



ARYAN COAL 15 MW WIND POWER PROJECT IN MAHARASHTRA, INDIA



Document Prepared by EKI Energy Services Limited

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1 PROJECT DETAILS

1.1 Summary Description of the Implementation Status of the Project

Aryan Coal 15 MW Wind Power Project at Village Ghatnandra in Sangli District of Maharashtra was commissioned during 29-September-2005 and 30-September-2005. The project activity entails generation of clean power by harnessing wind energy – a non-conventional renewable energy resource and export to the Maharashtra State Electricity Distribution Company Limited (MSEDCL).

The project activity involves commissioning and operation of Suzlon make 12 Wind Electric Generators (WEGs) of 1.25 MW capacities with a total installed capacity of 15 MW. The details of the WTGs have been tabulated as below:

Sr. No.	WTG No.	Capacity (MW)	Date of Commissioning	Location	Site Coordinates
1.	G 13	1.25	30-September-2005	Sangli, Maharashtra	17°10' 10.4"N 74° 54' 23.8"E
2.	G 14	1.25	30-September-2005	Sangli, Maharashtra	17°10' 21.5"N 74° 54' 22.1"E
3.	G 15	1.25	30-September-2005	Sangli, Maharashtra	17°10' 34.5"N 74° 54' 12.7"E
4.	G 17	1.25	30-September-2005	Sangli, Maharashtra	17°10' 11.8"N 74° 54' 04.7"E
5.	G 18	1.25	30-September-2005	Sangli, Maharashtra	17°10'21.8"N 74°54'59"E
6.	G 19	1.25	30-September-2005	Sangli, Maharashtra	17°10' 33.3"N 74° 54' 56.1"E
7.	G 21	1.25	30-September-2005	Sangli, Maharashtra	17°10' 0.1"N 74° 54' 49.4"E
8.	G 22	1.25	30-September-2005	Sangli, Maharashtra	17°10' 11.4"N 74° 54' 44.2"E
9.	G 27	1.25	29-September-2005	Sangli, Maharashtra	17°10' 22.8"N 74° 54' 24.3"E
10.	G 28	1.25	29-September-2005	Sangli, Maharashtra	17°10' 34.1"N 74° 54' 15.0"E
11.	G 29	1.25	29-September-2005	Sangli, Maharashtra	17°10' 46.1"N 74° 54' 09.6"E
12.	G 30	1.25	29-September-2005	Sangli, Maharashtra	17°10' 57.6"N 74° 54' 07.3"E
	Total	15 MW			

1.2 Sectoral Scope and Project Type

Sectoral Scope: Energy (renewable/non-renewable)

Project Type: According to small-scale CDM modalities the project activity falls under:

Type I – Renewable Energy Projects

Category ID – Grid connected renewable electricity generation, (Version 13, EB 36).

1.3 Project Proponent

Organization name	Aryan Coal Benefications Pvt. Ltd. ¹
Contact person	Mr. Ramesh Khanna
Title	Vice President
Address	Rao Tula Ram Marg, 18, Vasant Enclave, New Delhi-110057, Delhi, India
Telephone	+91-124-2719020
Email	rameshkhanna@aryancoal.com

1.4 Other Entities Involved in the Project

Organization name	EKI Energy Services Limited
Role in the Project	Project Consultant
Contact person	Tapti Saha
Title	Assistant Manager-Operation
Address	EnKing Embassy, Office No 201, Plot 48, Scheme 78, Part 2, Vijay Nagar, Indore- 452010, Madhya Pradesh, India.
Telephone	+91 9770900207
Email	tapti@enkingint.org

1.5 Project Start Date

For the project activity, the project start date is the earliest date of the commissioning of any wind mill. As mentioned in table above, the earliest commissioning date for the WTG in the

¹ Aryan Coal Benefications Pvt Ltd and ACB (INDIA) Ltd both are same company.

project activity is 29-September-2005. Therefore the start date for the project activity is 29-September-2005².

1.6 Project Crediting Period

The Crediting Period start date can be considered as either the start date of project activity or 28-March-2006, whichever is later. Accordingly, the Crediting Period start date for the project activity is 28-March-2006 and the length of first crediting period would be maximum of 10 years i.e up to 27-March-2016³.

