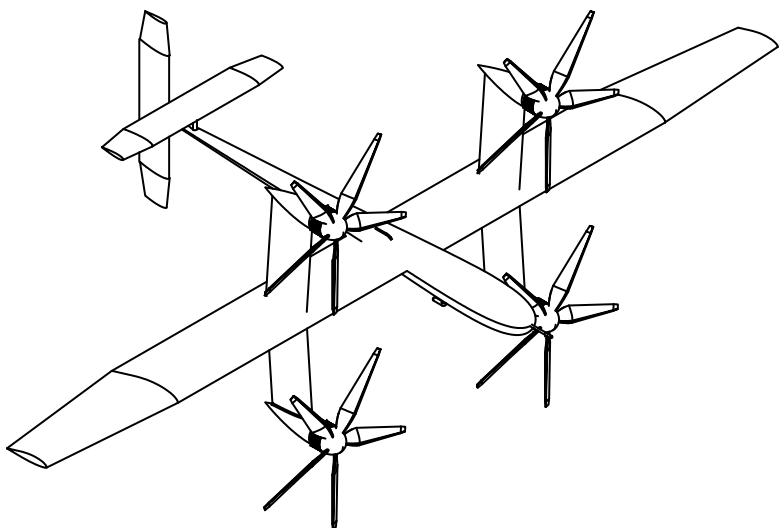


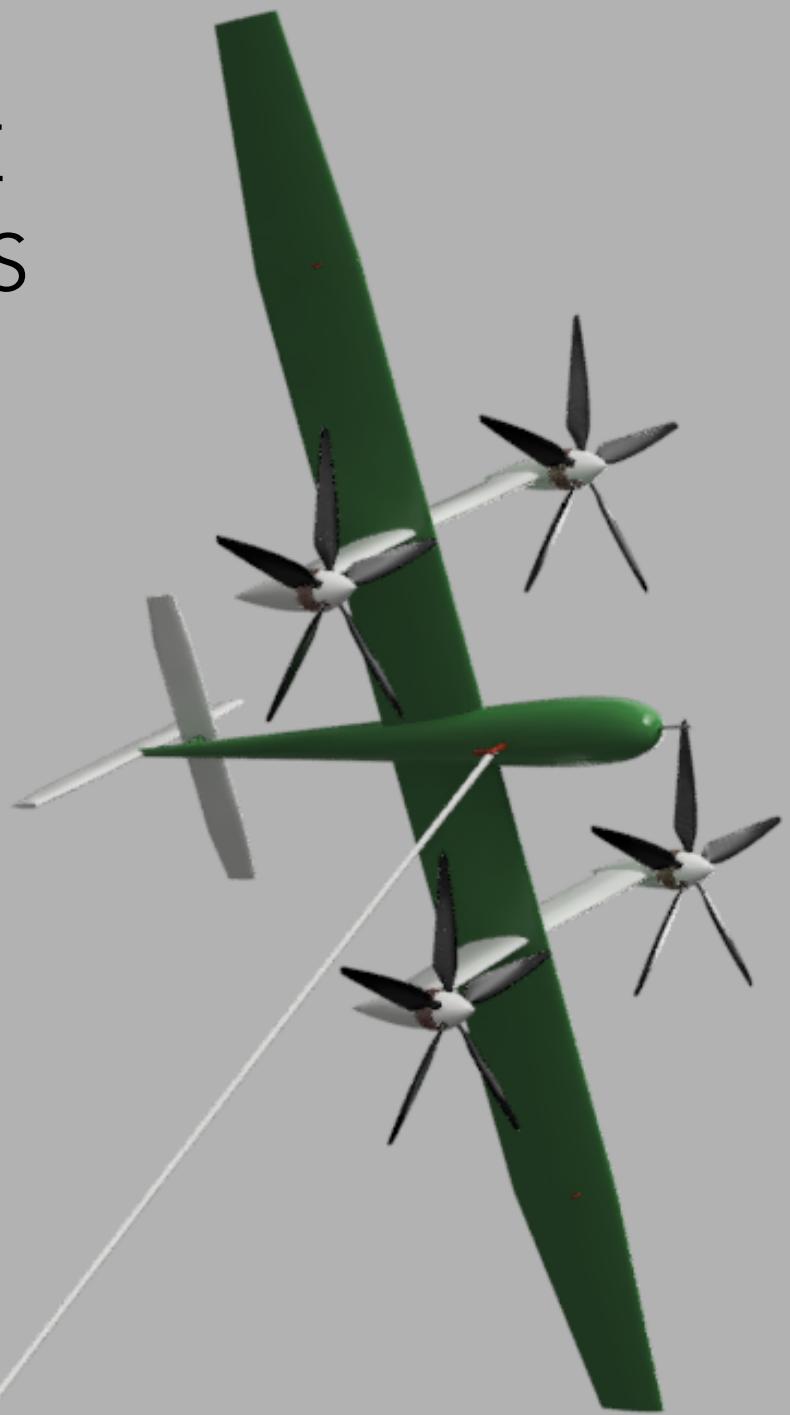
DRONE WIND TECHNOLOGIES



D-100

**NEXT GENERATION
WIND POWER**

A RADICALLY NEW 100 KW WIND TURBINE FOR MINIGRIDS

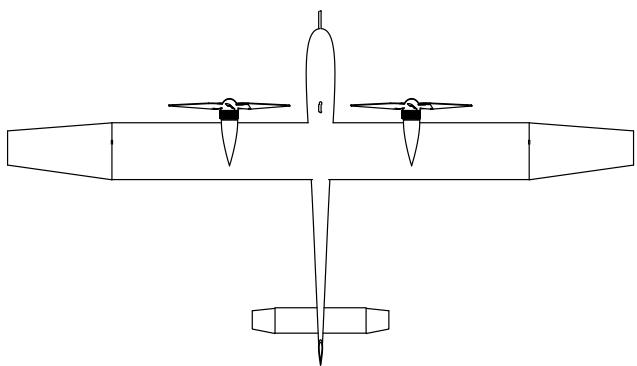


Rated power	100 kW
Wind range	4-25 m/s
Swept area	1400 m ²
Typical capacity factor	35-55 %
Typical annual savings*	€ 80,000
Typical turn-key price**	€ 125,000

*Assuming 35% capacity factor and € 0.35 diesel

**Including average shipping & installation costs € 23,000

DRONE WIND MEANS WIND ENERGY **ANYWHERE**



D-100 from Drone Wind Technologies is a flying wind turbine system consisting of two wings and a small ground station. It ships in a standard container and is exceptionally easy to install — it can be installed almost anywhere, without cranes or expensive machinery. In fact, the € 125,000 price example includes average shipping and installation costs to an island location outside Europe.

With a peak power output of 100 kW it happily integrates into existing diesel or hybrid systems where the investment is typically paid back within 2 years, and continues to provide substantial savings.

Attractive PPA options are also available.



EASY INSTALLATION

The entire D-100 system ships in a standard 20 foot container with a total weight of 2,600 kg and can easily be installed in almost any location using equipment included in the container.

EASY MAINTENANCE

All service and maintenance is carried out at ground level. Annual service can be carried out by the client using tools and parts included with the system.



