



**Monitoring report form
(Version 03.1)**

Monitoring report

Title of the project activity	22.5 MW Grid Connected Wind Farm Project by RSMML in Jaisalmer, India
Reference number of the project activity	1602
Version number of the monitoring report	01
Completion date of the monitoring report	09/05/2013
Registration date of the project activity	11/12/2008
Monitoring period number and duration of this monitoring period	2 nd monitoring period 02/07/2010 to 31/12/2012 (including first and last day)
Project participant(s)	Rajasthan State Mines and Minerals Limited (RSMML) Emergent Ventures India Private Limited Swedish Energy Agency
Host Party(ies)	India
Sectoral scope(s) and applied methodology(ies)	01 and ACM0002 (Version 06)
Estimated amount of GHG emission reductions or net anthropogenic GHG removals by sinks for this monitoring period in the registered PDD	70727 tCO ₂ e
Actual GHG emission reductions or net anthropogenic GHG removals by sinks achieved in this monitoring period	53239 tCO ₂ e

SECTION A. Description of project activity

A.1. Purpose and general description of project activity

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The main purpose of the project activity is to generate electricity from wind power, a renewable source of energy for partly captive purposes and partly sale to the grid.

Apart from generation of renewable electricity, the project has also been conceived for the following:

- To contribute to climate change mitigation efforts
- To enhance the commercialization of wind turbines in the region
- To contribute to the sustainable development of the region, socially, environmentally and economically
- To reduce the prevalent regulatory risks for this wind power project through revenues from the CDM

General Description

The project activity, promoted by Rajasthan State Mines and Minerals Limited (RSMML), has been undertaken to harness the available wind power potential at Jaisalmer along with the development of local economy. The project has installation of 6 x 1250 kW (7.5MW) Suzlon Wind Energy Generators (WEG) and 25x600 kW (15 MW), Vestas RRB WEGs, totaling to 22.5 MW at Pohra village and Baramsar/ Pohra village respectively in Jaisalmer district of Rajasthan. These WEGs are interconnected to 33 KV end of 220 KV Grid Sub Station (GSS) Amarsagar at Jaisalmer.

Of the total, 90% of electricity generated by 6 No.s of 1250kW (7.5 MW) Suzlon make WEGs at Pohra village is sold to Ajmer DISCOM and the balance 10% is utilized for captive use. Whereas 40% electricity generated by the 25 No.s of 600 kW (15 MW) Vestas RRB WEGs at Baramsar/Pohra village is sold to Ajmer DISCOM and rest 60% would be utilized for captive use.

The project activity has sought a 10 year fixed crediting period starting from 11/12/2008. The second monitoring is from the period of 02/07/2010 to 31/12/2012 and the total number of CERs generated during the first monitoring period is 53239.

A.2. Location of project activity

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The wind farm is located at villages Pohra and Baramsar at District Jaisalmer in the state of Rajasthan. The location has been chosen based on the available average wind power potential in the area established by the micro-siting studies done by the Suzlon Energy Limited and Vestas RRB Limited, who are the two suppliers of WEGs.

The project area falls in the district of Jaisalmer and is situated in the villages of Pohra and Baramsar. The location details have been given as below. The nearest airport is at Jodhpur which is 308 km from Jaisalmer.

Country: India
State: Rajasthan
District: Jaisalmer
Villages: Pohra and Baramsar

Table 1: Latitude and longitude of Pohra and Baramsar

Village	Latitude	Longitude	MSL
Pohra	27 ⁰ 02'' N	70 ⁰ 57'' E	150-325 m
Baramsar	26 ⁰ 35'' N	70 ⁰ 35'' E	279 m

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)
Government of India (Host Country)	Rajasthan State Mines and Minerals Limited (Public Entity)	No
Switzerland	Emergent Ventures India Private Limited (Private Entity)	No
Sweden	Swedish Energy Agency (Private Entity)	No

A.4. Reference of applied methodology

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The methodology details are given in the table below:

Table 2: Methodological details

Methodology Number	ACM0002
Methodology Title	“Approved Consolidated Baseline Methodology for grid connected electricity generation from renewable sources”
Version	06
Sectoral Scope	01

A.5. Crediting period of project activity

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The project activity has sought a 10 year fixed crediting period starting from 11/12/2008

SECTION B. Implementation of project activity**B.1. Description of implemented registered project activity**

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The wind farm is located at villages Pohra and Baramsar at District Jaisalmer in the state of Rajasthan. The location has been chosen based on the available average wind power potential in the area established by the micro-siting studies done by the Suzlon Energy Limited and Vestas RRB Limited, who are the two suppliers of WEGs.

The project activity started on 15th December 2005 and is estimated to generate approximately 31.5 Million Units in a year. Project was implemented and commissioned before the registration. All facilities and equipments have been installed.

Table 3: Details of Suzlon WEGs

Sr.No	WEG No.(SEL)	No. of WEGs	Capacity	Date of commissioning	Village	Khasra Number
1	J-91	1	1250 kW	25.03.2006	Pohra	443
2	J-92	1	1250 kW	25.03.2006	Pohra	455
3	J-93	1	1250 kW	25.03.2006	Pohra	451
4	J-94	1	1250 kW	25.03.2006	Pohra	451
5	J-95	1	1250 kW	25.03.2006	Pohra	450
6	J-99	1	1250 kW	25.03.2006	Pohra	458

Table 4: Details of Vestas RRB WEGs

Sr.No	WEG No.(Vestas RRB)	No. of WEGs	Capacity	Date of commissioning	Village	Khasra Number
1	B1	1	600 kW	30.09.2006	Baramsar	1103
2	B2	1	600 kW	30.09.2006	Baramsar	1103
3	B3	1	600 kW	30.09.2006	Baramsar	1104
4	B4	1	600 kW	30.09.2006	Baramsar	1101
5	B5	1	600 kW	30.09.2006	Baramsar	1104
6	B6	1	600 kW	30.09.2006	Baramsar	1105
7	B7	1	600 kW	30.09.2006	Baramsar	1106
8	B8	1	600 kW	30.09.2006	Baramsar	1195
9	B9	1	600 kW	30.09.2006	Baramsar	1195
10	B10	1	600 kW	30.09.2006	Baramsar	1062
11	B11	1	600 kW	30.09.2006	Baramsar	1062
12	B12	1	600 kW	30.09.2006	Baramsar	1061
13	B13	1	600 kW	30.09.2006	Baramsar	1106
14	B14	1	600 kW	30.09.2006	Baramsar	1121
15	B15	1	600 kW	30.09.2006	Pohra	1084
16	B16	1	600 kW	30.09.2006	Pohra	1084
17	B17	1	600 kW	30.09.2006	Pohra	1084
18	B18	1	600 kW	30.09.2006	Pohra	1083
19	B19	1	600 kW	30.09.2006	Pohra	1078
20	B20	1	600 kW	30.09.2006	Pohra	1077
21	B21	1	600 kW	30.09.2006	Pohra	1077
22	B22	1	600 kW	14.10.2006	Pohra	1078
23	B23	1	600 kW	14.10.2006	Pohra	1078
24	B24	1	600 kW	14.10.2006	Pohra	1071

25	B25	1	600 kW	14.10.2006	Pohra	1013
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B.2. Post registration changes**B.2.1. Temporary deviations from registered monitoring plan or applied methodology**

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Not applicable

B.2.2. Corrections

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Not applicable

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

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Not applicable

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

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Not applicable

B.2.5. Changes to start date of crediting period

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Not applicable

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

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Not applicable

SECTION C. Description of monitoring system

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Metering and related issues:

1. The generated electricity is purchased by the state electricity utility of Rajasthan. The meters are therefore calibrated, sealed and managed by the state electricity utility.
2. The electricity generation measurements are required by the utility and the investors to assess electricity sales revenue and / or wheeling charges.
3. The metering equipment at the delivery point is in accordance with the relevant provisions of the metering code and is situated at the Amarsagar substation.
4. The project activity has therefore two independent measurements of generated electricity from the wind turbines.
5. The primary recording of the electricity fed to the state utility grid is carried out jointly at the incoming feeder of the state electricity utility (RVPNL). All the machines in the project are connected to the

feeder.

