MONITORING REPORT FORM (CDM-MR)
Version 01

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MONITORING REPORT
Version 1.0 and Date 05/10/2010

Title: BUNDLED WIND ENERGY POWER PROJECTS (2004 POLICY) IN RAJASTHAN"
Project Reference No: 1166
Monitoring Period - FROM 1/12/2009 TO 31/08/2010 (including first and last day)

SECTION A. General description of the project activity

A.1. Brief description of the project activity: >>

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Bundled wind power project of 24.8 MW ("Project") is installed in the state of Rajasthan and provides reliable, renewable power to the Rajasthan state electricity grid. The Project leads to reduction of greenhouse gas emissions because it displaces electricity from fossil fuel based electricity generation plants. The Project harnesses renewable resources in the region, and thereby displacing non-renewable natural resources thereby ultimately leading to sustainable economic and environmental development. Enercon (India) Ltd ("Enercon" or "EIL") is the equipment supplier and the operations and maintenance contractor for the Project. The generated electricity is supplied to the utility (Discom) under a long-term power purchase agreement (PPA). The details of the sub-projects comprising the Project are as under:

- CEPCO Industries: 12 MW
- Ushdev International: 2.4 MW
- Brindavan Agro Industries: 1.6 MW
- Amrit Bottlers Ltd: 0.8 MW
- Deedee Enterprises: 0.8 MW
- JN Investment: 0.8 MW
- Metalfab Hightech Private Limited: 0.8 MW
- SE Investment: 0.8 MW
- Brindavan Bottlers Ltd.: 0.8 MW
- Delta Enterprises: 2.4 MW
- Sankalp International: 0.8 MW
- Malani Impex Inc.: 0.8 MW

The first machine under the project activity was commissioned on 25th Mar 2006 and the last machine under the project activity was commissioned on 13th May 2006. The expected operational lifetime of the project is for 20 years. The total emission reductions achieved under this monitoring period (1 December 2009 to 31 August 2010) is **22,685 tCO_2**.

A.2. Project Participants

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Enercon (India) Limited
Japan Carbon Finance

A.3. Location of the project activity:

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The Project is located at Kita and Bhu village, in Jaisalmer District of Rajasthan that forms part of the Northern regional electricity grid of India. The project area extends between latitude 26° 41' & 26° 46.5' North and longitude 70° 57.5' & 71° 4' East. The Project is connected to the RRVPN 33/132/220 kV

substation at Amarsagar. The sites are located at a distance of 25 km from Jaisalmer by road. The nearest railway station is at Jaisalmer. Individual WEG location numbers and coordinates are detailed out in below table: -

			Latitude			Longitude		
Sr.No.	Unique Identification No.	Location No	Degree	Minute	Second	Degree	Minute	Second
1	Cepco-01	207	26	44	23.9	71	0	4.9
2	Cepco-02	208	26	44	18.7	71	0	13.4
3	Cepco-03	209	26	44	10.1	71	0	15.1
4	Cepco-04	210	26	44	1.6	71	0	15.4
5	Cepco-05	171	26	43	16.6	70	58	53.6
6	Cepco-06	172	26	43	28.0	70	58	47.8
7	Cepco-07	173	26	43	36.5	70	58	48.8
8	Cepco-08	175	26	43	35.9	70	59	8.1
9	Cepco-09	187	26	43	35.1	70	59	34.0
10	Cepco-10	166	26	42	33.7	70	59	4.1
11	Cepco-11	165	26	42	29.2	70	59	7.9
12	Cepco-12	164	26	42	24.6	70	59	11.8
13	Cepco-13	163	26	42	20.0	70	59	15.6
14	Cepco-14	162	26	42	15.4	70	59	19.5
15	Cepco-15	189	26	43	31.6	70	59	46.1
16	DE-01	202	26	44	8.3	70	59	55.9
17	DE-02	201	26	44	2.0	70	59	59.0
18	DE-03	200	26	43	56.5	71	0	2.5
19	UIL-01	206	26	44	28.4	70	59	41.2
20	UIL-02	205	26	44	22.1	70	59	44.3
21	UIL-03	204	26	44	16.2	70	59	47.4
22	BAIL-01	199	26	43	51.0	71	0	6.0
23	BAIL-02	198	26	43	46.4	71	0	9.8
24	ABL-01	216	26	45	41.9	70	59	34.6
25	BBL-01	217	26	45	46.2	70	59	31.7
26	DDE-01	203	26	44	12.9	70	59	52.0
27	JNI-01	214	26	45	13.7	70	59	19.8
28	MII-01	212	26	45	6.9	70	59	35.1
29	MHPL-01	188	26	43	40.4	70	59	29.5
30	SI-01	211	26	45	4.2	70	59	19.8
31	SE-01	291	26	45	38.0	70	59	38.7

A.4. Technical description of the project

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The Project involves 31-wind energy converters (WECs) of Enercon make (800 kW E-48) with internal electrical lines connecting the Project with local evacuation facility. The WECs generates 3-phase power at 400V, which is stepped up to 33 KV. The Project can operate in the frequency range of 47.5–51.5 Hz and in the voltage range of 400 V ± 12.5%. The other salient features of the state-of-art-technology are:

- Gearless Construction - Rotor & Generator Mounted on same shaft eliminating the Gearbox.
- Variable speed function – has the speed range of 18 to 33 RPM thereby ensuring optimum efficiency at all times.
- Variable Pitch functions ensuring maximum energy capture.
- Near Unity Power Factor at all times.
- Minimum drawl (less than 1% of kWh generated) of Reactive Power from the grid.
- No voltage peaks at any time.
- Operating range of the WEC with voltage fluctuation of -20 to +20%.
- Less Wear & Tear since the system eliminates mechanical brake, which are not needed due to low speed generator, which runs at maximum speed of 33 rpm and uses Air Brakes.
- Three Independent Braking System.
- Generator achieving rated output at only 33 rpm.
- Incorporates lightning protection system, which includes blades.
- Starts Generation of power at wind speed of 3 m/s.

