

MEDIA RELEASE

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Leading energy firms partner on turbine blade initiative

- **Leading energy companies Duke Energy Renewables, EDF Energy, ENGIE, E.ON, innogy and Kruger Energy partner on wind turbine blade initiative.**
- **Firms collaborate to tackle industrywide challenge by sharing data on leading edge protection performance via the Offshore Renewable Energy (ORE) Catapult.**
- **Agreed inspection methodology to ensure consistent data.**

Six global energy companies have launched a joint initiative to tackle wind turbine blade erosion by sharing data on how various leading edge protection systems perform in different operating environments.

Duke Energy Renewables, EDF Energy (project lead), ENGIE, E.ON, innogy and Kruger Energy have signed a partnership agreement that will see them share data from leading edge protection system trials on wind farms around the world to assess how they operate in different conditions and geographies.

The data will be fed into a central database controlled by the Offshore Renewable Energy (ORE) Catapult. Participants will use a standard inspection methodology to ensure consistency and the Catapult will then anonymise and analyse the data, providing insights into the performance of each protection system.

Speaking on behalf of the partners, innogy's Morten Christiansen, Asset Integrity Manager at Galloper Wind Farm said: "Blade performance is fundamental to the efficiency of a wind farm so by sharing data across numerous sites, the partners will be able to review how different leading edge protection systems operate and then apply the information to improve planning and maintenance."

Annual inspections will take place during the same season and reports will be centrally supplied to ORE Catapult, who will manage the access to the shared data.

ORE Catapult's engineering lead for the project, Dr Hamish MacDonald, added: "As an independent and trusted industry data handler, the Catapult will provide cutting-edge insights into the performance of the various leading-edge protection systems being used, helping operators to better plan their operations and maintenance activities."

A minimum of three leading-edge protection systems will be compared and the data categories will include local atmospheric details such as wind speeds, rainfall and UV exposure, wind turbine type and time in operation.

Project leader, Dr Camélia Ben Ramdane of EDF said: "This project is a great opportunity to collaborate on an issue that most wind operators must tackle. To be able to share this with partners operating windfarms all over the world, hence covering many environmental conditions, is a real benefit to all.

"New partners are welcome to join and take part in this project and we expect to know the outcome in about three years. I am confident we can all rely on ORE Catapult and benefit from their proven knowledge in the field of leading edge erosion to analyse our data."



The joint initiative group is actively seeking new partners for the project from all onshore and offshore wind turbine suppliers and operators, including those who may already be performing trials on their wind farms.

For more information potential participants can get in touch with Camélia Ben Ramdane via email: camelia.ben-ramdane@edf.fr.

ENDS

With photo caption:

A rope access technician at Gwynt y Môr Offshore Wind Farm prepares to install a leading edge protection system that will provide data for the joint industry blade project.

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Notes to Editors:

The companies making up the Blade Group Joint Industry Partnership are:

Duke Energy Renewables

Duke Energy Renewables, a nonregulated unit of Duke Energy, operates wind and solar generation facilities across the U.S., with a total electric capacity of 3,000 megawatts. The power is sold to electric utilities, electric cooperatives, municipalities, and commercial and industrial customers. The unit also operates energy storage and microgrid projects.

EDF Energy (project lead)

Research, development and innovation are at the heart of EDF Energy.

EDF Energy Research and Development (R&D UK) is a centre of technical excellence whose main purpose is helping to build a brighter energy future for the UK. Our vision is: "Accelerating the transition to a sustainable, low carbon society through the development and testing of new technologies and business models." EDF Energy R&D UK is currently advancing research in the fields of Low Carbon Generation (supporting existing nuclear, nuclear new build and renewables), Modelling and Simulation, Environment and Natural Hazards, Energy System Design, Smart Cities, Local Energy Systems, Energy Storage & Efficiency and Smart Digital Technology. By coupling the advances in science and engineering with the emergence of new digital innovations EDF Energy R&D UK is providing ground breaking solutions to policy makers, partners and customers in order to realise our vision.