LOW COST

The D-100 system is very easy to install and requires little change to the installation site. Coupled with easy maintenance this translates into very low total costs.

LOW NOISE

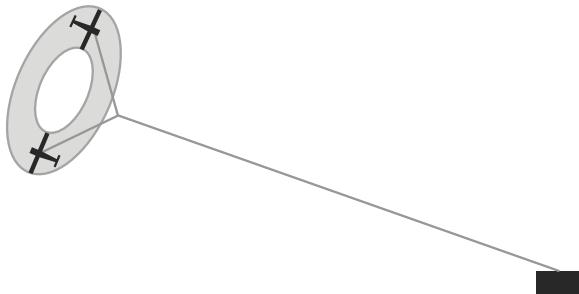
While in operating mode the wings are located 300 meters downwind from and about 100 meters higher than the ground station. This results in very low noise levels when placed downwind from a house



LOW WASTE

Compared to a traditional wind turbine the D-100 system uses 95% less material, which means not just easier shipping and installation, but also lower environmental impact and significantly simpler decommissioning.

Drone wind turbines have no tower, and the function of the blades on a traditional wind turbine is fulfilled by two ultralight wings that fly in a large circle. The wings are computer controlled and anchored to the ground with a strong tether. Propellers on the wings generate electricity that is sent down the tether.



The main advantages of this construction is that the system can be made much lighter and more compact for the same power output, and that it needs no real tower, nor a large foundation. In fact around 90% of the material can be saved.

This translates into much lower costs and greater flexibility when installing the system at a site, but also easier maintenance. A typical installation will cost less than € 25,000, including integration into an existing diesel system, even at sites where traditional wind turbines are infeasible.