Enercon (India) Ltd has secured and facilitated the technology transfer for wind based renewable energy generation from Enercon GmbH, has established a manufacturing plant at Daman in India, where along with other components the "Synchronous Generators" using "Vacuum Impregnation" technology are manufactured.

A.5. Title, reference and version of the baseline and monitoring methodology applied to the project activity:

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Baseline Methodology: *Consolidate monitoring methodology for grid-connected electricity generation from renewable sources,* ***ACM0002, Version 6.***

Monitoring Methodology: *Consolidated monitoring methodology for grid-connected electricity generation from renewable sources,* ***ACM0002, Version 6***

A.6. Registration date of the project activity:

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30/10/2008

A.7. Crediting period of the project activity and related information (start date and choice of crediting period):

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The length of the Crediting period of the project activity as per registered PDD is 10 years (Fixed) starting from 30/10/2008 to 29/10/2018. Joint Meter Reading is generated on 1st day of every month. In first CER verification, the monitoring period considered was the period from 1-Nov-2008 to 30-Nov-2009. The second monitoring period is considered from 01-Dec-2009 to 31-August-2010.

A.8. Name of responsible person(s)/entity (ies):

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Contact Information of project proponents are given in the table below:

Organization:	Enercon (India) Limited
Street/P.O.Box:	A-9, Veera Industrial Estate, Veera Desai Road, Andheri West
Building:	Enercon Tower
City:	Mumbai
State/Region:	Maharashtra
Postfix/ZIP:	400 053
Country:	India
Telephone:	+91-22-2671 7176
FAX:	+91 22 66921177
E-Mail:	yogesh.mehra@enerconindia.net
URL:	www.enerconindia.net
Represented by:	
Title:	Managing Director
Salutation:	Mr.
Last Name:	Mehra
Middle Name:	
First Name:	Yogesh
Department:	Corporate
Mobile:	+91-9820040301
Direct FAX:	+91 22 66921177
Direct tel:	+91-22-6692 4848 extn. 7111
Personal E-Mail:	yogesh.mehra@enerconindia.net

Organization:	Japan Carbon Finance, Ltd.
Street/P.O.Box:	6th Floor, 1-3 Kundankita, 4-chrome
Building:	Chiyoda-ku
City:	Tokyo
State/Region:	
Postfix/ZIP:	102-0073
Country:	Japan
Telephone:	+81 3 5212 8870
FAX:	+81 3 5212 8886
E-Mail:	jcf@jcarbon.co.jp
URL:	http://www.japancarbon.co.jp/
Represented by:	
Title:	Deal Manager
Salutation:	Mr.
Last Name:	Shozo
Middle Name:	
First Name:	Watanabe
Department:	Carbon Finance Department
Mobile:	
Direct FAX:	+81 3 5212 8886
Direct tel:	+81 3 5212 8878

Personal E-Mail:	s-watanabe@jcarbon.co.jp

SECTION B. Implementation of the project activity

B.1. Implementation status of the project activity

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The first machine under the project activity was commissioned on 25th March 2006 and last machine under the project activity was commissioned on 13th May 2006. The project activity consists of 31 machines (800 kW) of Enercon make E-48. The commissioning date for all the machines included in the project activity is given in the table below.

Serial No	Capacity	Unique Identification No.	Location No	Date of Commissioning
1	0.8	Cepco-01	207	29-Mar-06
2	0.8	Cepco-02	208	29-Mar-06
3	0.8	Cepco-03	209	29-Mar-06
4	0.8	Cepco-04	210	29-Mar-06
5	0.8	Cepco-05	171	29-Mar-06
6	0.8	Cepco-06	172	29-Mar-06
7	0.8	Cepco-07	173	31-Mar-06
8	0.8	Cepco-08	175	31-Mar-06
9	0.8	Cepco-09	187	30-Mar-06
10	0.8	Cepco-10	166	30-Mar-06
11	0.8	Cepco-11	165	30-Mar-06
12	0.8	Cepco-12	164	30-Mar-06
13	0.8	Cepco-13	163	13-May-06
14	0.8	Cepco-14	162	13-May-06
15	0.8	Cepco-15	189	13-May-06
16	0.8	DE-01	202	29-Mar-06
17	0.8	DE-02	201	29-Mar-06
18	0.8	DE-03	200	29-Mar-06
19	0.8	UIL-01	206	29-Mar-06
20	0.8	UIL-02	205	29-Mar-06
21	0.8	UIL-03	204	29-Mar-06
22	0.8	BAIL-01	199	29-Mar-06
23	0.8	BAIL-02	198	29-Mar-06
24	0.8	ABL-01	216	25-Mar-06
25	0.8	BBL-01	217	25-Mar-06
26	0.8	DDE-01	203	25-Mar-06
27	0.8	JNI-01	214	29-Mar-06
28	0.8	MII-01	212	29-Mar-06
29	0.8	MHPL-01	188	31-Mar-06

30	0.8	SI-01	211	29-Mar-06
31	0.8	SE-01	291	25-Mar-06

Enercon operation and maintenance activities are ISO 9001:2000 certified and all the events are recorded in the log book available at the project site. Referring to the data available it can be inferred that there have not been any major special events for any of the machines that are included in the project activity. As a part of regular maintenance the machines are stopped for mechanical and electrical maintenance for 16 to 18 hours annually and for visual inspection for 6 to 7 hours quarterly.