1.7 Project Location

All the 12 WTGs were installed at Village Ghatnandare, Taluka Kavathe Mahankal, District Sangli in the state of Maharashtra and are connected to the Kundlapur Substation. The nearest railway station is located at Satara city and airport at Pune. Latitude and longitude for the area and WTG wise location details are as follows:

Sr. No.	WT G No.	Capacity (MW)	Survey No.	Village	District	State	Site Coordinates	Feeder No.
1	G 13	1.25	1018	Ghatnandare	Sangli	Maharashtra	17°10' 10.4"N 74° 54' 23.8"E	5
2	G 14	1.25	1018/P	Ghatnandare	Sangli	Maharashtra	17°10' 21.5"N 74° 54' 22.1"E	5
3	G 15	1.25	1017	Ghatnandare	Sangli	Maharashtra	17°10' 34.5"N 74° 54' 12.7"E	5
4	G 17	1.25	1028	Ghatnandare	Sangli	Maharashtra	17°10' 11.8"N 74° 54' 04.7"E	5
5	G 18	1.25	1035	Ghatnandare	Sangli	Maharashtra	17°10' 21.8"N 74° 54' 59"E	5
6	G 19	1.25	1053	Ghatnandare	Sangli	Maharashtra	17°10' 33.3"N 74° 54' 56.1"E	5
7	G 21	1.25	1010	Ghatnandare	Sangli	Maharashtra	17°10' 0.1"N 74° 54' 49.4"E	5

² First set of WTGs commissioned, synchronized with grid and began generating emission reductions.

³ It has been mentioned in the registered VCS PD that the Crediting Period of this project activity is of 10 years (28-March-2006 to 28-March-2016). However the crediting period should be 28-March-2006 to 27-March-2016. Hence the end date of the crediting period has been revised. Deviation has been taken on the same in section 3.2 of the MR

8	G 22	1.25	1054	Ghatnandar e	Sangli	Maharashtra	17°10' 11.4"N 74° 54' 44.2"E	5
9	G 27	1.25	1045	Ghatnandar e	Sangli	Maharashtra	17°10' 22.8"N 74° 54' 24.3"E	6
10	G 28	1.25	998	Ghatnandar e	Sangli	Maharashtra	17°10' 34.1"N 74° 54' 15.0"E	6
11	G 29	1.25	971	Ghatnandar e	Sangli	Maharashtra	17°10' 46.1"N 74° 54' 09.6"E	6
12	G 30	1.25	927	Ghatnandar e	Sangli	Maharashtra	17°10' 57.6"N 74° 54' 07.3"E	6

Maps depicting the districts and states in which the Wind Projects are located are placed below.



1.8 Title and Reference of Methodology

The following CDM approved methodology is used for the project:

Project Type : **I – Renewable Energy Projects**
Project Category : **D – Grid connected renewable electricity Generation**
(Version 14: EB 48)

Reference: Appendix B of the simplified modalities and procedures for small-scale CDM project activities i.e. 'indicative simplified baseline and monitoring methodologies for selected small-scale CDM project activity categories' Version- 10

Following CDM tools have also been referred to:-

- Tool to calculate the emission factor for an electricity system (Version 01.1, EB 35)
- Additionality tool for small scale project activities (Attachment A to Appendix B, Version 06: 30 September 2005)

1.9 Participation under other GHG Programs

The project has neither been registered nor seeking registration under any other GHG programs. The project is seeking registration only in VCS program.

This project has issued VCUs of 69,520 tCO₂ previously under VCS mechanism from 01-August-2009 to 31-December-2012.

1.10 Other Forms of Credit

Emission Trading Programs and Other Binding Limits:

Net GHG emission reductions or removals generated by the Project shall not be used for compliance with an emissions trading program or to meet binding limits on GHG emissions in any Emission Trading program or other binding limits.

Other Forms of Environmental Credit:

Not applicable, as the project is not registered in any other GHG mechanism other than VCS. Also, the project activity is not availing any REC benefits and the same can be confirmed from publically available link of REC generators.

