Welcome & thanks for this Opportunity

**Honorable Secretary  MNRE Shri U Tripathi**
**JS (Wind) MNRE Ms Varsha Joshi**
**Director ( SWT Program) MNRE Shir G Upadhyay**
**Executive Director NIWE Dr Gomathi Nayagam**
**DDG NIWE Dr R Katyal**
**Ex Director MNRE Dr JP Singh**
**MEDA**
**Scientist Hari**
**Association**
**Telecom Industry**
**SWT Manufacturers**
**Delegates**

# XZERES Corp Presents Wind Solar Hybrid Power Solutions

**For Telecom & Broad Cast Towers**

# Our Company

- XZERES Corp
- 100% Owned subsidiary of 9 Bn US $ Ravago Group, Belgium. WL in Peto, Rubber & Raisins
- Global provider and manufacturer of best in class small wind power systems and power management solutions
- American made, off-grid and grid-connected wind turbine systems (2.4kW, 10kW, 50kW)
- Proven history with over 9,300 turbines deployed worldwide in 110 countries
- Patented innovative technology and various product certifications
- Acquired Southwest Windpower in 2013

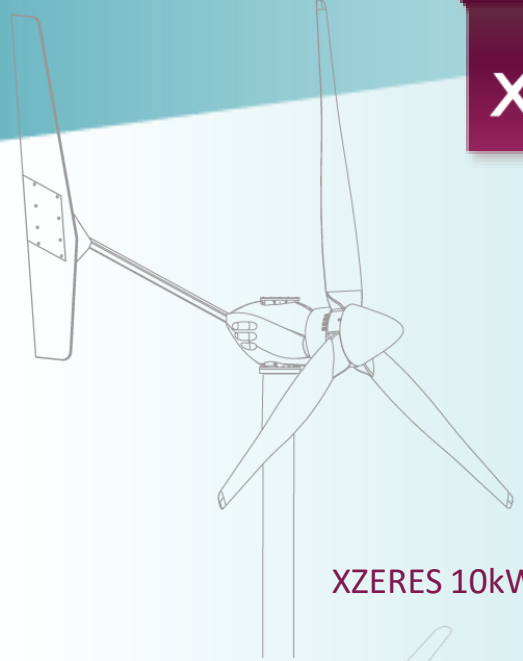
# Our Wind Solution, Our Value

Simple By Design: PM-Direct Drive technology reduces the number of moving parts, resulting in less wear and tear and **less maintenance** and **quiet operation**

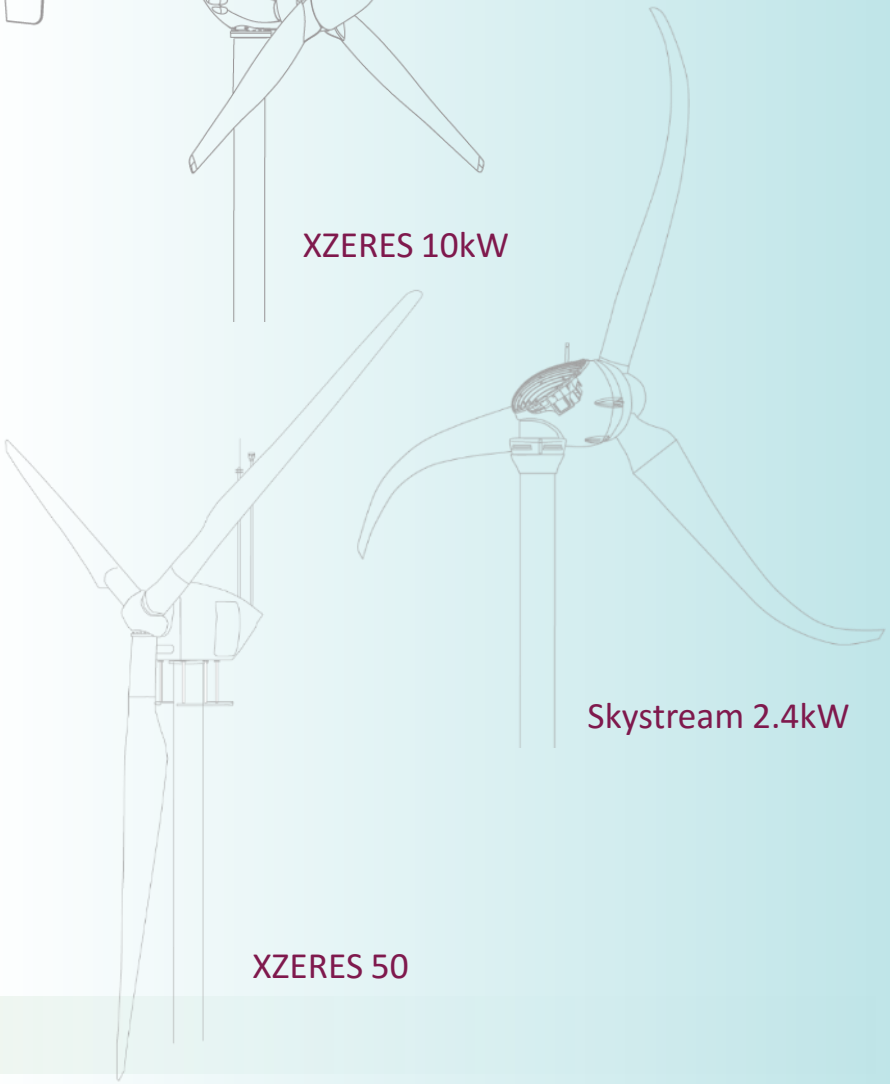
Peace Of Mind:

