



WELCOME



OBJECTIVES OF MEDA

- ➔ Promote, Develop, Non-conventional, Renewable and Alternate Energy Sources and Technologies.
- ➔ Take Concrete steps for Energy Conservation
- ➔ Assist GOI and GOM in Renewable Energy Programmes
- ➔ Evolve Suitable Alternatives
- ➔ Install Demonstration Projects
- ➔ Pursue Power Projects Based on Renewable Energy.



National First Prize to MEDA for Wind Energy Development for four consecutive years viz. 1998-1999, 1999-2000, 2000-2001 and 2001-02.2003.2007 second prize.

STAND ALONE SYSTEMS - HYBRID



- ❖ **SMALL AEROGENERATOR : 0.4 - 6 KW**
- ❖ **WIND SOLAR HYBRID SYSTEM : 1 - 10 KW**
- ❖ **POWER FROM: * WIND & SOLAR**
- ❖ **COMPONENTS:**
 - ❖ **WIND AEROGENERATOR AND TOWER, SOLAR PHOTOVOLTAIC PANELS, BATTERIES, CABLES, CHARGE CONTROLLER & INVERTER.**
- ❖ **UNDER CLEAR SUNNY DAY 2.5 TO 3 UNITS PER KW.**
- ❖ **THE COST: RS. 2.9 TO 3.25 LAKH PER KW.**
- ❖ **SUBSIDY :**
 - ❖ **FOR COMMUNITY USE, GOVT. ORGANISATIONS 75% OF EX-WORKS COST MAXIMUM UPTO RS.2 LAKHS PER KW.**
 - ❖ **For Individuals, Industrial users, R&D and academic institutions 50% of ex-works cost subject to a maximum of Rs. 1.25 lakhs per kW**

TECHANICAL DETAILS

- ❖ **The Wind Solar Hybrid System consists**
 - Wind Aerogenerator
 - Photovoltaic System.
- ❖ **The system has following components:**
 - Wind Aerogenerator,
 - Solar Photovoltaic Panels
 - Tower
 - Controllers
 - Battery bank
 - Inverter &
 - Auto-functioning Switch.

Wind Aerogenerator

This is the major component of system and converts kinetic energy of wind into electrical energy. This consists of Propeller / Blades, Electric Generator.

Solar Photovoltaic Panels

Conversion of Solar Energy into Electrical Energy is achieved through Solar Photovoltaic Cells. The Photovoltaic module which generates electricity is made up of Silicon Material. The wafers of highly pure Silicon are chemically processed and hermetically sealed.

DC System

This is also one of the important components of the Wind / Solar PV Hybrid Energy System; the output from the wind aerogenerator is normally variable AC whereas output from Solar PV panels is DC. The DC system converts output from wind to DC & combines it with output from Solar panel. Now this DC output power can be supplied for charging batteries.

Battery

Depending upon the load requirement and the number of hours of operation of loads, the adequate battery size is calculated. Normally, lead - Acid type maintenance free EL tubular batteries are used

Inverter

Inverter is an electronic device which converts DC to AC with the help of controlled rectifiers. The advantage of using AC is that we can use energy efficient lights such as CFLs wherever possible.

Benefits of Wind-Solar Hybrid System

Environmentally friendly.

Comparatively more reliable sources of energy for power generation.

No fuel is required for the operation of system.

No Pollution thus improving health.

No fear of fire hazards since petroleum based fuel is not used.

Easy to operate and maintain.

STAND ALONE SYSTEMS - WIND



4.3 KW Wind / Solar Hybrid System at Dr. Railkar's Hospital, Loni, Dist. Pune (In service from 10 years)

- **SMALL AEROGENERATOR (3.0 KW)**
- **SOLAR SYSTEM (1.350 KW)**
- **WIND SOLAR HYBRID SYSTEM (4.3 KW)**

**SUMMARY OF YEARWISE INSTALLATION OF WIND SOLAR
HYBRID SYSTEMS & ITS PROGRESS IN THE STATE OF
MAHARASHTRA**

Sr. No	Year	Nos. of systems installed & Commissioned	Capacity in kW
1	1998-99	1	5
2	199-2000	7	19
3	2000-01	4	17.95
4	2001-02	3	25
5	2002-03	17	77.56
6	2003-04	15	67.65
7	2004-05	9	65.375
8	2005-06	14	58.564
9	2006-07	16	126.9
10	2007-08	9	45.4
11	2008-09	18	45.4
	Total	113	559.299

Work is in Progress Status

- ❖ Installation work is in progress at 7 sites for 57.575 KW
- ❖ Work not started due to non-receipt of User Share at 7 sites for 54.975 KW
- ❖ Tender Document Prepared Adv is to be Published for 130 KW (17 Sites)
- ❖ Tender Document Prepared and Adv Published for 293.5 KW (90 sites)

O & M Problems

- ❖ Most of the Manufacturers does not impart the adequate training to the User.
- ❖ Most of the Manufacturers does not carry out the routine o & m.
- ❖ After the warrantee period manufacturers does not provide adequate services in respect of repairs of the systems. The response of Manufacturers is poor.
- ❖ The manufacturers are not giving the committed generation from the systems.
- ❖ Some manufacturers response is poor after sales and service.
- ❖ Wind Generation is low for practically 2/3 of the year.

Wind Data of Bahirewadi Wind Monitoring Site

Sensor height	20 meter
Latitude	16°28'N,
Longitude	558 m a s l
Wind speed at 20 m height	4.65 m/s
Elevation	558 m a s l

Month	Wind Speed Available At 20 meter height (m/s.)
JAN	3.7
FEB	3.7
MAR	4.2
APR	4.9
MAY	5.2
JUN	8.1
JUL	6.8
AUG	4.0
SEPT	3.9
OCT	3.9
NOV	4.3
DEC	3.1
Average of 12 month	4.65 m/s

Suggestions

- ❖ The guarantee/Warranty should be of 5 Years instead of 2 years.
- ❖ Accordingly MEDA is incorporating 5 years CMC.
- ❖ User & Manufacturer should make AMC after warranty Period.
- ❖ Manufacturers to improve after sale service.
- ❖ Most of manufacturers are Pune based. Their service charges should be reasonable.
- ❖ Market Mode system may be implemented.
- ❖ Standardization of major equipments, wherever possible.
- ❖ Testing of aero generators may be carried before the provisional empanelment.
- ❖ Cost Reduction – WSHS cost is approaching SPV Power Plant cost same shall be brought down.
- ❖ Design Wind Generation for lower starting in Wind Speed.



THANK YOU