

dt wind

the **power** of wind



1.5 kw three-blades

Maximum power: 1,5 Kw with 12,5 Mt/sec. Of wind
Blades diameter: 2,1 meters
Total weight: 26 Kg
Start up: 2,5 Mt/sec. of wind



3.0 kw three-blades

Maximum power: 3,0 Kw with 12,5 Mt/sec. of wind
Blades diameter: 3,1 meters
Total weight: 30 Kg
Start up: 2,3 Mt/sec. of wind



IEC / EN 61400-2
compliant



DUCATI
energia



What is a micro-windturbines?

Micro-windturbines are systems with **rated powers smaller than 20kW**. Such systems can take advantage of the installation site's specific conditions. Being very **adaptive** systems they can exploit both strong and feeble winds, as well as sudden gusts of wind. **Micro-windturbines have an extremely limited impact on the scenery.**

Mechanical operation principles

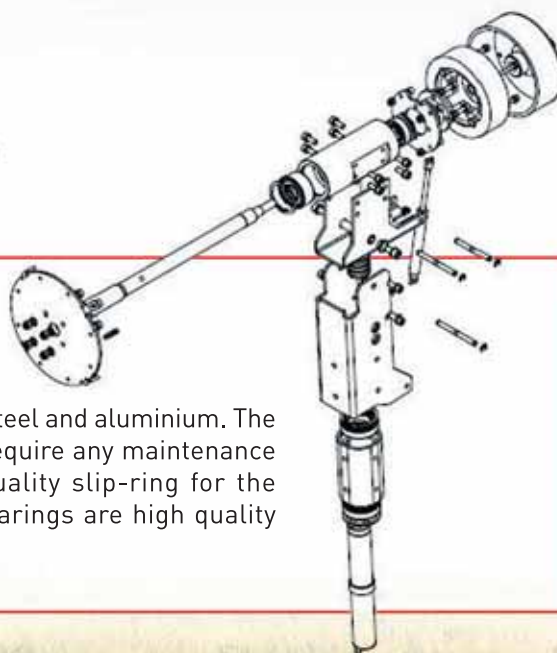
A micro-windturbine is an electromechanical equipment capable of converting the linear flux of wind into a turning motion, which can be used to drive one or more electrical generators housed in the system's body.

6061T6 Aluminium Blades

The turbine blades have the key-role of intercepting the wind's power. The design decision of choosing aluminium for the blades, instead of fancier composite materials, is due to their **extreme strength** as well as **dimensional uniformity: any blade differs at most 1,2g from any other**. This avoids the necessity of a balancing operation, allowing a simple, quick on-site substitution of any blade in case of damage.

Sturdy and simple = reliability and long life

DT WIND's mechanical structure is entirely made of INOX steel and aluminium. The direct-drive generator –i.e. without gear-box– does not require any maintenance or lubrication. The turbine is equipped with a high-quality slip-ring for the transmission of the 3 phases to the ground. All ball-bearings are high quality products from SKF.



Electrical operation principles

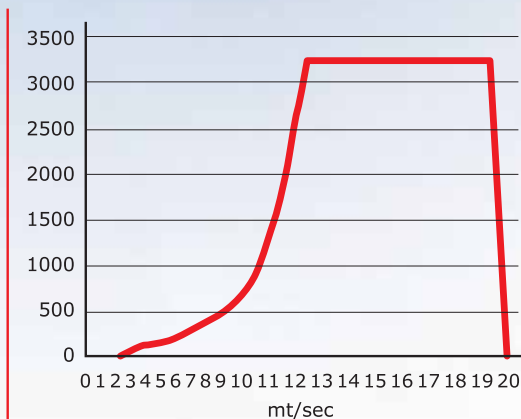
The electrical generator is the hearth of the micro-windturbine. **DUCATI ENERGIA** has developed a standard-setting generator especially for this application, registering the lowest cogging torque of this category.