- **American made** turbines designed to meet global certifications
- **5 and 10 year warranty** options and 20 year design life
- Lightning and corrosion protection for harsh environments
- **Web based monitoring** interface to access real-time performance data and optimize turbine operations
- Over **9,300 installations** on 7 continents minus Whisper Brand

Smart Investment: Our power curve is best-in-class. Coupled with **low O&M** and in house financing options, customers can start realizing **immediate** savings



XZERES 10kW



Skystream 2.4kW

XZERES 50

# Our Turbines, Your Community

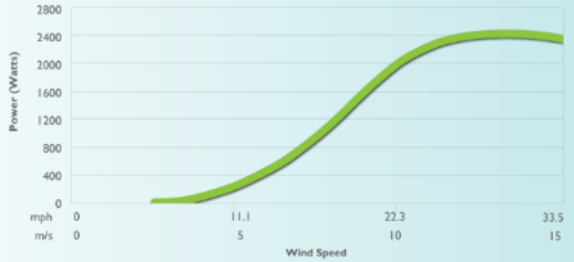
There’s a reason you find our turbines on all 7 continents. Our durable, technologically advanced fleet meets global certification benchmarks and the power needs of farmers, business owners, school administrators, home land security, commercial establishments, residences, remote communities and telecom developers all over the world.

# The Right Choice

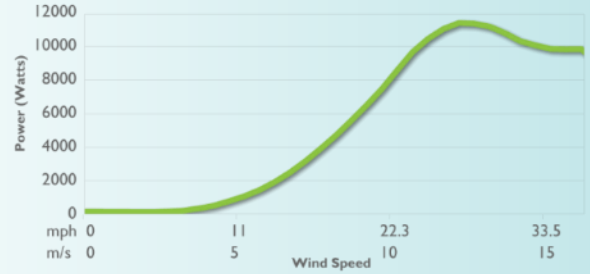
| | Skystream 2.4kW | XZERES 10kW | XZERES 50 |
|---|---|---|---|
| Diameter | 12 ft (3.72 m) | 23.6 ft (7.2 m) | 54.1 ft (16.5 m) |
| Swept Area | 115.7 sq. ft. (10.87 $m^2$) | 442 sq. ft. (41 $m^2$) | 2301.32 sq. ft. (213.8$m^2$) |
| Rated Speed | 25 mph (11 m/s) | 25mph (11 m/s) | 25 mph (11 m/s) |
| Cut-In Speed | 7mph (3.2 m/s) | 5 mph (2.5 m/s) | 6 mph (2.7 m/s) |
| Rated /Peak Power | 2.1 kW / 2.4kW | 10.4 kW / 12.1 kW | 53 kW/55 kW |
| Blades | 3 blade, downwind | 3 blade, upwind | 3 blades, upwind |
| Alternator | 3-phase, permanent magnet | 3-phase, permanent magnet | 3-phase, permanent magnet |
| Annual Energy Production | 5,349 kWh* @ 6 m/s | 25,979 kWh* @ 6 m/s | 191,000 kW* @ 7 m/s |

*Actual output will vary based on site conditions & tower heights

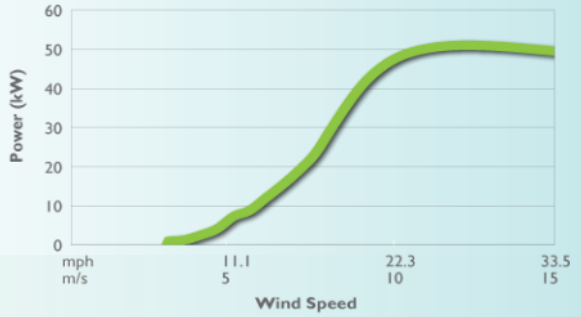
Skystream 2.4kW Power Curve




XZERES 10kW Power Curve




XZERES 50 Power Curve



# The Right Technology

Patents: 9 US and International Patents, 19 US and International Trademarks

List of Certifications:

NREL

CE

NIWE

GL OPERATING 24/7

SWCC WIND TURBINE PERFORMANCE CERTIFICATION
SMALL WIND TURBINE Power Performance Testing Conforms to AWEA 9.1-2009 LPP-10-10

MCS
The Certification Mark for Onsite Sustainable Energy Technologies

NIPPON KAIJI KYOKAI NK Small Wind Turbine Type Certification

UL

Web Based Performance Monitoring: A window into your turbine performance, you will always know how much energy your turbine is producing and trouble shoot any problems that may occur.

