



## Monitoring report form (Version 03.1)

### Monitoring report

<b>Title of the project activity</b>	Enercon Wind Farm (Hindustan) Ltd in Karnataka
<b>Reference number of the project activity</b>	1259
<b>Version number of the monitoring report</b>	04
<b>Completion date of the monitoring report</b>	08/01/2013
<b>Registration date of the project activity</b>	27/10/2008
<b>Monitoring period number and duration of this monitoring period</b>	04 (01/07/2012 – 30/09/2012; including first and last days of monitoring period.)
<b>Project participant(s)</b>	1) M/s Enercon (India) Limited 2) Rabobank International
<b>Host Party(ies)</b>	India
<b>Sectoral scope(s) and applied methodology(ies)</b>	Sectoral Scope: 1: Energy industries (renewable - / non-renewable sources)  Applied Methodology: ACM0002, Version 06
<b>Estimated amount of GHG emission reductions or net anthropogenic GHG removals by sinks for this monitoring period in the registered PDD</b>	37,520 tCO <sub>2</sub> e
<b>Actual GHG emission reductions or net anthropogenic GHG removals by sinks achieved in this monitoring period</b>	45,359 tCO <sub>2</sub> e

**SECTION A. Description of project activity****A.1. Purpose and general description of project activity**

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The project activity is installation of 68.8 MW wind power project ("Project") by Enercon Wind Farm (Hindustan) Ltd. in Karnataka state of India to provide reliable, renewable power to the Karnataka state electricity grid which is part of the Southern regional electricity grid. The Project will lead to reduced greenhouse gas emissions because it displaces electricity from grid connected fossil fuel based electricity generation plants.

The project activity consists of 86 WEGs of Enercon make E-48 and each machine capacity is of 800 kW (E-48) totalling to the capacity of 68.8 MW. The WEGs generates 3-phase power at 400V, which is stepped up to 33 kV and connected to 33kV metering points. From 33 kV metering point electricity transmitted to Enercon Sub-station. At sub-station electricity is step-up to 220 kV. From Enercon substation electricity is further evacuated to the state electricity grid at 220kV. The Project can operate in the frequency range of 47.5–51.5 Hz and in the voltage range of 400 V  $\pm$  12.5%.

The first machine under the project activity was commissioned on 29 September 2006 and last machine under the project activity was commissioned on 28 December 2006. The expected operational lifetime of the project is for 20 years.

The total emission reductions achieved under current monitoring period (01/07/2012 to 30/09/2012) is 45,359 tCO<sub>2</sub>.

**A.2. Location of project activity**

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Project activity is located in Karnataka state of India. The turbines are uniquely identified as EWHPL-01 to EWHPL-86. The details of the physical location are as follows:

S.No.	District	Taluka	Village	No. of WEG's
1	Tumkur	Chikkanayakanahalli	Dasudi	20
		Chikkanayakanahalli	Nelenuru	5
		Chikkanayakanahalli	Ganadu	6
		Gubbi	Annenhalli	6
		Gubbi	Siddapura	9
2	Chitradurga	Hosadurga	Chikkabyaledakere	16
		Hosadurga	Kanubehalli	11
		Hosadurga	Arasinagundi	8
		Hosadurga	Elladakere	5
			<b>Total</b>	<b>86</b>

Individual WEG location numbers and coordinates are detailed out in below table:-

S.No.	WEG Unique Identification Number	Location No.	Latitude (N)			Longitude (E)		
			Degree	Minutes	Seconds	Degree	Minutes	Seconds
1	EWHPL 01	1	13	43	20.9	76	31	3.9
2	EWHPL 02	2	13	43	25.4	76	31	1.5
3	EWHPL 03	3	13	43	30.0	76	30	59.0
4	EWHPL 04	4	13	43	34.6	76	30	57.2
5	EWHPL 05	5	13	43	39.3	76	30	55.6
6	EWHPL 06	6	13	43	43.8	76	30	53.1
7	EWHPL 07	7	13	43	50.0	76	30	50.5
8	EWHPL 08	8	13	43	54.5	76	30	48.0
9	EWHPL 09	9	13	44	3.9	76	30	44.9
10	EWHPL 10	10	13	45	33.0	76	31	5.9
11	EWHPL 11	11	13	45	28.2	76	31	6.4
12	EWHPL 12	12	13	45	23.4	76	31	7.0