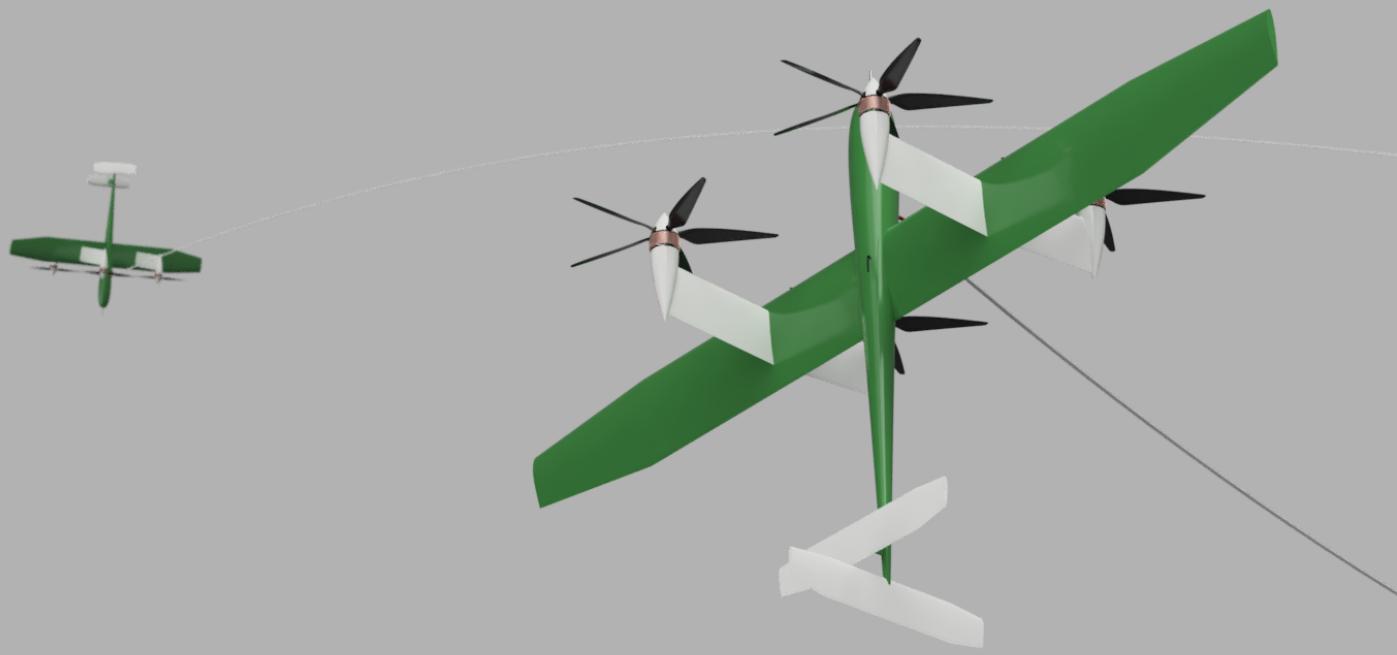
In a storm or when the wind drops, the wings will automatically fly back and secure themselves to the ground station.

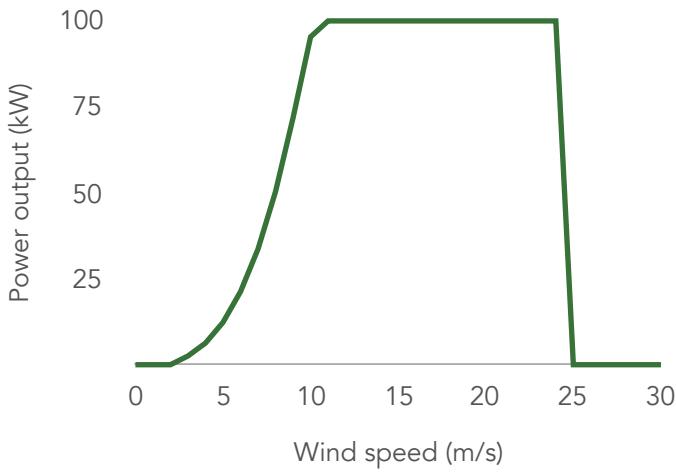
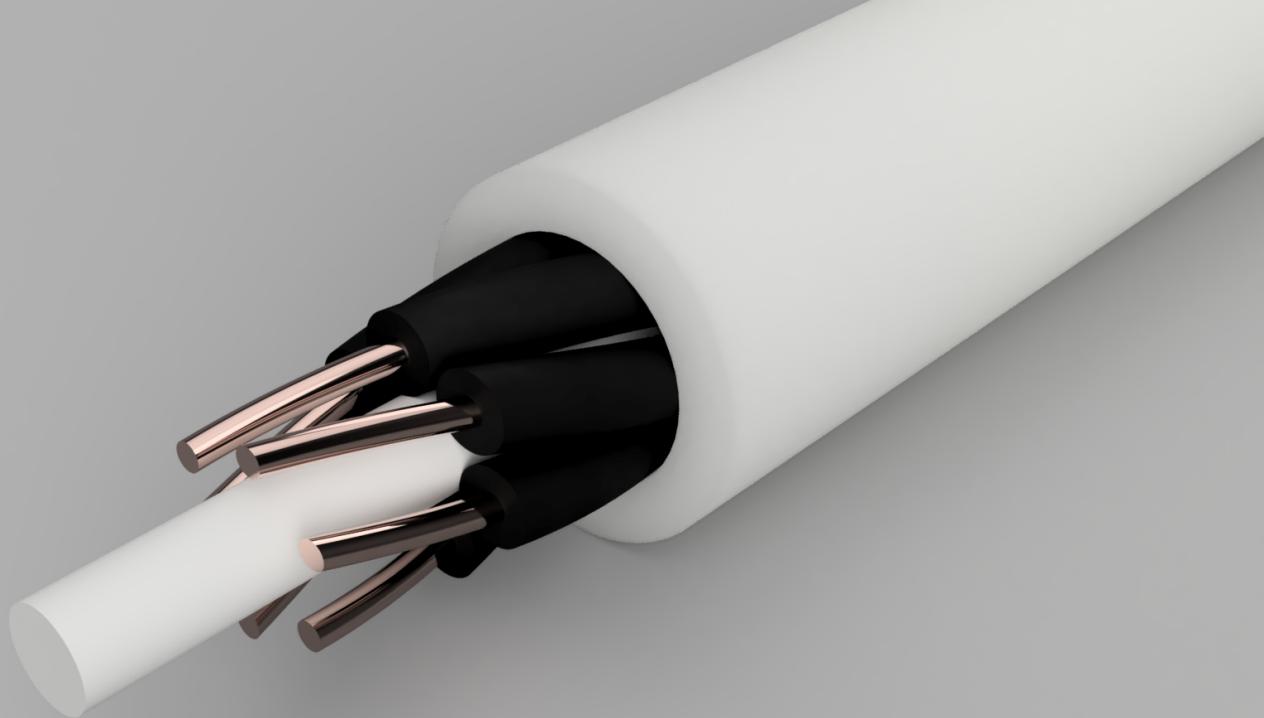