Quiet Operation: With rated sound levels from 41.2 to 47.5 dB(A), our turbines are good neighbors in urban and rural settings.

# The Right Support

Customer Service: At XZERES our customers come first.  We are committed to identifying the right clean energy solution for your home, business, school or farm. Our wind resource tools, incentive expertise and financing options provide you with a true picture of your wind project and the financial and environmental benefits you will reap.

Installation: We know your project is important. Our turbines have been installed thousands of times and our trusted installer partners will be with you every step of the way from the initial site walk to the ribbon cutting to ensure a smooth process

Warranty: We stand by our turbines with 5 and 10 year warranty options.  If there is a concern or problem, contact us anytime and we will respond within 24 hours. Our global network of trained service providers are committed to supporting the operational excellence of your wind turbine.

# XZERES Skystream Target Application Examples

Supplemental “power plants” in infrastructure-strained urban areas

Remote telecom micro-grids

Rural village electrification/micro-grids

XZERES Skystream 2.4
kW
Micro-Grid Maldives

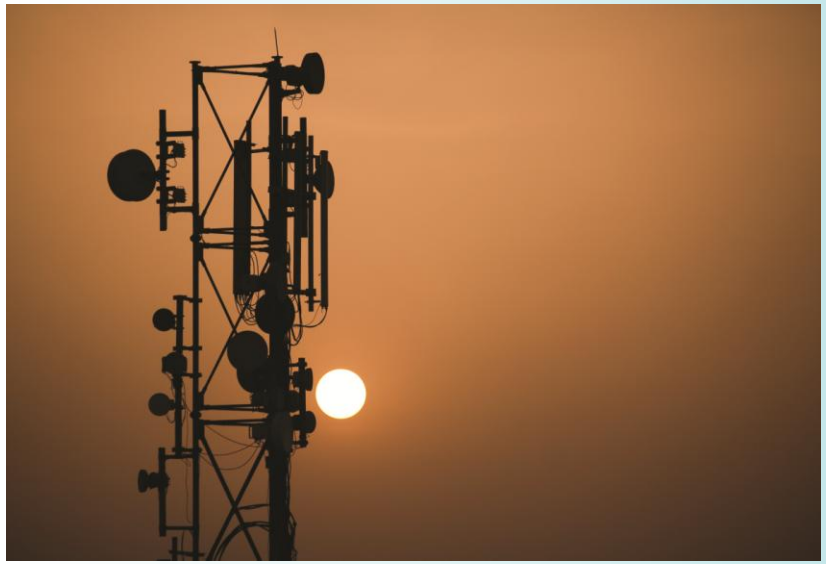
# XZERES 10 kW Installs

Remote Island
Electrifications
Vietnam Off Grid

XZERES 50

# Telecom Energy Challenges

| CHALLENGES |
| --- |
| Lack of grid power or poor quality grid power |
| Continually rising fuel costs due to fuel transportation, theft, pilferage and market fluctuations |
| Generator maintenance |
| Dependence on human labor |
| Majority of emissions created by the mobile telecom industry stem from power base stations |
| Increased pressure by government to meet clean energy goals |



India has 450,000 telecom towers and spends 1.9 billion a year on diesel

# Wind Power Solutions

| SOLUTIONS |
| --- |
| Grid dependence can be eliminated |
| Minimal need for diesel, cutting operational costs |
| Maintenance costs dramatically reduced |
| Man power needs reduced |
| Immediate positive impact on emissions and noise pollution |
| Clean energy subsidies can be accessed while helping governments meet renewable energy requirements |

