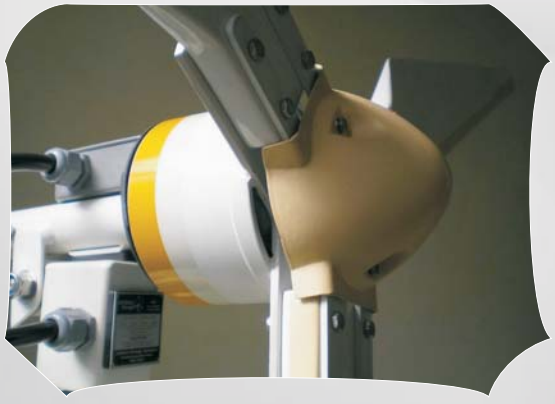
Touching you with Green Energy!

WINDCARE
INDIA PVT. LTD.

SMALL WIND TURBINE



Profile

Major Service Provider for Wind energy sector

www.windcareindia.com

PROFILE

WINDCARE INDIA PVT. LTD, a leading wind turbine service provider in the global wind industry executing all works related to wind turbines from concept to commissioning including Wind assessment, site selection, erection, O&M, etc. Also we have a special state of art technology of 'with out crane - dismantling and re erection of components' like gearbox, generator, blade units of any tonnage and from any hub height.

Our attractive Service Packages

1. Dismantling and re-erection of WTG components using without crane.

2. Country wide 24*7 operation and Maintenance of wind parks.

3. Repair and re-engineering of Wind Turbine and its components.
4. Turnkey project execution of Wind turbines.

5. Promoters of small wind turbines up to 20-KW for domestic usage.

6. Consultancy services for complete solution of Wind turbine project (Concept to commissioning).

UNITRON ENERGY SYSTEMS PVT. LTD formerly '**UNITRON SYSTEMS**', established in 1987, today boasts of an impressive growth rate from the start. With the growth in the products and Capacities Company changed its name to UNITRON Energy Systems Pvt. Ltd., as it is now known.

UNITRON is one of the first small-scale enterprise recognized by MNES (Ministry of nonconventional energy) to manufacture "wind - solar " hybrid systems under their special program.

UNITRON is installed capacities exceed 220KW till date spread over 65 sites in different states of India. About 75KW worth orders in hand.

UNITRON's inherent strength is product engineering and development especially power conversion systems, controllers, regulators, data loggers etc.,

UNITRON's Clientele enjoys reliable support and supply of all BOS systems manufactured under one roof.

UNITRON also specializes in several mechanical components that go into wind turbines such as bearings, shafts, yaw blades, adapters, rotors Towers of different types etc.,
Fully automatic wind-solar hybrid power plants successfully installed for area lighting at "Dona Paula" Goa and "Snake Park" Pune.

Jointing Hands

Like minded companies with innovation joined hands for promoting the world class small turbines globally.

WINDCARE, Distributer and system integrator for complete range of M/s. Unitorn's Products from November 2008.


CERTIFICATE

DIRECTOR

650 Watts

AVERAGE WIND SPEED

MPH	M/S	KMPH	MONTHLY GENERATION
09	4.0	14.5	54 kWh
10	4.5	16	72 kWh
11	4.9	17.7	91 kWh
12	5.4	19.3	161 kWh

Weibull k = 2

ELECTRICAL

MODEL	UE 6LV / HV
Diameter	2.2 / 7.2
Swept Area, Sqm / Sqft (1)	3.7 / 43
Number of Blades	3
Blade Material	Carbon fiber reinforced
Rated Power, Watts (1)	550
@ Rated Wind, M/s / Mph	10 / 22
Rated Power Watts (2)	660
@ Wind speeds M/s, / Mph	10.5 / 24
Peak Power @ 12 M/s	750
Cut-in wind, M/s, Mph	2.7 / 6

MECHANICAL

Prop Tip to center cm. / in.	28 / 11
Min. Tip clearance cm. / in.	20 / 8
Max tower dia at tip cm. / in.	6 / 2.5
Mounting pipe / tube	P 2.5” scd 40
Tower top weight	23 kg.
Lateral thrust	550 nts.

