EcoAdvantage Power Inc.
4139 Willow Landing Rd.
Chico, CA 95928
530-342-1665
EcoAdvantagePower.com.

EcoBreeze 20kw Wind Turbine On-Grid System

TheEcoBreeze 20kw turbine is a beautiful machine that produces little noise and has many safety features. The turbine uses a direct drive permanent magnet generator. It can start up in as little as 3 meters per second, 6 mph. 20 kilowatts of power will be produced at 11 m/s or 24.6 mph. The overloading capacity (dump resistance) is 2 times the rated power, with double over speed protection.

With a life span of 20+ years the EcoBreeze 20kw needs no special maintenance.

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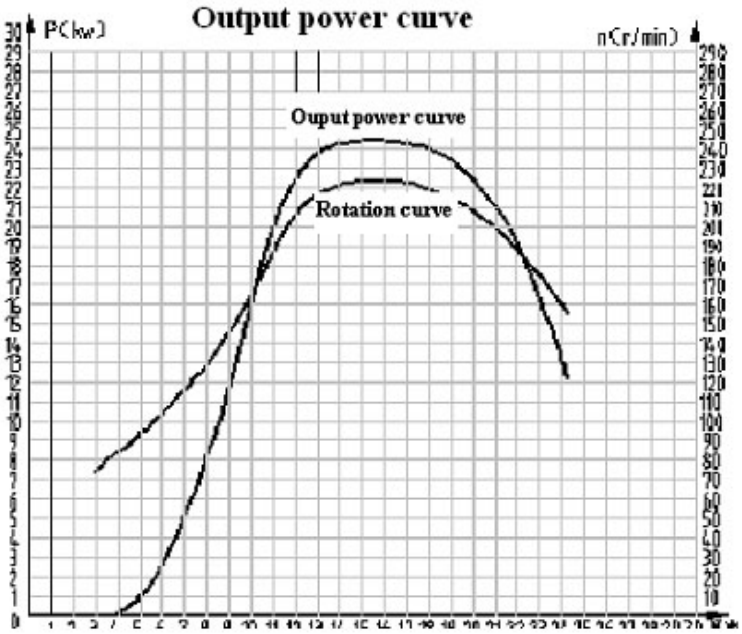
I. EB 20kw Wind Turbine Parameters

Model	DB20KW
Rotor Diameter (m)	10
Blade Material/Quantity	Fiberglass/3
Rated Wind Speed (m/s)	11
Start Up Wind Speed (m/s)	3
Working Wind Speed (m/s)	4-30
Survival Wind Speed (m/s)	50
Rated Power (kw)	20
Maximum Power (kw)	23
Rated Rotor Speed (r/min.)	180
Regulation Method/Stop Method	Yawing, Folding Tail mechanical Brake
Generator Type	Permanent Magnet
Phase	3
Working Voltage	DC540V/AC380V
Working Temperature	-40C---+40C
Wind Turbine Weight (kg)	1500
Tower Structure/Height (m)	Monopole/25
Tower Weight (kg)	6600
Electricity Generating / yr.	20,000/60,000 kw
Working Life	20+ years



The maximum output can reach 1.3 – 1.5 times the rated power, thus there is great protection for coil overload. The generator can withstand more than 2500v. EB turbines use sealed, NSK or American bearings . Being a gear less turbine (no transmission), little maintenance is needed. The turbine will operate for over 30,000 hours without maintenance. Only annual inspections of the casing and blades are required.

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II. EB 20kw Wind Turbine Safety Features

The design of the blades and hub allows the turbine to survive a wind speed of 50 m/s or 112 mph. This is 2-3 times the rated wind speed. A California registered professional engineer designed the tower and foundation.

When wind becomes strong and nears overload, the turbine will regulate speed and output automatically by yawing, and use of dump load. The wind reaches critical speed, an electric winch will start automatically to fold the tail (yaw the turbine) and begin the mechanical braking system. This can also be done by "hand winching" the turbine at the base of the tower. One may shut down or lock the turbine at any time, for storms, vacations, and maintenance. Manual controls for such are on the controller panel as well as the hand winch.

In normal conditions the turbine will regulate itself with the first actions.

Unique to the EcoBreeze is the DC emergency yaw motor, which with a simple back up battery, will safely shut down the turbine during a storm with grid power failure. (Grid power failure usually happen during storms)

At EcoAdvantage, we build and incorporate our own control system that is redundant to the factory system but adds a greater degree of control options and safety. Our system will not interfere with the factory system, but works along side it.

Features of the EcoAdvantage Control system:

Wind speed monitoring with pre programmed or chosen shut down speeds based solely on the winds speed. For instance, it can be set to shut down at 35mph and to restart when the wind is below 20mph for an hour. THIS AUTO RESTART is unique to the EcoBreeze and not available on the standard factory machine. Standard machines need to be manually started at the turbine, with no web controls or auto restart available.

The EcoBreeze winch motors run in two directions, allowing the turbine to restart itself. After a grid failure, it will also restart on its own.

The EcoAdvantage control system also allows for either EcoAdvantage, or the user to monitor the machine ON LINE, from anywhere an internet connection is available. Once on line, the outputs can be viewed for each inverter, as well as the positions of the off and on switches. From on line, we can turn off or on your turbine. You have the ability to do the same. If you are out of town, you can see what your turbine is doing, or shut it off if an impending storm presents a risk to keeping it running. *Your site must also have internet connection for this feature to be used.

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For Ag applications, the on line view,or auto restart is very important, as you don't have to trudge through muddy roads to restart is if it has shut down from grid failure or overload caused from too much wind. Most other turbines of similar design require a manual restart.

The EcoBreeze turbines continue to operate in winds over 40mph. Many of the others are shut down long before that.

Additional features unique to the EcoBreeze Turbines:

The EB turbines all have lights atop for safety related to night AG spraying.

We supply 110v to the towers for other applications such as Digital Path or other internet providers, if there is a desire for such. IN most cases, the turbine owner will get free internet for offering some space atop the tower for the apparatus. We have one at the Shop Turbine on Willow Landing Rd. Free is nice!!

EB turbines use slip rings to eliminate cable twist due to yawing to many times in one direction.

Only EB Turbines use ceramic brake pads for long life and added friction needed in strong wind shutdown.