# Configurations

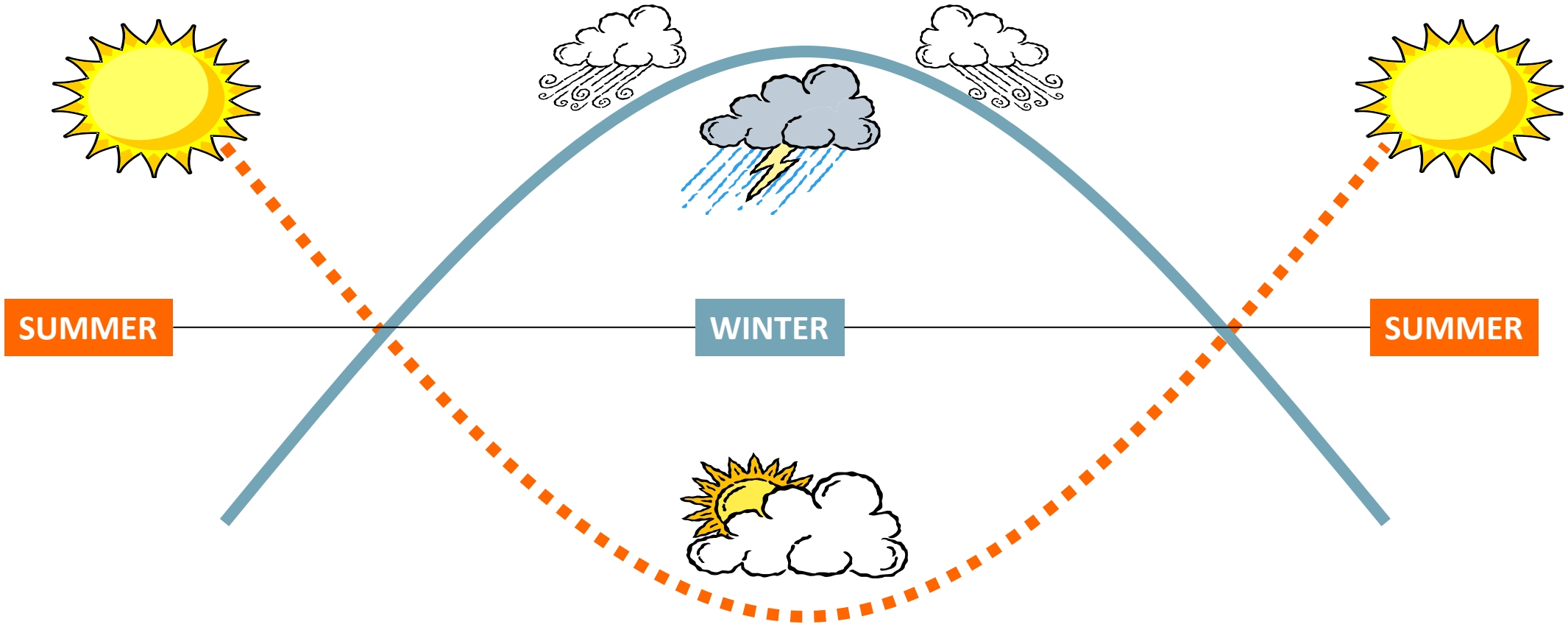
- All Telecom Deployments to Date Have Been with Skystream 2.4kW
- *The 10kW System Can Also be Configured for Both Battery Charge or Direct Grid Connect. Sufficient Low Height Wind Speed for Ground Mount and Higher Energy Demand are Ideal for Deployment.*
- Installations Have Been Both Co-locating atop the Telecom Structure and Free Standing Tower where Ground Wind Speed is Sufficient.
- **Grid Configuration for 2.4kW**
  - Skystream 3.7 Integrated Wind Turbine
  - Turbine Support Structure
- **Off Grid Configuration for 2.4kW**
  - Skystream 3.7 Integrated Wind Turbine
  - Turbine Support Structure
  - Host Inverter, Mate, Enclosures
  - Diversion Load and Diversion Load Controller
  - Cabling