FEATURES

Lowest cost per watt.

Neo magnets for long life.

High output for low winds.

Unique angle governing.

Sustained output in high winds.

Ruggedized body frame.

Stainless steel components.

TYPICAL USES

Remote homes,

Cabins &

Out buildings.

UE 6 / 650 W

PRODUCTS

1.5 KW

AVERAGE WIND SPEED

MPH	M/S	KMPH	MONTHLY GENERATION
09	4.0	14.5	117 kWh
10	4.5	16	166 kWh
11	4.9	17.7	202 kWh
12	5.4	19.3	244 kWh

Weibull k = 2

ELECTRICAL

MODEL	UE 15 LV / HV
Diameter	3.2 / 11
Swept Area, Sqm / Sqft (1)	9.2 / 95
Number of Blades	3
Blade Material	Carbon fiber reinforced
Rated Power, Watts (1)	1350
@ Rated Wind, M/s / Mph	10 / 22
Rated Power Watts (2)	1500
@ Wind speeds M/s, / Mph	10.5 / 24
Peak Power @ 12 M/s	1700
Cut-in wind, M/s, Mph	2.7 / 6

MECHANICAL

Prop Tip to center cm. / in.	35 / 14
Min. Tip clearance cm. / in.	28 / 11
Max tower dia at tip cm. / in.	6 / 2.5
Mounting pipe / tube	P 2.5” scd 40
Tower top weight	34 kg.
Lateral thrust	1000 nts.

FEATURES

Lowest cost per watt.

Neo magnets for long life.

High output for low winds.

Unique angle governing.

Sustained output in high winds.

Ruggedized body frame.

Stainless steel components.

Whisper quiet.

TYPICAL USES

Small homes,

Signalling &

Beacons.

UE 15 / 1.5 KW

PRODUCTS

3.3 KW

AVERAGE WIND SPEED

MPH	M/S	KMPH	MONTHLY GENERATION
09	4.0	14.5	269 kWh
10	4.5	16	362 kWh
11	4.9	17.7	476 kWh
12	5.4	19.3	568 kWh

Weibull k = 2

ELECTRICAL

MODEL	UE 35 LV / HV
Diameter	4.65 / 15
Swept Area, Sqm / Sqft (1)	16.4 / 175
Number of Blades	3
Blade Material	Carbon fiber reinforced
Rated Power, Watts (1)	2700
@ Rated Wind, M/s / Mph	10 / 22
Rated Power Watts (2)	3300
@ Wind speeds M/s, / Mph	10.5 / 24
Peak Power @ 12 M/s	3600
Cut-in wind, M/s, Mph	2.7 / 6

MECHANICAL

Prop Tip to center cm. / in.	56 / 22
Min. Tip clearance cm. / in.	36 / 14
Max tower dia at tip cm. / in.	36 / 16
Mounting pipe / tube	P 5" scd 40
Tower top weight	77 kg.
Lateral thrust	1400 nts.

FEATURES

Lowest cost per watt.

Neo magnets for long life.

High output for low winds.

Unique angle governing.

Sustained output in high winds.

Ruggedized body frame.

Stainless steel components.

Whisper quiet.

TYPICAL USES

Farm houses,

Water pumping,

Village Electrification,

And RHCs etc...