When the wind returns to the operational range the planes will again fly back to the operating location.

The system operates fully automatically and only requires occasional service and maintenance. It is constantly monitored by Drone Wind Technologies.

IN DRONE WIND TURBINES THE BLADES AND NACELLE ARE REPLACED BY TWO ULTRALIGHT WINGS ON A TETHER





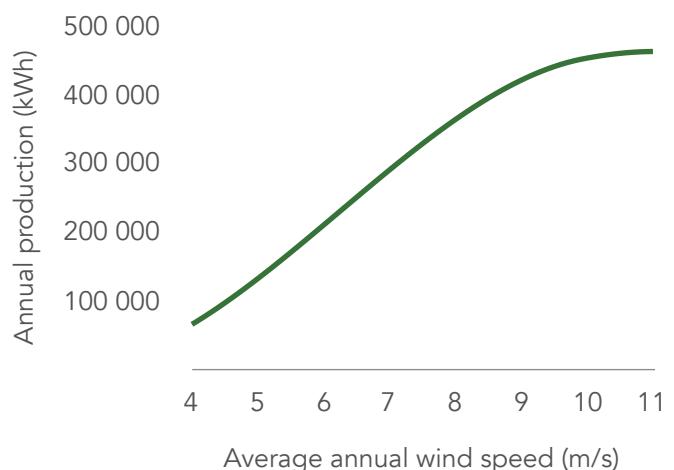
POWER CURVE

The power output of the D-100 increases from 10 kW at 5 m/s to a maximum of 100 kW at 10 m/s. The output then stays constant with increasing wind speed until 25 m/s at which point the wings automatically fly back to the ground station to land, in order to minimize risks.

The relevant wind speed is measured at 100 m above ground, which is where the wings fly during power generation. The wind at this altitude is usually stronger than the ground wind.

ANNUAL PRODUCTION

At a typical onshore location the annual power production curve can look like the graph on the right. The capacity factor of the system is usually above 35% and can go as high as 55%, thanks to the wide power curve and the relatively high working altitude.



WITH TYPICAL ANNUAL SAVINGS OF € 79,000, PAYBACK TIME IS USUALLY **UNDER 2 YEARS**

COSTS

The cost of the drone wind turbine system itself, that is the wings, the ground station and the balance of system, amounts to € 102,000.

Shipping costs will run to € 11,000 on average including customs, for a relatively remote location outside of Europe. Installing and integrating with an existing, often diesel based solution (EPC costs), average € 12,000.

Attractive Power Purchase Agreements and leases also be arranged.