6. There are two energy meters installed at the substation. In the event that the main metering system is not in service due to maintenance, repair or testing, then the backup metering system (Check meter) shall be used during the period the main metering system is not in service. Both the meters and the metering boxes are sealed by RVPNL.
7. The joint measurement is carried out once in a month in presence of both parties (the developer's representative and officials of the state power utility). Both parties sign the recorded reading.
8. The meters are tested for accuracy annually by the RVPNL.
9. Calibration of the machines is taken care of during the annual testing of the meters.

Calibration details of energy meters in the current monitoring period:

Set of meters for SUZLON WEGs

Identification No. of the meter	Year 2010	Year 2011	Year 2012
RJU02146	19-04-10	07-03-2011	12-03-2012
RJU02145	19-04-10	07-03-2011	12-03-2012

Set of meters for VESTAS RRB WEGs

Identification No. of the meter	Year 2010	Year 2011	Year 2012
TNB03312	07-09-10	06-09-2011	14-09-2012
RJU02174	07-09-10	06-09-2011	14-09-2012

10. **Calibration details for the controller**

Controller meter is a self-calibrated type meters and does not require calibrations. This 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 hence, it is not possible to calibrate. Moreover, turbine can not run without this relay hence it can not be removed for calibration during operation.

11. The secondary monitoring, which provides 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.
12. The controller reading is sent to the utility every month for the purpose of cross checking.
13. Wherever, more than one Power Producer(s) are injecting energy produced by them using the common evacuation/ injection system and through the common metering equipment with RVPNL, the joint meter reading taken at common evacuation/ injection system shall be supported by meter readings of individual power producers using such common evacuation/injection system. Based on this break up limited to total energy injection, the power supplied from the individual power plant shall be regulated for the purpose of apportioning the electricity exported to the grid.

Apportioning of Generation for Vestas RRB turbines:

In this project activity, since some WEGs, other than those included in the CDM project, are connected to the same main and backup substation meters (TNB03312¹ & RJU02174), apportioning of generation is required. The readings of the main and backup meters would also include net electricity generated by the other non-project WEGs too. Hence, there is a need to segregate electricity generated by these non-project WEGs from the project WEGs from the common meter readings. This is done by apportioning the main or backup meter readings with the CMS readings.

The following formulae describe the apportioning rule in this case:

Break up Energy Export:

$$\frac{\sum_{x=i}^{x=n} \text{Controller monthly generation}}{\sum \text{Monthly controller generation}} \times \text{Substation EB Meter Export (from JMR)}$$

Break up Energy Import:

$$\frac{\sum_{x=i}^{x=n} \text{Controller monthly generation}}{\sum \text{Monthly controller generation}} \times \text{Substation EB Meter Import (from JMR)}$$

Thus, based on 'break up energy export' and 'break up energy import', final net generation is calculated and mentioned in the Break up sheet, certified by RVPNL (which is sent to each client). Invoice is raised to the RVPNL against the net generation mentioned on the Break up sheet only.

Operation and Maintenance Practices and Structure:

The operation and maintenance for the project has been assigned to Suzlon Energy Limited and Vestas RRB India Ltd. for 7.5 MW and 15 MW respectively. The following is a list of some of the services undertaken by both the companies in order to ensure the efficient running of the plant.

1. Routine Maintenance Services:

Routine Maintenance Labour Work involves making available suitable manpower for operation and maintenance of the Equipment and covers periodic preventive maintenance, cleaning and upkeep of the Equipment.

2. Security Services:

This service includes watch and ward and Security of the Wind Farm and the Equipment.