Web-link: https://www.recregistryindia.nic.in/index.php/general/publics/registered_regens

1.11 Sustainable Development

The contribution of the project activity to the sustainable development of the host country India is evident from the following:

Social well-being:

- No human displacement due to the project activity and hence no requirement of relocation

- The local population has been employed during the installation, commissioning and operation of the wind mills, thus proper training imparted to the people involved results in the skill development of the local inhabitants and also improvement in their economic condition.

- Improvement in the infrastructure in the nearby areas such as development of road network, transportation facilities and other amenities

Economic well-being:

- The project activity is responsible for creating business opportunities for many local stakeholders

- It will help in abridging the demand-supply gap in electricity in the regional grid and the national grid

- It will lead to conservation of fossil-fuels and makes these nonrenewable sources of energy available for other important purposes.

- It indirectly contributes towards industrial development of the region by creating a support in terms of supplying power for industries to come up in due course of time

Technological well-being:

- The project activity will promote clean power generation technology. The project contributes towards the stability of grid power that is a major cause of concern in remote locations.

- It also helps in reducing the losses due to power transmission and distribution from the existing generating stations of the grid to remote areas

Environmental well-being:

- The project activity will reduce GHG emissions and contributing to the overall cause of mitigation of global warming

- The project activity by setting up wind-farms for power generation does not cause environmental disturbance or ecological imbalance to the surroundings

- The project activity does also contribute to the reduction in the levels of SO_x, NO_x, and SPM associated with combustion of fossil fuels for generation of thermal power

Additionally report on sustainable developments related to this project activity is being submitted to VERRA registry board regularly according to the requirement.

2 SAFEGUARDS

2.1 No Net Harm

The project activity has no significant impact on the environment. Wind power projects are not included in the Schedule I of the EIA notification S.O.1533 (E) dated 14thSeptember 2006⁴and thus an EIA is not required. Ministry of Environment & forests vide their OM J-11013/41/2006 - IA II (I) dated 13thMay 2011, has re-affirmed this and exempted wind power plants from EIA and Environmental Consent requirement.

2.2 Local Stakeholder Consultation

Detailed local stakeholders consultation was conducted during the registration of the project – by identification of stakeholders, identification of local stakeholders, invitation of them, held meeting where project activity was explained in details and the PP also took due care of comments/suggestions of the local stakeholders. The process of local stakeholder consultation is continuous. During the current monitoring period, the project proponent has kept grievance register in plant site office and sought comments/grievances/suggestions from local stakeholders including local community, government agencies and NGOs. Besides, the PP has also kept provision for submitting comments/grievances/suggestions from local stakeholders through direct mail. However, no major comments/grievances/suggestions have been received from the aforementioned stakeholders during the current monitoring period and all such minor suggestions have been take care by the PP.

Sl. No.	Date	Site	Comments	Resolution taken on Date	Resolution
1.	02-March-2013	Ghatnandra	Water RO should be prepared	02-March-2013	RO has been prepared.
2.	13-April-2015	Ghatnandra	Sitting arrangement should be properly maintained.	14-April-2015	Chairs have been placed at office.
3.	18-March-2016	Ghatnandra	Road should be clean.	19-March-2016	Road has been cleared.

⁴<http://envfor.nic.in/legis/eia/so1533.pdf>

2.3 AFOLU-Specific Safeguards

Not Applicable.

3 IMPLEMENTATION STATUS

3.1 Implementation Status of the Project Activity

The project activity is in operation since 29-September-2005 for full capacity of the plant i.e. 15 MW.

No changes / modifications in the plant equipment take placed as of date.

Sr. No.	PP	WTG No.	Feeder No.	Commissioning Date
1.	ACB (INDIA) Ltd	G13	5	30-September-2005
2.	ACB (INDIA) Ltd	G14	5	30-September-2005
3.	ACB (INDIA) Ltd	G15	5	30-September-2005
4.	ACB (INDIA) Ltd	G17	5	30-September-2005
5.	ACB (INDIA) Ltd	G18	5	30-September-2005
6.	ACB (INDIA) Ltd	G19	5	30-September-2005
7.	ACB (INDIA) Ltd	G21	5	30-September-2005
8.	ACB (INDIA) Ltd	G22	5	30-September-2005
9.	ACB (INDIA) Ltd	G27	6	29-September-2005
10.	ACB (INDIA) Ltd	G28	6	29-September-2005
11.	ACB (INDIA) Ltd	G29	6	29-September-2005
12.	ACB (INDIA) Ltd	G30	6	29-September-2005

The Wind Turbines Generators (WTG) of the project activity running smoothly during the current monitoring period. The WTGs are in operation continuously without major outages (forced & planned) including minor overhaul times & downtimes of equipment during the current monitoring period. No major equipment has been replaced or exchanged during this period. There was no such event occurred that may impact the GHG emission reductions or removals and monitoring.