13	EWHPL 13	13	13	45	18.9	76	31	7.7
14	EWHPL 14	14	13	45	14.3	76	31	8.3
15	EWHPL 15	15	13	45	10.2	76	31	9.5
16	EWHPL 16	16	13	44	54.0	76	31	12.3
17	EWHPL 17	17	13	44	49.2	76	31	13.1
18	EWHPL 18	18	13	44	44.5	76	31	14.7
19	EWHPL 19	19	13	44	39.8	76	31	16.7
20	EWHPL 20	20	13	44	35.4	76	31	19.9
21	EWHPL 21	21	13	44	30.5	76	31	19.8
22	EWHPL 22	22	13	44	25.6	76	31	20.2
23	EWHPL 23	23	13	44	21.7	76	31	26.4
24	EWHPL 24	24	13	44	16.9	76	31	27.7
25	EWHPL 25	25	13	44	12.0	76	31	28.2
26	EWHPL26	26	13	44	8.0	76	31	29.8
27	EWHPL 27	27	13	43	57.6	76	31	53.8
28	EWHPL 28	28	13	43	54.1	76	31	55.1
29	EWHPL 29	29	13	43	49.5	76	31	57.1
30	EWHPL 30	30	13	43	44.8	76	31	58.6
31	EWHPL 31	31	13	43	40.0	76	31	59.5
32	EWHPL 32	32	13	43	35.4	76	32	1.9
33	EWHPL 33	33	13	43	30.6	76	32	4.8
34	EWHPL 34	34	13	43	0.6	76	32	22.1
35	EWHPL 35	35	13	42	54.7	76	32	19.9
36	EWHPL 36	36	13	42	50.3	76	32	23.0
37	EWHPL 37	37	13	42	45.6	76	32	24.7
38	EWHPL 38	38	13	42	40.9	76	32	26.3
39	EWHPL 39	39	13	42	36.3	76	32	28.5
40	EWHPL 40	40	13	42	31.1	76	32	31.4
41	EWHPL 41	41	13	40	57.2	76	35	58.1
42	EWHPL 42	42	13	40	52.4	76	35	59.4
43	EWHPL 43	43	13	40	47.7	76	36	0.9
44	EWHPL 44	44	13	40	43.1	76	36	2.6
45	EWHPL 45	45	13	40	38.4	76	36	4.2
46	EWHPL 46	46	13	40	33.7	76	36	5.8
47	EWHPL 47	47	13	40	13.7	76	36	10.7
48	EWHPL 48	48	13	40	9.1	76	36	12.6
49	EWHPL 49	49	13	40	4.7	76	36	15.7
50	EWHPL 50	50	13	39	2.8	76	36	34.8
51	EWHPL 51	51	13	38	58.7	76	36	36.8
52	EWHPL 52	52	13	38	54.1	76	36	38.9
53	EWHPL 53	53	13	38	49.5	76	36	41.3
54	EWHPL 54	54	13	38	44.9	76	36	43.1
55	EWHPL 55	55	13	38	40.2	76	36	44.9
56	EWHPL 56	56	13	38	35.6	76	36	46.9
57	EWHPL 57	57	13	38	30.9	76	36	48.7
58	EWHPL 58	58	13	38	26.4	76	36	50.9
59	EWHPL 59	59	13	38	22.3	76	36	56.3
60	EWHPL 60	60	13	38	17.8	76	36	58.8
61	EWHPL 61	61	13	38	11.8	76	37	2.5
62	EWHPL 62	62	13	38	7.2	76	37	4.6
63	EWHPL 63	63	13	38	2.6	76	37	6.8
64	EWHPL 64	64	13	37	58.0	76	37	9.2
65	EWHPL 65	65	13	37	53.5	76	37	11.5
66	EWHPL 66	66	13	37	48.9	76	37	13.7