3. Management Services:

- a) Data logging in for power generation, grid availability, machine availability.
- b) Preparation and submission of monthly performance report in agreed format.
- c) Taking monthly meter reading jointly with SEB, of power generated at RSMML's Wind Farm and supplied to SEB Grid from the meter/s maintained by SEB for the purpose and co-ordinate to obtain necessary power credit report/ certificate.

¹ TNB03312 and RJU02174, located at the Amarsagar Substation, are the common meters, therefore, measure the electricity generated by both project and non project WEGs.

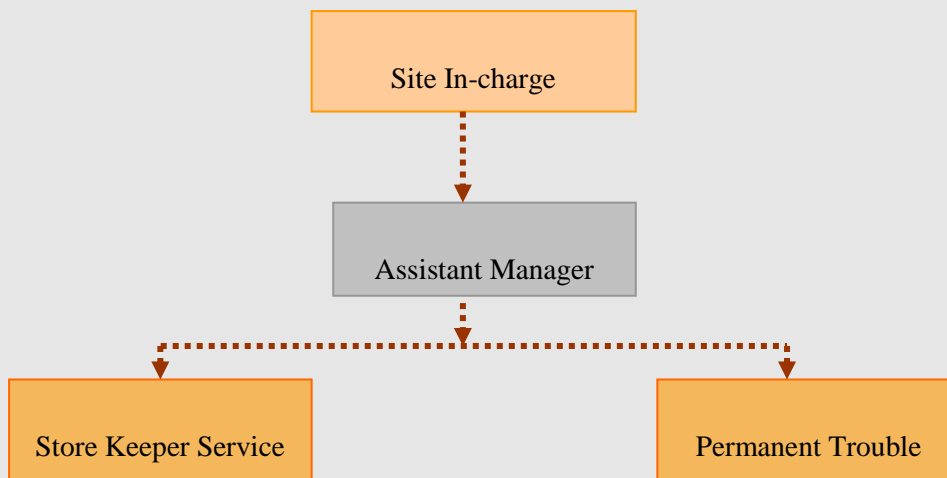
4. Technical Services:

- a) Visual inspection of the WEG and all parts thereof.
- b) Technical Assistance including checking of various technical, safety and operational parameters of the Equipment, trouble shooting and relevant technical services.

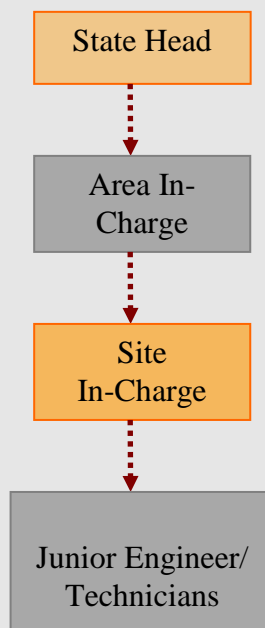
Performance review is carried out for both the parts of the entire project regularly. In case of any problem, both the companies take action as soon as possible. They shall also be liable to replace any part(s) that may fail or show signs of defects for the entire life term of the project. The O&M team at the site takes care of these performance reviews to maintain generation of electricity from this renewable source and carries out the GHG audits at the site.

Basic Organizational Structure:

A. Vestas



B. Suzlon



Roles and responsibilities:

A. Vestas

Designation	Responsibilities
Site In-Charge	<ul style="list-style-type: none"> ✓ Over All in charge for Rajasthan ✓ Administration ,Planning, Setting of Wind mills ✓ Smooth functioning of Site
Assistant Manager - Service	<ul style="list-style-type: none"> ✓ Planning, Adherence of Maintenance , Correspondence
Store Keeper Service	<ul style="list-style-type: none"> ✓ Maintaining the stock level and related correspondence ,data entry
Permanent Trouble Shooter	<ul style="list-style-type: none"> ✓ Attending of fault in minimum possible time