# Wind Solar Hybrid Power for Telecommunications, most viable RET

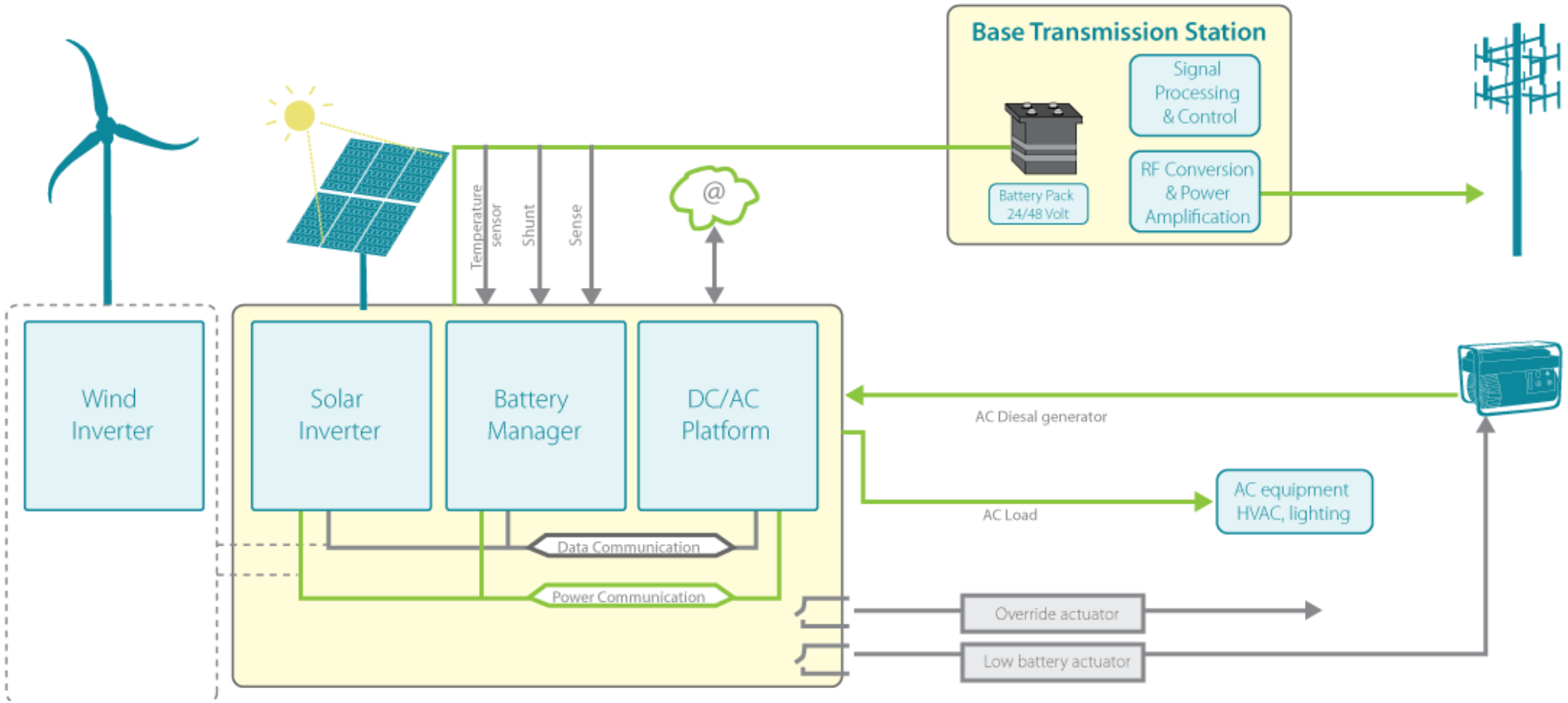
## Many telecom companies opt for hybrid renewable energy solutions that combine solar and wind, **wind & solar power has clear advantages**

- When a Wind generator and an SPV system are interfaced, the power generation from these is mutually supplemented, and the resultant hybrid system offers a reliable and cost-effective electric supply in a decentralized mode. The wind-solar hybrid system mainly consists of one or two Wind generators along with SPV panels of suitable capacity, connected with charge controller, inverter, battery bank, etc. to supply AC power.
- The major advantage of the system is that it meets the basic power requirements of non-electrified remote areas, where grid power has not yet reached. The power generated from both wind and solar components is stored in a battery bank for use whenever required. A hybrid renewable energy system utilises two or more energy production methods, usually solar and wind power.
- The major advantage of solar / wind hybrid system is that when solar and wind power production are used together, the reliability of the system is enhanced. Additionally, the size of battery storage can be reduced slightly as there is less reliance on one method of power production. Often, when there is no sun, there is plenty of wind.
- Wind speeds are often low in periods (summer, eventually) when the sun resources are at their best. On the other hand, the wind is often stronger in seasons (the winter, in many cases…) when there are less sun resources. Even during the same day, in many regions worldwide or in some periods of the year, there are different and opposite patterns in terms of wind and solar resources. And those different patterns can make the hybrid systems the best option in electricity production.

# Wind and Solar ARE Complimentary and typically NOT Mutually Exclusive



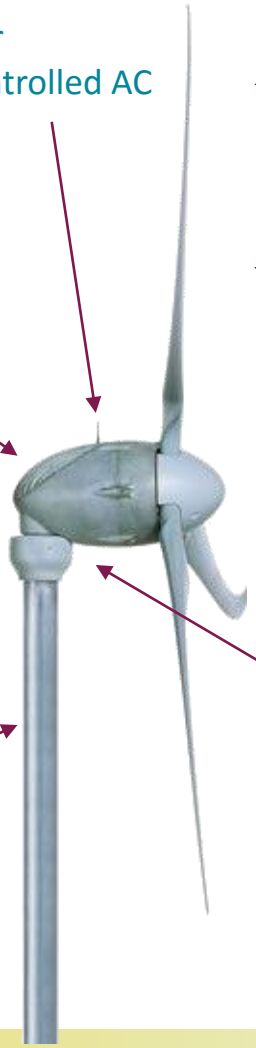
# XZERES Wind Solar Hybrid Energy System – Battery Charge



# Wind Solar Hybrid – Various System Capacities

| Load Bank | | | Load Bank | | | Load Bank | | | Load Bank | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| System | KW | 16 Units | System | KW | 20 Units | System | KW | 24 Units | System | KW | 30 Units |
| | | | | | | | | | | | |
| **Wind** | 2.1 | 12 Units | **Wind** | 2.1 | 12 Units | **Wind** | 2.1 | 12 Units | **Wind** | 2.1 | 12 Units |
| **Solar** | 1 | 4 Units | **Solar** | 2 | 8 Units | **Solar** | 2 | 8 Units | **Solar** | 3 | 12 units |
| **Battery** | | | **Battery** | | | Battery | | 4 Units | **Battery** | | 6 Units |
| Assuming 5 m/s wind speed & 4 units per KW for Solar<br>The actual generation would be different based on site characteristics | | | | | | | | | | | |