UE 33 / 3.3 KW

PRODUCTS

4.2 KW

AVERAGE WIND SPEED

MPH	M/S	KMPH	MONTHLY GENERATION
09	4.0	14.5	310 kWh
10	4.5	16	421 kWh
11	4.9	17.7	550 kWh
12	5.4	19.3	685 kWh

Weibull k = 2

ELECTRICAL

MODEL	UE 42 LV / HV
Diameter	4.90 / 16
Swept Area, Sqm / Sqft (1)	19 / 205
Number of Blades	3
Blade Material	Carbon fiber reinforced
Rated Power, Watts (1)	3400
@ Rated Wind, M/s / Mph	10 / 22
Rated Power Watts (2)	4200
@ Wind speeds M/s, / Mph	11 / 25
Peak Power @ 12 M/s	4.6 KW
Cut-in wind, M/s, Mph	2.7 / 6

MECHANICAL

Prop Tip to center cm. / in.	56 / 22
Min. Tip clearance cm. / in.	36 / 14
Max tower dia at tip cm. / in.	36 / 16
Mounting pipe / tube	P 5” scd 40
Tower top weight	80 kg.
Lateral thrust	1600 nts.

FEATURES

Lowest cost per watt.

Neo magnets for long life.

High output for low winds.

Unique angle governing.

Sustained output in high winds.

Ruggedized body frame.

Stainless steel components.

Whisper quiet.

TYPICAL USES

Mini Wind farms,

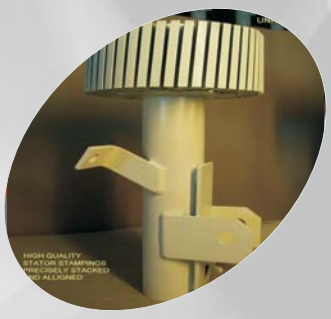
Water pumping,

Water purification,

Telecom, and

Cathodic Protection.