B. Suzlon

Designation	Responsibilities
State Head	<ul style="list-style-type: none"> ✓ Over All in charge for Rajasthan ✓ Administration ,Planning, Setting of Wind mills ✓ Smooth functioning of Site
Area In-Charge	<ul style="list-style-type: none"> ✓ Planning, Adherence of Maintenance and operations , Correspondence
Site In-Charge	<ul style="list-style-type: none"> ✓ Verification of the data ✓ Site visit to check authenticity of data and take corrective action, wherever necessary
Junior Engineer	<ul style="list-style-type: none"> ✓ Operation and Monitoring of the data ✓ Data recording ✓ Reporting the data ✓ Archiving of data ✓ Check, if any, disturbance in the functioning of the WTG, meter ✓ Rectify the source of error at the earliest

Data Collection and Archiving:

The monthly data of electricity generated is collected in both print and electronic form. However, the data in electronic form is archived throughout the life time of the project. The electricity records are maintained regularly by the team at the site.

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

Data / Parameter:	EF _y (Combined Margin)
Unit:	tCO ₂ e/MWh
Description:	CO ₂ emission factor of the Northern Region Grid
Source of data:	Calculated as weighted sum of the OM and BM emission factors. The formulae for this are as per ACM0002, version 06
Value(s) applied):	0.8971
Purpose of data:	Baseline Emission Calculation

Additional comment:	The EF_y is fixed over the project's crediting period and is calculated as the weighted average of the Operating Margin emission factor and the Build Margin emission factor.
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D.2. Data and parameters monitored

Data / Parameter:	$EG_{y\ net}$ (EGy export – EGy import)
Unit:	kWh
Description:	Net electricity supplied to grid by the project
Measured/ Calculated / Default:	Calculated
Source of data:	JMR Sheets/measurement records of the EPC contractor.
Value(s) of monitored parameter:	59346006.61
Monitoring equipment:	Two way trivector meters placed at each grid interconnections point. The value is measured for Suzlon 7.5 MW and calculated for Vestas 15 MW based on the measured value of electricity export and import. The detail of the measuring equipment is provided in Section C.
Measuring/ Reading/ Recording frequency:	Monthly
Calculation method (if applicable):	For Vestas 15 MW WEG's the data is based on the breakup of generation sheet which is based on monthly generation record (MGR/JMR) authorized by RVPNL. The detail calculation (apportioning) procedures have been detailed in section C above.
QA/QC procedures:	The meters are calibrated once in each year
Purpose of data:	For baseline emission calculation
Additional comment:	The data will be archived 2 years beyond crediting period

Data/Parameter	$EG_{y\ export}$
Unit	kWh
Description	Electricity export to grid by the project activity
Measured/Calculated /Default	Measured for Suzlon 7.5 MW WEG's and Calculated for Vestas 15 MW WEG's
Source of data	JMR Sheets and share certificates issued by state electricity utility
Value(s) of monitored parameter	60060090.33
Monitoring equipment	Two way trivector meters placed at each grid interconnections point. The value is measured for Suzlon 7.5 MW and calculated for Vestas 15 MW based on the measured value of electricity export and import. The detail of the measuring equipment is provided in Section C.

Measuring/Reading/Recording frequency	Monthly
Calculation method (if applicable)	For Vestas 15 MW WEG's the data is based on the breakup of generation sheet which is based on monthly generation record (MGR/JMR) authorized by RVPNL. The detail calculation (apportioning) procedures have been detailed in section C above.
QA/QC procedures	The meters are calibrated once in each year
Purpose of data	For baseline emission calculation
Additional comment	The data will be archived 2 years beyond crediting period