# Key Design Features




## High Level Design Goals

Aesthetics, Reliability, Convenience

- ✓ Quiet, unobtrusive operation.
- ✓ Not to be noticed, but if seen, to be appreciated
- ✓ To support purchase, installation, and performance as if a home appliance
- ✓ Fully certifiable to all applicable product standards

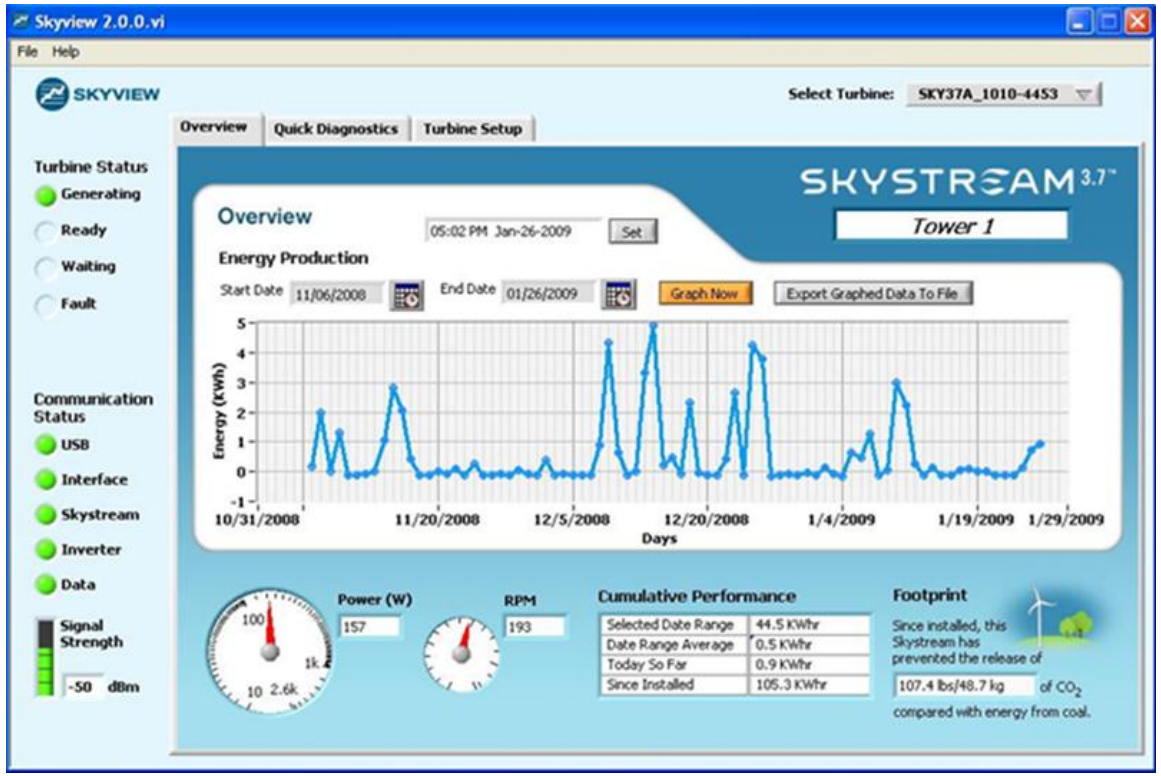
# Proprietary Material Handling and Tower System

Total Weight : ***Turbine is 77 kg, Stub Tower, attaching plates and hardware is 176 kg, for a total weight of 253 kg***

