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Kinewell Energy demonstrates potential for relevant cost saving in inter-array cable system

A major European offshore wind developer has engaged Kinewell Energy to re-analyse the inter-array cable system of one off their offshore wind farms, demonstrating relevant cost savings.

The aim of the study was to understand what potential savings could be enabled through innovative use of Kinewell Energy's KLOC optimisation software. The study demonstrated that some flexibility in turbine layout, asset crossings, cable type selection, substation positioning, and export cable routing are key to achieving further optimized CAPEX and added revenues through reduced transmission losses.

Dr Andrew Jenkins, Kinewell Energy Managing Director said, "We are extremely proud of our role in driving down the cost of offshore wind through the significant savings, typically in the region of 20% of CAPEX, our world leading KLOC optimisation software can deliver to inter-array cable systems."

The KLOC software, Highly Commended by the IET Innovation Awards, rapidly develops optimised inter-array cable layouts. It appropriately prioritises the optimisation of capital cost against operational costs such as electrical transmission losses and unavailability losses due to cable faults.

Although the KLOC software has been developed around offshore wind, it has other applications as well. It can be used to optimise the inter-array layout of connecting any number of nodes with a central location. That means it is immediately transferable to large onshore wind, large solar, wave and tidal energy projects. However, it could also be used for array cables that supply (rather than receive) energy to (or from) those nodes, such as Electric Vehicle (EV) charging points in large car parks.

Notes to editors:

The inter-array cable system links offshore wind turbines to the offshore substation with cables in order to collect the energy generated, before it is exported to shore via an export cable. The inter-array cable system typically costs c. £35m for each GW of installed capacity¹, where 80 GW of further offshore wind capacity is expected to be installed worldwide by 2024².

¹ BVG Associates on behalf of The Crown Estate and the Offshore Renewable Energy Catapult, "Guide to offshore wind farm", January 2019, <https://www.thecrownestate.co.uk/media/2860/guide-to-offshore-wind-farm-2019.pdf>

² Forbes, "As Global Energy Demands Grows, So Does Appetite For Offshore Wind", 26 March 2019, <https://www.forbes.com/sites/arielcohen/2019/03/26/as-global-energy-demands-grows-so-does-appetite-for-offshore-wind/#3f4a26c665e7>



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The KLOC inter-array cable optimisation software was launched as a consultancy tool for Kinewell Energy in November 2015 following over two years of research and development. The IET Innovation Awards in 2016 Highly Commended the KLOC software. The world leading inter-array layout optimisation tool KLOC was also launched as a licensed product in 2018 following client requests.

The Institution of Engineering and Technology (IET) is a global engineering community of over 167,000 members worldwide in 150 countries and holds an innovation award annually. Kinewell Energy's KLOC software was selected to be Highly Commended in November 2016 from over 300 entries from 25 countries in two categories; Power and Model Based Engineering.

Kinewell Energy is supported by Newcastle University's START UP team who offer expert guidance, training, resources and opportunities to help students and graduates develop enterprising skills, explore ideas and launch new businesses. There are 179 START UP supported businesses currently trading with a combined annual turnover of £26.8m. A total of 449 full-time equivalent jobs and over £9m of external investment has been raised to support these enterprises.

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