B.2. Revision of the monitoring plan

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The revision for monitoring plan was approved by UNFCCC on 02/08/2010 (Link: http://cdm.unfccc.int/Projects/DB/SGS-UKL1181723770.26/view). The revision in monitoring plan was done to describe the allocation plan transparently.

B.3. Request for deviation applied to this monitoring period

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Not Applicable

B.4. Notification or request of approval of changes

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Not Applicable

SECTION C. Description of the monitoring system

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Approved monitoring methodology ACM0002 / Version 06 Sectoral Scope: 1, "Consolidated monitoring methodology for zero-emissions grid-connected electricity generation from renewable sources", by CDM - Meth Panel is proposed to be used to monitor the emission reductions.

The electricity supplied to the grid will be metered at the 33/132/220 kV level at the RRVPN substation at Amarsagar. Representatives of RRVPN/Jodhpur Discom and Enercon will jointly take the main reading and sign the meter reading on the first day of every month. Simultaneously, the joint meter reading at 33/132/220 kV level of the backup metering system at Temdarai substation will also be taken by representatives of RRVPN/Jodhpur Discom and Enercon.

The meters used are Trivector and the manufacturer is the Secure Meter. The meters are two-way meter and measure the electricity import and export and give the net electricity. In case the meters are found to operate outside the permissible limits, the meters will be either replaced immediately or calibrated. Error correction will be applied to the meter reading. Whenever a main meter goes defective, the consumption recorded by the backup meter will be referred. The details of the malfunctioning along with date and time and snaps shot parameters along with load survey will be retrieved from the main meter. The exact nature of the malfunctioning will be determined after analyzing the data so retrieved and the consumption recorded by the main meter will be assessed accordingly.

If main as well as back up metering system becomes defective, the assessment of energy consumption for the outage period will be done from the backup meters by the concerned parties as mutually agreed or at the level of Metering Committee set up under the Metering Code. The main and the backup metering systems will be sealed in presence of representatives of Enercon and RRVPN/Jodhpur Discom.

The main meter readings are apportioned based upon the LCS meter readings from the individual WTGs to compute net electricity supplied from individual WTGs. The LCS meter readings are archived electronically on continuous basis. Joint meter reading at the EB substation and at the pooling substation of Enercon is noted each month. Therefore cumulative LCS meter reading for each month is used for purpose of allocation of net electricity supplied to the grid from the project activity.

The LCS meters are do not require calibration as the energy readings of electricity generated at the LCS meter is cross verified by the energy calculated by inverting system installed in the WEGs. In case there is any mismatch in the energy values recorded by the LCS meter and the energy values calculated by the inverting system; the machine will stop working and generate the error report. The operations and maintenance staff will calibrate the meter immediately and correction factor will be determined.

EG_y for the project activity is derived as follows:-

The project activity is located in Bhu and is connected to Amarsagar substation. In addition to the project activity, the wind farms located at Temdarai, Sodabandhan, Korwan, Asloi and other wind turbines at Bhu are also connected to the Amarsagar substation. Electricity delivered by all these wind farms are metered at a common metering point. The common metering point comprises two main meters i.e. Main meter 1 and Main meter 2 that are installed at 132 kV metering point at the Amarsagar substation. Consequently, the main meter readings reflect the aggregate electricity supplied by all these wind farms, including the project activity. The net electricity supplied by individual wind turbines is determined by following a process of allocating the total electricity (recorded at the main meters M1 and M2) to the individual turbines in proportion of the electricity generation recorded by the LCS meters at the individual wind turbines. The procedure for allocation is detailed below:

$E_{JMR,Export}$ = Electricity exported, as recorded by the main meter at the substation

$E_{JMR,Import}$ = Electricity imported, as recorded by the main meter at the substation

$E_{Controller,Export}$ = Electricity exported by a WEG, as measured at the controller

$\sum E_{Controller,Export}$ = Electricity exported by all the WEGs connected to the main meter at the substation, measured at the controller of each WEG

$E_{WEG,Export}$ = Electricity exported by a WEG to the grid, calculated
$E_{WEG,import}$ = Electricity imported by a WEG from the grid, calculated

Electricity exported by each WEG is apportioned on the basis of electricity exported recorded at the controller of each WEG and the electricity exported at the main meter and mentioned in the JMR. The export multiplication factor is calculated as follows-

1. $$\text{Export Multiplication factor} = \frac{E_{JMR,Ex}}{\sum E_{Controlle}} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (1)$$

Thus the energy exported by a WEG to the grid is given by the equation-

1. E_{WI} = Export Multiplication factor x 1. $E_{Controll}$ …….. (2)

As the controller meter doesn't record import, the apportioning of energy imported by each WEG is also done on the basis of electricity exported recorded at the controller of each WEG and the electricity imported at the main meter and mentioned in the JMR. The import multiplication factor is calculated as follows-

1. $\text{Import Multiplication factor} = \frac{E_{JMR,in}}{\Sigma E_{Controll}}$ .... (3)

Thus the energy imported by a WEG to the grid is given by the equation-

1. $E_{WEG,import} = \text{Import Multiplication factor} \times E_{Controll}$.............................. (4)