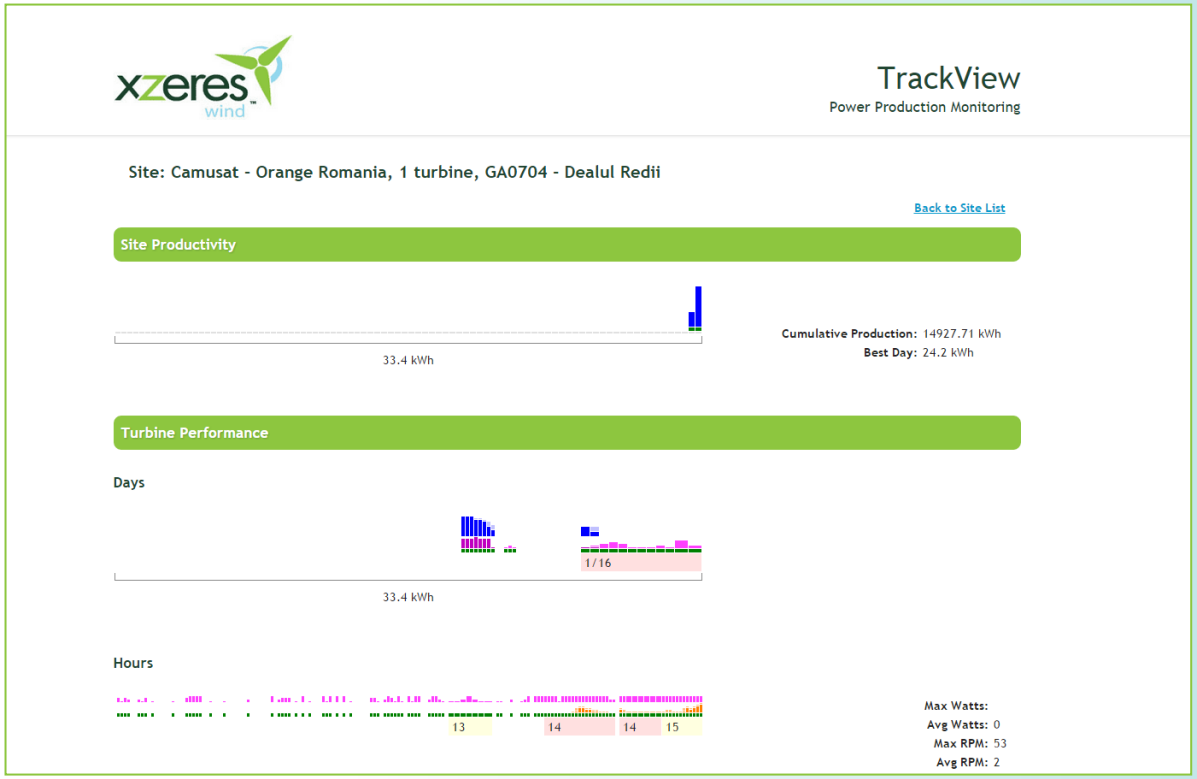
Maximum Loading at 53.6 m/s: ***3.508 kN. This is the thrust load at the attachment of the system to the top of the telecom tower.***

If Tower Health is insufficient Standard Ground Mounted Free Standing Monopoles are available.

# Remote Monitoring and Tracking




*The XZERES Skystream 3.7 has an on board wireless bridge that provides real time monitoring and data acquisition to a PC application named Skyview. The graphical interface will portray current operating behavior as well as historical production and events. This is a screenshot of the main tab in the Graphic User Interface*




*The wireless communication can also optionally be ported to a web based monitoring system that will provide access to historical data, event logging and fleet management capabilities. The Skyview monitoring and data acquisition system is a self contained comprehensive tool for measuring wind turbine performance either locally or remotely.*

# Deployment Examples

The Following are Details and Configuration Examples of Some of the Currently Operating Systems

# CAMUSAT Rom
# Telecommunications Romania

- Commissioning Date: December 2012
- Tower Configuration: Co-located on 45m SSL
- Availability: 100%
- Wind Speed at Hub Height: 7.1 m/s
- Connection Configuration: Grid Connected
- Off Set Fuel/Cost Per kWh: Utility Power at $0.12/kWh
- Daily Annual Average kWh: 20 kWh

# Bharti Infratel, India

- Commissioning Date: August 2012
- Tower Configuration: Co-Located on 50m SSL
- Availability: 100%
- Wind Speed at Hub Height: 5.5 m/s
- Connection Configuration: Off Grid
- Off Set Fuel/Cost Per kWh: Diesel at $.42/kWh
- Daily Annual Average kWh: 14 kWh

# CAMUSAT SAS - France

- Commissioning Date: October 2010
- Tower Configuration: Co-located on 39m SSL
- Availability: 99%
- Wind Speed at Hub Height: 5.2 m/s
- Connection Configuration: Direct to grid
- Off Set Fuel/Cost Per kWh: Utility Power $0.09/kWh
- Daily Annual Average kWh: 10.76 kWh

# CINERGY-DELMEC - Ireland

- Commissioning Date: July 2012
- Tower Configuration: Co-located on 15m SSL
- Availability: 100%
- Wind Speed at Hub Height: 5.9 m/s
- Connection Configuration: Grid-Connected Battery Backup
- Off Set Fuel/Cost Per kWh: Utility Power at $0.14/kWh
- Daily Annual Average KWh: 15 kWh
- Installed Cost: $8500

Top Mount
Telecom Tower
Hungary

Top Mount Telecom Tower
Jaisalmer, India

# Bangladesh

# Mobile Solar Wind Hybrid Telecom Tower Thailand

# Skystream Wind Solar Hybrid Ground Mount

# The Right Choice

- Can be configured for on-grid, on grid with battery back up or battery charging.
- XZERES has developed a proprietary support system and material handling system to ease the installation and service operation
- Host Inverter contains auto start feature for back up diesel generators to maximize fuel savings
- With grid references we can provide predicted output by month
- We offer localized training for installers and service providers
- We also localize standard components
- Our deployments on telecom have shown:
  - ✓ 100% Availability
  - ✓ No Operational Issues
  - ✓ Providing Energy at zero maintenance and service costs
  - ✓ No incidents of energy shortages and batteries kept charged resulting in maximum diesel fuel savings