3.2 Deviations

2.3.1 Methodology Deviations

No methodology deviations during current monitoring period.

2.3.2 Project Description Deviations

The length of the fixed crediting period can be claimed up to 10 years as per VCS guideline (version 04)

Since start date of crediting period is 28-March-2006 as per registered PD and then end date of crediting period will be 27-March-2016 but the same date is mentioned 28-March-2016 in registered PD.

A deviation has been requested as per VCS guideline to correct the end date from 28-March-2016 to 27-March-2016

3.3 Grouped Projects

Not applicable

4 DATA AND PARAMETERS

4.1 Data and Parameters Available at Validation

Data / Parameter	EFOM _y
Data unit	tCO ₂ /MWh
Description	Operating Margin Grid Emission factor of the regional grid (NEWNE grid in India)
Source of data	Calculated from CO ₂ baseline database for the Indian Power Sector –Central Electricity Authority (CEA), Ministry of Power, Version 4.0, September 2008.
Value applied	1.009
Justification of choice of data or description of measurement methods and procedures applied	-
Purpose of Data	The parameter is used in calculating the emission reductions that are taking place due to the project activity in a conservative and transparent manner.
Comments	The CEA databases are maintained and made publicly available by CEA

Data / Parameter	EF _{BM,y}
Data unit	tCO ₂ /MWh
Description	Build Margin Grid Emission factor of the regional grid (NEWNE grid in India)
Source of data	CO2 baseline database for the Indian Power Sector –Central Electricity Authority (CEA), Ministry of Power, Version 4.0, September 2008.
Value applied	0.598
Justification of choice of data or description of measurement methods and procedures applied	-
Purpose of Data	The parameter is used in calculating the emission reductions that are taking place due to the project activity in a conservative and transparent manner. The data has been published by CEA, which is the nodal agency for all power related activities in the country.
Comments	The CEA databases are maintained and made publicly available by CEA

Data / Parameter	EF _{CM,y}
Data unit	tCO ₂ /MWh
Description	Build Margin Grid Emission factor of the regional grid (NEWNE grid in India) ⁵
Source of data	CO2 baseline database for the Indian Power Sector –Central Electricity Authority (CEA), Ministry of Power, Version 4.0, September 2008.
Value applied	0.906
Justification of choice of data or description of	-

⁵ NEWNE grid is now under unified Indian grid

measurement methods and procedures applied	
Purpose of Data	The parameter is used in calculating the emission reductions that are taking place due to the project activity in a conservative and transparent manner. The data has been published by CEA, which is the nodal agency for all power related activities in the country.
Comments	The CEA databases are maintained and made publicly available by CEA

4.2 Data and Parameters Monitored

Data / Parameter	EGy											
Data unit	KWh /Year											
Description	Net Electricity Exported by the all the WTGs to grid in the year y											
Source of data	JMR Sheets											
Description of measurement methods and procedures to be applied	- Monthly joint meter is carried out at the metering point by the MSEDCL official and the representative of project proponent or the Operation and Maintenance contractor employed by the project proponent. - Net electricity supplied to the NEWNE grid will be calculated based on the difference between values of “export” and “import” on the MSEDCL meter. - The invoices raised by project proponent contain the net electricity exported to the Grid. - The data is archived electronically.											
Frequency of monitoring/recording	Monthly											
Value monitored	<table><tr><td>Year</td><td>Vintage wise Net Electricity</td></tr><tr><td>2013</td><td>24,501,450</td></tr><tr><td>2014</td><td>17,581,060</td></tr><tr><td>2015</td><td>19,886,710</td></tr><tr><td>2016</td><td>2,211,870</td></tr></table>		Year	Vintage wise Net Electricity	2013	24,501,450	2014	17,581,060	2015	19,886,710	2016	2,211,870
Year	Vintage wise Net Electricity											
2013	24,501,450											
2014	17,581,060											
2015	19,886,710											
2016	2,211,870											
Monitoring equipment												

