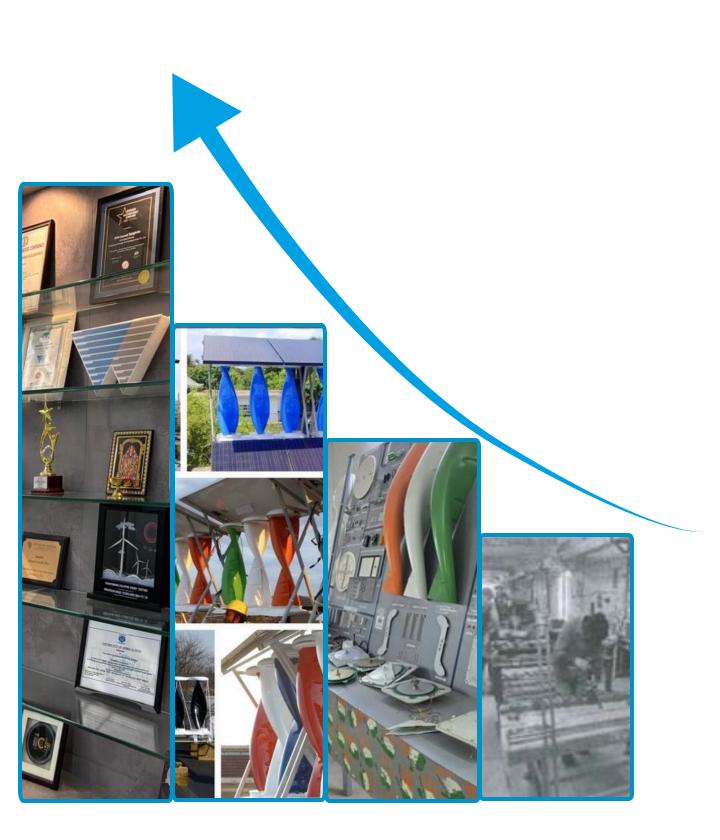


PRESENTATION ON SOLARMILL® AND ITS APPLICATIONS AND SUCCESS STORIES FROM WINDSTREAM ENERGY TECHNOLOGIES INDIA PVT. LTD.

About Company



With over a decade of expertise in decarbonizing the planet, we are a global leader in hybrid renewable energy solutions. Founded in 2013, our technology, design, and innovation set us apart.



Our products and processes are **certified to international standards** and endorsed by premier institutions and public sector organizations. Example: **ISO certified, CE certified, NIWE Certified.**

With a presence in **38 countries**, we offer unique solutions **in manufacturing and operating hybrid energy solutions worldwide**, catering to diverse markets and economies.

Our relentless innovation has earned numerous industry awards, reinforcing our commitment to sustainability and cutting-edge energy solutions.









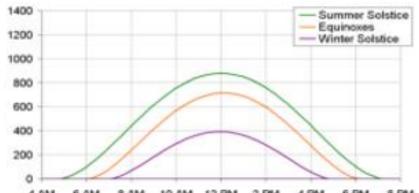






Solar Power

Advantages and Challenges



Advantages



- Clean Energy.
- Sustainable
- Power to Remote Areas.
- Can be Installed on Rooftops.
- Global Availability.
- Silent.

Challenges



- •Available only 4 to 6 hrs in a day.
- •It requires large areas.
- •Expensive for off-grid & bad-grid areas.
- •Seasonality.

800 700 600 500 400 300 100 0 Time of Day (00:00 - 24:00)



Advantages



- · Clean Source.
- Use of Modern Technology.
- Rapid Growth Potential.
- Exponential generation
- sustainable/clean source
- Available throughout the day.

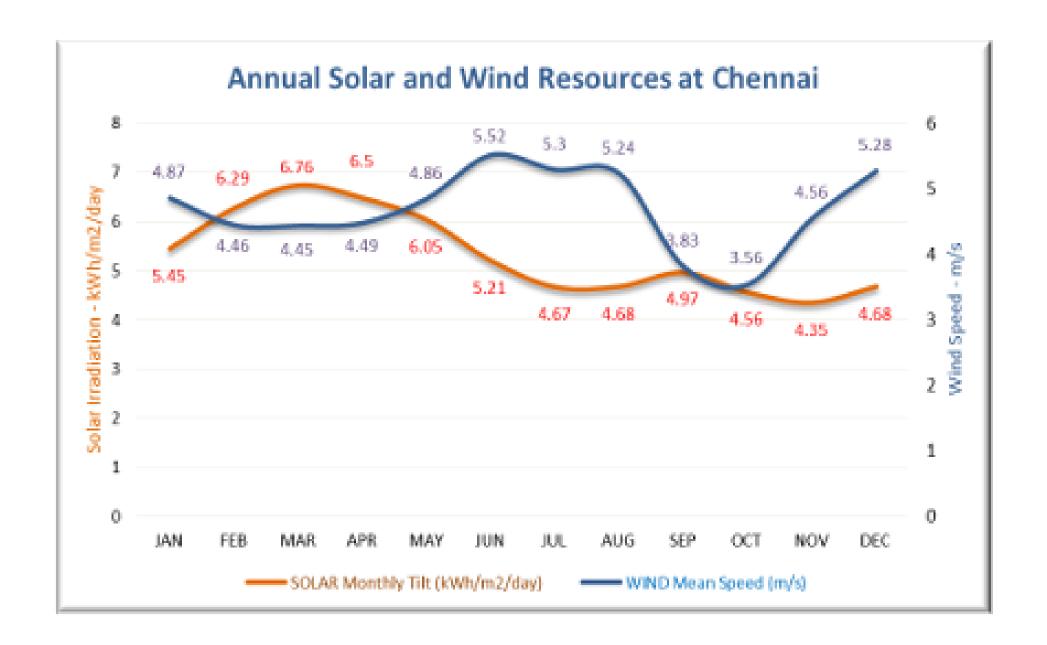
Challenges



- Wind Reliability throughout the year
- Threat to Wildlife.
- Noise Pollution.
- Expensive to Set Up
- Seasonality.
- Suitable for Certain Locations only.