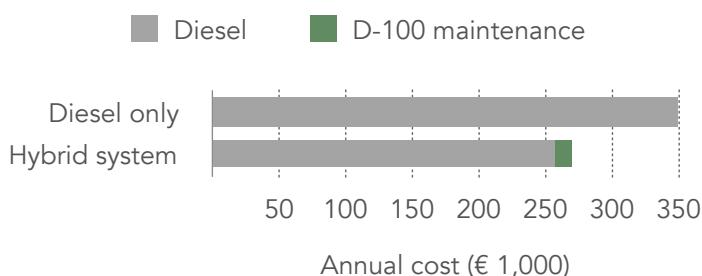
Wind drone Balance of system
Shipping* EPC costs*



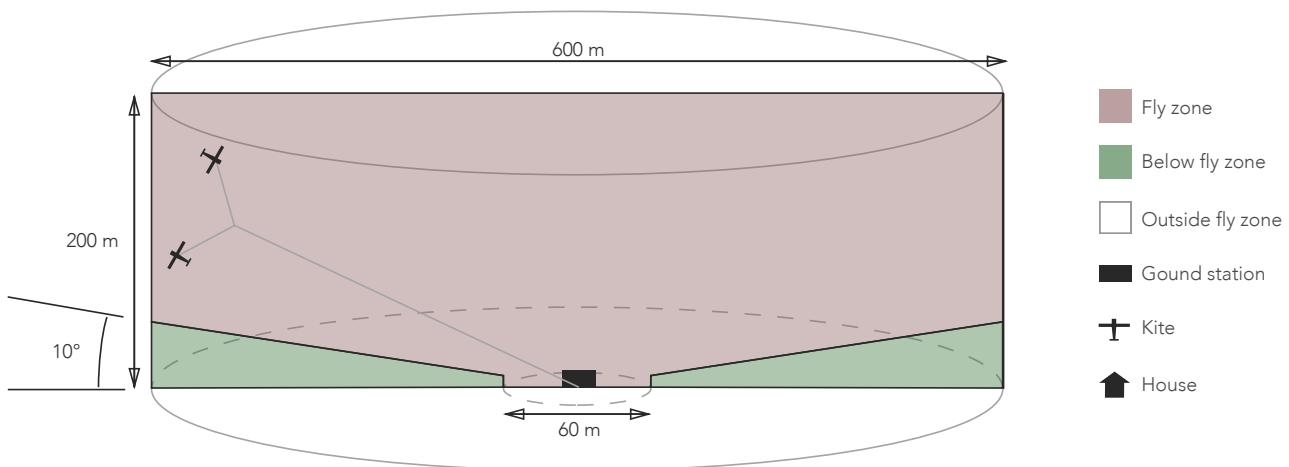
*Typical

SAVINGS

A typical customer running a small factory or other business at an island location may have two 100 kW diesel generators and use 1,000,000 kWh annually. With an energy cost of € 0.35 per kWh he would currently be spends € 350,000.



At a capacity factor of 35% and with curtailment at 15%, the customer gets 260,000 kWh annually from the D-100 drone wind system, implying annual fuel savings of € 79,000. This means that the € 125,000 investment in the drone wind system pays itself back in 1.6 years and then continues to deliver substantial savings.

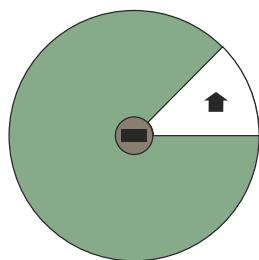
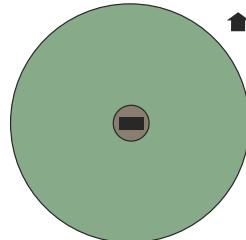


SAFETY

During operation the drone wings will be located at a distance of around 300 m from the ground station and at a height of around 100 m. When flying back to and from the ground station they will maintain a height of at least 10 m, except in the area that extends 30 m around the ground station in all directions.

No human or animal should be present in the fly zone (red zone) during operations and the fly zone has to be closed off to air traffic at all times.

The ground area below the fly zone (green) is safe for humans to be in and animals to inhabit, but human habitations should be placed outside this zone.

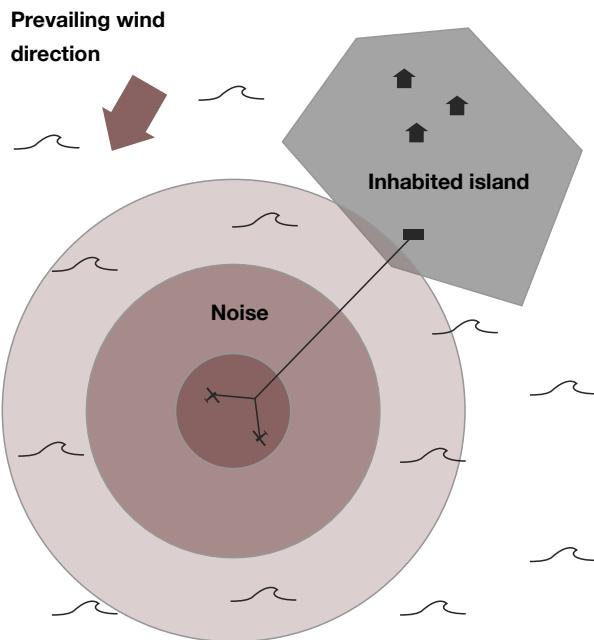


It is also possible to exclude a wedge-shaped area from the fly zone. This area will then be considered safe for human habitation. Doing this will lead to minor losses in power production, in the most cases under 5% on an annual basis.

