

primus **windpower**



Primus Wind Power is pleased to present the AIR Wind Turbine family of products. The Primus Factory is located outside of Denver, Colorado and we are also excited to say our products are produced and developed in the USA. Our philosophy is focused on listening to the voice of our customers. We look forward to providing our current customers, distributors and dealers, as well as new partners with the industry 'best-in-class' products and services. Primus Wind Power offers a global brand of product portfolio; AIR 30, AIR X Marine, AIR 40, AIR BREEZE and AIR SILENT X in 12, 24, and 48 volt configurations. Our products support the advancements in usage of micro wind in applications such as Telecom equipment monitoring, SCADA equipment (energy supply), security system monitoring and railroad crossing equipment (well adapted to be joined with existing PV Hybrid systems). Our products have been utilized in many applications with small load requirements to maintain equipment monitoring and consistent energy supply. Additional markets include; marine/sailboats, Tiny Homes, remote home and cabins, RV's, Hybrid lighting systems, coastal and buoy platform applications. Primus supports the idea and promotes the slogan:

AIR Wind Turbines complete any off-grid system (Marine or Land)

- Simple, Affordable, Reliable Power
- Easily Integrates with PV (Hybrid System)
- System Redundancy
- Maximum Power in Winter (when PV is reduced)
- Night Time Power Production
- Product Longevity – Over 165,000 Units Installed Since 1995

With regards to our updated product portfolio, our newest generation of AIR 40 and AIR Breeze are our recommended wind turbines (12V, 24V and 48V). The AIR 30 (formerly named AIR X Land) and the AIR X Marine are also available products. The AIR 40 and AIR Breeze both have improved power production at most common wind speeds and will provide the most amp hours into a battery bank in nearly all locations worldwide. The AIR Silent X was introduced in 2015, and is recommended for the Marine Cruiser Sailboat market along with the AIR Breeze. All units continue to be sold with a full 5-year warranty.

ONLINE TOOLS: We offer live training webinars each month, maintenance and repair videos, as well as one-on-one phone training. The webinars and videos are a great educational resource for all to learn more about WIND. Our product manuals and training videos are available in multiple languages, including Spanish (see below URL's).

<http://www.primuswindpower.com/maintenance-service/attend-webinar/>

<http://www.primuswindpower.com/maintenance-service/watch-webinar/>

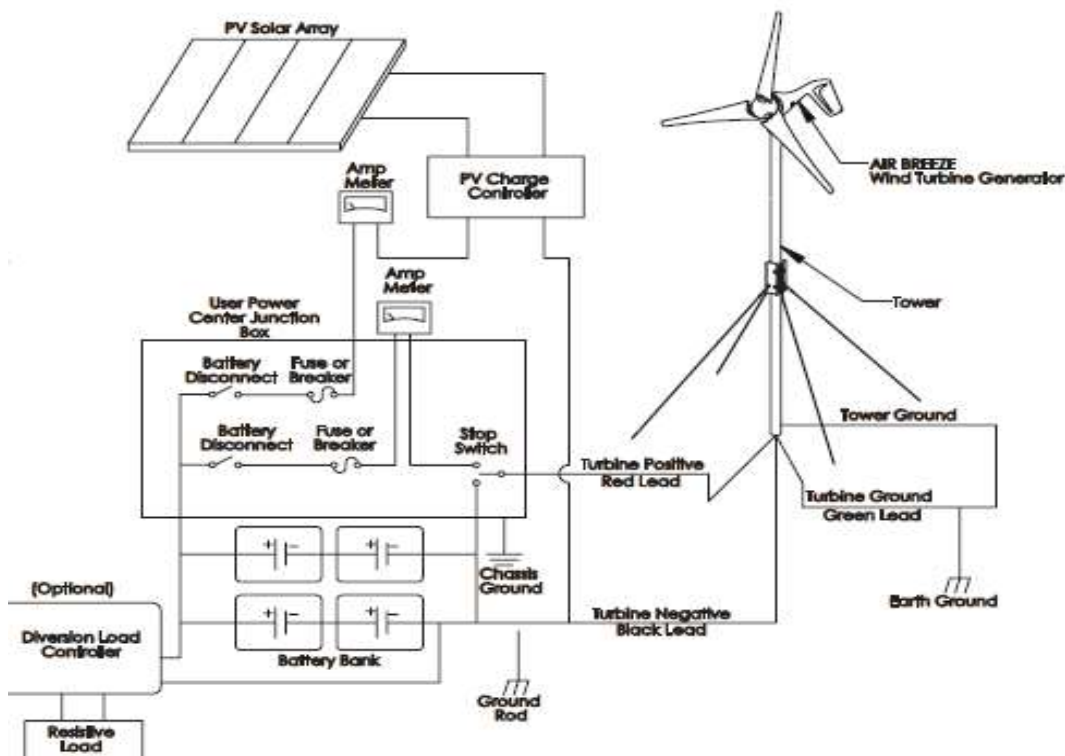
<http://www.primuswindpower.com/maintenance-service/warranty1-2/>

<http://www.primuswindpower.com/wind-power-products/manuals>

Primus is pleased to offer wind resource data free to our customers. Compiled by AWS True Wind, we can now provide wind data for each month of the year, and at specific tower heights, for most locations, worldwide. You will have free access to this wind resource data on our website www.primuswindpower.com.

