

Preliminary Design Specifications for the Windlite 10 kW DC Wind Turbine

SYSTEM

Type	Stand Alone Battery Charger
Configuration	Direct Drive, Horizontal Axis, Upwind Furling Tail
Rotor Diameter	7.0 m

PERFORMANCE PARAMETERS

Rated Electrical Power	9.7 kW @10.5 m/s
Wind Speed	@hub height
• cut-in	4.0 m/s
• Furling (high wind)	18 m/s
• peak (survival)	59.5 m/s
Calculated Annual Output	
@ 100 % availability	24,093 kWh (25m) 27,878 kWh (37m)

ROTOR

Type of Hub	Rigid
Rotor Diameter	7.0 m
Swept Area	38.5 m ²
Number of Blades	3
Rotor Speed @ rated wind speed	230 rpm
Location Relative to Tower	Upwind
Rotation	CW When Looking Downwind

BLADE

Length	3.4 m
Material	Resin Transfer Molded or Wood Epoxy
Airfoil (type)	NREL 822,823
Twist	10
Root Chord	500 mm
Tip Chord	207 mm
Over speed Device	Horizontal Furling
Hub Attachment	Partially Imbedded Root Bolts

GENERATOR

Type	Permanent Magnet
Min. Ambient Temp.	-40°C
Voltage (V)	100-300 VRMS Variable Rectified to 120 V DC
kW @ Rated Wind Speed	9.7 kW
kW @ Peak Continuous	10.5 kW
Speed RPM (nominal)	230 @ Rated Power
Winding Configuration	Ungrounded Wye Stator
Insulation	Class F
Enclosure	Totally Enclosed Air Over (TEAO)
Frame Size	Custom
Mounting	Direct mount to Yaw Tube

YAW SYSTEM

Normal	Free, rotates 360 degrees
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DRIVE TRAIN TOWER INTERFACE

Structural	Turntable Bearing & Plate Adapter
Electrical	Slip Ring Assembly

TOWER

Type	Galvanized Guyed, Tubular or Self Self Supporting Lattice
Tower Height	25 m (82 ft)
Options	18.3 m (60 ft), 30.5 m (100 ft), 37 m (121 ft)

FOUNDATION

Type	Concrete or special pad
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CONTROL SYSTEM

Type	Digital Signal Processor (DSP) Based
Enclosures	NEMA 1, NEMA 4 (optional)

PROTECTION FEATURES

- Field Current Limiting
- Power Converter Output Protection
- DC Bus Current Limiting
- DC Bus Over Voltage Protection
- Battery Voltage Regulation
- Power Converter Overload Protection
- Power Switches Thermal Cutout
- Stator Current Limit
- Stator Imbalance
- Generator Ground Fault
- Generator Thermal Cutout
- Failed Rectifier Diodes Detection

ROTOR SPEED CONTROL

Passive	Rotor yaw angle increases with increased wind velocity
Normal Start up	Aerodynamic, electrical boost if necessary
Furling / Over Speed Control	Drive Train offset rotates rotor out of wind-Furling

APPROXIMATE SYSTEM DESIGN WEIGHTS

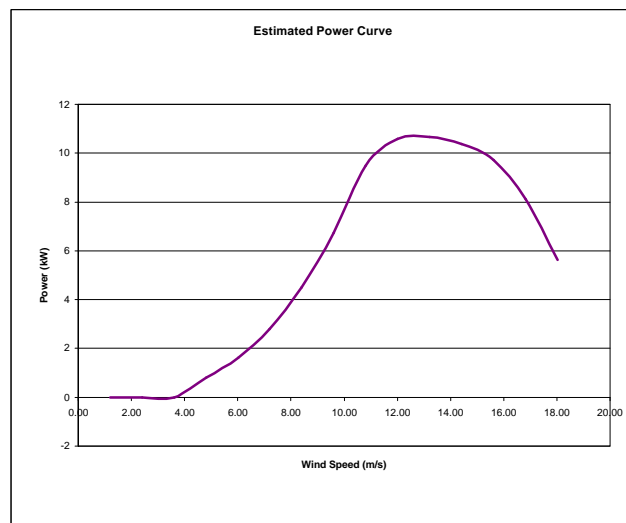
Tower	825 kgs
Rotor & Drive Train	300 kgs

DESIGN LIFE: 20 Years

DESIGN STANDARDS: Applicable Standards, AWEA, EIA and IEC

DOCUMENTATION: Installation Guide and Operation & Maintenance Manual

SCHEDULED MAINTENANCE: Annual or after severe events.



NOTE 1: Atlantic Orient Corporation, Windlite Corporation, and their affiliates are constantly working to improve their products, therefore, product specifications are subject to change without notice.

NOTE 2: Power curves show typical power available at the controller based on a combination of measured and calculated data. Annual energy is calculated using power curves and a Rayleigh wind speed distribution. Energy production may be greater or lesser dependent upon actual wind resources and site conditions, and will vary with wind turbine maintenance, altitude, temperature, topography and the proximity to other structures including wind turbines.

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