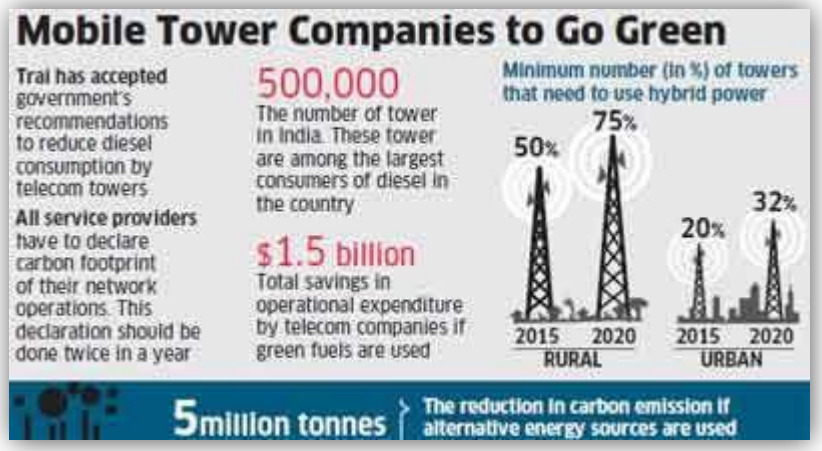
# Federal Target for Telecom Towers

The government announced that it has issued the Following directives to the licensees/all ILD service providers to adopt measures to green the Telecom sector:

i. At least 50% of all rural towers and 20% of the urban towers are to be powered by hybrid power (Renewable Energy Technologies (RET) + Grid Power) by 2015, while 75% of rural towers and 33% of urban towers are to powered by hybrid power by 2020.

ii. All service providers are required to evolve a carbon credit policy in line with carbon credit norms with an ultimate objective of achieving a maximum of 50% over the carbon footprint levels of the base year in rural areas and achieving a 66% over the carbon foot print levels of the base year in urban areas by the year 2020. The base year for calculating all existing carbon foot prints would be 2011, with an implementation period of one year and the first year of carbon reduction would be the year 2012.

iii. All service providers to declare the carbon foot prints of their network twice in a year. Further based on the details of footprints declared by all service providers, service providers should aim at carbon emission reduction targets for the mobile network at 5% by the year 2012-2013, 8% by the year 2014-15, 12% by the year 2016-17 and 17% by the year 2018-2019.



# Financing and Leasing Option

- XZERES Corp now introducing its most famous finance and lease model
- No Upfront Payment ( Capex)
- Wind Speed 5 and above
- PPA as per agreed tariff
- 10 Year SLA
- 20/50/100/200 Capacity (Cluster)
- Wind Solar Hybrid
- Off Grid & Grid Connect
- Federal Subsidy passed on to Xzeres
- O & M to Xzeres
- Peace of Mind

# Contact Us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adaniel@xzeres.com

www.xzeres.com

# CXO Messages

***Ravago HQ, Boston***

*Shri U Tripathy.*

*I am engaged in BREXIT situation, would have loved to meet you. Ravago and Xzeres are passionate and have long vision for India. We are dedicated to offer quality and reliable systems, with unending compromise.*

*Please accept my best wishes for July 01 Event.*

*It will be my pleasure to meet you, when next in India. A wonderful country.*

***Axle Rousiss***

*Chairman (30 /06 /2016)*

**Jim Duffy**

MNRE is too stringent on their empanelment requisites.

I think India has got only about 2 MW SWT till last year. They must open up. Our Board members are sticky about this.

**President**

**Ravago, Americas**

**(20 June, 2016)**

**29th, June 2016**

**MS V Joshi,**

Madam,

*Xzeres is world leader in its class of SWTs, we continue to express our full commitment to Indian Federal initiative. Xzeres Corp is looking at long time vision. Alex Daniel is our mainstay Country Head fronting our Corporation. Most of the technologies belong to our own or acquired innovations and history, below 5 KW. We are financially and operationally strong.*

*Appreciate one page one window MAKE IN INDIA ease. Mr Prime Minister, N Modi's program to be also applicable to Small Wind Systems for ease of business for MNCs as that is seemed a go-in to India for Xzeres.*

**Frank Greco**

President

**XZERES Corp**

Shri U Tripathy,

**We Claim what we seed. Reliability is Ravago. Now Offering our famous lease and finance option to India.**

Appelbaum Marks – Legal, IP & Trade Marks – VP - Global

**Ravago, Americas**

**(06 / 28 / 2016)**