Data/Parameter	EG_{y import}
Unit	kWh
Description	Electricity import from the grid by the project
Measured/Calculated /Default	Measured for Suzlon 7.5 MW WEG's and Calculated for Vestas 15 MW WEG's
Source of data	JMR Sheets and share certificates issued by state electricity utility
Value(s) of monitored parameter	714083.72
Monitoring equipment	Two way trivector meters placed at each grid interconnections point. The value is measured for Suzlon 7.5 MW and calculated for Vestas 15 MW based on the measured value of electricity export and import. The detail of the measuring equipment is provided in Section C.
Measuring/Reading/Recording frequency	Monthly
Calculation method (if applicable)	For Vestas 15 MW WEG's the data is based on the breakup of generation sheet which is based on monthly generation record (MGR/JMR) authorized by RVPNL. The detail calculation (apportioning) procedures have been detailed in section C above.
QA/QC procedures	The meters are calibrated once in each year
Purpose of data	For baseline emission calculation
Additional comment	The data will be archived 2 years beyond crediting period

Data/Parameter	EG_{controller}
Unit	kWh
Description	Electricity generated by the Project WEG's
Measured/Calculated /Default	Measured
Source of data	The data is based on the daily Generation Report (DGR)/ CMS Data
Value(s) of monitored parameter	62090393
Monitoring equipment	Panel meters installed at each WEG's
Measuring/Reading/Recording frequency	Daily
Calculation method (if applicable)	NA
QA/QC procedures	<ul style="list-style-type: none"> • This value of electricity generated is used only to derive the apportioning ratio for apportioning. • Controller meter is self-calibrated type. <p>The electronic meter is replaced only when it stops working which can easily get noticed due to real-time data monitoring at the CMS.</p>
Purpose of data	Used for apportioning purpose by state electricity utility

Additional comment	The data will be archived 2 years beyond crediting period
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D.3. Implementation of sampling plan

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No sampling plan is followed by PP.

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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Baseline emissions due to displacement of grid electricity are the product of the baseline emission factor (EF_y), times the electricity supplied by the project activity to the grid (EG_y), over the crediting period.

The total baseline emissions BE_y (tCO_2/yr) = $EG_{y\ net} * EF_y$

Where

BE_y = Baseline emissions in year y (tCO_2).

$EG_{y\ net}$ (MWh/yr) = Net Electricity generated by the project in year y;

EF_y (tCO_2/MWh) = CO_2 emission factor of the Northern Region Grid

Calculation of Baseline Emission Factor EF_y

Baseline emission factor EF_y is calculated as the weighted average of the Operating Margin emission factor ($EF_{OM,y}$) and the Build Margin emission factor ($EF_{BM,y}$):

$$EF_y = w_{OM} EF_{OM,y} + w_{BM} EF_{BM,y}$$

Where the weights w_{OM} and w_{BM} are 75% and 25% respectively, and $EF_{OM,y}$ and $EF_{BM,y}$ are calculated as described above and are expressed in tCO_2/MWh .

The Baseline Emission factor EF_y is estimated as 0.8971 tCO_2/MWh .

Monitored Data:

I. RRB Vestas - 25 X 600 kW (15 MW)

Month/ year	Billing Period		$EG_{y\ export}$, kWh	$EG_{y\ import}$, kWh	$EG_{y\ net}$, kWh	$EG_{y\ net}$, MWh
	Initial reading	Final Reading				
Jul-10	01.07.10	02.08.10	1687697	14521	1673176	1673.18
Aug-10	02.08.10	01.09.10	1245846	21383	1224463	1224.46
Sep-10	01.09.10	01.10.10	613532	24336	589196	589.20
Oct-10	01.10.10	01.11.10	738674	25836	712838	712.84
Nov-10	01.11.10	01.12.10	348263	24632	323631	323.63
Dec-10	01.12.10	01.01.11	480149	18262	461887	461.89
Jan-11	01.01.11	01.02.11	564832	15414	549418	549.42
Feb-11	01.02.11	01.03.11	652354	14706	637648	637.65

