

DATA SHEET WIND TREE

By



Contents

1. General
presentaion of the
WindTree

2. Technical
description

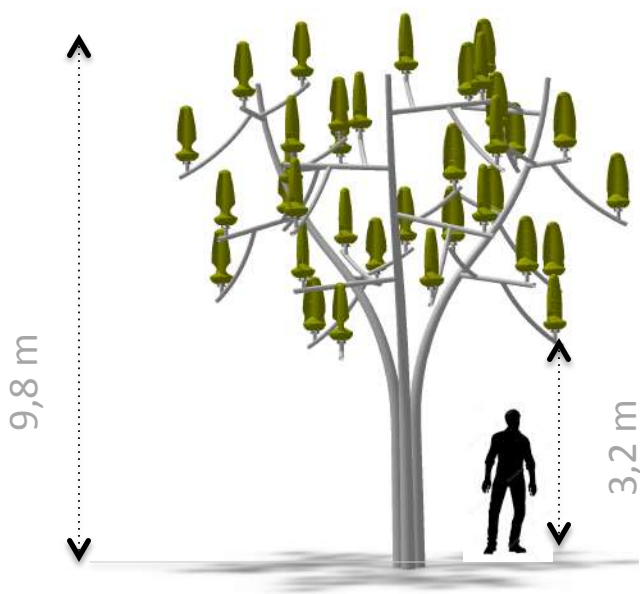
- Mechanical characteristics
- Electrical characteristics
- Aerodynamical characteristics

3. WindTree
installation

- Civil engineering
- Installation work
- Electrical connection

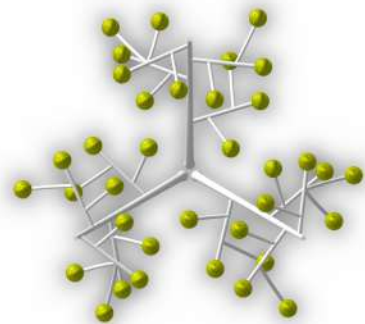
4. Summary table

5. Anchor Diagram



Installed Power per tree
Nominal Power
Power per Aeroleaf
Number of leaves

10 800 W
5868 W
300 W
36



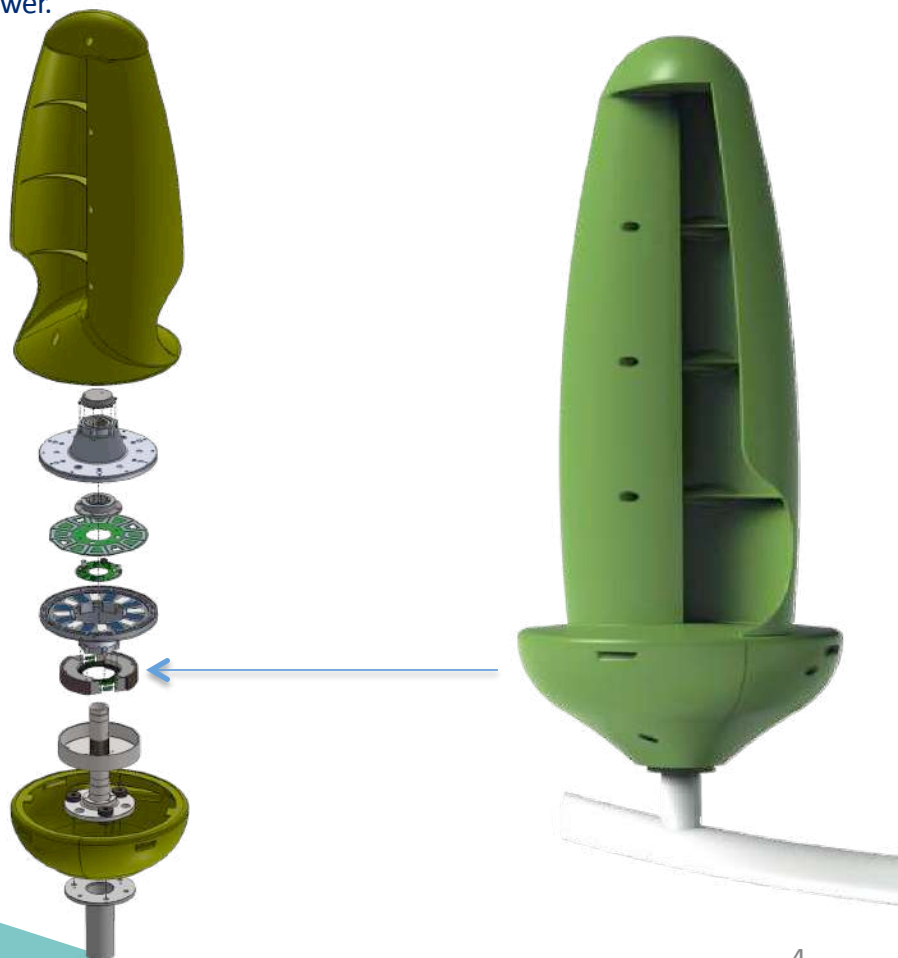
Inspired by nature, the WindTree is a complementary electrical production system, based on a small vertical axis wind turbine called Aeroleaf®. This innovation captures all types of wind in urban or natural environments, whether turbulent or laminar, strong or light.

