MONITORING REPORT FORM (F-CDM-MR)
Version 02.0

MONITORING REPORT

Title of the project activity	1.5 MW Grid connected Wind Electricity Generation at Tirunelveli District, Tamilnadu, India by Kallam Agro Products and Oils Private Limited
Reference number of the project activity	2770
Version number of the monitoring report	01
Completion date of the monitoring report	14/09/2012
Registration date of the project activity	15/12/2009
Monitoring period number and duration of this monitoring period	Monitoring Period Number : 01 Duration : 15/12/2009 to 20/12/2011
Project participant(s)	Kallam Agro Products & Oils (P) Ltd
Host Party(ies)	India
Sectoral scope(s) and applied methodology(ies)	Sectoral scope: 1: Energy Industries (renewable - / non-renewable sources) Methodology : AMS-I.D.– Grid connected renewable electricity generation (Version 13, EB 36)
Estimated amount of GHG emission reductions or net anthropogenic GHG removals by sinks for this monitoring period in the registered PDD	7,655 tCO_2e
Actual GHG emission reductions or net anthropogenic GHG removals by sinks achieved in this monitoring period	6,046 tCO_2e

SECTION A. Description of project activity

A.1. Purpose and general description of project activity

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The project activity generates electrical power using wind energy through operation of Wind Turbine Generators (WTG) located at Thiruvambalapuram Village, Radhapuram Taluka, Tirunelveli District, Tamilnadu and export the generated electricity to the State grid i.e., Tamil Nadu Electricity Board (TNEB)[1], which is a part of Southern regional grid.. The electricity is being generated from wind power which is renewable source, thereby displacing the electricity from the grid to the state electricity board through sustainable means without causing any negative impact on the environment and to contribute to climate change mitigation efforts.

The electrical energy displaced by this Wind power plant results in the annual reduction of equivalent amount of CO_2 emissions to the atmosphere that would have otherwise been emitted in the absence of the project activity. Thereby the project activity resulted in the reduction of Green House Gases (GHGs) into the atmosphere.

The project activity comprises 1 WTG of capacity 1.5 MW The electricity generated at 690 V level and stepped up to 33 kV for inter connection with grid to match the nearest sub-station of Udayathoor, which is at a distance of 10 km from the project site.

Relevant dates for the project activity (e.g. construction, commissioning, continued operation periods, etc.)
• Project construction started on 20/01/2008 and completed in Mar 2008.
• Project activity Synchronization to grid/ Commissioned on 28/03/2008.
• Continued operation since 28/03/2008.

The present monitoring period is chosen from 15/12/2009 to 20/12/2011. The net electricity exported to the grid by the project activity is 6,538.653 MWh and the net emission reductions are of 6,046 tCO_2e during the chosen monitoring period.

A.2. Location of project activity

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The location of project activity is:

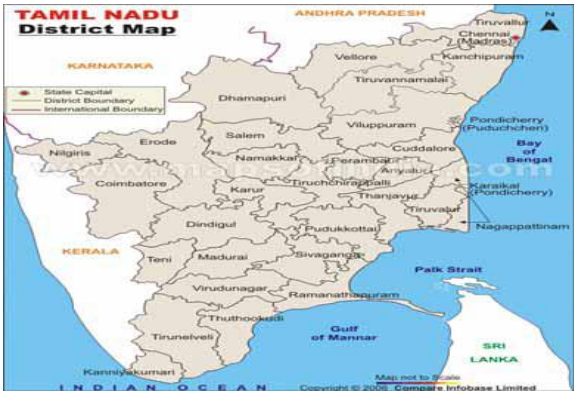
(a) Host Party (ies)	*:*	*India*
(b) Region/ State/ Province, etc.	*:*	*Tamilnadu*
(c) City/ Town/ Community, etc.	*:*	*Tirunelveli / Thiruvambalapuram*
(d) Physical/ Geographical location.[2]	*:*	*77° 48' 03.3"E (longitude) & 8° 15' 11.4"N (latitude)*

The Physical location of the project is given below:-

[1] *The project activity sells electricity to Tamil Nadu Electricity Board (TNEB). TNEB was restructured by establishing a holding company with the name "TNEB Ltd" and two subsidiary companies namely "Tamil Nadu Transmission Corporation Ltd.,"(TANTRANSCO) and "Tamil Nadu Generation and Distribution Corporation Ltd.," (TANGEDCO) as per the mandatory requirements of the Electricity Act 2003, which came in to effective from 01 Nov 2010 fully.* http://www.tangedco.gov.in/template1.php?tempno=&cid=0&subcid=182