Why Hybrid?



- •Higher Energy Density: More energy per square meter.
- •Reliable Power: Ensures continuous generation, reducing downtime.
- •Customizable: Can be designed to fit various needs.
- •Better Battery Life: Smooth charging cycles extend storage life.



Problems of Small-Wind Solar Hybrid Solutions

Short Life due to continuous motion and sensitive Tails



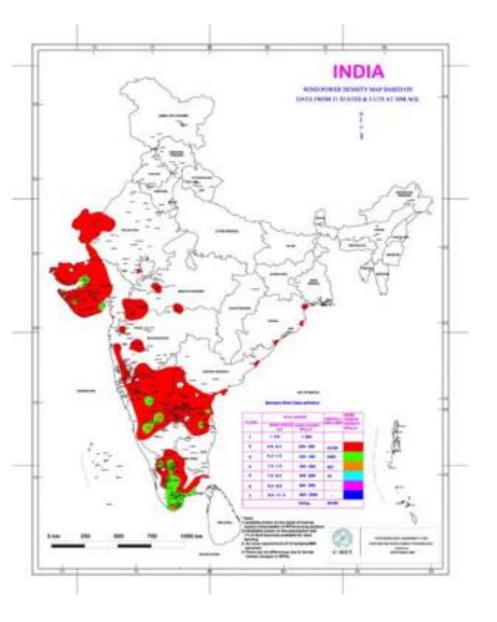
Possible Fire Due to High Winds (No Brakes)



Heavy Foundation due to top heavy structure



Wind Speed Constraints due to uneven terrians





The Product And Features



Vertical-Axis Wind Turbines (VAWTs)

- Omnidirectional, compact, and durable design.
- Equipped with permanent magnet generators for high efficiency and low maintenance.

Energy Generation At Low Wind Speeds

- Generating Power at Just
 2.5 m/s (Cut-in wind speed)
- Maximum Safety with Cut-Off at 18 m/s (Braking system)

Silent & Eco-Friendly

- Quiet in operation with a bird-safe design.
- **Zero emissions**, helping to reduce carbon footprint.



Easy Installation

- Portable, lightweight, and quickly deployable.
- More energy density per square foot.

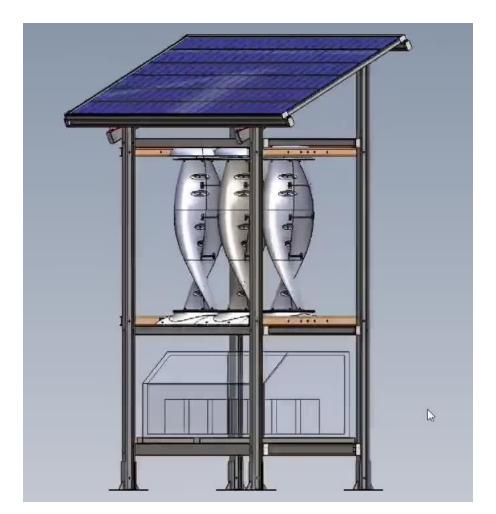
Smart Power Electronics with MPPT

- Dynamic electronics to optimize energy generation in all wind conditions.
- Adaptive technology extends lifespan and reduces operational costs.

Easy Grid Integration

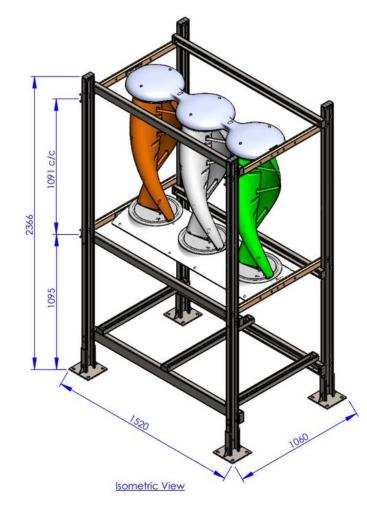
- Compatible for on-grid, offgrid and net metering solutions, ensuring scalability for future needs.
- Suitable for **gross metering**

