewed Surface Vehicle (USV), both optimised for the offshore wind sector can build on and improve the capabilities of the current Work Class ROVs hosted from larger crewed vessels.

“The climate emergency demands that we apply the very best innovation to ensure better underwater data collection methodologies. We look forward to delivering this research and to seeing our innovations applied to achieve breakthroughs in remote subsea inspection.”

Professor Feargal Brennan

Head of Department for Naval Architecture Ocean and Marine Engineering, Strathclyde University

PROFESSOR FEARGAL BRENNAN

HEAD OF DEPARTMENT FOR NAVAL ARCHITECTURE OCEAN AND MARINE ENGINEERING, STRATHCLYDE
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About BeeX

BeeX designs and manufactures Hovering Autonomous Underwater Vehicles (HAUVs). As a spinoff from National University of Singapore (NUS), our work leverages on a decade of industrial R&D operationalising tech for subsea, defense and self-driving. We believe that our approach of delivering a fully integrated solution across hardware and software is central in reducing reliance on expensive support vessels. Ultimately, our ambition is to empower to blue economy with data. Our tech will enable underwater inspections at scale, whilst slashing operational risks, carbon footprint and costs.

About Sulmara

At Sulmara we innovate to deliver a sustainable energy future. We are a global subsea services company with a focus on driving efficiency in the offshore energy sector through the adoption of new technology and methodology building towards a net zero carbon future.

About University of Strathclyde

The University of Strathclyde is a leading international technological university based in the centre of Glasgow.

Inspired by our founding principle as 'a place of useful learning', our mission is to make a positive difference to the lives of our students, to society and to the world.

Strathclyde students benefit from an innovative and practical educational experience enhanced by its integration with our research capabilities, high-quality academic resources and an unparalleled industry engagement programme.