[2] http://wikimapia.org/#lat=8.2531667&lon=77.8009167&z=9&l=0&m=w&search=8%C2%B015%2711.4%22N%20%20%2077%C2%B048%2703.3%22E

Map1: Tamil nadu state in India



Map2: Tirunelveli district in Tamil nadu state

Map 3: Location of the project activity in Tirunelveli district of Tamil Nadu

A.3. Parties and project participant(s)

Party involved ((host) indicates a host Party)	Private and/or public entity(ies) project participants (as applicable)	Indicate if the Party involved wishes to be considered as project participant (Yes/No)
India (host)	Private Entity: Kallam Agro Products & Oils (P) Ltd	No

A.4. Reference of applied methodology

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Methodology :

AMS- I.D. **"**Grid connected renewable electricity generation**"** (Version 13, EB 36, Annex 26).

Tools:

"Tool to calculate the emission factor for an electricity system"(Version 01.1, EB 35, Annex 12).

"Tool for the demonstration and assessment of Additionality" (Version 05.2, EB 39, Annex 10).

A.5. Crediting period of project activity

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Type: Fixed Crediting Period (10 Years - 0 months, i.e from 15/12/2009 to 14/12/2019).

Start date of crediting period: 15/12/2009.
(No changes to the start date of this crediting period have been applied since)
Length of the crediting period corresponding to this monitoring period: 15/12/2009 – 20/12/2011.

SECTION B. Implementation of project activity

B.1. Description of implemented registered project activity

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The WTG has been commissioned and commenced its commercial operation on 28/03/2008. The project promoter has installed the monitoring equipments to monitor the parameters, which were described in the registered CDM-PDD.

The details of project operational hours during this monitoring period are presented below:-

	(Hr:Mn)
Total Hours	17,664:00
Running Hours	17,555:40
Non-Running Hours	108 :20

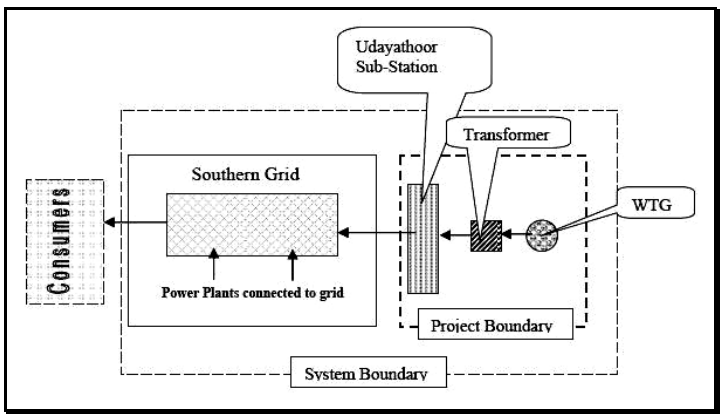
Plant outages and reasons are furnished in Annex-2.

No significant events occurred during this Monitoring period, which may impact the applicability of the applied methodology.

The technical description of the project activity is:-

The Project activity utilises the velocity of the wind in the atmosphere for power generation by using of WTG. The project activity uses the Horizontal Axis Wind Turbine (HAWT) having three rotor blades. The HAWT consists of a tower and nacelle that is mounted on the tower. The turbine blades are mounted on the hub of the nacelle and are kept upwind into the direction flow of wind by a yaw system. The kinetic energy of wind is converted into mechanical energy and then converted into electrical energy by the electric generators. Power is transmitted to the generator through three-stage gearbox and main shaft. WTG is monitored and controlled by a microprocessor based control unit.