QA/QC procedures to be applied	The main meter as well as check meter are maintained and calibrated by the MSEDCL on a regular basis as per their internal calibration schedule as specified in the power purchase agreement. The manager in charge of the power plant is responsible for verifying the quantum of electricity exported to the grid vis-à-vis the net electricity generated from the wind power generating unit within the same time period. Pls. refer Annex III for calibration details.
Purpose of the data	Calculation of Baseline Emission Reduction
Calculation method	
Comments	The relevant data will be recorded in electronic form and the same along with the electricity bills will be archived for two years beyond the crediting period.

4.3 Monitoring Plan

· Suzlon Windfarms Services Ltd. is responsible monitoring of the electricity generation at the wind mills. Suzlon has qualified site personals to ensure constant and reliable monitoring of the installed wind turbines.

· The gross electricity generated by the wind mill is measured instantaneously at the control panel installed below the wind mill. The reading from the control panel is recorded continuously and is maintained through MIS system.

· The electricity from the wind mill is transmitted to the substation maintained by Suzlon. Monthly joint metering of the main meter is carried out by the officials from

MSEDCL and the project developer and the Joint Monthly Report (JMR) is generated. The electricity as recorded by this meter is measured as gross electricity produced by the wind mill.

· The combined electricity generated by different wind mill including, the project proponent wind mills, is collectively received at the substation. The collective electricity is again metered at the substation before it is exported to the grid maintained by MSEDCL.

· The difference in the net electricity exported to the grid and total of gross electricity generated by all the wind mills is measured as transmission loss which is estimated by Suzlon. This transmission loss is equally distributed to each of the wind mill associated to the grid based on the gross power generated by the each wind mill.

· Based on the above data, the net electricity exported to the grid by each of the wind mill is calculated and accordingly invoices are raised by the project proponent against the net electricity generated and exported by individual machines.

- The entire monitoring is done in very transparent manner. As an emergency preparedness plan, check meters are installed along with the main meters so that the data can be continuously monitored in case of malfunctioning of the main meter.
- To ensure the reliability & accuracy of the data, the energy meters are calibrated at least once in a year and the accuracy class of the energy meters is maintained.

The roles and responsibilities of the relevant personnel involved in monitoring, reporting and verification of various GHG performance related parameters in the project activity are explained in Annex I.

5 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

5.1 Baseline Emissions

The baseline emissions is calculated as the MWh produced by the renewable generating unit multiplied by an emission factor (measured in tCO₂/MWh) calculated in a transparent and conservative manner, as below.

$$BE_y = EG_y * EF_{GRID}$$

Where

BE_y = Baseline emissions in year y (tCO₂).

EG_y = Electricity generation by the project in year y (MWh).

EF_{GRID} = Combined margin emissions factor (Baseline emission factor) for the year y (tCO₂/MWh).

EG_y (Net energy exported during the monitoring period)	64,181.08 MWh
EF_{Grid} (Combined margin emissions factor as per the baseline adopted)	0.906 tCO ₂ /MWh

Baseline emissions for the monitoring period

$$BE_y = 64,181.08 \times 0.906$$

= 58,146 tCO₂
(round down
value)

5.2 Project Emissions

Project emissions (PE_y) = 0

5.3 Leakage

Leakage Emissions (LE_y) = 0

5.4 Net GHG Emission Reductions and Removals

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
2013	22,198	0	0	22,198
2014	15,928	0	0	15,928
2015	18,017	0	0	18,017
2016	2,003	0	0	2,003
Total	58,146	0	0	58,146 ⁶

It is to be noted here that as per the estimated emission reduction to be achieved from the project activity for the current monitoring period is 77,125 tCO₂e, whereas actual emission reductions achieved are 58,146 tCO₂e, which is approximately 24.6% lower than the estimated emission reductions. The generation of electricity depends upon many other climatic conditions, and not within the control of the project participant. The lower generation during the current verification period is hence due to certain natural conditions and hence acceptable.