UE 42 / 4.2 KW



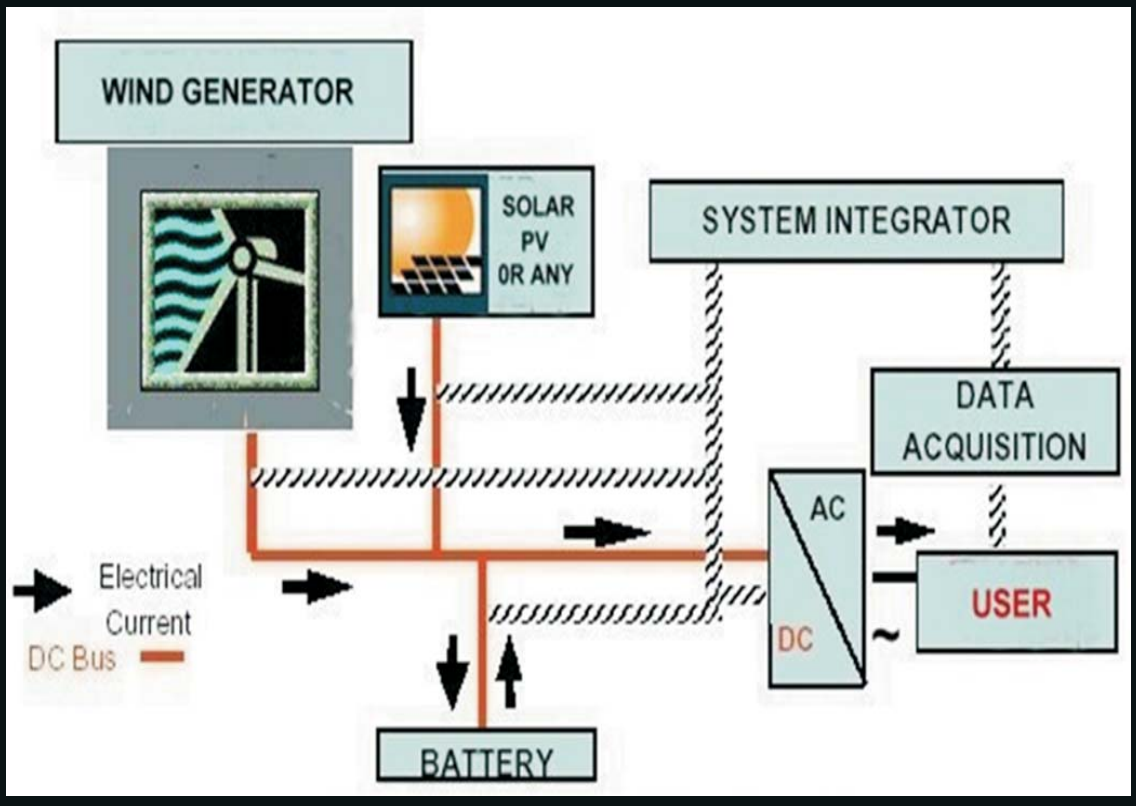
PRODUCTS

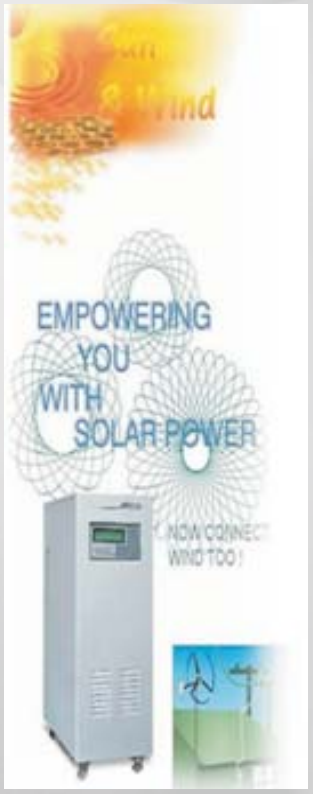
Monthly Generation

WIND SPEED			UE 6	UE 15	UE 32	UE 42
Kmph	Mph	M/s	650 W	1500 W	3300 W	4200 W
8	5	2.2	4	1	29	41
9.6	6	2.7	12	37	71	92
11.2	7	3.1	22	64	117	148
12.8	8	3.6	36	98	181	228
14.5	9	4.0	48	142	259	310
16	10	4.5	68	178	352	412
17.7	11	4.9	89	239	456	550
19.3	12	5.4	115	288	568	688
21	13	5.8	140	338	670	840
22.5	14	6.3	169	396	776	972
24	15	6.7	198	456	863	1082
25.7	16	7.1	228	496	954	1197
27.3	17	7.6	255	538	1076	1352
29	18	8.0	277	574	1134	1427
30.5	19	8.5	319	654	1292	1628
32	20	9.0	380	785	1548	1946
33.7	21	9.4	442	905	1850	2328
35.4	22	9.8	504	1040	2040	2567
37	24	10.2	555	1146	2330	3005
38.6	25	10.7	575	1198	2520	3166
40	26	11.2	708	1435	2997	3766
41.8	27	11.6	818	1566	3189	3997
43.4	28	12	896	1756	3558	4501

Monthly energy estimate (KWH) of wind Generators of various ratings.

SOLAR Applications





SPECIFICATIONS

MODEL	PCU 1100	PCU 3300
Electrical Specifications		
AC Output Voltage (Nominal)	230 V AC, Single phase & N	415 V AC, Three phase & N
AC Output Voltage Range	218 to 242 V AC	395 to 435 V AC
Continuous Power @ 25 c	1 - 100 KW as per requirement	
Efficiency Peak (At full load & nominal input voltage)	> 92% min, various upwards for the higher rating	
Frequency (Nominal)	Refer table 1	
DC Input voltage	1 - 100 KW as per requirement	
Wave form	Sinewave	
Total Harmonic Distortion	< 5 %	
Mechanical Specifications		
Operating temperature Range	0 to 50 C	
Enclosure	MS, Power coated	
Enclosure Protection Grade	IP 20	
Altitude	1000 meter	
Additional Features		
Forced Air cooling	With DC brush less fans	
Protections	Refer table 2	
User Display	LCD type (metering & Fault display)	
Remote Monitor	Provided with Cable	
Communication	RS 232 interface with software	
Testing Standard	**IEC 62040 PART-III**	