Mar-11	01.03.11	01.04.11	959024	18637	940387	940.39
Apr-11	01.04.11	01.05.11	1331224	20788	1310436	1310.44
May-11	01.05.11	01.06.11	3579689	4500	3575189	3575.19
Jun-11	01.06.11	01.07.11	3770886	6778	3764107	3764.11
Jul-11	01.07.11	01.08.11	2584819	9196	2575623	2575.62
Aug-11	01.08.11	01.09.11	1621730	14677	1607053	1607.05
Sep-11	01.09.11	01.10.11	1399801	7583	1392219	1392.22
Oct-11	01.10.11	01.11.11	780289	26116	754173	754.17
Nov-11	01.11.11	01.12.11	239548	31060	208489	208.49
Dec-11	01.12.11	02.01.12	332485	22259	310226	310.23
Jan-12	02.01.12	01.02.12	671821	18953	652868	652.87
Feb-12	01.02.12	01.03.12	622532	14803	607730	607.73
Mar-12	01.03.12	02.04.12	1288004	19412	1268592	1268.59
Apr-12	02.04.12	01.05.12	1232836	21098	1211738	1211.74
May-12	01.05.12	01.06.12	1930554	10387	1920168	1920.17
Jun-12	01.06.12	02.07.12	3795967	3738	3792230	3792.23
Jul-12	02.07.12	01.08.12	3501577	4644	3496933	3496.93
Aug-12	01.08.12	01.09.12	1899206	14174	1885032	1885.03
Sep-12	01.09.12	01.10.12	897341	19075	878266	878.27
Oct-12	01.10.12	01.11.12	367811	34512	333299	333.30
Nov-12	01.11.12	01.12.12	222593	27748	194846	194.85
Dec-12	01.12.12	01.01.13	483743	16036	467707	467.71
Total			39844830.33	525263.72	39319566.61	39319.57

II. Suzlon Machines - 6 x 1250 kW (7.5MW)

Month/ year	Billing Period		EG _{yexport} , kWh	EG _{yimport} , kWh	EG _{y net} , kWh	EG _{y net} , MWh
	<i>Initial reading</i>	<i>Final Reading</i>				
Jul-10	01.07.10	02.08.10	969300	6480	962820	962.82
Aug-10	02.08.10	01.09.10	576000	8100	567900	567.90
Sep-10	01.09.10	01.10.10	381600	8100	373500	373.50
Oct-10	01.10.10	01.11.10	463680	9000	454680	454.68
Nov-10	01.11.10	01.12.10	250740	9180	241560	241.56
Dec-10	01.12.10	01.01.11	376380	7380	369000	369.00
Jan-11	01.01.11	01.02.11	362700	6120	356580	356.58
Feb-11	01.02.11	01.03.11	398160	6660	391500	391.50
Mar-11	01.03.11	01.04.11	505080	6480	498600	498.60
Apr-11	01.04.11	01.05.11	659340	7020	652320	652.32
May-11	01.05.11	01.06.11	1554300	2700	1551600	1551.60
Jun-11	01.06.11	01.07.11	1414260	4860	1409400	1409.40
Jul-11	01.07.11	01.08.11	1203120	4320	1198800	1198.80
Aug-11	01.08.11	01.09.11	765360	5580	759780	759.78
Sep-11	01.09.11	01.10.11	692280	2340	689940	689.94
Oct-11	01.10.11	01.11.11	414180	8280	405900	405.90

Nov-11	01.11.11	01.12.11	178380	10440	167940	167.94
Dec-11	01.12.11	02.01.12	275940	8460	267480	267.48
Jan-12	02.01.12	01.02.12	432000	6480	425520	425.52
Feb-12	01.02.12	01.03.12	398880	5580	393300	393.30
Mar-12	01.03.12	02.04.12	708300	6840	701460	701.46
Apr-12	02.04.12	01.05.12	647280	6120	641160	641.16
May-12	01.05.12	01.06.12	1035180	3960	1031220	1031.22
Jun-12	01.06.12	02.07.12	1796220	2700	1793520	1793.52
Jul-12	02.07.12	01.08.12	1903140	2700	1900440	1900.44
Aug-12	01.08.12	01.09.12	915660	5220	910440	910.44
Sep-12	01.09.12	01.10.12	450360	5580	444780	444.78
Oct-12	01.10.12	01.11.12	208980	9720	199260	199.26
Nov-12	01.11.12	01.12.12	182520	9540	172980	172.98
Dec-12	01.12.12	01.01.13	95940	2880	93060	93.06
Total			20215260.00	188820.00	20026440.00	20026.44