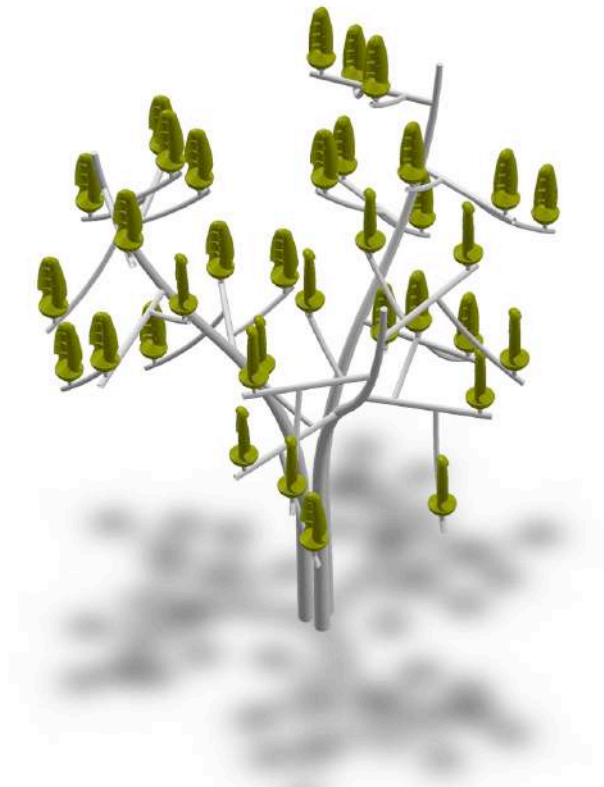
Each Aeroleaf is made of a synchronous generator with permanent magnets. The generators developed by New World Wind have a stator (copper winding linked to an electronic card) and a rotor made of two plates supporting the magnets. Simply initiated by the rotation of the blade, without any belts or gears, the magnets create a magnetic field, generating tension and alternating current (AC). To allow for the addition of each Aeroleaf power, it is switched to direct current prior to the final AC generation.

Thanks to the electronic card developed by New World Wind, the production of the current is optimized with respect to wind speed. The microcontroller on each Aeroleaf guarantees a fine regulation of the system. Every ten milliseconds a computation is performed to sent a voltage/current instruction to Aeroleaf rotational speed in order to generate the maximum power.

NWW Micro Generator

Proprietary technology with electronic regulation card embedded in each leaf for a maximum efficiency