SOLAR

LCD Display

APPLICATIONS - Small Wind

There are various types of applications in the field of small and micro wind turbines and the details can be classified as below:

1. For House, farm houses
2. For Commercial and office buildings
3. For Hospital, Hostel, Hotels, College, School etc…
4. For Theme park, Petrol bulk
5. For water pumping system
6. For Street Lighting
7. For Telecom towers
8. For Rural Electrification

WATER PUMPING SYSTEM

MODEL	UE 42
RATING	4.2 KW
PUMP	SUBMERSIBLE 18 STAGE -440 V, AC DELTA connected.
PUMP RATING	1.75 To 2.5 HP

WIND SPEED	3.5 - 4.5 m/s 8-10 mph	4.5 - 5 m/s 10-11 mph	5.6 m/s 11-13.5 mph	6 - 7 m/s 13.65-16 mph	7 - 9 m/s 18-20 mph
7m / 25 feet	2860	6000	9500	14200	20000
15m / 50 feet	900	2400	3800	6300	9750
25m / 80 feet	300	1400	2100	3400	5350
40m / 130 feet	0	600	1200	2350	3800
60m / 200 feet	0	0	300	1200	2350

NOTE

When multiple turbines are used simply multiply figures of the table by number of turbines used, if four of UE42s are employed multiply figures by "4" Estimated Diesel fuel saved per annum per UE 42 @ 5.4 m/s ~ **3750 liters** .

STREET LIGHTING

High luminous efficacy up to 200 lumens per watt results in very low power costs.

Wave length efitted by the light is close to peak sensitivity of human eye

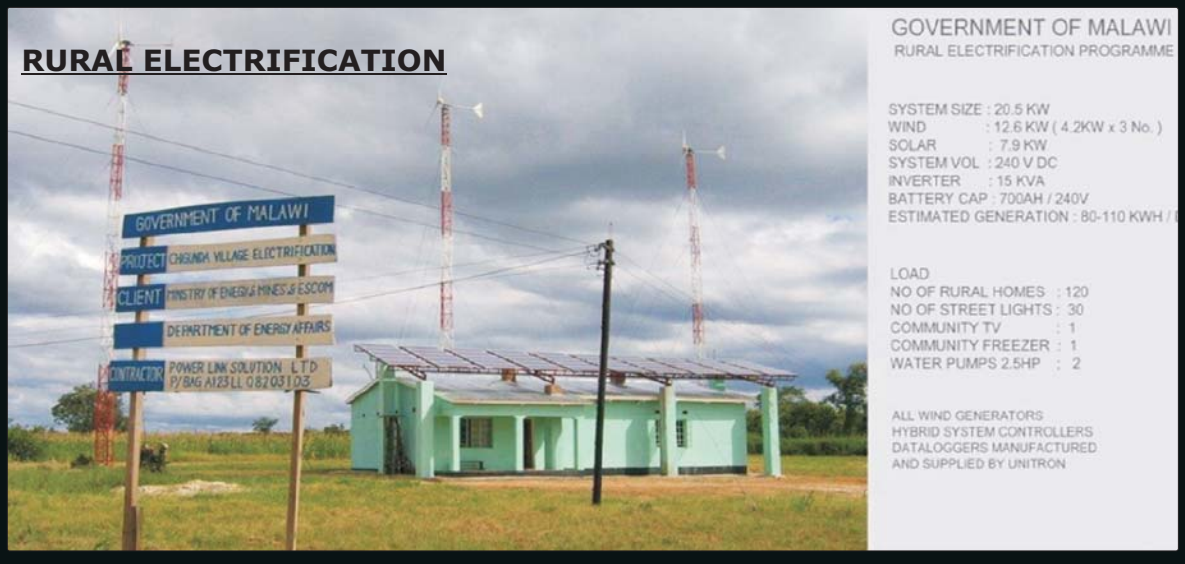
No ultra-violet radiation results in insects not attracted to the light which results in negligible soiling of the luminaire.

