

Enhanced Lidar Wind Field Reconstruction

Publieke samenvatting / Public summary

Aanleiding

Light Detection and Ranging ("Lidar") wind sensing devices are able to measure a 3D wind field, offering a step-change in understanding of the wind conditions experienced by wind farms over traditional methods. However, current methods used to extract the wind field from the raw data collected by the Lidar sensors are not well-developed, particularly when the Lidar is mounted on the turbine nacelle. Overcoming these current limitations will enable other innovations to reduce wind farm Cost of Energy, particularly active turbine control.

Doelstelling

This project aims to improve significantly the accuracy of wind fields reconstructed from raw Lidar, by applying one of the most powerful modern machine learning techniques: Gaussian Processes. ECN researchers have experience of using these statistical techniques to address similar questions in wind energy. By working closely with one of the leading Lidar manufacturers, ZephIR, to demonstrate success on data already collected on a wind farm, this project has an excellent chance of advancing the industry's capabilities for real-time measurement of wind conditions inside large offshore wind farms.

Resultaat

At the end, a validation methodology and summary of results will be published, along with a plan to apply the successful new method to the commercial ZephIR Lidar. A Joint Industry Project will be developed to extend this innovation further and

Projectinformatie / Project information

Projectnummer / Project number

TKITOE_TT_WIIP1_1602_ECN

Subsidiebedrag / Grant amount

€ 26.298,00

Algemene informatie / General information

Penvoerder / Secretariat

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apply it to operational wind farms.

De data in deze applicatie is afkomstig van de Rijksdienst voor Ondernemend Nederland (RVO) en wordt in samenwerking met de Topsector Energie ontsloten.

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