EDF Energy R&D UK Centre worked closely with experts from EDF Renewables in the UK. EDF Renewables is one of the UK's leading renewable energy companies which develops, builds and operates generation projects with a focus on onshore and offshore wind as well as battery storage technology and new technologies. The company already operates more than 965MW with more than 2GW in development including 1.1 GW of consented projects. It is a joint venture between EDF Energy and EDF Renewables Group.

ENGIE

About ENGIE: Our group is a global reference in low-carbon energy and services. In response to the urgency of climate change, our ambition is to become the world leader in the zero carbon transition "as a service" for our customers, in particular global companies and local authorities. We rely on our key activities (renewable energy, gas, services) to offer competitive turnkey solutions. With our 160,000 employees, our customers, partners and stakeholders, we are a community of Imaginative Builders, committed every day to more harmonious progress. Turnover in 2018: 60.6 billion Euros. The Group is listed on the Paris and Brussels stock exchanges (ENGI) and is represented in the main financial indices (CAC 40, DJ Euro Stoxx 50, Euronext 100, FTSE Eurotop 100, MSCI Europe) and non-financial



indices (DJSI World, DJSI Europe and Euronext Vigeo Eiris - World 120, Eurozone 120, Europe 120, France 20, CAC 40 Governance).

In renewable generation, ENGIE has a total installed capacity of 27.8 GW made of Hydro (19.6 GW), Wind (6.0 GW) and Solar (2.2 GW).

E.ON

E.ON is an international private energy company, which focuses on energy networks, customer solutions, and renewable energies. As one of Europe's largest energy companies, E.ON plays a leading role in shaping a clean, digital, decentralized world of energy. To this end, the company develops and sells products and solutions for private, commercial and industrial customers. In fiscal 2018, 43,000 employees generated sales of 30 billion euros. Around 32 million customers purchase electricity, gas, digital products or solutions for electric mobility and energy efficiency from E.ON. The company is one of the world's leading producers of renewable energy and has invested more than EUR 12 billion in this business area in recent years. E.ON is headquartered in Essen, Germany.

innogy

innogy SE is a leading German energy company, with revenue of around €37 billion (2018) and around 43,000 employees. With its three business segments Renewables, Grid & Infrastructure and Retail, innogy addresses the requirements of a modern, decarbonised, decentralised and digital energy world. Its activities focus on its about 22 million customers, and on offering them innovative and sustainable products and services which enable them to use energy more efficiently and improve their quality of life. The key markets are Germany, the United Kingdom, the Netherlands and Belgium, as well as several countries in Central Eastern and South Eastern Europe, especially the Czech Republic, Hungary and Poland. In renewable power generation, the company is also active in other regions, e.g. Spain, Italy and the USA, with a total capacity of 4.0 gigawatts. As a leader of innovation in future-oriented fields like eMobility, we are represented in the international hot-spots of the technology industry such as Silicon Valley, Tel Aviv and Berlin. We combine the extensive expertise of our energy technicians and engineers with digital technology partners, from start-ups to major corporates.

Kruger Energy

Kruger Energy specializes in the development and management of renewable energy power plants. The Company manage and operate 38 production sites, ranging from hydroelectric, wind and solar power facilities to biomass cogeneration plants. In addition to advocating the optimal and respectful use of resources, Kruger Energy seamlessly integrates its projects into host communities. Kruger Inc. and its subsidiary Kruger Energy together operate more than thirty production sites that have a total installed capacity of about 540 MW.

The data is being collected and managed by ORE Catapult:

ORE Catapult was established in 2013 by the UK Government and is part of a network of Catapults set up by Innovate UK in high growth industries. It is the UK's leading innovation centre for offshore renewable energy and helps to reduce the cost of offshore renewable energy, supporting the growth of the industry and creating UK benefit.