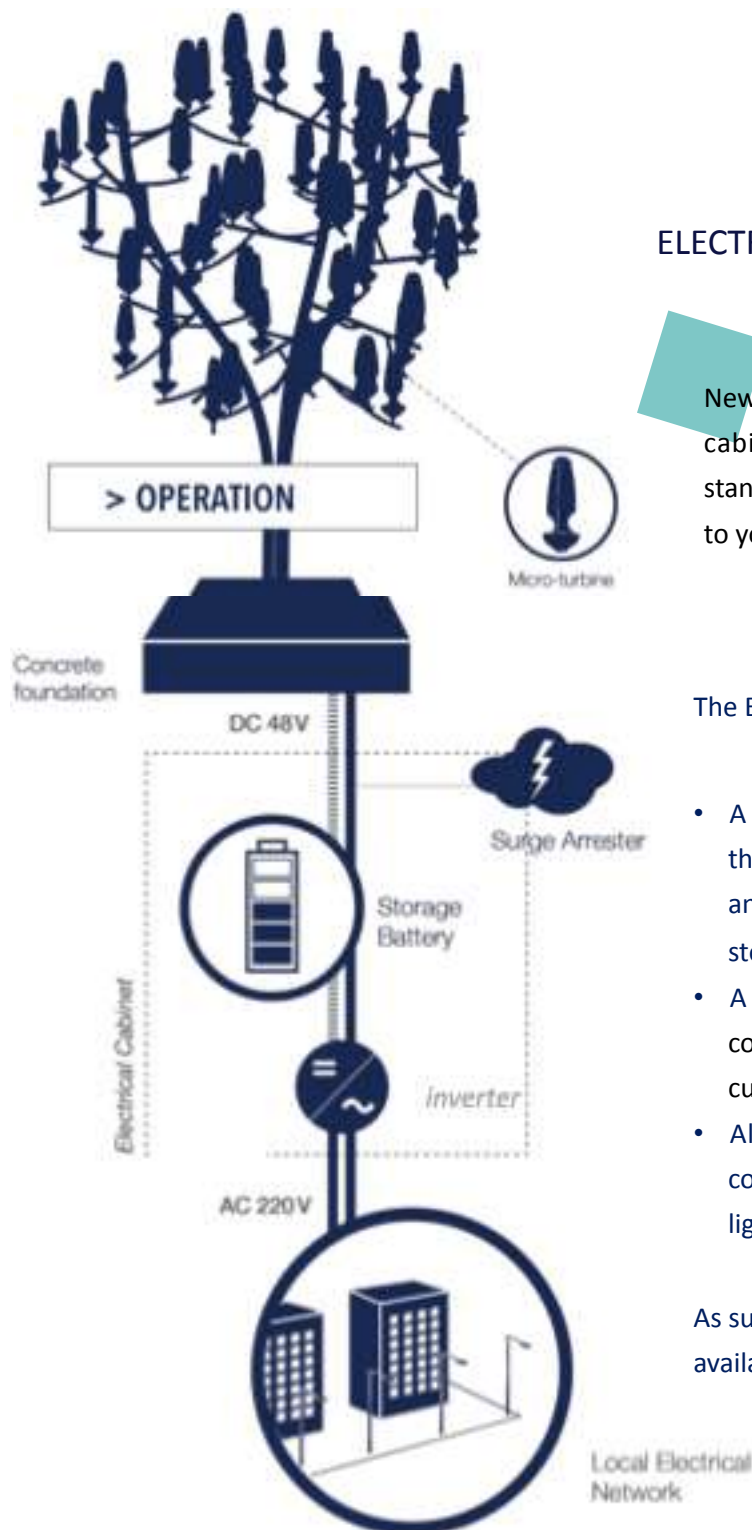


The WindTree is a steel structure (trunk and branches) on which 36 Aeroleaf® are installed.

The Aeroleaf are all independant, which facilitates both production and maintenance as each turbine can be monitored without stopping the overall production (electrical assembly in parallel) and without risk (low voltage 48V).

Aeroleaf height	3,2 ft – 0,98 m
WindTree's total height	32 ft – 9,8 m

WindTree's total weight (excluding base anchor)	3590 kg
--	---------



ELECTRICAL INSTALLATION SCHEMATICS

New World Wind provides an electrical cabinet compliant with the electrical standards in France/Europe. We will comply to your country requirements.

The Electrical cabinet is made of:

- A battery, allowing to temporarily regulate the electricity production to limit peaks and solely for short time needs. It is not for storage.
- A specific inverter dedicated to self-consumption that connects directly to the customer's main switchboard (TGBT).
- All the security systems required for commissioning (fuse wire, switchgears, lightning conductor and isolation switch).