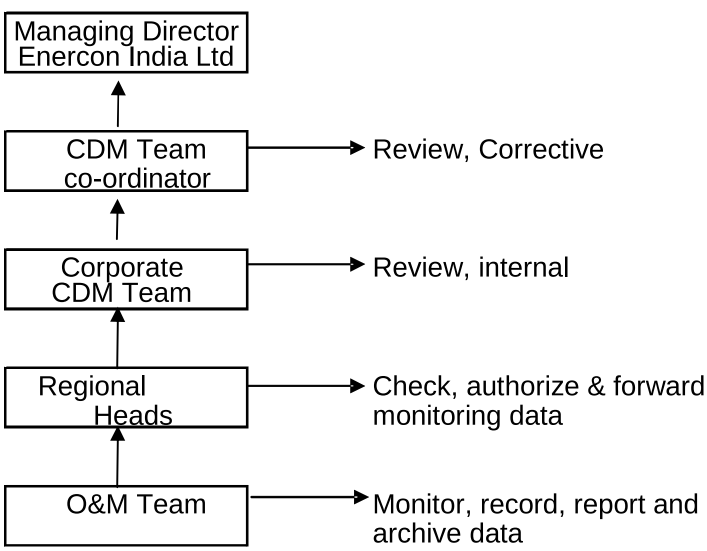
The net electricity exported by the WEGs of the project is given by the equation-

1. $EG_y = \sum_{Project} E_{WE}$ - 1. $\sum_{Project} E_{WE}$ .... (5)

The summation is done on the WEGs belonging to the project activity.

The operational and management structure implemented by Enercon is as follows:

STRUCTURE **RESPONSIBILITY**



Training and maintenance:

Training on the machine is an essential pre-requisite, to ensure necessary safety of man and machine. Further, in order to maximize the output from the Wind Energy Converters (WECs), it is extremely essential, that the engineers and technicians understand the machines and keep them in good health. In order to ensure, that Enercon's service staffs is deft at handling technical snags on top of the turbine, the necessity of ensuring that they are capable of climbing the tower with absolute ease and comfort has been established. The Enercon Training Academy provides need-based training to meet the training requirements of Enercon projects. The training is contemporary, which results in imparting focused

knowledge leading to value addition to the attitude and skills of all trainees. This ultimately leads to creativity in problem solving.

Calibration Details

The metering equipments were inspected & calibrated by state utility. Meter details for the all the main and backup meters are as follows:-

Meter description	Serial No.	Make	Accuracy class	Metering point	Calibration before monitoring period	Calibration Due date	Latest date of calibration	Calibration Due date
Main meter (Line I)	TNU00946	Secure	0.2	Amarsagar Substation	29-Jan-2009	29-Jan-2010	30-Mar-2010	30-Mar-2011
Backup meter (Line I)	RJB00052	Secure	0.2	Temdarai Substation	30-Jan-2009	30-Jan-2010	31-Mar-2010	31-Mar-2011
Main meter (Line II)	TNU00945	Secure	0.2	Amarsagar Substation	29-Jan-2009	29-Jan-2010	30-Mar-2010	30-Mar-2011
Backup meter (Line II)	ABB00691 (In 2008 the meter was TNU00951)	Secure	0.2	Temdarai Substation	30-Jan-2009	30-Jan-2010	31-Mar-2010	31-Mar-2011

It can be noticed from the above table that calibration for all the meters was conducted in January 2009 and again in March 2010. The calibration of the meters that were calibrated in January 2010 is valid until January 2010. The monitoring period for the project activity from 01/12/2009 to 31/08/2010; the calibration was not conducted by the due date. However, PP has conducted the calibration again in March 2010 which is valid until March 2011. All the meters were found to be performing under the permissible limit of error. Therefore as per annex 60 of EB 52, Para 4(a); the energy generation data is adjusted for maximum permissible error of the meters i.e. 0.2%.

The main and the backup meters are calibrated once each year. The LCS meters are do not require calibration as the energy readings of electricity generated at the LCS meter is cross verified by the energy calculated by inverting system installed in the WEGs. In case there is any mismatch in the energy values recorded by the LCS meter and the energy values calculated by the inverting system; the machine will stop working and generate the error report. Therefore there is no data uncertainty. The line diagrams showing all relevant monitoring points are appendix 1.

SECTION D. Data and parameters

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D.1. Data and parameters determined at registration and not monitored during the monitoring period, including default values and factors

Data / Parameter:	$EF_{OM,y}$
Data unit:	tCO_2e/MWh
Description:	Operating Margin Emission Factor of Northern Regional Electricity Grid
Source of data used:	"CO_2 Baseline Database for Indian Power Sector" version 1.1 published by the Central Electricity Authority, Ministry of Power, Government of India. The "CO_2 Baseline Database for Indian Power Sector" version 1.1 is available at www.cea.nic.in
Value(s) :	2002 – 03: 0.9993 2003 – 04: 0.9869 2004 – 05: 0.9756
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline Emissions
Additional comment:	None

Data / Parameter:	$EF_{BM,y}$
Data unit:	tCO_2e/MWh
Description:	Build Margin Emission Factor of Northern Regional Electricity Grid
Source of data used:	"CO_2 Baseline Database for Indian Power Sector" version 1.1 published by the Central Electricity Authority, Ministry of Power, Government of India. The "CO_2 Baseline Database for Indian Power Sector" version 1.1 is available at www.cea.nic.in
Value(s) :	0.5335
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline Emissions
Additional comment:	None