⁶ Round down value

APPENDIX I: THE ROLES AND RESPONSIBILITIES OF THE RELEVANT PERSONNEL INVOLVED IN MONITORING, REPORTING AND VERIFICATION OF VARIOUS GHG PERFORMANCE RELATED PARAMETERS IN THE PROJECT ACTIVITY

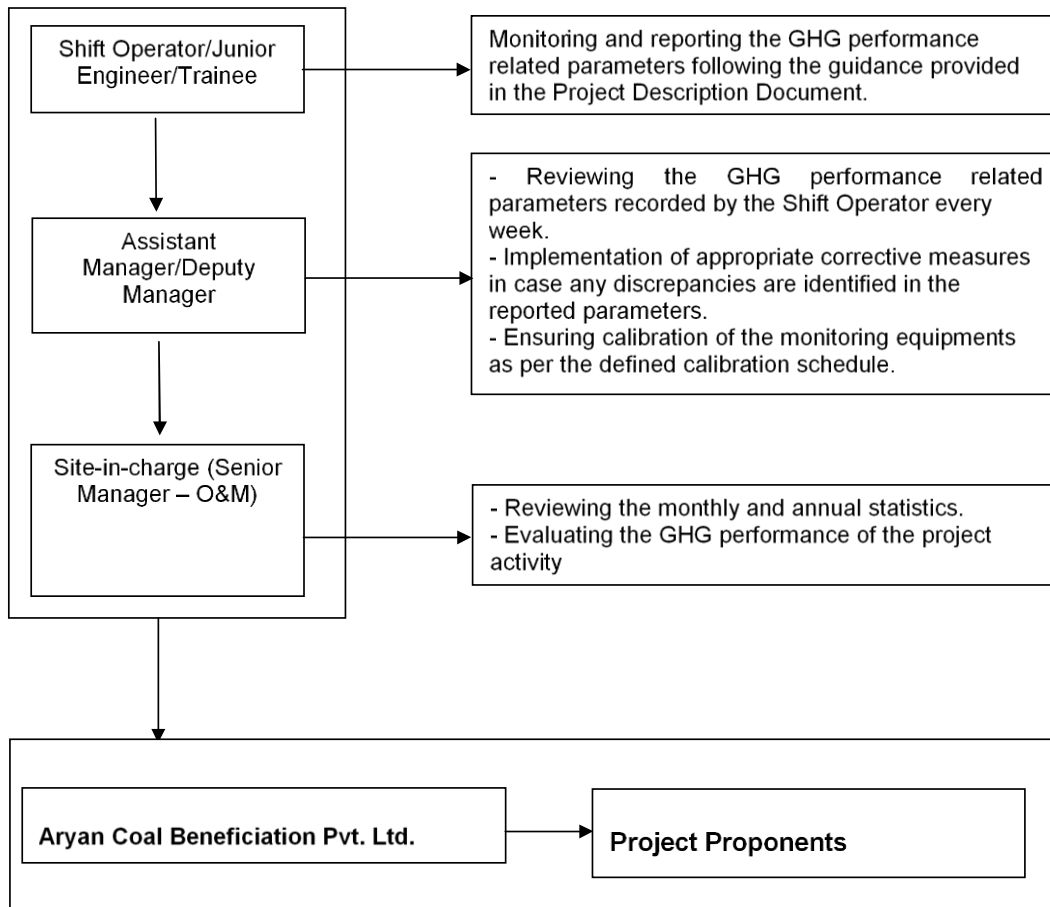
As per paragraph 13 of “Type AMS. I-D Grid connected renewable electricity generation (Version 12: Valid from 10 Aug 07 onwards)”, KWh generated by windmills is to be recorded.

The data monitoring is involved in measurement of KWh generated by windmills. The proposed project activity requires evacuation facilities for sale to grid and the evacuation facility is essentially maintained by the state electricity utility. The electricity generation measurements are required by the utility and the investors to assess electricity sales revenue and / or wheeling charges. The project activity has therefore envisaged two independent measurements of generated electricity from the wind turbines.

