VENTUS

by Drone Swarm Engineering group

Mission

Project Ventus is a high-tech, autonomously operating drone swarm, used to measure atmospheric conditions in wind farms to optimize control and performance.
This scalable system consists of 78 fully autonomous drones and 21 high-tech support stations that are both weather & fire proof. The drone swarm flies in a gridded pattern covering an entire wind farm of 100 km^2 in just 37 minutes, providing a spatial resolution of 300 m.

Creating a revolutionary system to assist in the transition towards emerging green energies. Increasing annual wind energy performance gain by 2.55 % for a 25year lifespan.

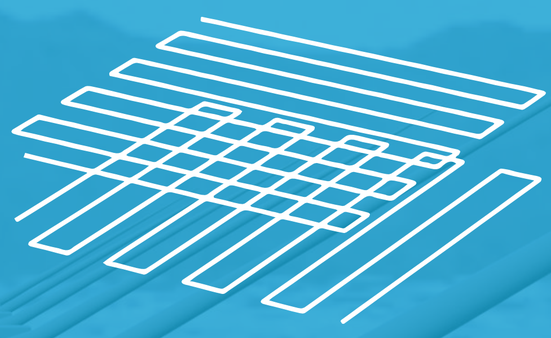
Specifications

Number of drones: 78

Wind speed accuracy: 1 m/s

Temperature accuracy: 0.1 °C

Swarm pattern



Mission data

System cost: 21.7 M €

Revenue: 4.8 M €/ year

Maintenance cycle: 6 months

Operational downtime: <10 %

Measurement efficiency: 90 %

TU Delft

Design Synthesis Exercise 2022

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