



## Turbine Description

The CF11-13 is a Horizontal axis wind turbine with active blade pitch and active yaw.

## Turbine Generator

The Turbine has a permanent magnet AC 3-phase radial flux generator.

## Active Blade Pitching

The blades are automatically controlled to optimise aerodynamic performance under different operating conditions using active pitch.

## Yaw Actuator, Heated Wind Vane Cup Anemometer's

The wind vane and cup anemometer are monitored by the turbine PLC, which then activates the yaw motor to align the turbine into the wind.

## Mechanical Brake

All C&F turbines employ a fail safe hydraulic rotor brake system. Multiple callipers are used.

## Blades

Blades in this range are glass-filled vinylester resin over a polyurethane foam core.

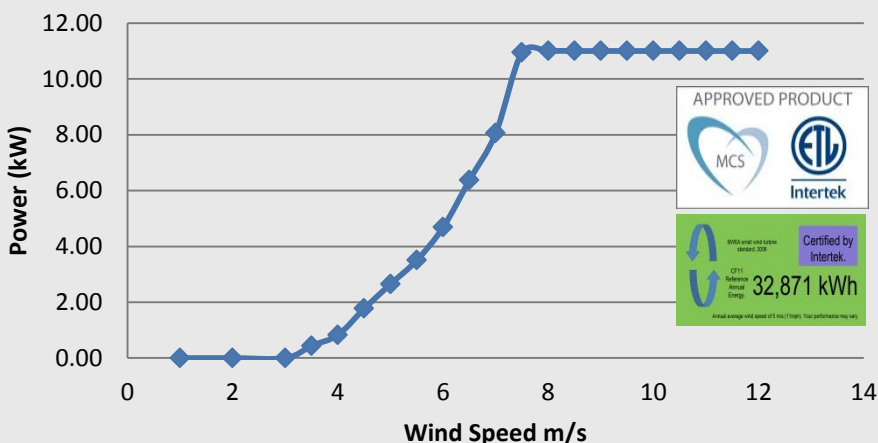
## Mast

Tubular steel monopole.

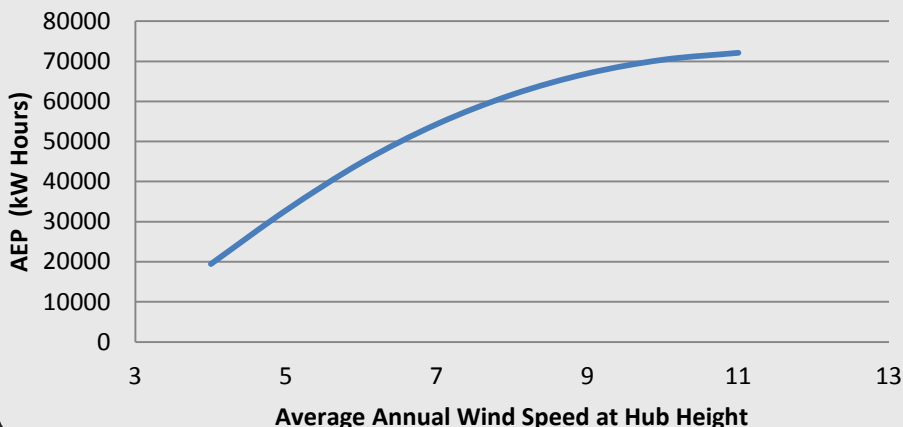
## Controller

C & F Green Energy has developed its own GSM enabled controller, allowing us to remotely monitor your turbine. Our 24/7 monitoring station will ensure your turbine is always performing to its optimum. This provides you, the customer, with peace of mind that your investment is continuously working for you.

## CF11-13.1m Rotor - Power Curve



## CF11-13.1m Rotor - AEP vs Average Site Wind Speed (Wind speed distribution estimated using statistical estimation)



## CF11-13: Specification Sheet

**Recommended for site with an average wind speed of +5m/s**

- Rotor Diameter : 13.1m
- Rotor Swept Area : 134.8 m<sup>2</sup>
- Number of Blades : 3
- Hub Height : 15m/20m
- Max. Power : 11kW (can be restricted)
- Rated Wind Speed : 9.0m/s
- Wind Class : III (Vave = 7.5 m/s)
- Survival Wind Speed : 60 m/s
- BWEA Sound Level: 44.89 dBA @ 60 Lp,60m
- Cut-in Wind Speed : 2.2 m/s
- Cut-out Wind Speed : 25 m/s
- Rotor Speed Range : 0-85rpm(normal operating range)
- Installation Method: Hydraulic Tilt Lift

**Certified AEP (kWh) :** 5 m/s = 32871, 6 m/s = 44768, 7 m/s = 54353, 8 m/s = 61698, 9 m/s = 66991.

### Acoustic Disclaimer

"This acoustic performance estimate is based upon a standardised method using publicly available information. It is given as guidance only and should not be considered to be a guarantee. The acoustic performance of wind turbine systems is impossible to predict with a high degree of certainty due to the variability in the wind from location to location and from year to year. For a greater level of certainty, it is recommended that on-site wind speed monitoring is undertaken ideally for at least a year. Note: it may be useful to monitor for shorter periods, especially if the acquired data is then correlated with other sources in order to estimate an annual mean wind speed."

## C&F Green Energy Ltd

Cashla, Athenry, Co. Galway, Ireland  
Telephone: +353-91-790868

[www.cfgreenenergy.com](http://www.cfgreenenergy.com)

[sales@cfgreenenergy.com](mailto:sales@cfgreenenergy.com)

**Power Performance Disclaimer:** "This energy performance estimate is based upon a standardised method using publicly available information. It is given as guidance only and should not be considered to be a guarantee. The energy performance of wind turbine systems is impossible to predict with a high degree of certainty due to the variability in the wind from location to location and from year to year. For a greater level of certainty, it is recommended that on-site wind speed monitoring is undertaken ideally for at least a year. Note: it may be useful to monitor for shorter periods, especially if the acquired data is then correlated with other sources in order to estimate an annual mean wind speed."