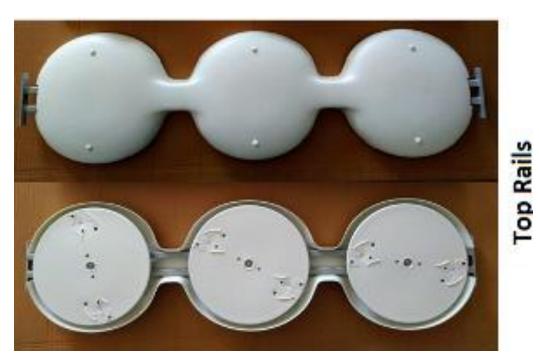
SolarMill - Material and Construction



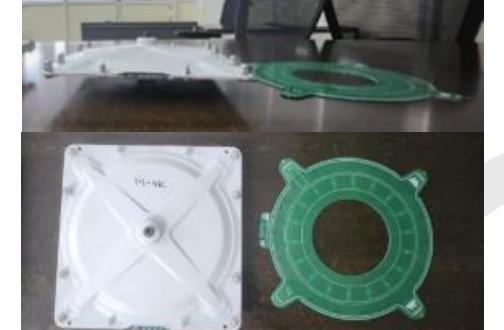








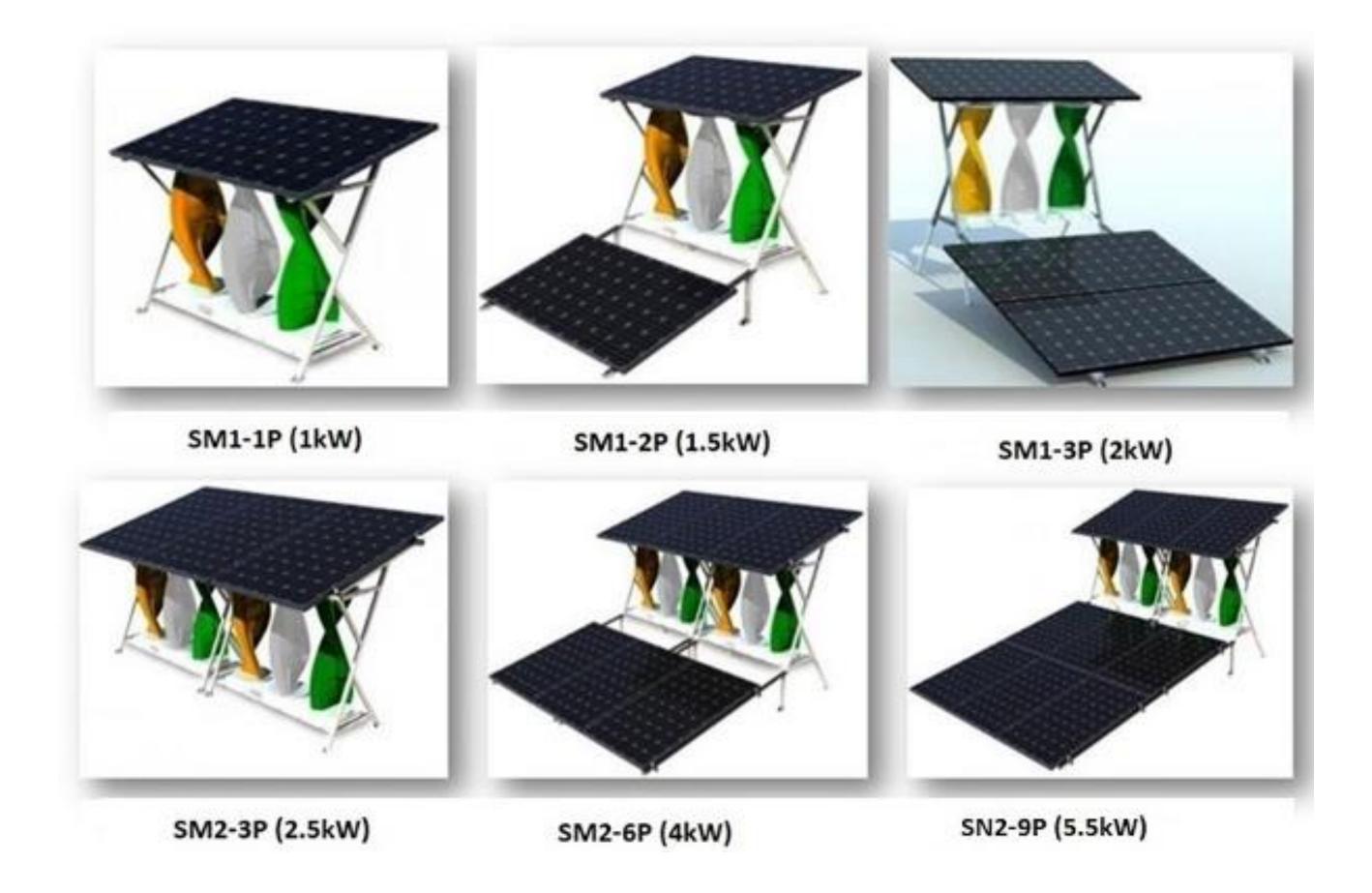




Generator



Windstream - SolarMill configurations





Our Domain Presence





Business and Residential

Aesthetics and Ease of Roof top Installations

Solutions for Powering:

- Non-Critical loads
- Common lighting
- Streetlights

Solutions for

- On-Grid (Net metering)
- Off-Grid
- Grid interactive









Solutions for Telecom





We offer Solutions to telecom that are:

- Unique
- More Reliable & Stable Power
- No interference with Communication equipment
- Diesel saving
- Modular design to install at various levels of the Tower
- Silent in operation
- No threat to Wildlife





Solutions for Railways





Solutions for Powering

- Station electrification
- Signalling
- Level crossing
- Railway offices









Solutions For Fisheries & Marine





Solutions for Powering:

- Fish Farms
- Boats and Ferries
- Chillers
- Water makers
- Ice plant









Rural Development







- Streetlights
- Hamlets
- Village electrification
- Healthcare Facilities
- Community Centers











Health care



Use Case:

- Chiller Mills for vaccine and medicine storage in remote areas
- Mobile Medical Units
- Emergency camp vans













Mini Grid Solutions for Powering

Solutions for Powering Mini Grids:

- Homes & Villages Reliable electricity for daily needs
- Schools & Healthcare Power for education and medical services
- Water Pumps & Irrigation –
 Supporting agriculture and clean water access
- Small Businesses Enabling rural enterprises and economic growth
- Street Lights & Public Areas –
 Improving safety and accessibility
- Telecom & Connectivity Ensuring network access in remote areas

Argentina, South America



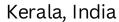
Karnataka, India







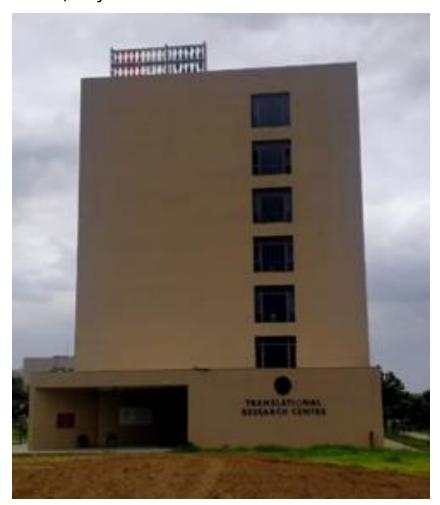




Solutions for Educational institutions



PDEU, Gujarath





Solutions for Powering

- Schools in Remote areas and tribal areas
- Digital class Rooms

It can also be used for

- Lab Demos
- Social experiments for students







Bits Pilani



Solutions for Agriculture



Solutions for Powering:

- Chillers & Freezers
- Water Pumps
- Mini Cold Chambers
- Dryers
- Animal sheds













Solutions for E- Mobility









Cochi, India

Solutions for:

- Powering Charging stations for
 - Two-wheelers
 - Four Wheelers
- Fast chargers



Solutions for Aviation

Solutions for Powering:

- Airports
 - Non Critical loads
 - Common lighting
 - Street Lights
 - Signals
- Drone Charge stations



Airports



Drone Charge stations



Street Light





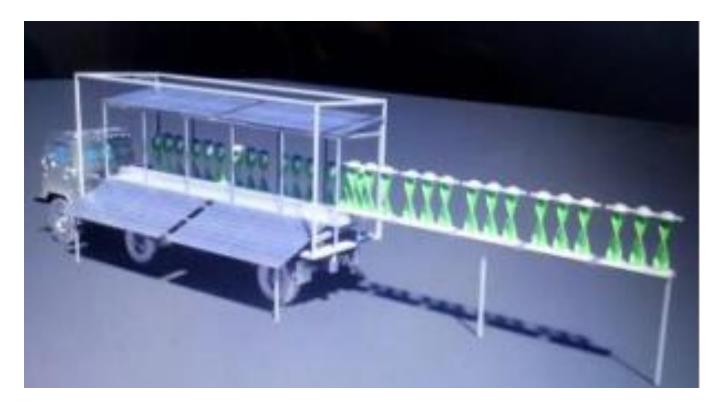
Solutions for Mobile Power Units





Solutions for Powering:

- Powering Defence exercises
- Tactical location





Solutions for:

- Disaster Management
- Temporary Powering in
- Critical Locations
- Tactical situations



Solutions For Defence





Solutions for Powering

- Mini-Grid for Shelters
- Battery Charging Equipment
- Communication Towers
- Defence post
- Mobile Generator
- Security Tower
- Renewable energy Backpack