Extra long life - more than 20,000 hours.

TELECOM APPLICATIONS

Typical load of GSM / CDMA site: **2 KW continuous**
Typical size of the hybrid system: **15 KW**
Configuration: **10 KW to 15 KW wind + 5 KW solar**
DC bus architecture: **48v DC**
System availability: **60 % to 100 %**
Maintenance: **negligible**
Multiple small turbines may also be utilized
Diesel saved: **9500 liters / annum**
Typical pay back: **5 years**

RURAL ELECTRIFICATION



REMOTE / ISLAND ELECTRIFICATION

Benefits

One of very few small wind energy manufacturers worldwide to make effective use of carbon composites for rotor blades. The rotor blades manufactured by Unitron sport lowest weight / meter length with 300% more strength!!

Development work also taken up using 'NANO CARBON' technology to replace physical carbon material in our rotor blades.

Successfully demonstrated and commissioned several "Wind Electric Direct Water Pumping systems" in Africa. These systems directly drive conventional 3 phase submersible / surface pumps without use of inverter and batteries.

Eight villages electrified under UNDP program for the Kingdom of Malawi (west Africa) electrified with 20.5 KW hybrid system comprising of 3XUE42 / 4.2 KW + 7.9KW solar , this system powers 100- 120 rural homes , about 300 street lights and a water pump , community freezer and a Satellite TV.

World's first "MINI WIND FARM" went on steam during DEC '07 . This 0.4 MW (48nos X 2 groups of UE42 / 4.2 KW wind generators project demonstrates extracting wind energy at 25% PLF for low average wind speeds (< 5 m/s) which was thought not feasible up till now. According to WORLD BANK, it is only 12 15% world's land mass has potential for multi-mega watt wind farming , 10 15% is of no use for wind energy but about 60 64% has average winds that is suitable for small turbines.

First Urban 150 KW hybrid wind farm will be going on steam by end of FEB '09 at Suzlon Energy Corporate campus , Pune.

ECONOMICS @ a GLANCE

Complete system estimates

1 KW purely solar **will cost you about 3.5 LACS to 4.0 LACS**
1 KW wind - solar hybrid **depending on energy mix will cost 2.40 to 2.70 Lacs**
1 KW only wind **will cost 2.00 to 2.20 Lacs cost per KW drops to about 1.65 - 1.85 Lacs when installed in large numbers say 25-30 KW and up.**

Estimate for alternate back up systems

1 KW portable generator will cost 0.30 LACS, cost of fuel per year 4 to 5 hours a day 0.35 to 0.45 LACS first year expenses ~ 0.85 Lacs

1 KW inverter with 4-6 hours battery 0.85 LACS , annual energy expense from grid 0.20 to 0.25 LACS @ 5 /- per unit first year total expenses ~ 1.10 Lacs

You will notice that costs of alternate systems work out as high as 50% of the cost of renewable energy systems.

When depreciation of 80% is taken, which is not available on alternate systems the difference will be even narrower for e.g.,

say 1 KW hybrid costing 2.40 Lacs after depreciation will be about 1.50 Lacs ie 1.50 - 1.10 (cost of inverter system with one year operation) = 0.40 Lacs !!

When coupled with energy efficient systems the return on investment will be even faster for e.g.,

