



Mariah Power: A Wind Technology Company

Vertical Innovation, Technology Integration™



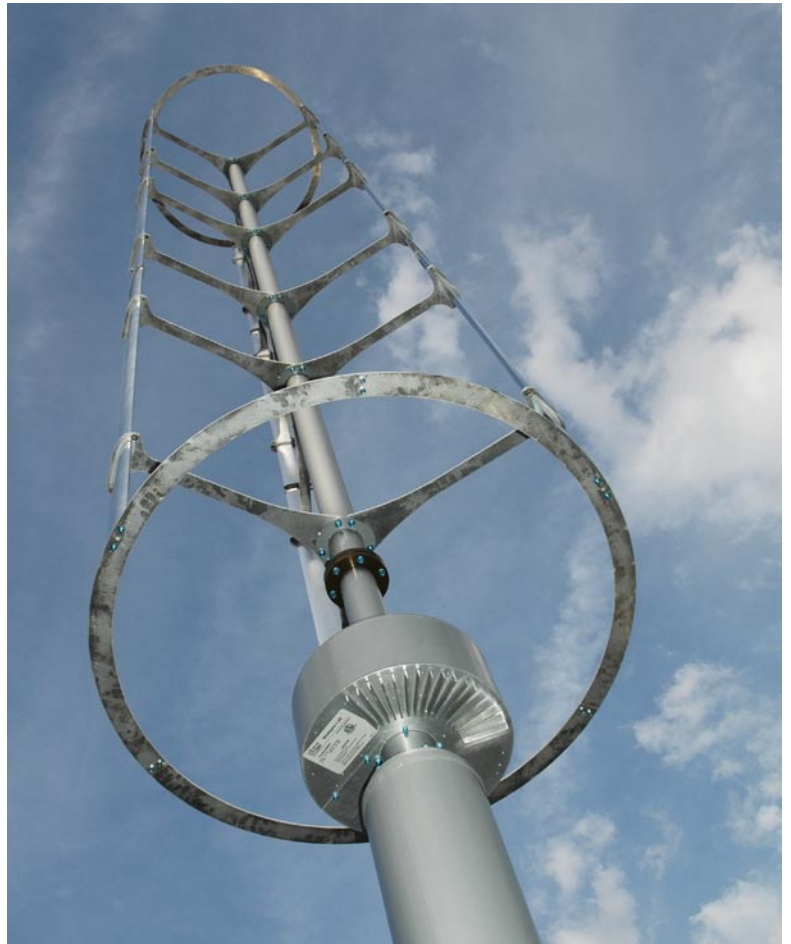
Mariah Power is a wind technology company specializing in advanced, small-scale wind power appliances. Our engineering team accounts for about two thirds of our staff, and covers a wide spectrum of disciplines, including electrical, mechanical, civil, structural, aeronautical, and software development engineering.

The team was assembled on the philosophy

of seeking innovative, experienced, and talented engineers who are willing to challenge the status quo and develop breakthrough solutions. With a combined total of over 90 patents and patents pending to their names, our technical team forms one of the most dynamic engineering teams in small-scale renewable energy. They bring together both experience from within the wind industry, and fresh thinking from other backgrounds.

Windspire®, a Complete Wind Energy System

Our core product, the Windspire® vertical wind turbine, is the result of extensive engineering development work, and boasts many unique features that set it apart in the marketplace. One of the distinguishing features of the Windspire vertical wind turbine is that it was engineered as a complete



system. It includes more than a rotor that turns in the wind and a generator to generate power. It also includes an integrated inverter, the complete pole and structure, and a wireless monitoring system. The advantage of designing the Windspire from the ground up is that we were able to optimize each component to work together for maximum system efficiency at the lowest possible cost, a benefit we are proud to pass on to our customers.

Rotor

The rotor is the airfoil structure that spins in the wind, using lift to transform wind energy into mechanical (rotational) energy. The Windspire rotor employs an efficient giromill design with a large swept area for maximum energy capture. It is unique in its tall, narrow, minimalistic profile that makes it aesthetically appealing and appropriate for a wide variety of settings. The rotor is constructed with multiple airfoil segments to reduce strain and to transfer wind-induced stresses to the high strength center shaft. The rotor was designed with the aid of extensive aerodynamic computer modeling to maximize power production, done by the world's premier expert in Darrieus rotors. The mechanical system was further refined using advanced rotordynamic modeling of vibration modes, performed by another leading expert in rotordynamics.



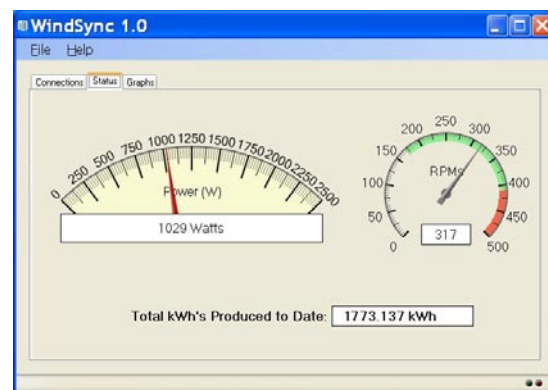
Generator



The generator takes the rotational energy and transforms it into electrical energy by driving a rotating magnetic flux through specialized copper windings, inducing current in them. The Windspire's very unique generator was developed by our own team, and served as a catalyst for the whole system. After working on a highly efficient air core permanent magnet generator technology for several years, Mariah Power was founded in 2005 with the integration of the generator into a wind turbine. The generator technology is unique in several ways: First, it minimizes magnetic-induced losses by using a special rotor and stator construction, resulting in very high efficiencies (up to 98%). Second, it is cog-free, for seamless rotation. Third, and perhaps most importantly, it operates most efficiently in low wind speeds. This is the opposite of most wind generators, and it allows the Windspire to capture more energy in the lower, more prevalent range of wind speeds.

Inverter

The inverter conditions the electricity that comes from the generator for use with various power systems, such as standard 120 volt and 240 volt AC electric grids, 3 phase power, and off-grid battery systems. Custom built for the Windspire, and integrated into the turbine, the computer-controlled inverter uses a peak power tracking algorithm to control the rotor speed and maximize energy production over a range of wind speeds. The inverter also protects the Windspire by applying a brake to limit rotation speeds in very high winds. The inverter includes a built-in wireless ZigBee modem that can directly transmit power generation information to your computer. Combined with our proprietary WindSync™ Software, you can monitor your Windspire's energy performance from your home or building. The Windspire inverter is UL 1741 and IEEE 1547 tested and certified.



Structure

The Windspire wind system uses its own engineered poles and structure that are designed for optimal operation of the turbine. The system utilizes an oversized ball bearing system, with greased-for-life mechanical bearings that provide for maintenance-free operation. Even the pole is specially designed, employing structural vibration damping for smooth operation. Made with high strength steel and hinged at the base, raising a Windspire is quick and easy. A standard Windspire assembly and installation can be done in as few as three hours, and does not require any heavy machinery.