Total EGy = 39319.57 + 20026.54

= 59641.92 MWh

= **59346.01 MWh**

BEy = EGy * EFy

= 59346.01 MWh * 0.8971 tCO₂e/MWh

= 53504.77 tCO₂e

= **53239 tCO₂e**

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

>>

The project activity being a zero emissions renewable energy project, there are no anthropogenic greenhouse gas emission by the project activity.

E.3. Calculation of leakage

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No leakage is considered from the project activity as per approved methodology.

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

Item	Baseline emissions or baseline net GHG removals by sinks (t CO ₂ e)	Project emissions or actual net GHG removals by sinks (t CO ₂ e)	Leakage (t CO ₂ e)	Emission reductions or net anthropogenic GHG removals by sinks (t CO ₂ e)
Jul-10	2364.75	0	0	2364.75
Aug-10	1607.93	0	0	1607.93
Sep-10	863.63	0	0	863.63
Oct-10	1047.38	0	0	1047.38
Nov-10	507.03	0	0	506.49

Dec-10	745.39	0	0	745.39
Jan-11	812.77	0	0	812.77
Feb-11	923.25	0	0	923.25
Mar-11	1290.92	0	0	1290.92
Apr-11	1760.79	0	0	1760.79
May-11	4599.24	0	0	4599.24
Jun-11	4641.15	0	0	4641.15
Jul-11	3386.04	0	0	3386.04
Aug-11	2123.29	0	0	2123.29
Sep-11	1867.90	0	0	1867.90
Oct-11	1040.70	0	0	1040.70
Nov-11	337.69	0	0	337.69
Dec-11	518.26	0	0	518.26
Jan-12	967.42	0	0	967.42
Feb-12	898.02	0	0	898.02
Mar-12	1767.33	0	0	1767.33
Apr-12	1662.23	0	0	1662.23
May-12	2647.69	0	0	2647.69
Jun-12	5010.98	0	0	5010.98
Jul-12	4841.98	0	0	4841.98
Aug-12	2507.82	0	0	2507.82
Sep-12	1186.90	0	0	1186.90
Oct-12	477.76	0	0	477.76
Nov-12	329.98	0	0	329.98
Dec-12	503.06	0	0	503.06
Total	53239	0	0	53239

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 (t CO₂e)	70727	53239

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

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Since the current monitoring period covers 30 months generation, estimated emission reductions has been calculated for these 30 months with PLF taken as 16% from the PDD.

PLF obtained in the current monitoring period is approximately 12.21% which is 24.72% lower than the estimated one.

E.7. Actual emission reductions or net anthropogenic GHG removals by sinks during the first commitment period and the period from 1 January 2013 onwards

Item	Actual values achieved up to 31 December 2012	Actual values achieved from 1 January 2013 onwards
Emission reductions or GHG removals by sinks (t CO ₂ e)	53239	Not applicable

Document information

<i>Version</i>	<i>Date</i>	<i>Description</i>
03.1	2 January 2013	Editorial revision to correct table in section E.5.
03.0	3 December 2012	Revision required to introduce a provision on reporting actual emission reductions or net anthropogenic GHG removals by sinks for the period up to 31 December 2012 and the period from 1 January 2013 onwards (EB70, Annex 11).
02.0	13 March 2012	Revision required to ensure consistency with the "Guidelines for completing the monitoring report form" (EB 66, Annex 20).
01	28 May 2010	EB 54, Annex 34. Initial adoption.

Decision Class: Regulatory
Document Type: Form
Business Function: issuance
Keywords: monitoring report, performance monitoring