Detailed technical process diagram of the project activity is furnished below:-



Technical details of the installed equipments are furnished below:

ROTOR Diameter : 82 m No. of rotor blade : 3. Orientation : Upwind/ Horizontal axis. Rotational Direction : Clockwise. Rotor Blade Material : GRP. Swept area : 5,281 m^2 Hub Height : 78.5 m. Regulation : Pitch Regulated. **OPERATIONAL DATA** Cut in wind speed : 4 m/s. Cut off wind speed : 20 m/s. **GEAR BOX** Type : Integrated 3 stage 1 planetary & 2 helical. Gear Ratio : 1:95:09. Manufacturer : Winergy/ Hansen.	**GENERATOR** Type : Asynchronous 4 poles. Rated Output : 1,500 kW. Rated Voltage : 690 V. Frequency : 50Hz. Insulation : Class "H". Enclosure Class: IP 54. Cooling System: Air Cooled. Slip Control : Macro Slip Providing Sip upto 16.7% **OPERATING BRAKES** Aerodynamic Brakes :3-Independent Systems with blade pitching. Mechanical brakes : Hydraulic disc break. **YAW DRIVE** Method of operation : Active Electrical yaw motor. Bearing type : Polyamide Silica Bearings.

B.2. Post registration changes

B.2.1. Temporary deviations from registered monitoring plan or applied methodology

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The Project activity has not applied for any temporary deviations from registered monitoring plan or applied methodology.

B.2.2. Corrections

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The Project activity has not applied for any corrections with respect to the registered PDD.

B.2.3. Permanent changes from registered monitoring plan or applied methodology

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The Project activity does not have any permanent changes from registered monitoring plan or applied methodology.

B.2.4. Changes to project design of registered project activity

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There are no changes to project design of registered project activity.

B.2.5. Changes to start date of crediting period

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There are no changes to start date of crediting period.

B.2.6. Types of changes specific to afforestation or reforestation project activity

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SECTION C. Description of monitoring system

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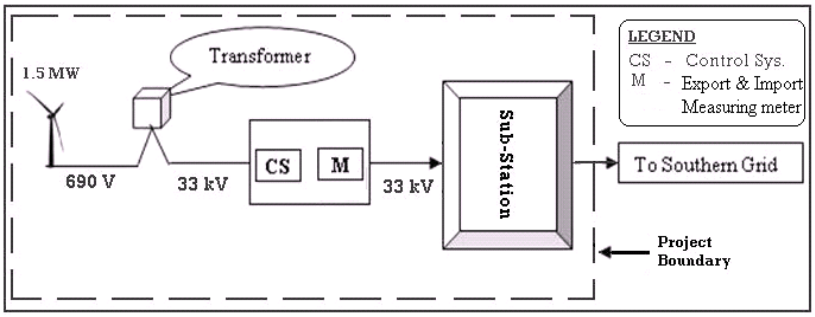
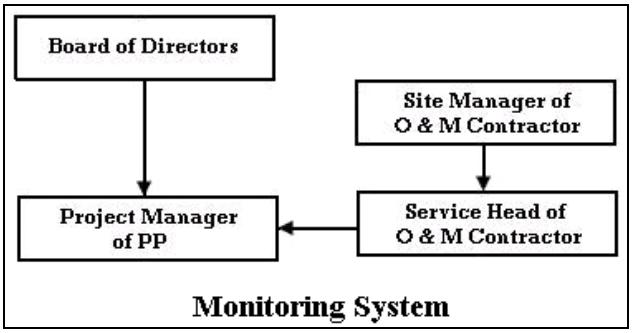
The project was provided with monitoring equipments which were described in the registered CDM-PDD and the line diagram for the monitoring parameters are furnished below:-



The project have executed separate Operation & Maintenance (O & M) contract with Suzlon Infrastructure Services Limited for data logging in for power generation, preparation and submission of monthly performance reports and taking monthly meter reading jointly with state electricity board and same will be supervised by the Project Manager of the project proponent assisted by the necessary technical and other staff. The monitoring organisation structure is shown below:-



Roles and Responsibilities:-

Board of Directors:

The authority and responsibility reviewing of the data rests with the Board of Directors submitted by Project Manager.

Site Manager (O & M):

He is responsible for monitoring and recording the electricity generation, electricity export to the grid, electricity imported from the grid and plant shut down timings. The monthly reports will be generated and submitted to the service head for verification.

Service Head (O & M):

The service Head examine the reports generated by the site Manager with respect to the monthly electricity generation, export, import and annual emission reduction calculations as per the monitoring plan. The calibration of the meters installed will be looked by him as per the monitoring plan.

