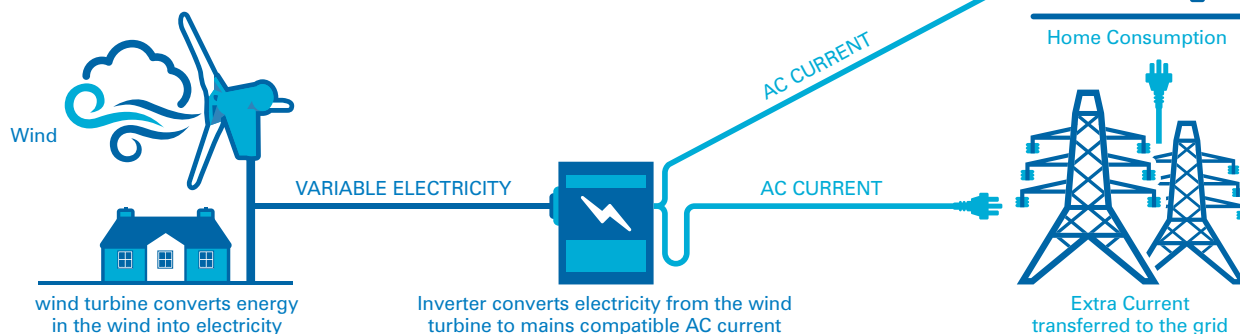


WIND
TURBINES

WIND TURBINES

Small scale wind turbines were one of the first forms of renewable energy generators developed. Historically, small wind turbines were used for pumping water to irrigate fields and provide drinking water to populations and animals. Wind turbines come in many different shapes and sizes. These vary depending on the application and power output. Typically, small wind turbines are free standing on a monopole and have two or three blades. There are a number of 6-bladed machines called 'wind-batterie-chargers'. These are mainly used in pleasure craft and typically generate around 100 Watts.



How Wind Turbines Work

**HANDIHEAT**

Improving Energy Efficiency For Rural Areas

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For a typical 5 or 6KW
wind turbine installation:



**Average
installed
cost £20,000***



**300,000kWh
generation
in 20 years***



**Save 2.5-5.6T
of CO₂/year
emissions¹**



**Equivalent
of planting
250-560
pine trees²**

**Costs and productivity of a wind turbine are directly linked to site conditions and available wind resource.
Range given assumes turbulence free open space between 5-9ms⁻¹ annual average.*

Productivity of a wind turbine is directly dependent on the annual average wind speed at a given location. For example, a 5kw turbine could produce as much as 9000KWh a year where the average wind speed is 5ms⁻¹. If the average wind speed is 8ms⁻¹, this could rise to an expected annual yield in excess of 20,000kWh.

Wind turbines work best in wide open spaces far away from obstructions. Small wind turbines will typically use a permanent magnet generator to produce electricity. This 'green' electricity is then fed into an inverter. The output power from the inverter can be distributed to the grid or used in an off-grid standalone configuration. A well-maintained turbine should last more than 20 years.



REFERENCES

¹ <https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2018>

² <https://www.gotreequotes.com/how-much-co2-do-trees-absorb/>



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