The system is continuously monitored remotely by Drone Wind Technologies and the wings are immediately grounded at any anomaly, and to perform scheduled maintenance.

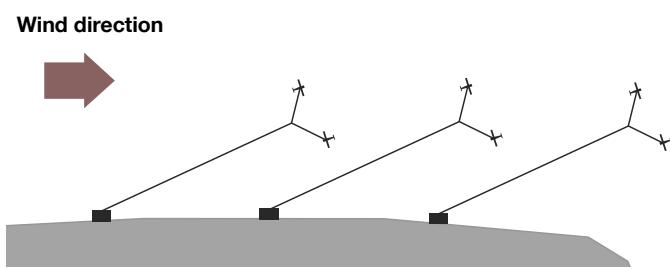
AT HOME **EVERWHERE**





NOISE

The noise level at the wings themselves is similar to that of a traditional wind turbine but the system can be placed and configured so that the wings are always down-wind of any noise sensitive areas. This means that noise pollution can be avoided to a very large extent.

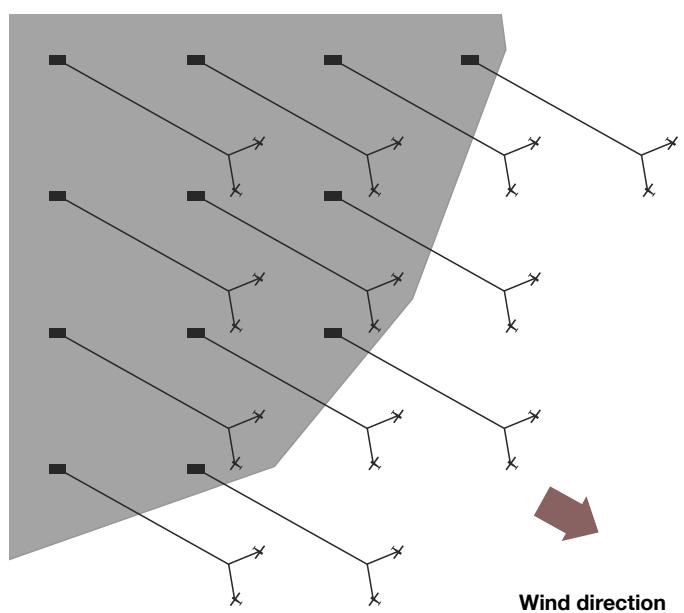


LAND USE

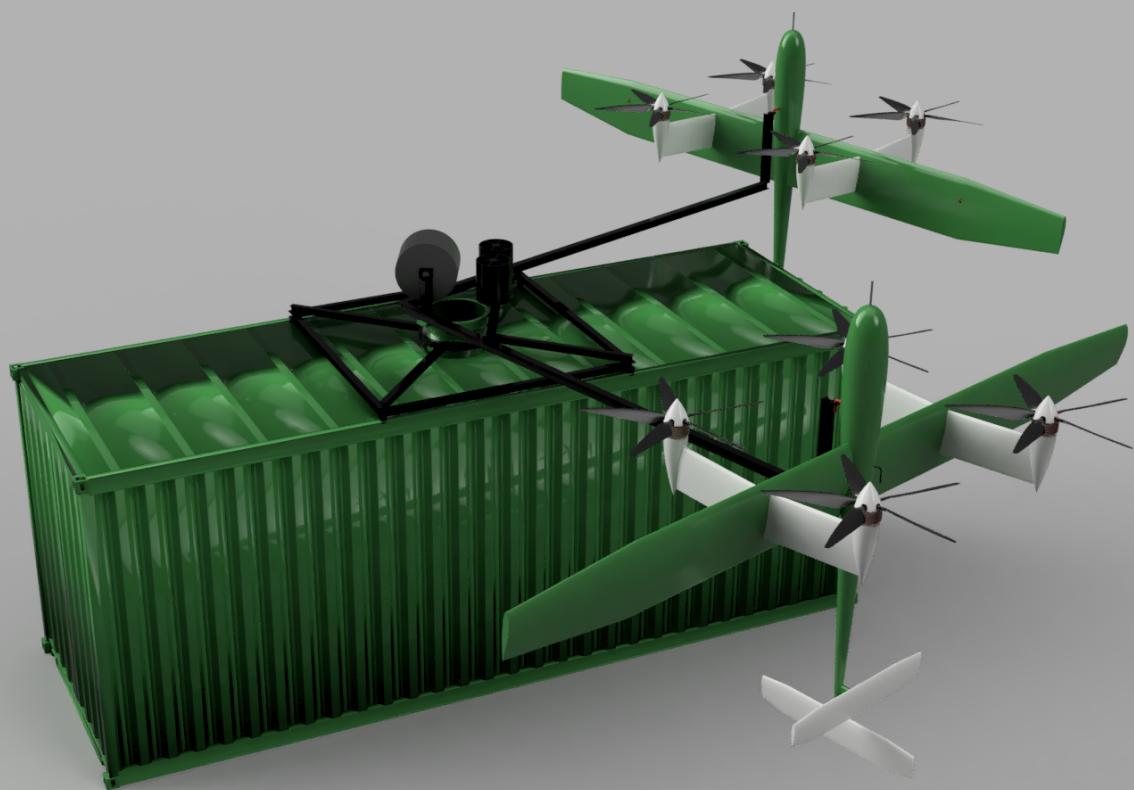
Multiple systems can be positioned with overlapping fly zones. The minimum distance between two ground stations should be 200 m along the wind direction, but can be smaller in the orthogonal direction if there is a strongly prevailing wind direction.