Project Manager:

The Project Manager is the person who is responsible for GHG monitoring activities in the project activity. He has appointed experienced persons (mechanical and electrical) in various disciplines to assist him. He is responsible for review the monthly reports submitted by service head of O & M contractor and prepare an internal audit report on operational conditions of plant and also compiling the data on electricity export to the grid system for submission to the Board of Directors. The responsibility of storage and archiving of information in good condition also lies with the Project Manager.

Methods of data transfer and archiving policy

The data will be recorded by site manager of O & M personnel at the project site and also the monthly export & import readings will be recorded & certified by TNEB/TANGEDCO officials. The electricity generation and distribution structure will be measured using calibrated meters. Records of measurements will be used for verification of emissions reductions. Sales bills / receipts may be compared as an alternative proof of the electricity exported to the grid.

Emergency Procedures

There are several emergency equipments used in various emergency situations like high voltages etc. The Suzlon Infrastructure Services Limited is responsible for Operating & maintenance of necessary spare parts and consumables for WTG such as Wind vanes and sensors, WTG Controllers, limit switches and sensors etc.

SECTION D. Data and parameters

D.1. Data and parameters fixed ex ante or at renewal of crediting period

Data/Parameter	EF_y
Unit	tCO_2/MWh
Description	CO_2 Emission factor for the regional grid system.
Source of data	As per Reg. PDD page 22/36
Value(s) applied	0.9291
Purpose of data	Calculation of baseline emissions
Additional comment	Fixed ex- ante for the crediting period.

D.2. Data and parameters monitored

Data/Parameter	EG_y
Unit	MWh
Description	Net electricity generated and delivered to the grid by the project activity during the year y
Measured/Calculated /Default	Calculated
Source of data	Statement showing the Energy Generated through wind mill issued by TNEB /TANGEDCO
Value(s) of monitored parameter	6,538.653
Monitoring equipment	Not applicable
Measuring/Reading/ Recording frequency	Recorded monthly using the measured values of export and import
Calculation method (if applicable)	Calculated as a difference of measured values of electricity exported to grid and electricity imported from grid i.e., $EG_{export,y} - EG_{import,y} = EG_y$
QA/QC procedures	The Meter used for reading export & import of energy will be calibrated as per the industry standards of host country.
Purpose of data	Calculation of baseline emissions
Additional comment	The data will be kept for two years after the end of the crediting period or the last issuance of CERs for this project activity, whichever occurs later.

Data/Parameter	$EG_{export,y}$
Unit	MWh
Description	The electricity exported to the grid during the year y
Measured/Calculated /Default	Measured
Source of data	Statement showing the Energy Generated through wind mill issued by TNEB/ TANGEDCO.
Value(s) of monitored parameter	6,578.853
Monitoring equipment	Details are provided in Table-1
Measuring/Reading/ Recording frequency	Measured continuously and recorded monthly
Calculation method (if applicable)	Left blank intentionally
QA/QC procedures	The Meter calibrated as per industry standards of host country.
Purpose of data	Calculation of baseline emissions
Additional comment	With respect to the Apportioning method considered as per registered PDD for the period 15/12/2009 to 20/12/2009is 47.901 MWh[3] . The data will be kept for two years after the end of the crediting period or the last issuance of CERs for this project activity, whichever occurs later.

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*Generation at Controller ((from date of registration to end of month[$]) i.e. from 15/12/2009 to 20/12/2009) as **A** =*	*65.010*	*MWh*
*Total generation at Controller (Total generation of particular month i.e., Dec-2009) as **B** =*	*325.497*	*MWh*
*% Generation from the start date of monitoring period to the end of the month = **C** = (A/B)*100 = (65.010/325.497)*100 =*	*19.972*	*MWh*
*Generation as per TNEB Generation report for the month Dec-2009 as **D** =*	*239.832*	*MWh*
*Generation or Export value used for calculation of emission reduction Calculations = (D * C/100)*	*(239.832* 19.972)/100 = **47.901***	*MWh.*

[$] *End of the month considered as per the JMR.*

Data/Parameter	$EG_{import,y}$
Unit	MWh
Description	The electricity imported from the grid during the year y
Measured/Calculated /Default	Measured
Source of data	Statement showing the Energy Generated through wind mill issued by TNEB/ TANGEDCO.
Value(s) of monitored parameter	40.200
Monitoring equipment	Details are provided in Table-1
Measuring/Reading/ Recording frequency	Measured continuously and recorded monthly.
Calculation method (if applicable)	Left blank intentionally
QA/QC procedures	The Meter used for reading calibrated as per industry standards of host country.
Purpose of data	Calculation of baseline emissions
Additional comment	The data will be kept for two years after the end of the crediting period or the last issuance of CERs for this project activity, whichever occurs later.