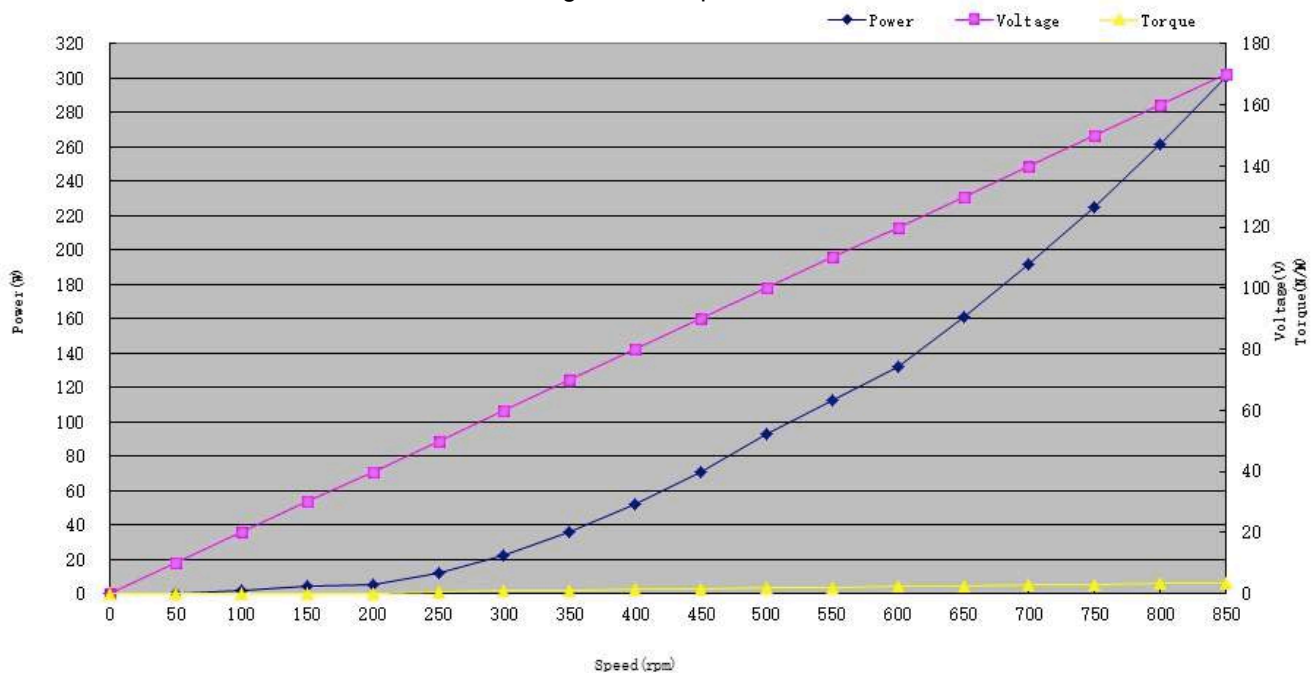
As such, the electrical cabinet is readily available for connection to local network.

The Areoleaf aerodynamic profile is optimized for the lowest wind speed, with a production threshold lowered to 2.5 m/s (wind speed minimum value from which the turbine is in operation).

For safety reasons, the Aeroleaf incorporates an electromagnetic brake that triggers automatically when the wind blows too hard

300W-850RPM-170VAC

Power curve per Aeroleaf
Relation Voltage/Power/SpeedRPM



In addition to their very low starting threshold, the Aeroleaf have the advantage of having a perfectly quiet operation, due to the small radius of their blades (little air brew) and the lack of gear (no sound).

The WindTrees can be installed in various environments.
NewWind is able to support its customers to define the best location,
with consideration to spatial requirements and wind availability.

The customer is responsible for the realization of the tree anchorage.

The data necessary for the construction of the concrete block are provided by NewWorldWind upstream of the civil works.

The interface between the anchor and the tree is via a reservation template provided by NewWorldWind.