When planning the placement of drone wind turbine systems the main limiting factor, just as with traditional wind turbines, is the turbulence found downwind from the wings, the so called wind wake.

Wind Drone Technologies will help you find the best configuration for your location, based on wind patterns, cost requirements, energy needs, noise considerations and other factors. Contact us to know more.



THE CONTAINER IT SHIPS
IN DOUBLES AS TOWER



FACTS AND FIGURES

Wing (x2)

Power output: 50 kW

Total weight: 52 kg

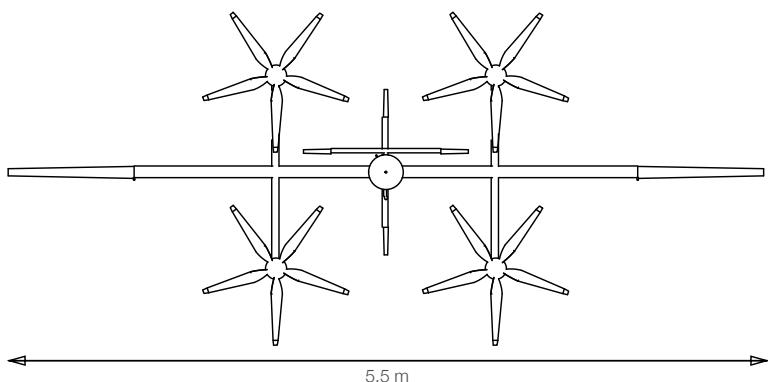
Electrical system: 24 kg

Generators: 12 kg