Data/Parameter	$EG_{LSC,y}$
Unit	MWh
Description	Electricity generated by wind mill during the year y
Measured/Calculated /Default	Calculated
Source of data	Log sheets recorded at project site
Value(s) of monitored parameter	6,676.145
Monitoring equipment	Details are provided in Table-1
Measuring/Reading/ Recording frequency	Left blank intentionally
Calculation method (if applicable)	Please refer Foot Note provided in the $EG_{export,y}$ parameter
QA/QC procedures	In case of any inconsistency or error notifying at the Controller[4], it will be rectified or replaced completely by the WTG supplier.
Purpose of data	Calculation of baseline emissions
Additional comment	The data will be kept for two years after the end of the crediting period or the last issuance of CERs for this project activity, whichever occurs later.

Table-1: Export & Import measuring meter calibration details

Description	**Energy Meter**	
Serial No.	04939495	
Make	Elster	
Accuracy class	0.5	
Calibration Frequency	Once in a year	
Date of last Calibration	28/03/2008	23/09/2011
Validity	27/03/2009	22/09/2012
Calibrating agency	TNEB	TANGEDCO

D.3. Implementation of sampling plan

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Data and Parameters described in Section D.1 and D.2 above are not determined by a sampling approach.

SECTION E. Calculation of emission reductions or GHG removals by sinks

E.1. Calculation of baseline emissions or baseline net GHG removals by sinks

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As per Registered CDM-PDD, the baseline emissions are calculated based on the net energy supplied to the grid (in MWh/year), and an emission factor for the displaced grid electricity (in kg CO_2/MWh).

[4] *The controller used for the WTG is SCS Controller it is a micro-processor based intelligent controller which has been specially designed for control of wind turbines. It uses a Woodward Multi function Relay that has three current inputs from CT and three direct voltage inputs (690 Volts). The analog values of current / voltage is converted into digital signal internally using A/D Converters at very high sampling rate. A software program reads these values and displays instantaneous parameters such as voltage, current, power factor, kVAh, kVArh and kWh. These instantaneous values are then time integrated and displayed / stored. Woodward relay is having no display and needs special protocol to view energy readings as this relay is communicating digital signal through special communication protocol. Moreover, turbine cannot run without this relay hence it cannot be removed for calibration, hence, it is not possible to calibrate.*

$BE_y = EG_y * EF_y$

Where

EG_y = The net electricity generated and delivered to the grid by the project activity during the year *y*

EF_y = The emission factor of the grid

EF_y is the emission factor of the grid to which the project is connected, and was determined and validated *ex-ante as* 0.9291 tCO_2/MWh for the crediting period, as per the Registered CDM-PDD.

EG_y is the net quantity of electricity exported to TNEB/TANGEDCO facility, which is determined by the electricity exported to the grid minus the electricity imported from the grid.

Table 2 : Baseline Emissions

Monitoring Period	Electricity Exported to Grid	Electricity Imported from Grid	Net Electricity Displaced	Baseline Emission Factor	Baseline Emissions
	MWh	MWh	MWh	tCO_2/MWh	tCO_2e
15/12/2009 to 20/12/2009*	47.901	1.056	46.845		43.523
20/12/2009 to 20/01/2010	330.984	0.912	330.072		306.670
20/01/2010 to 20/02/2010	326.856	0.960	325.896		302.790
20/02/2010 to 20/03/2010	147.384	1.872	145.512		135.195
20/03/2010 to 20/04/2010	124.800	3.000	121.800		113.164
20/04/2010 to 20/05/2010	156.984	2.808	154.176		143.245
20/05/2010 to 20/06/2010	451.224	0.936	450.288		418.363
20/06/2010 to 20/07/2010	430.440	1.200	429.240		398.807
20/07/2010 to 20/08/2010	377.376	1.608	375.768		349.126
20/08/2010 to 20/09/2010	402.528	1.560	400.968	0.9291	372.539
20/09/2010 to 20/10/2010	315.000	1.512	313.488		291.262
20/10/2010 to 20/11/2010	143.088	2.304	140.784		130.802
20/11/2010 to 20/12/2010	144.120	2.040	142.080		132.007
20/12/2010 to 20/01/2011	187.968	1.416	186.552		173.325
20/01/2011 to 20/02/2011	343.656	0.936	342.720		318.421
20/02/2011 to 20/03/2011	177.552	1.944	175.608		163.157
20/03/2011 to 20/04/2011	88.488	3.096	85.392		79.338
20/04/2011 to 20/05/2011	226.152	1.320	224.832		208.891
20/05/2011 to 20/06/2011	517.848	0.456	517.392		480.709