1. The primary recording of the electricity fed to the state utility grid has been carried out jointly at the incoming feeder of the state electricity utility. Machines for sale to utility will be connected to the feeder.
2. There are two energy meters installed at the site. One acts as a back up meter if the other one fails. Due to any unforeseen events if both the meters fail, the generation can be monitored at the controller end as explained below in point no.4.
3. The joint measurement has been carried out once in a month in presence of both parties (the developer’s representative and officials of the state power utility). Both parties will sign the recorded reading.
4. The secondary monitoring, which will provide a backup (fail-safe measure) in case the primary monitoring is not carried out, would be done at the individual WEGs. Each WEG is

equipped with an integrated electronic meter. These meters are connected to the Central Monitoring Station (CMS) of the entire wind farm. The generation data of individual machine can be monitored as a real-time entity at CMS. The snapshot of generation on the last day of every calendar month will be kept as a record both in electronic as well as printed (paper) form.

For measurement of all the parameters and maintenance of records due care has been taken and to prepare elaborated formats for data collection; methodology has been described for measurement and collection of each of the parameter; proper training is being provided to concerned personnel.



APPENDIX II: WTG SPECIFICATION DETAIL

Item	Description
Make	SUZLON

Model No.	S 70
Rating in Kw	1250
Rotor Diameter (m)	70
Highest hub height	75
Type of tower (Tubular/lattice)	Tubular
Number of blades	3
Power Regulation (pitch/stall)	Pitch
Type of generator (synchronous/asynchronous)	Asynchronous
Single speed /Dual speed/variable (generator)	Dual
AC/DC/AC System (Yes/No)	No
Rated voltage (V)	690V(50M HZ), 600V(60 hz)
Geared/Gearless	Geared
Cut-in wind speed (m/s)	3m/s
Cut -out wind speed (m/s)	20 m/s
Rated wind speed (m/s)	12m/s
Survival Wind speed (m/s)	67m/s
Auxiliary Consumption (KWh)	Approx 1% of generation
Reactive energy requirement	Approx 10% of active energy
Scheduled Month/year of Commissioning	September 2005
Wind power density	289 watt/m sq. (at 30m)

APPENDIX III: CALIBRATION DETAIL

Sr. No.	Name of the Company	Feeder No.	Meter Sr. No. (Main)	Meter Sr. No. (Check)	Accuracy Class	Date of Calibration	Due Date of Calibration
1	ACB(INDIA) Ltd	5	14796421	14796422	0.2s	18-December-2012	17-December-2013
2		6	14796410	14796411			

Sr. No.	Name of the Company	Feeder No.	Meter Sr. No. (Main)	Meter Sr. No. (Check)	Accuracy Class	Date of Calibration	Due Date of Calibration
1	ACB(INDIA) Ltd	5	14796421	14796422	0.2s	27-August-2013	26-August-2014
2		6	14796410	14796411			

Sr. No.	Name of the Company	Feeder No.	Meter Sr. No. (Main)	Meter Sr. No. (Check)	Accuracy Class	Date of Calibration	Due Date of Calibration
1	ACB(INDIA) Ltd	5	14796421	14796422	0.2s	20-August-2014	19-August-2015
2		6	14796410	14796411			

Sr. No.	Name of the Company	Feeder No.	Meter Sr. No. (Main)	Meter Sr. No. (Check)	Accuracy Class	Date of Calibration	Due Date of Calibration
1	ACB(INDIA) Ltd	5	14796421	14796422	0.2s	09-August-2015	08-August-2016
2		6	14796410	14796411			