Composites: 16 kg

Wingspan: 5.5 m

Wing material: carbon fiber



Tether

Length: 300 m

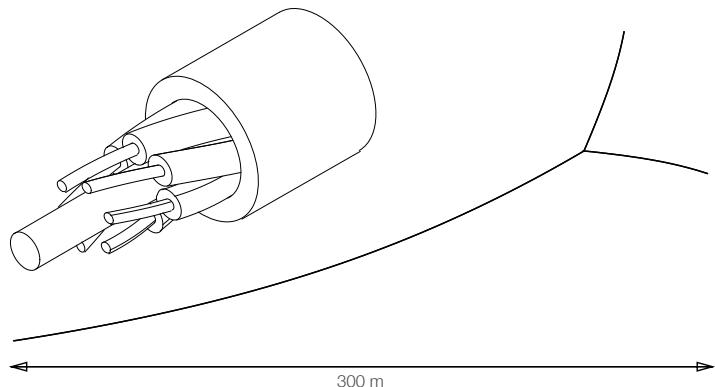
Diameter: 19 mm

Total weight: 90 kg

Conductor: copper

Strain relief: Dyneema

Voltage: 8kV



Ground station

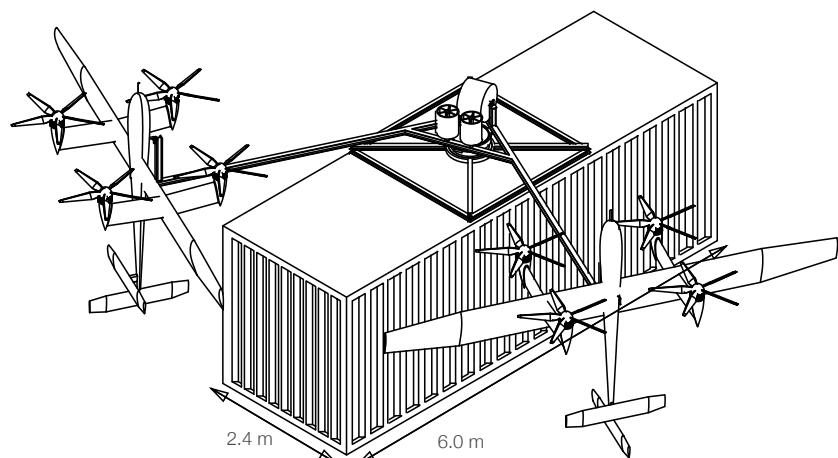
Beams and winch: 260 kg

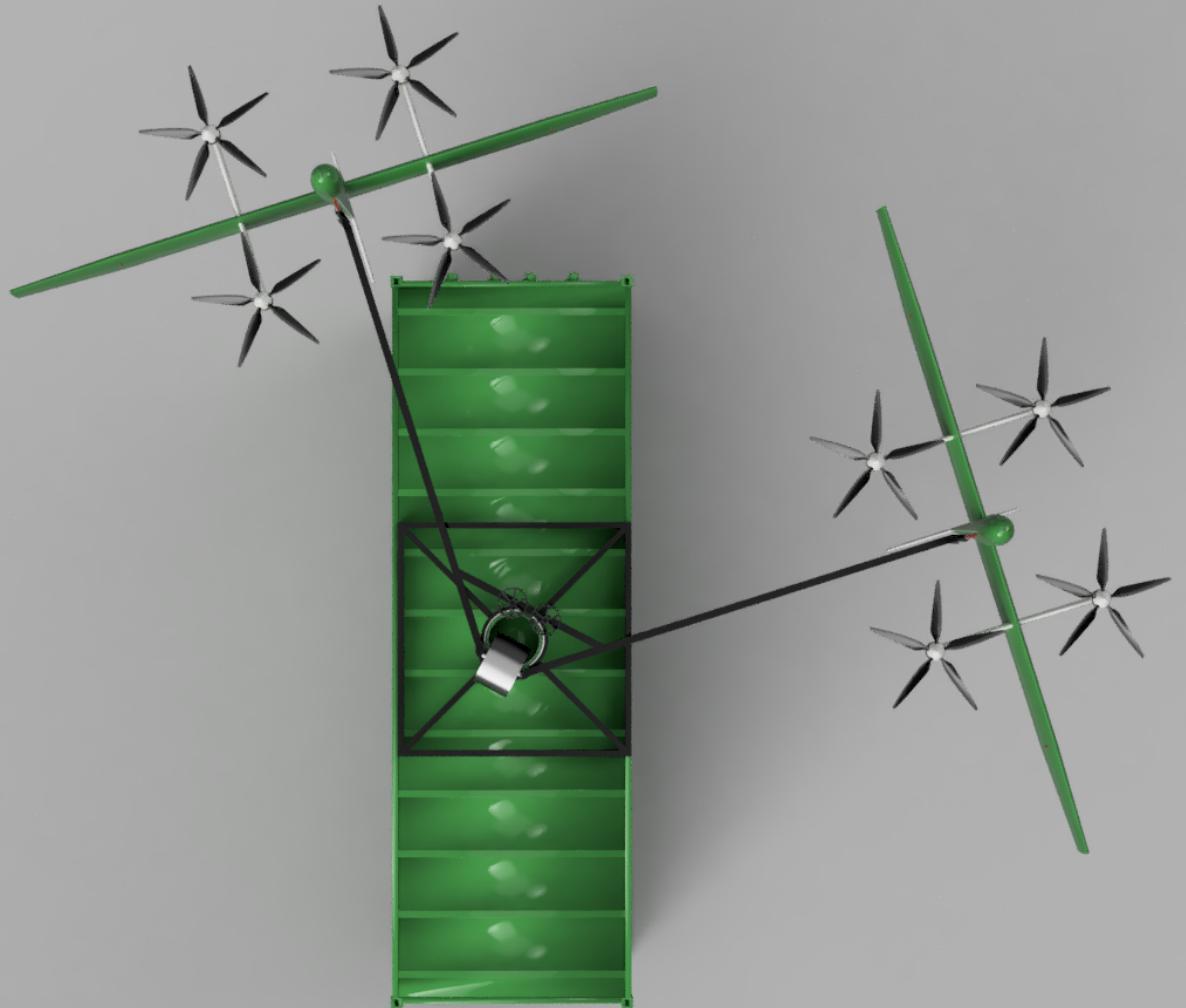
Electrical system: 50 kg

Container weight: 2100 kg

Size : 2.43m x 6.06m x 2.59m

Anchoring: ground spears





DESIGNED AND BUILT IN **DENMARK**
IN COLLABORATION WITH **UAS DENMARK**
WITH SUPPORT FROM **E.ON**

PREORDER TODAY AT WWW.DRONE-WIND.COM