Data / Parameter:	$EF_{CM,y}$
Data unit:	tCO_2e/GWh
Description:	Combined Margin Emission Factor of North East West North-east (NEWNE)
Source of data used:	"CO_2 Baseline Database for Indian Power Sector" version 1.1 published by the Central Electricity Authority, Ministry of Power, Government of India. The "CO_2 Baseline Database for Indian Power Sector" version 1.1 is available at www.cea.nic.in
Value(s) :	873.87
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline Emissions
Additional comment:	None

D.2. Data and parameters monitored	
Data / Parameter:	**EGy**
Data unit:	MWh (Mega-Watt hour)
Description:	Net electricity supplied to the grid by the Project
Measured /Calculated /Default:	Calculated by applying apportioning procedure better described in C.
Source of data:	Electricity supplied to the grid as per the tariff invoices raised on state utility (Discom).
Value(s) of monitored parameter:	25960.182 MWh
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline Emissions
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	Calculated as per formulas better described under section C.
Measuring/ Reading/ Recording frequency:	Monthly: The apportioning is done as per the procedure described in section C.
Calculation method (if applicable):	$EG_y = \sum_{Project} E_{WEG,Export} - \sum_{Project} E_{WEG,import}$ Refer section C for details and description of the above variables
QA/QC procedures applied:	QA/QC procedures will be as implemented by state utility (Discom) pursuant to the provisions of the power purchase agreement and the Metering Code of Rajasthan and there will be no additional QA/QC procedures. Refer Section C for an illustration of the provisions for QA/QC procedures.

Data / Parameter:	$E_{JMR,Export}$
Data unit:	MWh (Mega-Watt hour)
Description:	Electricity exported, as recorded by the main meter at the EB substation
Measured /Calculated /Default:	Measured: The Export reading is jointly noted from the main meter installed at the EB substation.
Source of data:	Export value from Joint meter reading taken at Substation in the presence of representatives of Enercon and state utility
Value(s) of monitored parameter:	Refer Appendix 3
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline Emissions
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	Line I Type- Trivector Meter Accuracy Class-0.2 Serial Number of Main Meter: TNU00946 Serial Number of Backup Meter: RJB00052 Line II Type- Trivector Meter Accuracy Class-0.2 Serial Number of Main Meter: TNU00945 Serial Number of Backup Meter: ABB00691(In 2008 the meter was TNU00951) Frequency of Calibration- Annual Last date of Test- 30-Mar-2010 Validity of Test- 29-Mar-2011 (one year)
Measuring/ Reading/ Recording frequency:	Monthly: The reading is jointly noted by the representatives of state utility and Enercon.
Calculation method (if applicable):	NA
QA/QC procedures applied:	The meters will be calibrated once each year by the state utility. Refer Section C for an illustration of the provisions for QA/QC procedures.

Data / Parameter:	$E_{JMRImport}$
Data unit:	MWh (Mega-Watt hour)
Description:	Electricity imported, as recorded by the main meter at the EB substation
Measured /Calculated /Default:	Measured: The import reading is jointly noted from the main meter installed at the EB substation.
Source of data:	Import value from Joint meter reading taken at Substation in the presence of representatives of Enercon and state utility
Value(s) of monitored parameter:	Refer Appendix 3
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline Emissions
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	Line I Type- Trivector Meter Accuracy Class-0.2 Serial Number of Main Meter: TNU00946 Serial Number of Backup Meter: RJB00052 Line II Type- Trivector Meter Accuracy Class-0.2 Serial Number of Main Meter: TNU00945 Serial Number of Backup Meter: ABB00691(In 2008 the meter was TNU00951) Frequency of Calibration- Annual Last date of Test-30-Mar-2010 Validity of Test- 29-Mar-2011 (one year)
Measuring/ Reading/ Recording frequency:	Monthly: The reading is jointly noted by the representatives of state utility and Enercon.
Calculation method (if applicable):	NA
QA/QC procedures applied:	The meters will be calibrated once each year by the state utility. Refer Section C for an illustration of the provisions for QA/QC procedures.

Data / Parameter:	$E_{Controller,Export}$
Data unit:	MWh (Mega-Watt hour)
Description:	Electricity exported by a WEG, as measured at the controller (LCS)
Measured /Calculated /Default:	Measured: The value is recorded continuously by the online monitoring station. This value can also be checked from the electronic panel installed inside the WTG tower.
Source of data:	This reading is monitored continuously by the online monitoring station at the project site. This reading can also be seen in the electronic panel installed inside the WTG tower.
Value(s) of monitored parameter:	Refer to Appendix 3

Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline Emissions
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	Meter Type: Refer Appendix 2 Accuracy Class: Refer Appendix 2 Serial Number: Refer Appendix 2 The LCS meters are do not require calibration as the energy readings of electricity generated at the LCS meter is cross verified by the energy calculated by inverting system installed in the WEGs. In case there is any mismatch in the energy values recorded by the LCS meter and the energy values calculated by the inverting system; the machine will stop working and generate the error report. Therefore there is no data uncertainty.
Measuring/ Reading/ Recording frequency:	Monthly: The value is recorded continuously by the online monitoring station. This value can also be checked from the electronic panel installed inside the WTG tower.
Calculation method (if applicable):	NA
QA/QC procedures applied:	The LCS meters are do not require calibration as the energy readings of electricity generated at the LCS meter is cross verified by the energy calculated by inverting system installed in the WEGs. In case there is any mismatch in the energy values recorded by the LCS meter and the energy values calculated by the inverting system; the machine will stop working and generate the error report. Therefore there is no data uncertainty.