67	EWHP 67	67	13	37	44.3	76	37	16.0
68	EWHP 68	68	13	37	39.8	76	37	18.4
69	EWHP 69	69	13	37	35.1	76	37	20.3
70	EWHP 70	70	13	37	30.5	76	37	22.3
71	EWHP 71	71	13	37	25.9	76	37	24.7
72	EWHP 72	72	13	32	25.1	76	43	45.2
73	EWHP 73	73	13	32	30.0	76	43	44.4
74	EWHP 74	74	13	32	34.8	76	43	44.7
75	EWHP 75	75	13	32	39.7	76	43	44.5
76	EWHP 76	76	13	32	44.6	76	43	43.9
77	EWHP 77	77	13	32	49.5	76	43	42.5
78	EWHP 78	78	13	32	54.4	76	43	42.1
79	EWHP 79	79	13	33	6.1	76	43	33.2
80	EWHP 80	80	13	33	11.0	76	43	34.1
81	EWHP 81	81	13	33	15.9	76	43	34.6
82	EWHP 82	82	13	33	20.8	76	43	34.5
83	EWHP 83	83	13	34	19.9	76	44	0.8
84	EWHP 84	84	13	34	27.5	76	44	2.3
85	EWHP 85	85	13	34	50.5	76	44	14.8
86	EWHP 86	86	13	34	54.9	76	44	14.8

### 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)	M/s Enercon (India) Ltd. (Private entity)	No
United Kingdom of Great Britain and Northern Ireland	Rabobank International (Private entity )	No

### A.4. Reference of applied methodology

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**Title:** Consolidated methodology for grid-connected electricity generation from renewable sources

**Reference:** Approved consolidated baseline methodology ACM0002 (Version 06, EB 24, Annex 7)  
UNFCCC web reference of methodology: [http://cdm.unfccc.int/EB/024/eb24\\_repan07.pdf](http://cdm.unfccc.int/EB/024/eb24_repan07.pdf) ; (Refer page no. 1 & 14 for of baseline & monitoring methodology)

**Baseline Methodology:** Consolidate baseline methodology for grid-connected electricity generation from renewable sources,

**Monitoring Methodology:** "Consolidated monitoring methodology for zero-emissions grid-connected electricity generation from renewable sources"

**Tool:** Tool for the demonstration and assessment of additionality, version 3.0 (weblink: <http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-01-v3.pdf> )

### A.5. Crediting period of project activity

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Type of crediting period : Fixed  
 Start date of crediting period : 27/10/2008  
 Length of crediting period : 10 years

## SECTION B. Implementation of project activity

### B.1. Description of implemented registered project activity

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The project activity consists of 86 machines (800 kW) of Enercon make E-48. The first machine under the project activity was commissioned on 29 September 2006 and last machine under the project activity was commissioned on 28 December 2006. Project activity WEGs were commissioned in three phases between 29 September 2006 & 28 December 2006. 56 WEGs under phase-I were commissioned on 29 Sep 2006, 9 WEGs under phase-II were commissioned on 26 Oct 2006 & 21 WEGs under phase-III were commissioned on 28 Dec 2006. The commissioning dates for all the machines include in the project activity are given in the table below.