High Altitude

INSTALLATIONS IN HIGH ALTITUDES











INSTALLATIONS IN HIGH ALTITUDES











INSTALLATIONS IN HIGH ALTITUDES











Atmospheric Water Generator







Cooling and Heating applications with Advanced Thermal material

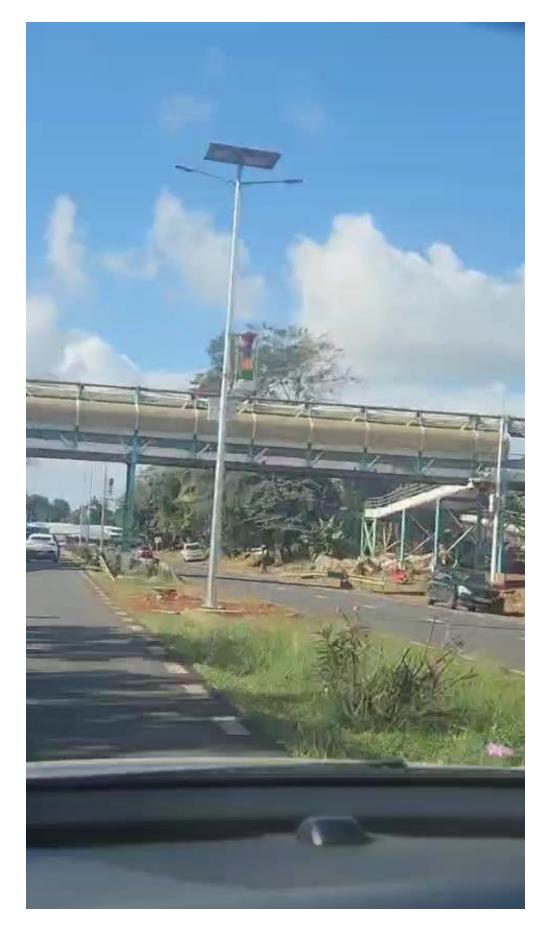




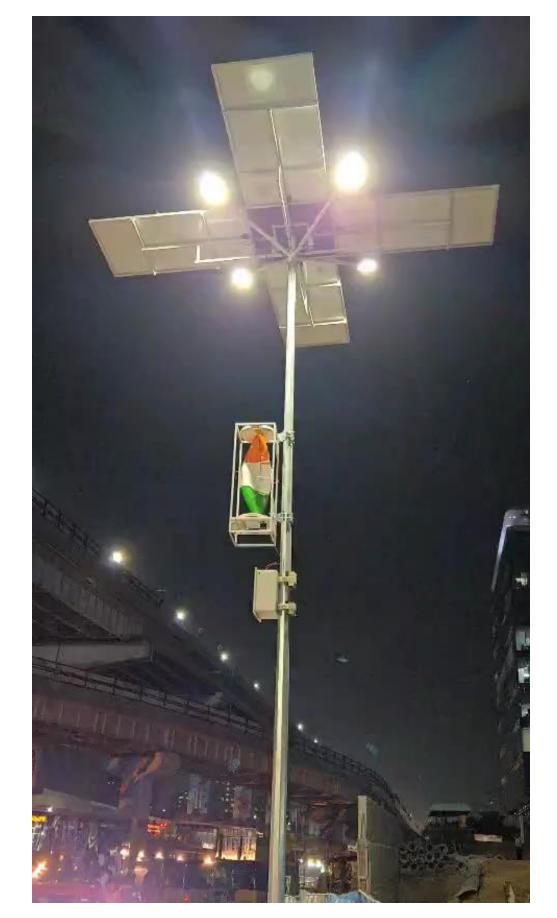




Hybrid Street Lights

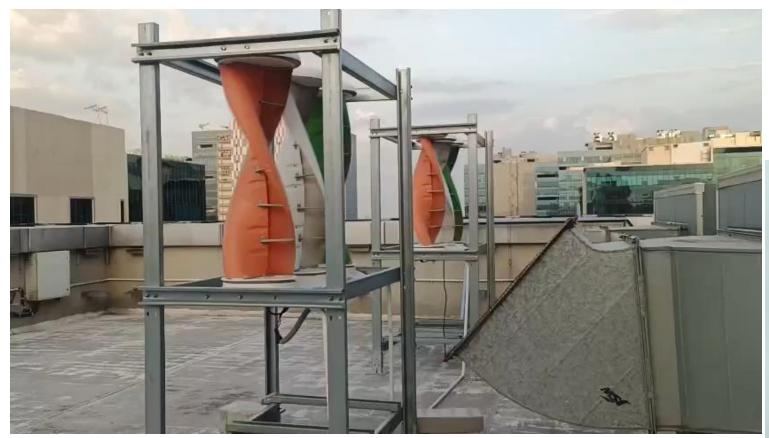


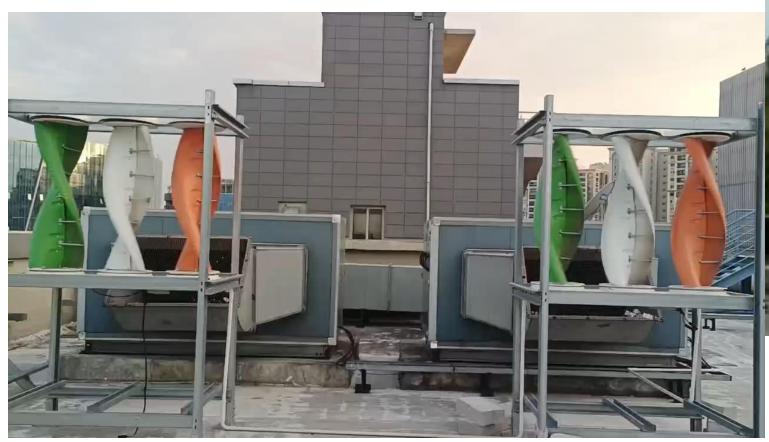






Systems in front of Exhausts









Unique advantage: Less space, Aesthetics, More Energy Density, Easy to Install etc.,







Social Impact: Can empower people in all remote Locations any and every where









Environmental Impact: Suitable, Scalable and Modular to install in all locations







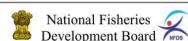








Government of India Schemes to impellent Wind solar Hybrid Systems in various sectors!!



Utilising Solar Wind Energy in Fisheries Sector

Climate Change is perceived as a major threat primarily to food production through Agriculture, Fisheries and Animal Husbandry. Climate Change is the consequence of Global Warming which in turn is due to increase in greenhouse gases (GHGs). Carbon Dioxide is a GHG that emanates from burning fossil fuels such as coal, oil and natural gas for generating energy/ power/ electricity. In Fisheries & Aquaculture HSD oil is used as fuel in fishing vessels and in gen-sets that ensure backup-power for post-harvest fish processing, cold chain maintenance, etc. Further, electricity from thermal power plants is essential for most of the semi-intensive, intensive and modern technology-driven aquaculture systems. India is the second largest fish producing country in the world with an annual production of about 12.60 million metric tonnes and it is aimed to increase it to 15.00 million metric tonnes.

The United Nations Climate Action Summit recognises that the pace of climate action must be rapidly accelerated and boosted. Despite global carbon dioxide emissions rising. India's ranking in the Climate Change Performance Index (CCPI) 2019 has improved to 11th position, most notably in its performance in the renewable energy category, and comparatively low levels of per capita GHG emissions. India has set for itself a relatively ambitious mitigation target for 2030.

As part of India's Climate Change mitigation strategy, the Dept. of Fisheries, Ministry of FAH&D, Govt. of India, under the Scheme "Blue Revolution: Integrated Development and Management of Fisheries" provides financial assistance for "Promoting Non-Conventional Energy (NCE) Source for Environment Friendly Fishing Practices" such as use of solar energy or other NCE sources for lighting, refrigeration on board the fishing vessels, and other activities.