The cogging torque –caused by the interaction of the rotor's permanent magnets with the stator slots- tends to block the rotation at standstill and at low speeds.

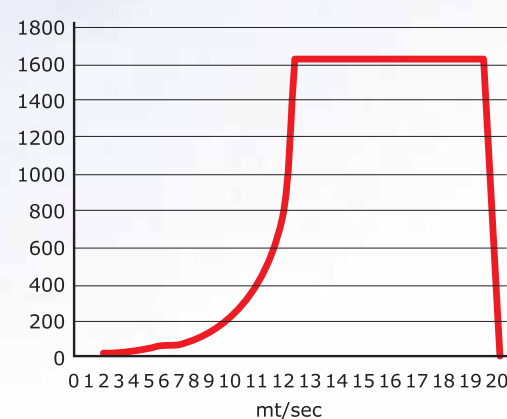
This outstanding electrical characteristic makes it possible for DT WIND to start up already at very low wind speeds.



Power Curve *dtwind* 3H



Power Curve *dtwind* 1.5H



To each *dtwind* dtwind its controller

The JACK 05 wind-controller supervises all electrical functions of the windturbine: safety features, ballast loads, smoothing of the DC voltage output.

SAFETY FEATURES:
WIND ANALYSIS
OUTPUT VOLTAGE ANALYSIS
VIBRATION SENSOR

Anemometer

The anemometer [supplied with each windturbine] fitted to the supporting pole constantly analyses the wind speed and communicates with the JACK 05 controller: in the event of excessive gusts of wind, the turbine is immediately braked down. Operation is automatically resumed when the wind speed returns to acceptable values.



Determining if a site is suitable for the setup of a micro-windturbine



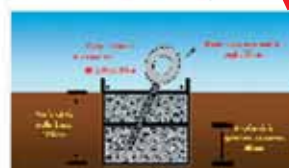
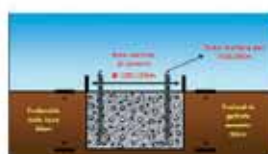
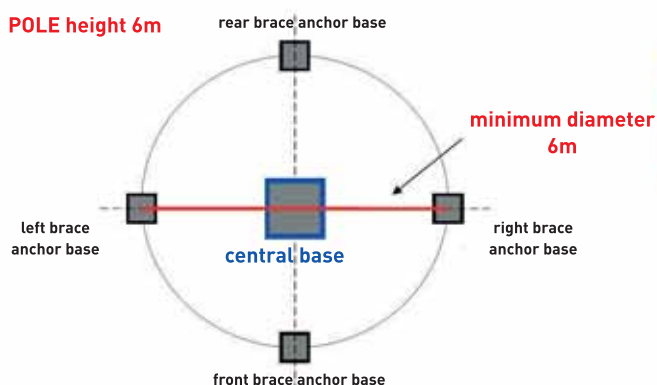
**MINIMUM REQUIREMENT:
APPROX. 4M/SEC YEARLY
AVERAGE WIND-SPEED**



After verifying –using the general wind-speed atlas and direct anemometric measurements- that the average wind speed meets the required 4m/sec, the height of installation must be determined. This choice is made depending on the height of nearby obstacles.

Installing a dtwind micro-windturbine *dtwind*

The pole's base and the braces must be set into suitable bases made of General Portland concrete. The figure shows the general layout. Alternatively, suitable concrete blocks can be used to anchor the braces.



dtwind. what can be done with the generated energy?



► OFF-GRID (battery-based energy storage)

The system is designed and set-up for the whole energy production to be stored and used locally [or for distribution over short distances]

► GRID-TIED (energy fed into the mains network)

The whole or excess energy is fed into the main electrical grid. There is no necessity of local energy storage, since the grid absorbs the excess energy and supplies energy when necessary. In most countries this type of installation allows to access the incentives reserved to renewable-energy power plants.

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