20/06/2011 to 20/07/2011	348.840	1.248	347.592		322.948
20/07/2011 to 20/08/2011	343.248	1.056	342.192		317.931
20/08/2011 to 20/09/2011	302.496	0.840	301.656		280.269
20/09/2011 to 20/10/2011	191.256	2.616	188.640		175.265
20/10/2011 to 20/11/2011	150.432	2.352	148.080		137.581
20/11/2011 to 20/12/2011	302.232	1.152	301.080		279.733
Total	**6,578.853**	**40.200**	**6,538.653**		**6,075.000**

[*] *Note:- The Export value is obtained as per the formula in page no.27 of Registerd CDM-PDD, and the import value is considered for the entire month i.e 20/11/2009 to 20/12/2009 on conservative basis for estimations.*

Therefore,

BE_y = 6,538.653 MWh * 0.9291 tCO_2/MWh

BE_y = 6,075 tCO_2e

E.2. Calculation of project emissions or actual net GHG removals by sinks

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No project emissions are applicable to this small scale wind power project, as the electricity generation is based on Wind resources, which does not involve in combustion or generation of emissions from fossil fuels. Hence, the project emissions are zero.

PE_y = 0 tCO_2e

E.3. Calculation of leakage

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As per AMS- I.D. (Version 13, EB 36) "If the energy generating equipment is transferred from another activity or if the existing equipment is transferred to another activity, leakage is to be considered."

There by no energy generating equipment is transferred from another activity or the existing equipment is transferred to another activity. Hence leakage emissions are considered as zero.

L_y = 0 tCO_2e

E.4. Summary of calculation of emission reductions or net anthropogenic GHG removals by sinks

Time Period	Baseline emissions or baseline net GHG removals by sinks (tCO_2e)	Project emissions or actual net GHG removals by sinks (tCO_{2e})	Leakage (tCO_2e)	Emission reductions or net anthropogenic GHG removals by sinks (tCO_2e)
15/12/2009 to 20/12/2009	43.523	0.000	0.000	43.523
20/12/2009 to 20/01/2010	306.670	0.000	0.000	306.670
20/01/2010 to 20/02/2010	302.790	0.000	0.000	302.790
20/02/2010 to 20/03/2010	135.195	0.000	0.000	135.195
20/03/2010 to 20/04/2010	113.164	0.000	0.000	113.164
20/04/2010 to 20/05/2010	143.245	0.000	0.000	143.245
20/05/2010 to 20/06/2010	418.363	0.000	0.000	418.363
20/06/2010 to 20/07/2010	398.807	0.000	0.000	398.807
20/07/2010 to 20/08/2010	349.126	0.000	0.000	349.126
20/08/2010 to 20/09/2010	372.539	0.000	0.000	372.539
20/09/2010 to 20/10/2010	291.262	0.000	0.000	291.262
20/10/2010 to 20/11/2010	130.802	0.000	0.000	130.802
20/11/2010 to 20/12/2010	132.007	0.000	0.000	132.007
20/12/2010 to 20/01/2011	173.325	0.000	0.000	173.325
20/01/2011 to 20/02/2011	318.421	0.000	0.000	318.421
20/02/2011 to 20/03/2011	163.157	0.000	0.000	163.157
20/03/2011 to 20/04/2011	79.338	0.000	0.000	79.338
20/04/2011 to 20/05/2011	208.891	0.000	0.000	208.891
20/05/2011 to 20/06/2011	480.709	0.000	0.000	480.709
20/06/2011 to 20/07/2011	322.948	0.000	0.000	322.948
20/07/2011 to 20/08/2011	317.931	0.000	0.000	317.931
20/08/2011 to 20/09/2011	280.269	0.000	0.000	280.269
20/09/2011 to 20/10/2011	175.265	0.000	0.000	175.265
20/10/2011 to 20/11/2011	137.581	0.000	0.000	137.581
20/11/2011 to 20/12/2011	279.733	0.000	0.000	279.733
Total	**6,075.000**	**0.000**	**0.000**	**6,075.000**