Data / Parameter:	$E_{WEG,Export}$
Data unit:	MWh (Mega-Watt hour)
Description:	Electricity exported by a WEG to the grid
Measured /Calculated /Default:	$E_{WEG,Export}$ denotes the electricity exported by a WEG to the grid. The value is calculated based on the formula mentioned in Section C
Source of data:	Calculated using formula mentioned in Section C
Value(s) of monitored parameter:	Refer to Appendix 3
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline Emissions
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	Calculated using the formulas better described under section C.
Measuring/ Reading/ Recording frequency:	Calculated using the formulas better described under section C.
Calculation method (if applicable):	$E_{WEG,Export}$ = Export Multiplication factor x $E_{Controller,Export}$ Refer to Section C for details and description of the above variables.

QA/QC procedures applied:	The value is calculated. Please refer Section C for QA/QC procedures.

Data / Parameter:	$E_{WEG,Import}$
Data unit:	MWh (Mega-Watt hour)
Description:	Electricity imported by a WEG from the grid
Measured /Calculated /Default:	$E_{WEG,Import}$ denotes the electricity imported by a WEG from the grid. The value is calculated based on the formula mentioned in section C.
Source of data:	Calculated using formula mentioned in Section C.
Value(s) of monitored parameter:	Refer to Appendix 3
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline Emissions
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	Calculated using the formulas better described under section C.
Measuring/ Reading/ Recording frequency:	Monthly: The reading is jointly noted by the representatives of state utility and Enercon.
Calculation method (if applicable):	$E_{WEG,import}$ = Import Multiplication factor x $E_{Controller,Expcrt}$ Refer to Section C for details and description of the above variables.
QA/QC procedures applied:	The value is calculated. Please refer Section C for QA/QC procedures.

Data / Parameter:	$\sum_{Project} E_{WEG,Export}$
Data unit:	MWh (Mega-Watt hour)
Description:	Summation of electricity exported to the grid by all the WEGs included in the project activity.
Measured /Calculated /Default:	$\sum_{Project} E_{WEG,Export}$ denotes summation of the electricity exported to the grid by a WEGs included in the project activity. The value is calculated based on the formula mentioned in section C.
Source of data:	Summation of data values of $E_{WEG,Export}$ for all the WEGs included in the project activity.
Value(s) of monitored parameter:	26007.719 MWh
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline Emissions
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	Calculated using the formulas better described under section C.
Measuring/ Reading/ Recording frequency:	Monthly: Calculated using the formulas better described under section C.
Calculation method (if	$\sum_{Project} E_{WEG,Export}$ denotes summation of the electricity exported to

applicable):	the grid by a WEGs included in the project activity. Refer to Section C for details and description.
QA/QC procedures applied:	The value is calculated and can be cross checked from the invoices raised on the state utility.

Data / Parameter:	$\Sigma_{Project} E_{WEG,Import}$
Data unit:	MWh (Mega-Watt hour)
Description:	Summation of electricity imported from the grid by all the WEGs included in the project activity.
Measured /Calculated /Default:	$\Sigma_{Project} E_{WEG,Import}$ denotes the summation of electricity imported from the grid by a WEGs included in the project activity. The value is calculated based on the formula mentioned in section C
Source of data:	Summation of data values of $E_{WEG,Import}$ for all the WEGs included in the project activity.
Value(s) of monitored parameter:	47.536 MWh
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline Emissions
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	Calculated using the formulas better described under section C.
Measuring/ Reading/ Recording frequency:	Monthly: Calculated using the formulas better described under section C.
Calculation method (if applicable):	$\Sigma_{Project} E_{WEG,Import}$ denotes the summation of electricity imported from the grid by a WEGs included in the project activity. Refer to Section C for details and description.
QA/QC procedures applied:	The value is calculated and can be cross checked from the invoices raised on the state utility.

SECTION E. Emission reductions calculation

E.1. Baseline emissions calculation

>>

"The baseline is the kWh produced by the renewable generating unit multiplied by an emission coefficient (measured in kg CO_2e/kWh) calculated in a transparent and conservative manner as the weighted average emissions (in kg CO_2e/kWh) as described in registered PDD.

$BE_y = EG_y * EF_y$

Where,

BE is baseline emissions in year y, t CO_2e

EGy is the net electricity supplied to the grid in year y and is applied directly from JMR certified by state utility. This value can also be cross checked from the invoice.

EFy *is* the CO_2 emission factor of the grid (873.87 tCO_2e/GWh fixed ex-ante). Refer Appendix 3 for detail.

Emission reduction calculation for the period 1st December 2009 to 31st August 2010:

Emission Reductions (ER) = 25,960,182 (kWh) * 873.87 (tCO_2/kWh) /10^6

= **22,685 tCO_2**

E.2. Project emissions calculation

>>

Since the project activity is a renewable energy project which generates electricity using wind power and hence does not result in project emissions.

E.3. Leakage calculation

>>

No leakage is considered from the project activity as per approved methodology ACM0002.

E.4. Emission reductions calculation / table

>>

The total emission reductions achieved during the monitoring period is **22,685** tCO_2.