The following responsibilities are excluded from NewWorldWind scope and shall be managed by the Customer:

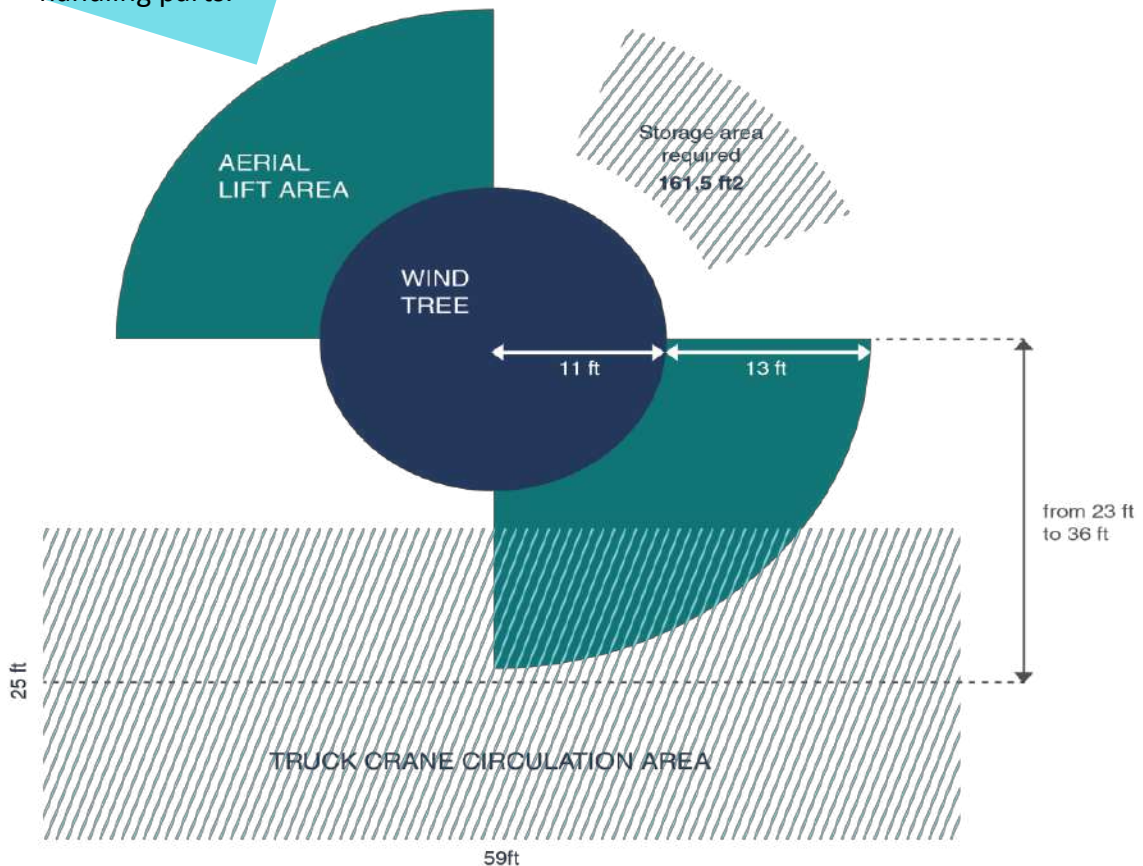
- Civil work of the Windtree foundation (solid concrete, including a junction box) based on the specifications provided by NewWorldWind, in appendix
- Installation of the cable sleeve between the Windtree and the electrical panel,
- Preparation of the area allocated to the electrical cabinet (if needed),
- Electrical connection to the Customer Low Voltage panel,
- Provision of a secured site and storage area during the installation.

NewWorldWind can facilitate the provision of the civil works in collaboration with our local partners.

The WindTree doesn't require any administrative approval prior to conduct the work (French requirements, other countries to confirm), because it's a wind system of less 12 meters.

The site works will start upon confirmation the site readiness as per a document to be signed-off by the project owner.

The metallic structure and the Aeroleafs will be delivered and temporary stored on site. the site must be accessible to a crane truck 12 t and 2 telescopic platforms required for handling parts.