- *Emission Reductions = 6,075 tCO_2e*
- *Emissions due to Delay Calibration[#] = 29 tCO_2e*
- *Net Emission Reductions = 6,046 tCO_2e*

[#] During the present monitored period, installed energy meter was used beyond calibration due date (Annually from the date of calibration test) and the export & import electricity readings are adjusted for the delayed calibration period (i.e 15/12/2009 to 20/10/2011) as per Annex 60 of EB 52. The details for emissions due to electricity adjusted for the delayed calibration period are presented in the spreadsheet.

E.5. Comparison of actual emission reductions or net anthropogenic GHG removals by sinks with estimates in registered PDD

Item	Values estimated in ex-ante calculation of registered PDD	Actual values achieved during this monitoring period
Emission reductions or GHG removals by sinks (tCO_2e)	**7,655**[5]	**6,046**

E.6. Remarks on difference from estimated value in registered PDD

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The achieved emission reduction from the project during this monitoring period is within the limit of the estimated value of the emission reduction in the registered CDM-PDD.

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History of the document

Version	Date	Nature of revision
02.0	EB 66 13 March 2012	Revision required to ensure consistency with the "Guidelines for completing the monitoring report form" (EB 66, Annex 20).
01	EB 54, Annex 34 28 May 2010	Initial adoption.
Decision Class: Regulatory **Document Type**: Form **Business Function**: Issuance		

[5] *As per registered CDM-PDD the estimates of emission reductions per year (i.e., for 365 days) is 3,796 tCO_2e. The number of days available during this monitoring period (15/12/2009 to 20/12/2011) is 736 days. Therefore, the estimated emission reductions for 736 days is calculated as (736/365)*3,796.30 = 7,655 tCO_2e*

Annex -1

Consolidated Report for Monitoring Parameter during the Monitored Period

Table 3 : Monthly Gross electricity Generation in MWh

Monitoring Period	Gross Electricity Generation
15/12/2009 to 20/12/2009	48.769
20/12/2009 to 20/01/2010	334.388
20/01/2010 to 20/02/2010	329.135
20/02/2010 to 20/03/2010	151.339
20/03/2010 to 20/04/2010	128.123
20/04/2010 to 20/05/2010	157.195
20/05/2010 to 20/06/2010	461.248
20/06/2010 to 20/07/2010	433.305
20/07/2010 to 20/08/2010	379.517
20/08/2010 to 20/09/2010	406.017
20/09/2010 to 20/10/2010	319.610
20/10/2010 to 20/11/2010	144.391
20/11/2010 to 20/12/2010	146.778
20/12/2010 to 20/01/2011	190.521
20/01/2011 to 20/02/2011	348.604
20/02/2011 to 20/03/2011	172.268
20/03/2011 to 20/04/2011	97.485
20/04/2011 to 20/05/2011	232.155
20/05/2011 to 20/06/2011	524.714
20/06/2011 to 20/07/2011	352.871
20/07/2011 to 20/08/2011	347.579
20/08/2011 to 20/09/2011	309.351
20/09/2011 to 20/10/2011	195.061
20/10/2011 to 20/11/2011	146.395
20/11/2011 to 20/12/2011	319.333
Total	**6,676.145**

Annex -2

Reasons for planned & forced shut downs during Reported Period

Period (DD/MM/YYYY)	Type of Shut down, Hr:Mn		Reason
	Planned	Forced	
20/05/2010		15:20	VCB tripped.
21/05/2010	19:50		Turbine stopped due to assymetry found in voltage than the set value.
22/05/2010	15:30		Turbine stopped due to assymetry found in voltage than the set value.
16/01/2011 to 17/01/2011		15:20	Turbine stopped due Controller Area Network (CAN) communication failure observed in Pitch drive 2, refitted the communication cables.
17/01/2011		17:20	Turbine stopped due CAN communication failure observed in Pitch drive 2.
18/01/2011		12:50	Turbine stopped as failure observed in 24V external supply to pitch drive 2.
01/04/2011		12:10	Turbine stopped as failure observed in 24V external supply to pitch drive 3.
Total	**35:20**	**73:00**	