



## How much electricity is produced ...

The yearly electricity production of the entire wind farm Alexigros is estimated at 40 million kilowatthours (kWh/a), which corresponds to the annual consumption of approximately 9,000 houses.

That means that each turbine can supply energy to about 430 houses every year.

### Did you know?

Each kilowatthour of electricity produced by a wind turbine avoids the emission of approximately 1 kg of Carbon dioxide (CO<sub>2</sub>) from a conventional fossil fueled power plant.

The annual energy produced from 1MW installed wind power is equivalent to the energy produced by "burning" 4,000 barrels of oil per year in a conventional power plant

## How does it work ....

The sun is the ultimate source of energy on earth: the sun's energy is converted to heat which warms up the air, the land and the sea. All these media heat up differentially thus resulting to movements of air masses which in turn create the winds.

The force of the wind makes the blades of a wind turbine to start turning. This mechanical energy is converted into electrical energy by the generator, which is directly connected through a shaft with the rotor blades.

Electricity produced by the generator, which is located in the nacelle (housing behind the rotor blades), is conveyed by cables to the base of the tower into a power converter and from there into a transformer converting it from 620 volts to 20 kilovolts (kV) and then with underground cables to the Alexigros Substation.

The substation collects the energy from all the turbines and channels it to the National Grid of the Electricity Authority of Cyprus.

## Find out more

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**Thank you.**



## Why here?

Alexigros wind farm has been named after the highest point of the area, called "Moutti tou Alexigrou".

The reason for choosing the specific location was that wind measurements on the site have shown good wind conditions throughout the year and that the land was available through the Cyprus Forest Department.



## Wind farm ALEXIGROS

The construction process took approximately 9 months, from December 2010 until August 2011.

The park consists of 21 wind turbines, VENSYS 82 from the German manufacturer Vensys Energy AG.

This model has a hub height of 85 meters, a rotor diameter of 82 meters, i.e. the wind turbine is 126 meters tall when the blade is at vertical point. Each turbine has got a rated capacity of 1.5 Megawatt (MW) and the total installed capacity of the wind farm is 31.5MW.

The turbines have a cut-in wind speed – i.e. when they start rotating and producing power - of 2.5 meters per second (about 9 km/h), which means that they can take advantage of lower wind speeds to produce energy.

The turbines always face the prevailing wind

direction due to a wind vane installed on top of the generator housing, which helps them guide into the face of the wind.

Wind turbines have to be that high due to the phenomenon of wind gradient: the closer an object is to the surface of the earth the lower the wind speed due to friction. This means: the higher the position of the rotor, the higher the wind speed and the lower the turbulences.

The output and hence electricity produced increases with the increase of wind speed. It reaches its maximum of 1.5MW at a wind speed of 12.5m/s (45km/h) at hub height and remains constant from then onwards. This constant level of output is achieved through the so-called pitching of the rotor blades, similar to controlling the speed of an aircraft through the angle of its wings.