The National Fisheries Development Board (NFDB) is promoting utilisation of renewable energy in various fisheries and aquaculture activities by providing financial assistance for installing 'Hybrid Solar Wind Energy Generator'.

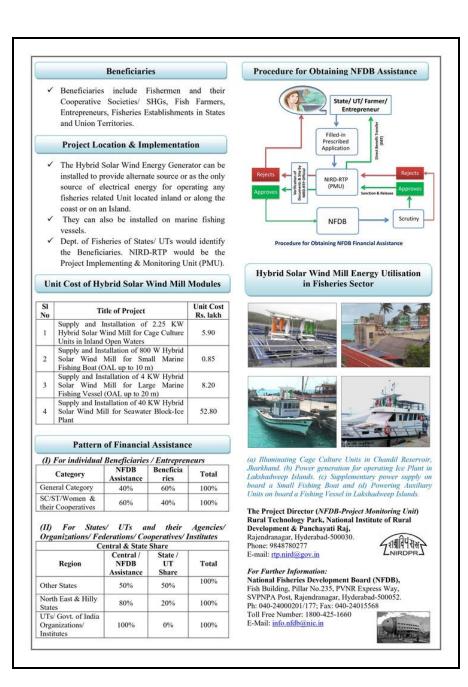
Hybrid Solar Wind Energy Generator

The solar wind energy generator is a hybrid, modular, scalable, distributed renewable energy system designed and ontimized for on and off grid installations at inland, on-shore and off-shore

Benefits and Advantages

- · Reduces dependence on fossil fuel. Fco- and Environment-Friendly
- Day and night power supply
- · Can be used, besides other things, to:
- 1. Illuminate cage culture units during night. 2. Power auxiliary units on board a marine fishing boat or vessel.
- 3. Operate small-scale ice plants in remote
- areas, including islands.

	Features of Hybrid Solar Wind Mill						
One Basic Unit of SolarMill* (WindStream Technologies)							
1	Wind Component						
A	Compact low profile vertical axis wind turbine						
В	Wind speed range : 2m/s to 18.5 m/s						
C	Power output range: 143 W to 500 W						
2	Solar Component						
A	Mono-crystalline solar cell: 60 per panel						
В	Maximum power output: 250 W, 1000V						
С	Simple mounting of multiple panels						
3	Entire Component						
A	Small Foot Print: Dimensions 146 cm (L) x 85 cm (x 190 cm (H)						
В	Minimizes backup battery storage requirements						
C	Online tool for power generation monitoring						
D	Material: UV Resistant HDPE						
E	Design Life-span: 20 years						



F. No. 32/18/2020-SPV Division Government of India Ministry of New & Renewable Energy Block No. 14, C.G.O. Complex, Lodhi Road, New Delhi - 110003 Dated: 14.02.2022 Office Memorandum Subject: Framework for Promotion of Decentralised Renewable **Energy Livelihood applications.**

In the COP26 held at Glasgow, Hon'ble Prime Minister of India has announced "Panchamrit" showing commitments from Government of India for reducing the impact of climate change. One of the announcements is to achieve 500 GW capacity in the country by 2030 from non-fossil sources. The Ministry of New and Renewable Energy is making efforts to achieve this ambitious target. Ministry has been supporting off-grid renewable energy applications including solar street light, standalone solar pumps, solar lamps, solar power packs, biogas plants. etc. There are number of livelihood applications which can be integrated with decentralised renewable energy (DRE) sources which not only provide clean and reliable energy but also help in increasing the productivity and income. Various Central Government Ministries are implementing different schemes that support livelihood applications directly or indirectly and integration of DRE sources will further promote the use of such applications.

2. With the aim to facilitate development of an enabling eco system for wide spread adoption of DRE based livelihood applications in the country a framework has been prepared by the Ministry after detailed consultations. The framework is attached. This framework has been developed to guide the State/ Central Government Ministries and other stakeholders in formulating schemes and programmes for promotion of DRE livelihood

Sr. Director/Scientist-F

Enclosed: As above.

- 1. All Central Government Ministries/ Departments
- 2. Energy/ Power/ Renewable Energy Department of all States/ UTs
- 3. All State Rural Livelihood Missions
- 4. All State Nodal Agencies for Renewable Energy

Annexure I Indicative List of DRE products						
Product	Machinery	Product Type	Motor	Capacity		
	Solar Cold storages	333	AC compressor	4MT - 15 MT		
	Bulk milk Chillers	Energy Efficient / Solar	AC	500 litres 1000 litres		
	Solar Refrigerator/ Deep Freezer	Powered / Hybrid(Wind+Solar)	DC - 0.5 HP	100 litre 20000 litre		
	Walk-in cold rooms		2-5 Ton Cooling AC / DC			
Cold Storage/ rooms and Refrigeration	Cold rooms	Biomass powered (DRE)	Very small (mainly thermal adsorption)	10MT - 15 MT		
		Energy Efficient / Solar Powered/ Hybrid(Wind+Solar)	PMDC	20-25 (Kg/batch)		
	Solar Tunnel Dryer		NA	20-2000 (Kg/batch)		
	Solar Cabinet Dryers	Solar Powered	NA	10 - 35 (Kg/batch)		
	Conduction Dryer		NA	10 -100 (Kg/batch)		
	Mini rice mills	Energy Efficient / Solar	DC 2 HP	100 - 150 kg/hour		
Rice milling and	Rice huller	Hybrid(Wind+Solar)	DC 0.5 HP	50-100 kg/hour		
processing	Rice polisher	Energy Efficient / Can be DRE Powered/ Hybrid(Wind+Solar)		50 -100 kg/hour		
	Mini mills	Energy Efficient / Solar Powered/ Hybrid(Wind+Solar)	2 HP	80-100 kg/hour		
Millet and pulses processing	Polishers		2 HP	100-120 kg/ hour		
processing	Graders and Sorters		0.5 HP	0-100 kg/hour		
Horticulture	Multi-purpose food processor	Energy Efficient / Can be DRE Powered	AC/DC 0.5 HP - 2 HP	100-200 (kg/hour)		
produce processing	Three roller mini sugarcane crusher		AC/DC 0.5HP - 1 HP	100-200		
Vertical Farming systems	DRE-enabled Climate-Controlled vertical farming systems.	Energy Efficient / Solar Powered / Hybrid(Wind+Solar)	NA	25-30 Kg per day		
Irrigation	Solar submersible pump		AC/DC 1 HP - 10 HP	40,000		



