



# **CF20 – 20kW**

## CF20 General Data

Supplier/ Manufacturer	C&F Green Energy
Configuration	Horizontal Axis
Life Expectancy	20 Years
Drive Train	Direct Drive
Service Maintenance	Annually
Rated Power	20kW @ 9.0m/s
Cut In Wind Speed	2.2m/sec.
Cut Out Wind Speed	25 m/sec.
Rated Wind Speed	9.5 m/sec.
Survival Wind Speed	60 m/sec.
Passive Power Regulation	Active pitching (blade-angle adjustment)
Active Power Regulation	Fully variable back-to-back IGBT system
Noise Emissions	45dB(a) at 60 <sub>LP</sub> , 60m
Ambient Temperatures	From -10°C UP TO 40°C
Electrical Configuration	Inverter Connected
CE Compliant	Yes

## Applied Standards

Degree of Protection	IP55
Standards	IEC 61400-1

## Rotor

Rotor Diameter	13.1m
Rotor Speed	75rpm
Rotor Weight	545kg
Power Regulation	Active Blade Pitch

## Blades

Number of Blades	3
Length	6m
Swept Area	134.8m <sup>2</sup>
Position	Upwind
Direction	Clockwise
Material	Fiberglass/ Vinyl-ester
Colour	Matt White. Ral 9018

Weight 246kg per set of 3

## Shaft Assembly

Shaft Material	EN24T
Bearing Housing Type	Ductile Cast Iron
Bearing Type	Dual Spherical Roller
Bearing Lubrication	Grease

## Fairing

Nacelle	2 Part - Fiberglass
Spinner	4 Part - Fiberglass

## Electrical Output

Rated Turbine Output	20kW, 21 kVA
Maximum Continuous Turbine Output	20kW, 21 kVA
Maximum 1 Minute Turbine Output	20kW, 21 kVA
Maximum 1 Minute Reactive Requirement	0.25 kVARS
Maximum Feeder Current	400V-32A – 220V 100A
Design Power Factor	0.95

## Brake System

Primary Brake System	Full Blade Pitching
Back Up Brake System	1 Passive Spring Applied, Hydraulically Released + 1 Hydraulic Active
Primary Brake Compressor	Piston Type – AC Motor

## Yaw System

Type	Active Yaw
Signal From	Anemometer
Yaw Slew Ring	4 Point Ball Bearing
Yaw Drive Type	Double AC Motor with Planetary Gearbox
Damping Device Resisters	Active & Passive Yaw Brake
Electrical Connection	Twist Cable
Yaw Locking Device	Hydraulic Brake & Electric Brake on Motor

## Generator

Manufacturer	C&F Green Energy
Type	Permanent Magnet (Radial)
Voltage	240V (2x120v) Split Phase

Frequency	60Hz
Winding	Star
Rated Power	20kW
Rated Current	29A
Rated Rotation Speed	75

## Nacelle

Nacelle Frame	Welded Structure
Nacelle Frame Finish	Shot blast, Primer & Paint
Nacelle Cover	ABS Cap Acrylic UV Stable
Dimensions	2900mm x1100mm
Weight	2.2 Tonne Approx.
Colour	RAL 9018

## Tower

Type	Tubular Steel Monopole
Sections	4
Weight	3.6 Tonne
Hub Height	20m
Blade Tip Heights	27.1m
Location Ladder	None
Turbine Access	Hydraulic Pivot Tower
Colour	Galvanised Steel

## Controller

Manufacturer	Phoenix Contact
Model	PLC-ILC-150-GSM
Remote Monitoring	Bespoke SCADA
Data Logging	Yes