Loc. no.	Unique Identification Number	Date of Commissioning
1	EWHPL 01	26-Oct-06
2	EWHPL 02	26-Oct-06
3	EWHPL 03	26-Oct-06
4	EWHPL 04	28-Dec-06
5	EWHPL 05	28-Dec-06
6	EWHPL 06	28-Dec-06
7	EWHPL 07	28-Dec-06
8	EWHPL 08	28-Dec-06
9	EWHPL 09	28-Dec-06
10	EWHPL 10	29-Sep-06
11	EWHPL 11	29-Sep-06
12	EWHPL 12	29-Sep-06
13	EWHPL 13	29-Sep-06
14	EWHPL 14	29-Sep-06
15	EWHPL 15	29-Sep-06
16	EWHPL 16	29-Sep-06
17	EWHPL 17	29-Sep-06
18	EWHPL 18	29-Sep-06
19	EWHPL 19	29-Sep-06
20	EWHPL 20	29-Sep-06
21	EWHPL 21	29-Sep-06
22	EWHPL 22	29-Sep-06
23	EWHPL 23	29-Sep-06
24	EWHPL 24	29-Sep-06
25	EWHPL 25	29-Sep-06
26	EWHPL26	26-Oct-06
27	EWHPL 27	29-Sep-06
28	EWHPL 28	29-Sep-06
29	EWHPL 29	29-Sep-06
30	EWHPL 30	29-Sep-06

31	EWHPL 31	29-Sep-06
32	EWHPL 32	29-Sep-06
33	EWHPL 33	29-Sep-06
34	EWHPL 34	29-Sep-06
35	EWHPL 35	29-Sep-06
36	EWHPL 36	29-Sep-06
37	EWHPL 37	29-Sep-06
38	EWHPL 38	29-Sep-06
39	EWHPL 39	29-Sep-06
40	EWHPL 40	29-Sep-06
41	EWHPL 41	29-Sep-06
42	EWHPL 42	29-Sep-06
43	EWHPL 43	29-Sep-06
44	EWHPL 44	29-Sep-06
45	EWHPL 45	29-Sep-06
46	EWHPL 46	29-Sep-06
47	EWHPL 47	29-Sep-06
48	EWHPL 48	29-Sep-06
49	EWHPL 49	29-Sep-06
50	EWHPL 50	26-Oct-06
51	EWHPL 51	26-Oct-06
52	EWHPL 52	29-Sep-06
53	EWHPL 53	29-Sep-06
54	EWHPL 54	29-Sep-06
55	EWHPL 55	29-Sep-06
56	EWHPL 56	29-Sep-06
57	EWHPL 57	29-Sep-06
58	EWHPL 58	29-Sep-06
59	EWHPL 59	26-Oct-06
60	EWHPL 60	26-Oct-06
61	EWHPL 61	26-Oct-06
62	EWHPL 62	29-Sep-06
63	EWHPL 63	29-Sep-06
64	EWHPL 64	29-Sep-06
65	EWHPL 65	29-Sep-06
66	EWHPL 66	29-Sep-06
67	EWHPL 67	29-Sep-06
68	EWHPL 68	29-Sep-06
69	EWHPL 69	29-Sep-06
70	EWHPL 70	29-Sep-06
71	EWHPL 71	29-Sep-06
72	EWHPL 72	28-Dec-06
73	EWHPL 73	28-Dec-06
74	EWHPL 74	28-Dec-06
75	EWHPL 75	28-Dec-06
76	EWHPL 76	28-Dec-06
77	EWHPL 77	28-Dec-06
78	EWHPL 78	28-Dec-06
79	EWHPL 79	28-Dec-06
80	EWHPL 80	28-Dec-06
81	EWHPL 81	28-Dec-06
82	EWHPL 82	28-Dec-06
83	EWHPL 83	28-Dec-06
84	EWHPL 84	28-Dec-06

85	EWHPL 85	28-Dec-06
86	EWHPL 86	28-Dec-06

Enercon operation and maintenance activities are ISO 9001:2008 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. Further the consolidated performance report of project WEGs during the monitoring period including the down time, machine availability, grid availability, etc. has been added in Appendix 2. During the monitoring period there were no events or situations occurred, which may impact the applicability of the methodology.

