



Improving blade health monitoring

BUSINESS PROFILE

- Ilosta is a technology developer, headquartered in Glasgow, that provides innovative solutions for the renewables sector to improve the lifespan and performance of their structural assets.
- The company was founded by Dr Saber Khayatzaheh, a chartered mechanical engineer and certified project manager, with over 10 years industrial experience.
- Their innovative software accurately detects defects like leading-edge erosion and cracks on critical engineering structures, that then classifies, maps and evaluates the damage using advanced AI algorithms.

SUPPORT RECEIVED

GRANT FUNDING

Ilosta is a leading technology provider in the offshore wind operations and maintenance field, best known for its innovative non-contact inspection technology designed to enhance the reliability and lifespan of engineering structures.

Ilosta provides analytics to inspectors, surveyors, asset owners and insurance providers to give them a deeper understanding of their asset integrity empowering them to make better informed decisions and drive profitability.

Ilosta’s ambition is to become the leading supplier of data analysis to the offshore wind sector both in the UK and, ultimately globally.

Impact of the support

Secured commercial work with UK asset owners and signed a commercial agreement with a UK leading wind service provider. Since engaging with OWGP, Ilosta has doubled its turnover and begun exporting into international markets.

Increased IP with the development of their new product Crack Map™ and secured investment to support further technical development of this technology.

Secured larger collaborative projects, including the Offshore Wind UK/US Collaboration (£0.5m), supported by Innovate UK and National Offshore Wind Research & Development Consortium (NOWRDC) US.

Solutions for the offshore wind industry



Provides software solutions to support operations and maintenance activities for the offshore wind sector.

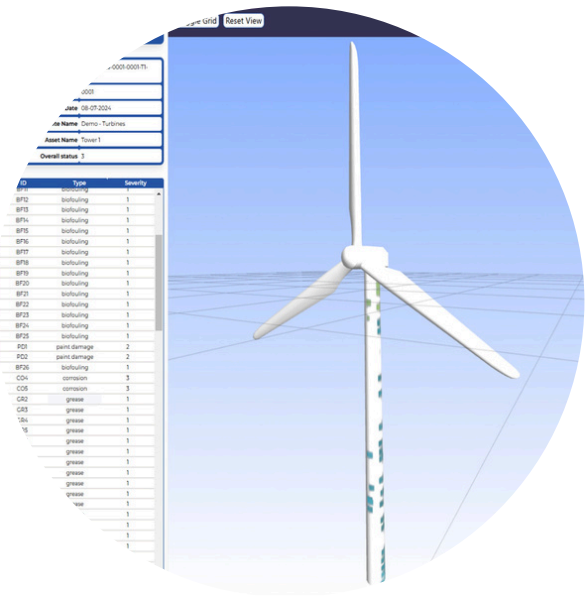
Their innovative software offers developers a more cost-effective and efficient solution to monitoring assets and predicting defects than existing products on the market.

Ilosta software identifies and classifies damage to assets up to 30 times faster than traditional analysis methods.

A closer look at blade monitoring software

Ilosta sought an Innovation Grant to develop a ground-breaking, non-contact digitised tool (Crack Map™) for the inspection and life assessment of wind turbine blades, particularly in the offshore wind sector.

The main goal of this project was to improve the reliability and accuracy of health monitoring in the offshore wind energy sector through a cloud-based software platform that automatically detects, classifies, maps, and analyses damage to offshore wind blades.



Before

Before engaging with OWGP, Ilosta had successfully completed OREC’s Launch Academy programme and had been supported by SE SMART Award, The Data Lab, Innovate UK, and Zero Waste Scotland, to enable early-stage commercialisation of some of their services. Having identified that current damage detection solutions had the capacity to gather large volumes of data but were unable to provide sufficient information to effectively investigate the causes of the defects, Ilosta sought to develop a more advanced tool capable of providing this insight to help developers make informed decisions about their assets.

During

After reviewing Ilosta’s application, OWGP identified their blade health monitoring technology as a valuable innovation to improve the reliability of offshore wind components, making them a strong candidate for Innovation Funding.

Ilosta began by enhancing their Physics-based AI model to create a precise 3D model of the Siemens SWT-3.6 offshore wind turbine blade. This involved using various sensors and developing a strategy to optimise the flight path.

Work then began on developing damage models to detect cracks and leading erosion and integrated into the AI tool. Turner Icen Ltd supported Ilosta during this phase by providing offshore and SCADA system data as well as access to an offshore wind turbine. A rain erosion model was then developed in-house to evaluate the pitting and leading-edge erosion on the SWT-3.6 blade. This model was validated using other models from ORE Catapult. The data was collated and tailored based on blade types and various offshore environments using historical weather data. Ilosta used this information to assess component damage and map out areas of high erosion.

The project closed out with an industrial demonstration and dissemination to showcase the results.

After

Since completion of the project, Crack Map™ is now up and running. The new platform allows front footage to be uploaded directly into the platform to produce basic and premium reports that classifies damage to blades and produces a 3D model. Ilosta has also developed a live, interactive dashboard to demonstrate damage that may occur to the full turbine based on the categories of erosion and damage to the blades.

The company has since secured a Smart Grant with Scottish Enterprise to work on the Ilosta sensor fusion as well as funding from InnovateUK to support a drone inspection project due to launch in July 2025. Ilosta have also entered into discussions with leading developers to work on tower inspection and life assessment of turbine towers in Northern Ireland and have secured two commercial contracts with Scottish Power as well as a contact with a drone company in the Netherlands. Most recently Ilosta’s innovative solutions were featured in the 2025 SOWEC Innovation Guide.



The Innovation Grant from OWGP played a pivotal role in the development of our Crack Map™ technology. Thanks to this support, we were able to significantly accelerate our research and development efforts, leading to a groundbreaking solution for blade health monitoring. Moreover, it enabled us to successfully expand into international markets. The collaboration and encouragement we received were truly invaluable to our growth and success.



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