Government of India Schemes to impellent Wind Solar Hybrid Systems in various government projects

Atal Akshay Urja Bhavan Lodhi Road, New Delhi-110003 Dated:20.69.2024

OFFICE MEMORENDUM

Subject: Clarification in respect of Operational Guidelines for Implementation of PM Surya Ghar: Maft Bijli Yojana for the component of "CFA to residential consumers"- regarding.

This refers OM No 318/17/2024-GCRT dated 07.06.2024 regarding notification of Operational Guidelines for Implementation of PM Surya Ghar: Muth Bijli Yojana (PMSG: MBY) for the component of CVSA to an idential component.

- The Clause 5(1) of the above mentioned Guidelines states, "The rooftop solar installation may include additional technology components such as small wind hybrids, buttery storage, solar tracker systems, etc. However, the CFA calculation shall be based on the CFA structure under the scheme as per capacity of solar modules installed in the system."
- The above provision in the Guidennes is very even that KLS systems was cattley soring systems
 are also eligible for CPA under the scheme. Accordingly, bylarid inverters can also be installed, as per
 provisions of the regulations issued by respective state/UT electricity regulatory commission, for RTS
 plants under PMSG: MBY.

PM Surya Ghar Muft Bijili Yojana Policy Document

F.No.12/26/2023-VVP Government of India Ministry of Home Affairs Department of Border Management

Vibrant Villages Programme (VVP) Guidelines: 2023

1. Objective

- 1.1 The objective of the Vibrant Villages Programme(VVP) is comprehensive development of the identified villages across four states and one Union Territory on the northern border, for improving the quality of life of people living there so as to encourage them staying in their native locations and reversing the out migration from these villages for adding to improvement in the security of the border.
- 1.2 The scheme aims to identify and develop the identified villages on northern border, as growth centres on a 'Hub and spoke Model' through promotion of entrepreneurship; empowerment of youth and women through skill development and traditional knowledge/heritage; development of sustainable eco-agri businesses through involvement of community-based Organisations, Cooperatives, Self-Help Groups, Non-Government Organisations, Agriculture Universities, Krishi Vigyan Kendras and Technical Universities of national importance.

Coverage

The programme shall cover the identified villages in 46 blocks in 19 districts across 4 states namely Himachal Pradesh, Arunachal Pradesh, Sikkim, Uttarakhand and one UT namely UT of Ladakh. Initially, 662 villages have been identified for development on a priority.

- 3. Focus Areas of Intervention: The programme will focus on the following 10
 - a. Economic growth Livelihood generation
 - b. Road Connectivity
 - d. Energy including renewable energy through Solar and Wind Power
 - Common Service Centre in the village
 - f. Regeneration of eco-system
 - g. Promotion of tourism and culture
 - h. Financial inclusion
 - i. Skill development and entrepreneurship
 - Development of Co-operative Societies for managing livelihood opportunities including agriculture/ horticulture/ cultivation of medicinal plants / herbs etc.

KERC (Implementation of rooftop aero turbine with solar or without solar) Regulations, 2025

KARNATAKA ELECTRICITY REGULATORY COMMISSION No. 16 C-1, Miller Tank Bed Area, Vasanth Nagar, Bengaluru- 560 052

Notification

No. KERC/S/F-31/Vol-1401/1351

Date:20.01.2025

KERC (Implementation of rooftop aero turbine with solar or without solar) Regulations, 2025

PREAMBLE:

- Section 86(1)(e) of the Electricity Act 2003 (the Act) mandates the Commission
 to promote co-generation and generation of electricity from renewable
 sources of energy by providing suitable measures for connectivity with the grid
 and sale of electricity to any person. Section 61(h) of the Act provides that,
 while specifying the terms and conditions of determination of tariff, the
 Commission shall be guided by the objective of promotion of co-generation
 and generation of electricity from renewable sources of energy.
- 2. Section 62(1)(a) read with Section 64 of the Act provides for determination of tariff for supply of electricity by a generating company to a distribution licensee by the Commission. Section 86(1)(b) provides for Regulation of electricity purchase and procurement process of distribution licensees including the price at which electricity shall be procured from the generating companies or licensees. Section 181 of the Act provides for making Regulations consistent with the Act to carry out the provisions of the Act, by the Commission.
- 3. Rooftop Aero Turbine(RAT) is a small-scale wind energy plant that is installed on rooftops to generate electricity by harnessing wind power. These turbines are designed to operate in urban or suburban environments where wind speeds are typically lower and more turbulent than in open areas. Rooftop aero turbines can be an effective way to harness wind energy for residential power use, especially in combination with solar power or without solar power. It is also envisaged to implement rooftop aero turbine with solar in Karnataka RE Policy 2022-27 under new initiatives.