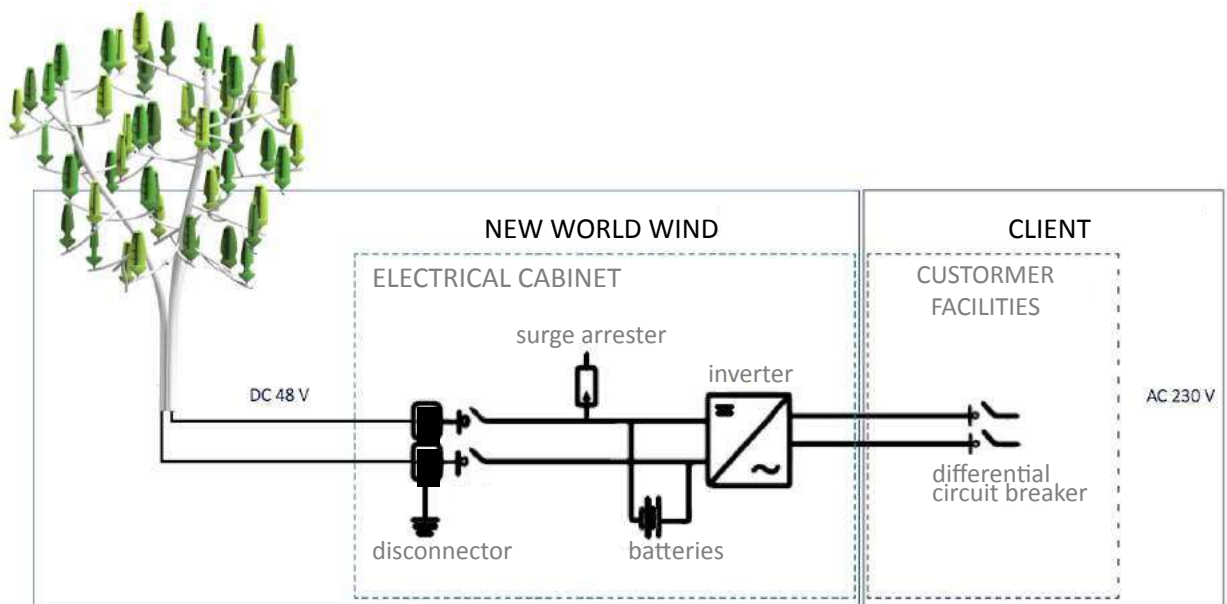


A 15m² area shall be cleared for the storage and an area for the lifting truck shall remain accessible at all times.

D1	D2	D3
Installation		Electrical connection

On-site work will take 2 to 4 days.

The Windtree is based on the concept of on-site generation and direct consumption of the electricity in the connected building/area.



The Windtree is connected to the local grid through the NewWorldWind electrical cabinet. A dedicated space should be prepared for the cabinet, within a maximum distance of 20 meters. In addition to the WindTree and its electrical cabinet, NewWorldWind is also providing the electrical wires between the WindTree and the Cabinet.

The overall installation is compliant with the current European standards.

In case of specific difficulties, New World Wind can propose adaptations to make the installation possible (on estimate).

The electrical cables sheaths between the WindTree and the Electrical cabinet is explained in the civil engineering specifications. Similarly, any specific protection and wiring until the Electrical cabinet shall be prepared by the Customer to allow for the connection between the Electrical cabinet and the local grid.

MECHANICAL CHARACTERISTICS

WindTree's total height	9,8 m - 32 ft
WindTree's diameter	8 m - 26,3 ft
Aeroleaf's height	0,97 m- 3,2 ft
WindTree's total weight	3590 kg
Number of Aeroleaf	36

TURBINES CHARACTERISTICS

Launch speed	2,5 m/s (9 km/h)
Wind speed limit	43 m/s continuously 50 m/s in gusts (180 km/h)

ELECTRICAL CHARACTERISTICS

WindTree's Installed Capacity	10 800 W
WindTree's Nominal Power	5 868 W
Maximum power per Aeroleaf	300 W
Output Voltage of the Inverter	110 / 230 V

SITE INSTALLATION

Installation Time	2-4 days
Maximum distance between the WindTree and the Electrical Cabinet	20 m- 66 ft
Minimal distance between the WindTree foot and the nearest building	6 m - 19,7 ft

RESPONSIBILITIES

Civil Engineering	Client
Anchoring	Client
Electric sleeves	Client
WindTree and Aeroleaves Installation	NewWorldWind
Control Cabinet Installation	NewWorldWind
Connection of the WindTree to Control Cabinet	NewWorldWind
Connection of the Control Cabinet to customer facility	Client

Key notes

- The Client is in charge of realising the civil engineering
- The WindTree doesn't require a declaration of site works under the French standards, other local regulations would have to be respected.