The project activity consists of 86 WEGs of Enercon make E-48 and each machine capacity is of 800 kW (E-48) totalling to the capacity of 68.8 MW. The WEGs generates 3-phase power at 400V, which is stepped up to 33 kV and connected to 33kV metering points. From 33 kV metering points electricity transmitted to Enercon Sub-station. At sub-station electricity is step-up to 220 kV. From Enercon substation electricity is further evacuated to the state electricity grid at 220kV. The Project can operate in the frequency range of 47.5–51.5 Hz and in the voltage range of 400 V  $\pm$  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 drawal (less than 1% of kWh generated) of Reactive Power from the grid.
- No voltage peaks at any time.
- Operating range of the WEG 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. Diagram of main component of Enercon make E-48 is shown in below picture:-

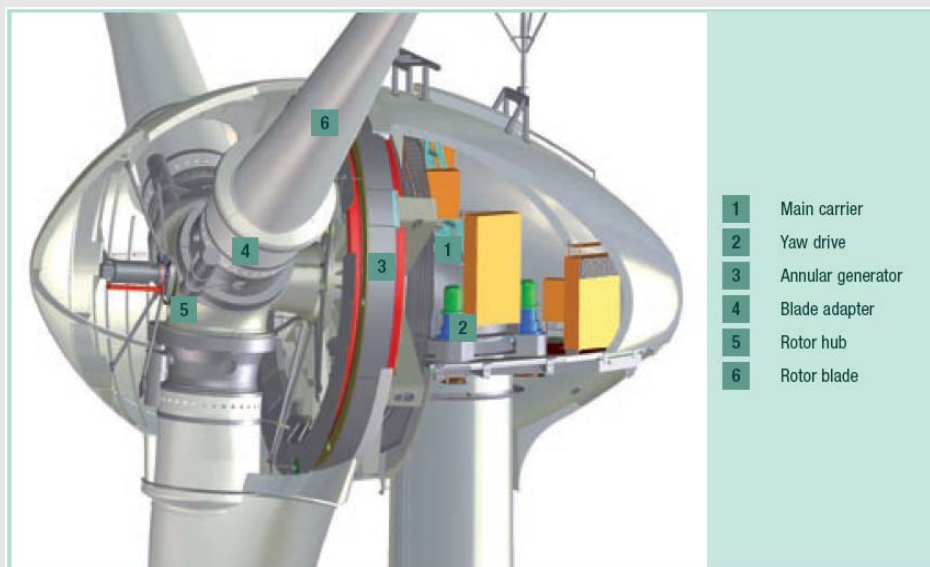


Figure: Enercon make E-48 Diagram.

**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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There is a revision in PDD (version 6, dated 03 September 2012) which has been approved on dated 08 January 2013 by UNFCCC.

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

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There is a revision<sup>1</sup> in Monitoring Plan which has been approved on date 15th March 2011 by UNFCCC.

**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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Approved monitoring methodology ACM0002 / Version 06, Sectoral Scope: 1, "Consolidated methodology for grid-connected electricity generation from renewable sources" --- Version 6, by CDM - Meth Panel is proposed to be used to monitor the emission reductions.

This approved monitoring methodology requires monitoring of the following:

- Electricity generation from the project activity; and
- Operating margin emission factor and build margin emission factor of the grid, where ex post determination of grid emission factor has been chosen

Since the baseline methodology is based on ex ante determination of the baseline, the monitoring of operating margin emission factor and build margin emission factor is not required. There are two main and check meters dedicated to project activity at 33 kV metering point for the project activity. The one set of main and check meter is connected to 56.8 MW and other set of the main and check meter is connected to 12 MW of the project activity. In addition to this there is one set of main and check meter (bulk meter) at 220 kV metering point at the Enercon substation is connected to the machines of the project activity and the machines commissioned by the other project developers. Therefore in order to determine the net electricity

<sup>1</sup> <http://cdm.unfccc.int/Projects/DB/DNV-CUK1185356859.49/view>



supplied to the grid by the project at 220 kV at the Enercon substation, the state utility applies the transmission loss to the meter reading recorded at the 33 kV metering point.