THE HYBRID SOLUTION: In most instances, solar is utilized as a power generation medium for off grid applications. At Primus Wind Power, we are advocates for wind to be used in conjunction with solar for system redundancy, more uniform power generation, and reduced depth of discharge. AIR is a suitable complement for nearly any off-grid power system where solar is being used. It is recommended that wind represent between 10% - 30% of the power generation capacity, depending on three variables:

1. **Wind Resource:** With solar accounting for 30% or more of the power generation capacity, the wind resource analysis should be focused on solar assistance, which is during winter time months when wind is at its peak. Many regions of the United States have sufficient wintertime winds to support most off-grid power needs (see winter wind resource map below). A Wind resource of 4 m/s (10 mph) is the minimum average **winter** wind speed that we recommend to install an AIR turbine in a Hybrid system.
2. **Solar Resource:** In cloud-free locations at less than 35 degrees latitude, such as Arizona, wind will comprise a smaller percentage of total power generation (typically between 10% - 20%) since wintertime solar availability is high. Other locations such as the Great Lake region or Canada with shorter and/or cloudier wintertime months, off-grid systems should have a larger wind capacity (typically between 20% - 30%).
3. **Load Specifics:** Energy loads that are necessary in the wintertime and nighttime should have a higher wind component. A prime example is hybrid lighting, where the load is increased in the wintertime (due to longer nights) and where energy is only needed during nighttime when wind power generation can occur and solar power generation cannot.

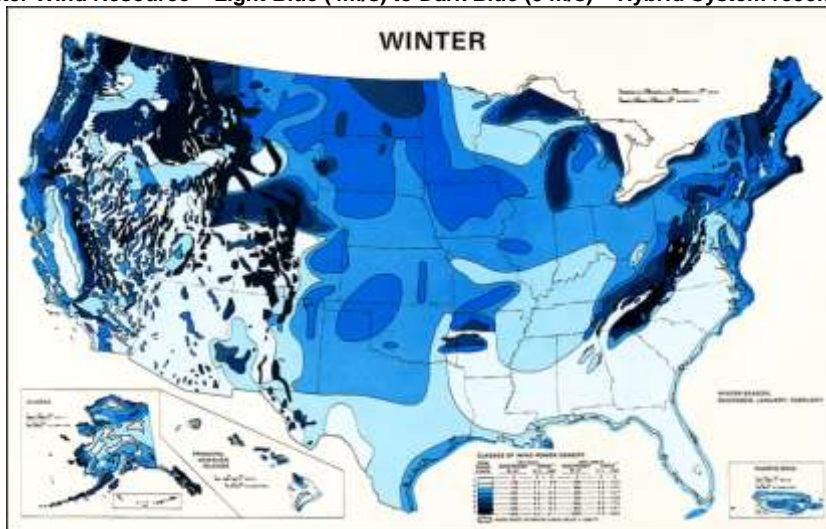


Power Requirements in battery based applications: Flexibility in Hybrid Solution can be adopted by adding in Wind to meet energy needs which is reasonably simple and can be completed in stages. Evaluating existing and anticipated power requirements should be reviewed in advance and taken into consideration:

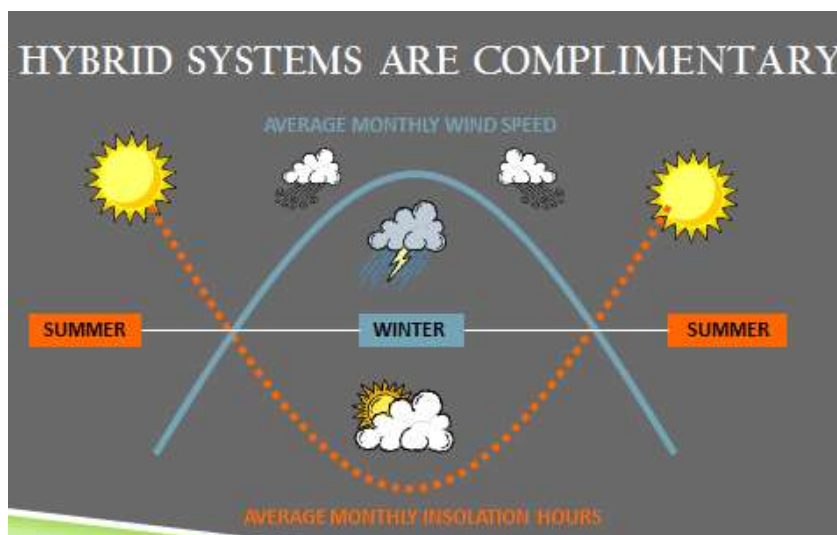
Wind Generator/PV location: The expected output from Wind and PV depends very heavily on location, time of year and weather etc. designing the optimal solution requires other details to be assessed:

- Location of install and descriptions of surrounding area and structures
- Local wind and weather conditions / similarly local sun conditions
- Other weather conditions to review:
 - Average rainfall
 - Cloud cover
 - Snow
 - Light

US Winter Wind Resource – Light Blue (4m/s) to Dark Blue (9 m/s) – Hybrid System recommended



TIPS to Why Hybrid and Why “AIR” A system that incorporates both WIND and SOLAR inputs will require a considerably smaller battery than one with sole power source of either option. Hybrid Solutions WIND/PV extend the life expectancy of a battery bank due to consistent flow of energy not allowing your system to drop below the recommended 50% depth of discharge. Hybrid Solutions WIND/PV allow for year round energy supply and consistency. The main focus is to know which resource you have more often and when (winter/summer & day /evening). This will allow you to outfit a system which maximizes on optimal energy supply as well as focusing on long-term life and usage of your solution and how each component contributes and when.



The “AIR” wind generator is a simple light-weight unit to install with any existing and or new Hybrid system. With it’s internal regulation there are virtually no further components necessary to support the normal function of the wind generator for standard DC applications (exceptions are stop switch, circuit breaker and amp meter).

PWP Contact Info: Ken Kotalik – Director of Sales for North America (303) 242-5820 – kkotalik@primuswindpower.com
 PWP Contact Info: Ketter Ulrich – Director of EMEA /LAC Sales (330) 663-8074 – kulrich@primuswindpower.com