APPENDIX IV: BREAK DOWN DETAIL

Gen. Date	Customer Name	State	Site	MW	Breakdown Remark	Break down Hrs.
01-February-2013	ACB (India) Limited	Maharashtra	Ghatnandra	15	Grid Down from EB	0.20
14-February-2013	ACB (India) Limited	Maharashtra	Ghatnandra	15	Grid Down from EB	0.20
19-February-2013	ACB (India) Limited	Maharashtra	Ghatnandra	15	Grid Down from EB	0.20
20-February-2013	ACB (India) Limited	Maharashtra	Ghatnandra	15	Grid Down from EB	0.10
28-February-2013	ACB (India) Limited	Maharashtra	Ghatnandra	15	Elec Voltage Asymmetry	0.30
10-March-2013	ACB (India) Limited	Maharashtra	Ghatnandra	15	Elec Voltage Asymmetry	0.20
11-March-2013	ACB (India) Limited	Maharashtra	Ghatnandra	15	Grid Down from EB	5.60
17-March-2013	ACB (India) Limited	Maharashtra	Ghatnandra	15	Elec Voltage Asymmetry	0.20
16-March-2013	ACB (India) Limited	Maharashtra	Ghatnandra	15	Grid Down from EB	5.60
24-March-2013	ACB (India) Limited	Maharashtra	Ghatnandra	15	Grid Down from EB	12.80
10-May-2013	ACB (India) Limited	Maharashtra	Ghatnandra	15	FSS Fault	2.20
13-May-2013	ACB (India) Limited	Maharashtra	Ghatnandra	15	Grid Down from EB	12.80
16-May-2013	ACB (India) Limited	Maharashtra	Ghatnandra	15	FSS Fault	1.60
18-May-2013	ACB (India) Limited	Maharashtra	Ghatnandra	15	Grid Down from EB	0.10
29-May-2013	ACB (India) Limited	Maharashtra	Ghatnandra	15	Grid Down from EB	5.00
01-June-2013	ACB (India) Limited	Maharashtra	Ghatnandra	15	Preventive Check	0.70
15-June-2013	ACB (India) Limited	Maharashtra	Ghatnandra	15	FSS Fault	1.20
03-July-2013	ACB (India) Limited	Maharashtra	Ghatnandra	15	Grid Down from EB	5.00
04-September-2013	ACB (India) Limited	Maharashtra	Ghatnandra	15	Grid Down from EB	5.00
15-September-2013	ACB (India) Limited	Maharashtra	Ghatnandra	15	Grid Down from EB	0.40
28-January-2014	ACB (India) Limited	Maharashtra	Ghatnandra	15	FSS Fault	7.20
07-February-2014	ACB (India) Limited	Maharashtra	Ghatnandra	15	Grid Down from EB	0.20

28-February-2014	ACB (India) Limited	Maharashtra	Ghatnandra	15	Grid Down from EB	2.60
09-April-2014	ACB (India) Limited	Maharashtra	Ghatnandra	15	Monthly Lubrication	0.80
13-April-2014	ACB (India) Limited	Maharashtra	Ghatnandra	15	Elec Voltage Asymmetry	0.10
11-July-2014	ACB (India) Limited	Maharashtra	Ghatnandra	15	Grid Down from EB	2.60
12-August-2014	ACB (India) Limited	Maharashtra	Ghatnandra	15	Monthly Lubrication	1.00
13-December-2014	ACB (India) Limited	Maharashtra	Ghatnandra	15	Grid Down from EB	0.40
14-January-2015	ACB (India) Limited	Maharashtra	Ghatnandra	15	Modification	1.70
15-February-2015	ACB (India) Limited	Maharashtra	Ghatnandra	15	Monthly Lubrication	1.00
16-April-2015	ACB (India) Limited	Maharashtra	Ghatnandra	15	Grid Down from EB	0.10
17-June-2015	ACB (India) Limited	Maharashtra	Ghatnandra	15	Grid Down from EB	0.10
18-July-2015	ACB (India) Limited	Maharashtra	Ghatnandra	15	Elec Voltage Asymmetry	0.20
19-August-2015	ACB (India) Limited	Maharashtra	Ghatnandra	15	Grid Down from EB	1.80
20-July-2015	ACB (India) Limited	Maharashtra	Ghatnandra	15	Grid Down from EB	1.80
11-January-2016	ACB (India) Limited	Maharashtra	Ghatnandra	15	Elec VoltageAsymmetry	0.10
22-February-2016	ACB (India) Limited	Maharashtra	Ghatnandra	15	Elec YawSensor ErrStop	0.40
05-March-2016	ACB (India) Limited	Maharashtra	Ghatnandra	15	Mech SwitchTwistCCW EndStop	3.50
24-March-2016	ACB (India) Limited	Maharashtra	Ghatnandra	15	YawNorthSensorNotDetected	0.50