The transmission loss calculated by the state utility is endorsed / confirmed jointly by the representatives of Enercon and the state utility. The transmission loss applied to the project activity by the state utility is reflected in the joint meter readings (Form B) recorded at 33kV metering point. Net electricity supplied to the grid is calculated by applying transmission loss to the meter readings taken at 33 kV metering location of the project activity.

The procedure for calculation of transmission loss as given in the PPA is set-out below:-

$$Z = \frac{(X1 + X2+ X3+ X4+....+ Xn) - Y}{(X1 + X2+ X3+ X4+....+ Xn)} \times 100$$

Where,

Z = Percentage transmission loss for export incurred in transmission line between the meters located at 33 kV metering point (including the machines of the project activity and other project developers) and the meters located at 220kV metering point (bulk meter: main and check) at high voltage side of receiving sub-station. **Refer Appendix 1 for schematic of the flow diagram.**

Summation of meter readings at 33 kV metering points for all the project developers connected to receiving substation (including the machines of the project activity and other project developers)

$$= (X1 + X2+ X3+ X4+....+ Xn)$$

Xi = Energy Export Reading (Xi) noted at energy meter installed at 33kV metering point where i vary from 1 to n which represents the meters connected to project activity and other project developers. X1, X2, X3,...Xn are the meters that are installed at 33kV metering point (including the machines of the project activity and other project developers) and further connected to the receiving substation at 220 kV by internally connected lines. **Refer Appendix 1 for schematic of the flow diagram**

Y = Energy Export Reading at bulk meter installed at high voltage side of transformer of the receiving sub-station at 220 kV connecting machines of the project activity and other project developers. **Refer Appendix 1 for schematic of the flow diagram.**

Energy Export by the project activity at 33 kV metering point is as follows:

$$EG_{\text{export}} = X1 + X2$$

Where, X1 & X2 is the export reading recording at 33kV metering points for project activity.

$$\text{Transmission Loss in Export (T}_E\text{)} = \text{Transmission Loss (Z) * Energy Export at 33kV metering point (EG}_{\text{export}}\text{)}$$

#### **Empirical Formula for Energy Export after adjustment of transmission loss (Equation 1)**

$$\text{Net Energy Export after adjustment of transmission loss} = \text{EG}_{\text{export}} - \text{Transmission Loss (T}_E\text{)}$$

The transmission loss in export is generally less than 5%. However in case of Energy Import, the state utility conservatively applies adjustment of 15% to the import values noted at 33 kV metering point.

$$\text{Transmission Loss in Import (T}_I\text{)} = 15\% * \text{Energy Import at 33kV metering point (EG}_{\text{import}}\text{)}$$

#### **Empirical Formula for Energy Import after adjustment of transmission loss (Equation 2)**

$$\begin{aligned} \text{Net Energy Import after adjustment of transmission loss} &= \text{EG}_{\text{import}} + 15\% * \text{EG}_{\text{import}} \\ &= 115\% * \text{EG}_{\text{import}} \end{aligned}$$

Therefore Energy Supplied to Grid after adjustment of transmission loss is difference of equation 1 and 2 as

given in the joint meter readings (Form B) signed jointly by Enercon and the state utility.

$$EG_y = EG_{\text{export}} - 115\% \cdot EG_{\text{import}} - \text{Transmission Loss } (T_E)$$

The Joint meter reading noted at 33 kV metering location contains the following data:-

1. Electricity Export ( $EG_{\text{export}}$ )
2. Electricity Import ( $EG_{\text{import}}$ )
3. Transmission Loss ( $T_E$ ) between 33 kV metering point and 220 kV metering point at Enercon substation
4. Net Electricity supplied to the Grid [ $EG_{\text{export}} - 115\% \cdot EG_{\text{import}} - T_E$ ]