Dealer / Distributor Network

- Thailand
- Philippines
- Middle east
- East Africa
- Europe
- South Africa
- South America
- Saudi Arabia
- Somalia
- Libya





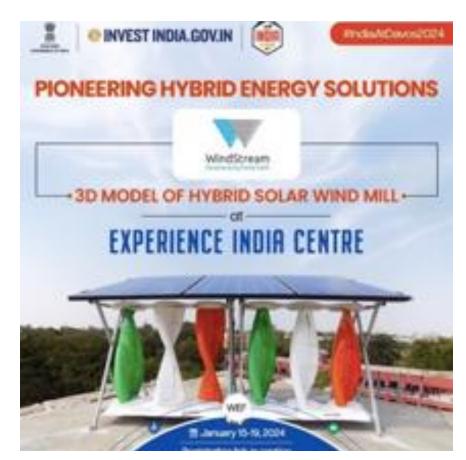
Recognitions and Accomplishments













WindStream was invited to be part of **World Economic Forum** by Govt of India, to Speak and also display **Solar Mil**l at the 'India Sustainability Lounge' at **Davos WEF** 2024

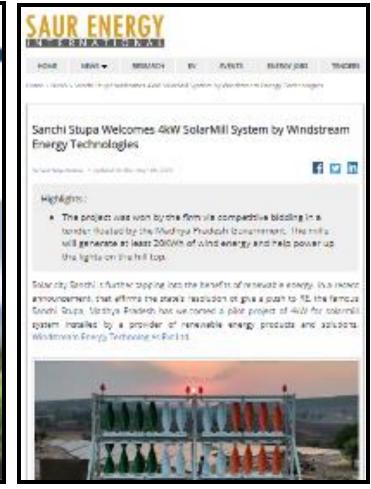


WindStream's SolarMill in News





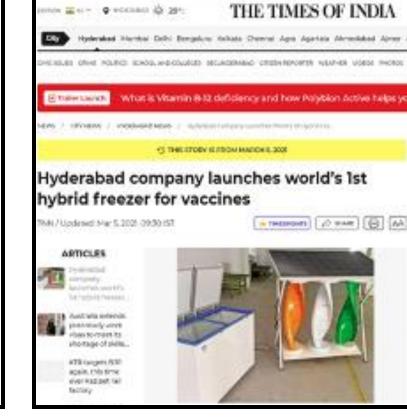


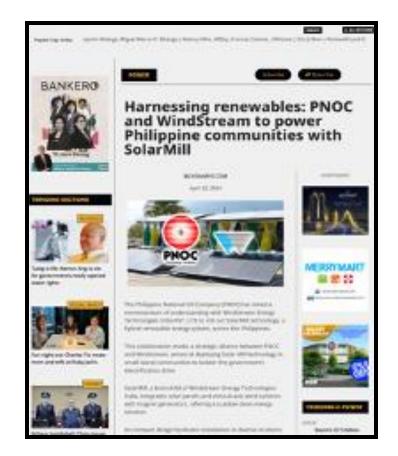














Comparison with other VAWTs and HAWT

Difference
Between WSTI
vetical Axis
Wind Turbine
and similar
Wind Turbines
from different
manufacturers







Difference
Between
Horizontal Axis
Wind Turbine
and Vertical
Axis Wind
Turbine at
different
heights



Other Recognitions

- •'New Small Wind Turbine Start-up Company & Innovation of Simple Modular Roof-Top SWES System' from National Institute of Wind Energy (NIWE) of MNRE
- •'Most Innovative Energy Saving Product' award for Excellence in Energy Management in event organized by Confederation of Indian Industry(CII) in 2015 and 2017.
- •'Best Electronics Manufacturing company' from IESA (Indian Electronics and Semiconductor association of India) year 2017
- •'Entrepreneurship Excellence Award for year 2022 ' at SuryaCon Kerala Annual Awards conducted by EQ Int'l Magazine
- •Been invited to be part of <u>World Economic Forum</u> and Shortlisting of our product, SolarMill by Govt of India, to be displayed in India Sustainability Lounge at <u>Davos WEF</u>, happening in Jan 2023
- •'Award of Excellence in New and Renewable Energy Development' from The Federation of Telangana Chambers of Commerce and Industry (FTCCI) in July 2023
- •'Company of the Year' Award' in small scale Wind Solar Hybrid Category at Suryacon Hyderabad organised EQ Int'l (First Source Energy India Pvt Ltd), an International magazine on renewable energy.





















Government Affiliations - India

Business Affiliation:









Technology Affiliation:







Certifications from:













Few of our Government Clients























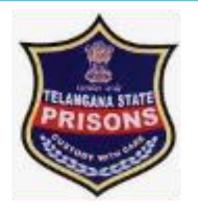




























Few of our Prestigious Clients









































Business Associates and Affiliations

- Philippine National Oil Company,
 Philippines
- Theos Corporation, Thailand
- Advanced Communications & Electronics Systems Company(ACES), Saudi Arabia
- La Afrique, Mauritius
- SCI, Tanzania
- Stratech, Guatemala
- S Makhanlal Consultancy Sdn Bhd , Malaysia
- Saura LLP, Dubai etc.,







Across The World





Contact Us





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<u>+91 998 994 5914</u>



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