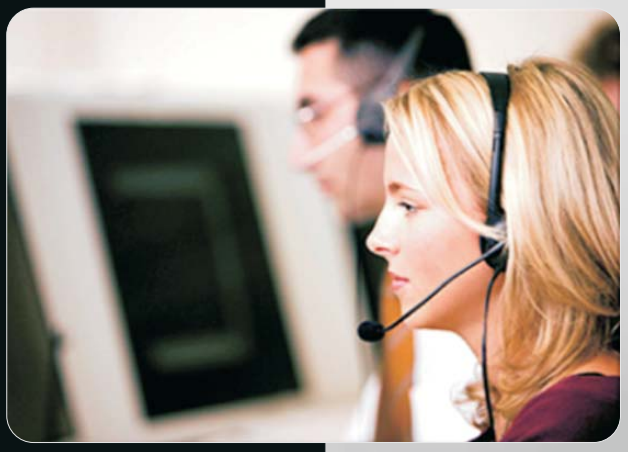
a 5 KW wind solar hybrid system (3.3 KW wind + 1.7 KW solar) costing about 12.50 Lacs can operate about 35 - 40 nos. of High Efficiency, High intensity street lights (55 W / 11000 Lumens) a conventional street light consumes as high as 200 W for nearly same light output this means 200W X 40 X 12 hours X 365 X 5.50 (unit cost)
= 1, 92,000 /- !!!

cost of 5 KW system after depreciation 7.75 Lacs

simple pay back 7.75 / 2 = 3.87 years !!!

Annual pollution alleviated > 10500 tons !!!

FUTURE PROPOSAL



Round the clock (24*7) customer care center.

Monthly checkup of Components for all installations during AMC.

Periodical maintenance as per our manual.

Minimum stock maintenance of spares.

A service point will be opened in a centralized location.

Contact us

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Tamil Nadu

Branches
TENKASI
NAGERCOIL
KARNATAKA
MAHARASTRA
GUJARAT

Also Serve in

ANDHRA PRADESH

MADHYA PRADESH

FAQ

1) Could you explain the technical basics of the mechanism of your wind generator?
Permanent magnet multi pole low speed alternator directly driven by NACA 10 modified aerofoil rotor (No gears)

2) What could be the applications of that generator? Only lighting purposes? Could we settle several wind mills in a single roof? What would be the minimum distance between two mills? Could it be applied to buildings in town? Can we see some of them in Metropolitan cities?
Depending on budget any size is possible. We are doing WIND-SOLAR hybrid power plants as high as 100 to 200 KW , which means one can run almost anything that runs on electricity , however we recommend energy efficient loads .Yes, you can install on rooftops . Small machines can be side clamped to stair case encl or lift encl, however large machines > 1.5 Kw better to install on a centrally located columns exposed in the terrace , i.e. a steel plate is integrated onto column tor steel and the mast is mounted on the plate , overall weight for a size of 3.3 Kw wind mill with 30 feet mast is < 600 KG

3) How tall is your device? Does it pass beyond the tree-line, to be efficient? Doesn't it raise any visual intrusion problems with the neighbors?
Obviously wind speed increase by rule thumb is about 20-25% every 30 feet , small turbines at least 12M , large once at least 15 to 18 M , small turbines enhance aesthetics when installed
on free standing polygon.

4) How many decibels does it produce at maximum speed and medium speed? Doesn't it require to be settled 600 feet from the other houses, as some other systems?
Our Carbon fiber composite blades are very silent Barely audible below 20 KMPH wind and about 2 dB above ambient for 30 to 35 KMPH winds at 200 feet.

5) Is there no risk of damaging the roof because of vibrations?
No problem, we have a roof top installation of 3.3 Kw operating for last 3 - 4 years

6) In urban areas, wouldn't it be turbulence of the wind because of the other buildings, which could hinder the efficiency?
To some extent yes , that's why choose a tall tower at least 30 feet above roof tops or roof tops as explained and ensure nearest tall building is not with 500 feet form the turbine.

7) Is there an electric immersion water system included in your device? If not, could it be added?
Yes , it is call USEFUL dump or Diversion loads , but for Indian scenario there is never excess energy generated , it so very rare diversion loads come into picture

8) For how long is your wind mill power generator sold? How many of them have you already sold?
We have WORLD WIDE presence now more than 1500 wind mills are in the field.

BUSINESS ENQUIRY

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WINDCARE
INDIA PVT. LTD.

TOUCHING YOU WITH SPECIAL TECHNOLOGY!