

Model 8 Windmill Power System

NOT your Grandpa's Windmill



TECHNICAL DESCRIPTION

Overview

The Model 8 System utilizes the standard Aermotor eight foot Wheel Assembly installed in the Permanent Magnet Alternator (PMA) to generate variable 3 phase AC electrical power. The PMA assembly replaces the basic windmill motor and mounts to a custom frame which is directly installed on the standard eight foot windmill mast pipe. Directional control and stability is provided by the standard vane and tailbone assembly. A remote control linear actuator allows the tailbone to be retracted to prevent damage from storm conditions.

Power generated is transmitted through a 30Amp slip ring assembly to a disconnect which allows the system to be isolated for maintenance as necessary. The slip ring mounts directly to the windmill mast pipe. From the disconnect, power is sent through a rectifier to generate a DC output and then to the power equipment needed to provide Grid-tie, Off-grid or hybrid (combined wind/solar) power services determined by the customer.

The PMA is a direct drive, high torque alternator. It is recommended for areas with at least a Class 3 Wind Environment. Detailed wind maps for average wind speed for your area can be found at www.nrel.gov.

The Tower

The standard Aermotor windmill tower is an engineered structure. The Alternator and frame are similar in weight to the standard motor assembly making them suitable for mounting on the standard tower. The towers for six and eight foot diameter windmills are structurally identical. To change from a six foot to eight foot diameter windmill requires changing out the mast pipe on the tower.

Any Aermotor tower for an eight foot diameter windmill is suitable. We recommend a tower height of 33feet (10m) minimum. Shorter towers may be suitable in areas with higher nominal wind speeds.



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The Alternator

The SpiritPMA 400-2LS is used by the Model 8 to generate power. The alternator is specifically designed for low speed operation. The maximum rated speed is 220rpm with a maximum line to line voltage under load of 246VAC. The following is a summary of the unit specifications:

Output - three phase variable AC

Poles- 12

Rated Power-4.25kW

Speed @ rated power-220rpm

Voltage @ rated power-246VAC

Current @ rated power - 10.2amps

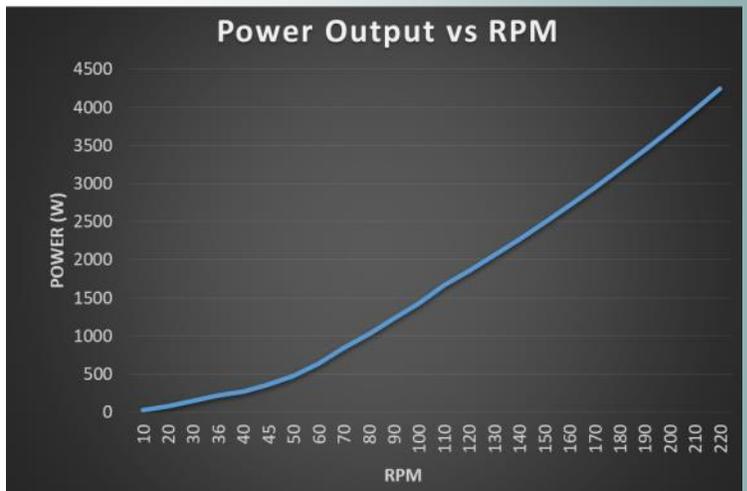
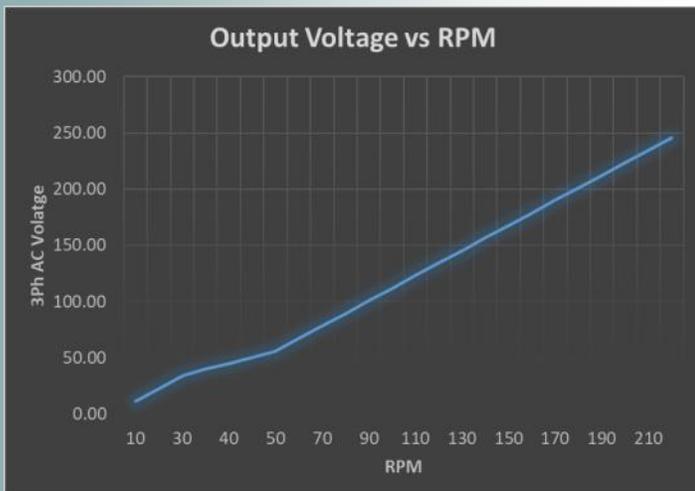
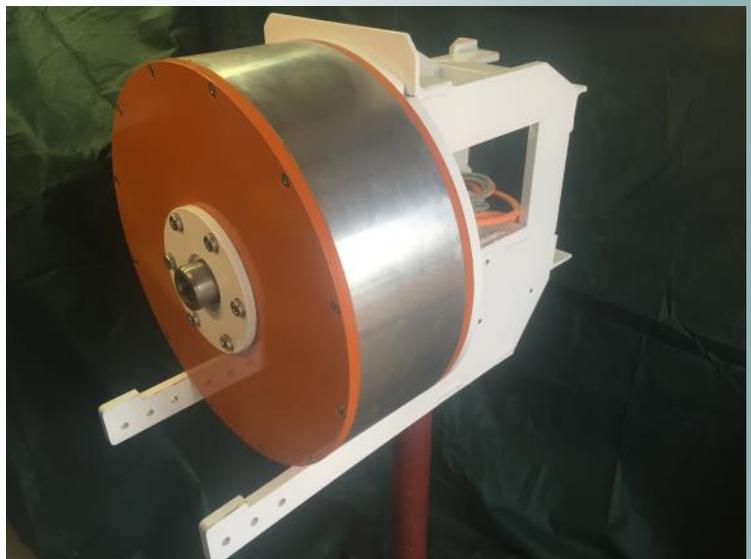
Torque @ rated power-235Nm

Efficiency @ rated power-79%

Power @ half speed (110rpm) - 1.6kW

Torque @ half speed-204Nm

Efficiency @ half speed-69%



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