



Wind monitoring

Gordonbush Wind Farm Permanent WindCube Installation



Project overview

Gordonbush Wind Farm is a 35 turbine wind farm approximately 12km northwest of Brora, in Sutherland - it was first commissioned by SSE Renewables in 2012 and generates up to 71.57MW of power. The Gordonbush Wind Farm Extension is an 11 turbine extension built alongside it in 2021. The new turbines are much taller (149.9m) than those in the existing wind farm and able to deliver more power but that means that wind measurements are required at heights beyond the existing met mast's capability.

Background

SSE Renewables commissioned Dulas to install a permanent WindCube LiDAR remote sensing system at the site to enable SSE wind analysts to map and analyse data as part of the long term operations on the site. The WindCube, which is a LiDAR (Light Detection and Ranging) wind measurement device, will be used to augment the mast data and provide accurate measurements to ensure optimal power.

Implementation

The installation consisted of a WindCube powered by mains electricity connected via one of the turbines and incorporated batteries to keep the key devices (Windcube and data systems) running in the event of loss of power. The WindCube was commissioned to measure at 14 heights, up to 300m.

Rachel Munday, Commercial Lead of Dulas's Wind Monitoring Department, oversaw the project and highlights its advantages for SSE, "Having a ground-based laser measurement system alongside the existing met tower means there is no need for a higher mast and all its attendant infrastructure. The WindCube delivers industry-leading precision data alongside the convenience of ground-based operation."

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Conclusion of project

The Gordonbush Extension Windfarm officially opened in August 2021. At full capacity it generates 38MW of wind-powered electricity, enough to power 46,000 UK homes each year*. Over the expected 25-year lifetime of the wind farm, Gordonbush Extension Wind Farm will save over 37,000 tonnes annually of harmful carbon dioxide emissions, helping the UK to transition towards a Net Zero carbon future.

Dulas has comprehensive experience of working with major wind farm developers in the UK, Republic of Ireland and internationally. We offer a variety of services including wind monitoring, data collection, feasibility studies, repowering and extension advice, helping to ensure that every wind scheme is successful and profitable.



WindCube

The WindCube is a CE approved, integrated LiDAR system that has proven its reliability and bankability of data in all kinds of environments worldwide. Made by Leosphere, a Vaisala company, it is the most compact and robust wind LiDAR ever manufactured. Capable of measuring at 20 heights simultaneously, and accurate across a range of heights up to 300m, the WindCube is recognised around the globe for reliable and consistent laser wind measurement. From energy yield assessment to power performance testing and optimisation, the WindCube is accepted onshore and offshore by all international standards and guidelines, including IEC, IEA, Measnet, TR6, and Stage 3 DNV-GL. Thousands of Vaisala LiDARs have been deployed throughout the world and the instruments are renowned for consistently delivering reliable, accurate data that results in a maximised return on investment. Dulas is proud to be the exclusive sales and support partner for Vaisala WindCube in the UK and Ireland.



*46,000 homes powered per annum based on Typical Domestic Consumption Values (Medium Electricity Profile Class 1, 2,900kWh per household; OFGEM, January 2020), typical onshore wind load factor, and projected installed capacity of 38MW.