Total baseline emissions: **22,685** tCO_2
Total project emissions: Zero
Total leakage: Zero

Total Emission reductions, ER = BEy – PEy
= **22,685** tCO_2

E.5. Comparison of actual emission reductions with estimates in the CDM-PDD

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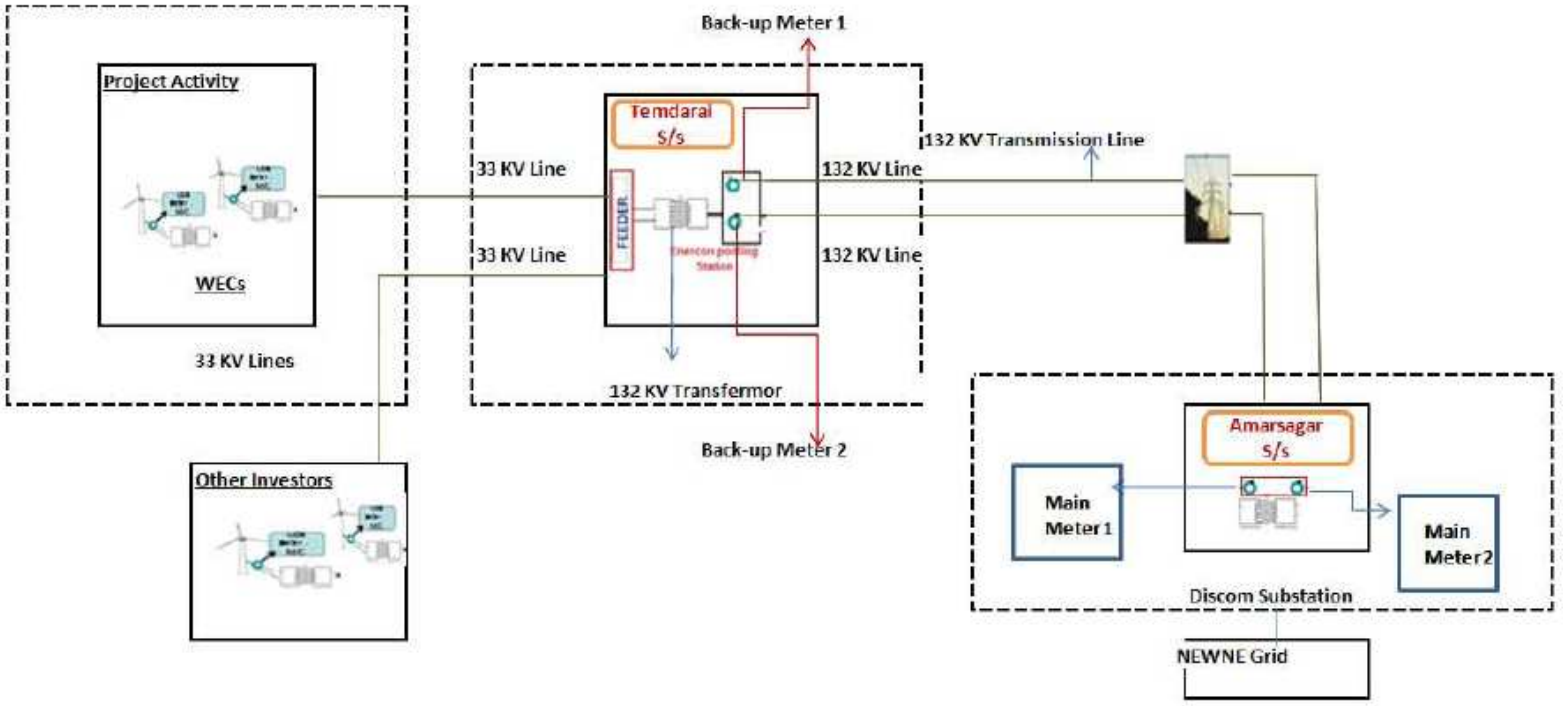
Item	Values applied in ex-ante calculation of the registered CDM-PDD	Actual values reached during the monitoring period
Emission reductions (tCO_2e)	**31,324** (09) months equivalent of annually **41,766** emission reductions estimated in the registered PDD)	**22,685**

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

>>

There is change of 27.57% ((31,324-22,685)/31,324 downside) in the expected and annual emission reductions. The difference in the total CERs is due to low wind availability leading to low plant load factor.

Appendix 1: Line Diagram Showing Relevant Metering Points



Appendix 2: Controller Meter Details

Serial No	Project Proponent	Unique Identification No.	Accuracy Class	Panel Meter Serial No	Make	Type
1	Cepco Industries Private Limited	Cepco-01	C-1	466706	NZR	IGZ 50 Hz
2		Cepco-02	C-1	466699	NZR	IGZ 50 Hz
3		Cepco-03	C-1	466657	NZR	IGZ 50 Hz
4		Cepco-04	C-1	466690	NZR	IGZ 50 Hz
5		Cepco-05	C-1	466694	NZR	IGZ 50 Hz
6		Cepco-06	C-1	466683	NZR	IGZ 50 Hz
7		Cepco-07	C-1	466382	NZR	IGZ 50 Hz
8		Cepco-08	C-1	466385	NZR	IGZ 50 Hz
9		Cepco-09	C-1	466303	NZR	IGZ 50 Hz
10		Cepco-10	C-1	466689	NZR	IGZ 50 Hz
11		Cepco-11	C-1	466398	NZR	IGZ 50 Hz
12		Cepco-12	C-1	466269	NZR	IGZ 50 Hz
13		Cepco-13	C-1	466659	NZR	IGZ 50 Hz
14		Cepco-14	C-1	466627	NZR	IGZ 50 Hz
15		Cepco-15	C-1	1166693	NZR	IGZ 50 Hz
16	Delta Enterprises	DE-01	C-1	466685	NZR	IGZ 50 Hz
17		DE-02	C-1	466390	NZR	IGZ 50 Hz
18		DE-03	C-1	466532	NZR	IGZ 50 Hz
19	Ushdev International Limited	UIL-01	C-1	466702	NZR	IGZ 50 Hz
20		UIL-02	C-1	466404	NZR	IGZ 50 Hz
21		UIL-03	C-1	466670	NZR	IGZ 50 Hz
22	Brindavan Agro Industries	BAIL-01	C-1	466478	NZR	IGZ 50 Hz

23	Limited	BAIL-02	C-1	466701	NZR	IGZ 50 Hz
24	Amrit Bottlers Ltd.	ABL-01	C-1	466704	NZR	IGZ 50 Hz
25	Brindavan Bottlers Ltd.	BBL-01	C-1	466678	NZR	IGZ 50 Hz
26	Deedee Enterprises	DDE-01	C-1	266705	NZR	IGZ 50 Hz
27	JN Investment	JNI-01	C-1	466391	NZR	IGZ 50 Hz
28	Malani Impex Inc.	MII-01	C-1	466526	NZR	IGZ 50 Hz
29	Metalfab Hightech Private Limited	MHPL-01	C-1	466281	NZR	IGZ 50 Hz
30	Sankalp International	SI-01	C-1	466304	NZR	IGZ 50 Hz
31	SE Investment	SE-01	C-1	466389	NZR	IGZ 50 Hz

Appendix 3: Net Electricity Exported to Grid (EGy)

Project Proponents	Month	EGy (kWh)
CEPCO	December 2009	818,895
Delta Enterprises		160,388
Ushdev International		157,699
Brindavan Agro Industries		112091
Amrit Bottlers Ltd.		61591
Brindavan Bottlers Ltd.		60268
Deedee Enterprises		49499
JN Investment		57937
Malani Impex Inc.		57525
Metalfab Hightech Private Limited		51883
Sankalp International		49713
SE Investment		51959

Project Proponents	Month	EGy (kWh)
CEPCO	January 2010	701,749
Delta Enterprises		149,043
Ushdev International		148,213
Brindavan Agro Industries		93,183
Amrit Bottlers Ltd.		51,397
Brindavan Bottlers Ltd.		51,452
Deedee Enterprises		48,230
JN Investment		50,400
Malani Impex Inc.		51,569
Metalfab Hightech Private Limited		47,168
Sankalp International		48,015
SE Investment		51,215

Project Proponents	Month	EGy (kWh)
CEPCO	February 2010	841,610
Delta Enterprises		189,174
Ushdev International		183,822
Brindavan Agro Industries		114,265
Amrit Bottlers Ltd.		63,015
Brindavan Bottlers Ltd.		63,700
Deedee Enterprises		57,981
JN Investment		59,387
Malani Impex Inc.		60,796
Metalfab Hightech Private Limited		56,673
Sankalp International		58,065
SE Investment		63,668

Project Proponents	Month	EGy (kWh)
CEPCO	March 2010	964,326
Delta Enterprises		206,310
Ushdev International		205,481
Brindavan Agro Industries		131,688
Amrit Bottlers Ltd.		67,647
Brindavan Bottlers Ltd.		67,170
Deedee Enterprises		61,216
JN Investment		66,959
Malani Impex Inc.		64,646
Metalfab Hightech Private Limited		67,690
Sankalp International		66,457
SE Investment		65,612

Project Proponents	Month	EGy (kWh)
CEPCO	April 2010	1,362,932
Delta Enterprises		308,330
Ushdev International		314,959
Brindavan Agro Industries		194,766
Amrit Bottlers Ltd.		98,022
Brindavan Bottlers Ltd.		102,883
Deedee Enterprises		105,779
JN Investment		95,814
Malani Impex Inc.		104,512
Metalfab Hightech Private Limited		96,586
Sankalp International		99,119
SE Investment		99,733

Project Proponents	Month	EGy (kWh)
CEPCO	May 2010	2,401,468
Delta Enterprises		506,488
Ushdev International		518,138
Brindavan Agro Industries		339,886
Amrit Bottlers Ltd.		174,023
Brindavan Bottlers Ltd.		168,904
Deedee Enterprises		170,594
JN Investment		167,539
Malani Impex Inc.		160,855
Metalfab Hightech Private Limited		167,907
Sankalp International		165,852
SE Investment		165,848

Project Proponents	Month	EGy (kWh)
CEPCO	June 2010	2,772,275
Delta Enterprises		565,029
Ushdev International		557,973
Brindavan Agro Industries		377,005
Amrit Bottlers Ltd.		186,731
Brindavan Bottlers Ltd.		188,935
Deedee Enterprises		188,426
JN Investment		187,061
Malani Impex Inc.		187,571
Metalfab Hightech Private Limited		186,162
Sankalp International		186,484
SE Investment		188,303

Project Proponents	Month	EGy (kWh)
CEPCO	July 2010	1,487,009
Delta Enterprises		303,248
Ushdev International		304,009
Brindavan Agro Industries		201,781
Amrit Bottlers Ltd.		101,141
Brindavan Bottlers Ltd.		100,254
Deedee Enterprises		100,024
JN Investment		101,846
Malani Impex Inc.		101,760
Metalfab Hightech Private Limited		100,595
Sankalp International		99,661
SE Investment		99,107

Project Proponents	Month	EGy (kWh)
CEPCO	August 2010	937,447
Delta Enterprises		209,191
Ushdev International		206,063
Brindavan Agro Industries		126,272
Amrit Bottlers Ltd.		68,536
Brindavan Bottlers Ltd.		68,543
Deedee Enterprises		68,282
JN Investment		71,617
Malani Impex Inc.		69,707
Metalfab Hightech Private Limited		61,385
Sankalp International		67,876
SE Investment		65,521