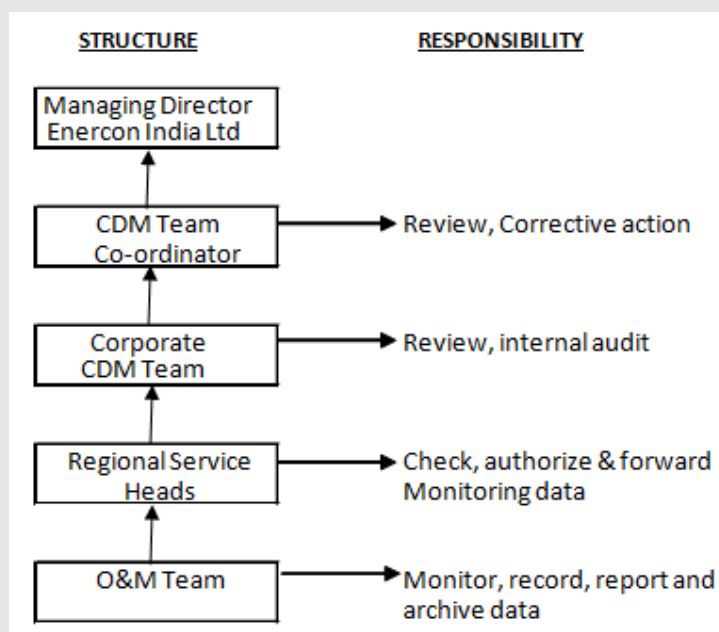
Joint meter reading (Form B) is signed by the representatives of Enercon and the state utility. The meter readings (both export and import), transmission loss and net electricity supplied to the grid are recorded in the joint meter readings (Form B) (33 kV metering point). Hence all these values will be reproduced from the joint meter readings (Form B) for calculation of emission reductions.

In addition to the joint meter readings (Form B) at 33kV metering location for the project activity, the following documents have been provided to the DoE for verification:

1. Joint Meter Readings (Form B) at 220kV metering point (bulk meters: main and check) at Enercon substation
2. Transmission loss calculation endorsed / confirmed jointly by the representatives of Enercon and the state utility.

The net electricity supplied to the grid can be cross checked from the invoices raised on the state utility for supply of net electricity supplied to the grid. Refer Annex – 2 for an illustration of the provisions for measurement methods.

The Project is operated and managed by Enercon (India) Ltd. The operational and management structure implemented by Enercon is as follows:



**Meter Test Checking Details:**

The metering equipments were inspected & tested by State Utility. Meter details for the all the main and check meters are as follows:-

Parameter	Type of meter	Meter description	Meter Serial No.	Make	Accuracy class	Meter Type
KBCWP-01 (68.8 MW)	220 kV Bulk meter	Main Meter	6605121	L&T	0.2	All the meters are two-way Tri-vector meters capable of recording import and export of electricity.
		Check Meter	6605122	L&T	0.2	
KBCWP-02 (56.8 MW)	33 kV billing meter	Main Meter	5389967	L&T	0.2	
		Check Meter	5389970	L&T	0.2	
KBCWP-03 (12 MW)	33 kV billing meter	Main Meter	5463844	L&T	0.2	
		Check Meter	5463845	L&T	0.2	

Details of meter test checking during monitoring period are as follows:-

Parameter	Meter description	Meter Serial No.	Meter Test Checking Frequency	Meter Test Checking detail before monitoring period	Meter Test Checking during current monitoring period	Due Date of Meter Test Checking
KBCWP-01 (68.8 MW)	Main Meter	6605121	Annual	08-Dec-11	24-July-12	24-July-13
	Check Meter	6605122				
KBCWP-02 (56.8 MW)	Main Meter	5389967		24-Jan-12	24-July-12	24-July-13
	Check Meter	5389970				
KBCWP-03 (12 MW)	Main Meter	5463844		25-Jun-12	NA	25-Jun-13
	Check Meter	5463845				

The main and check meters are tested for accuracy on annual basis by state utility and in case of error; meters are calibrated by state utility. Further during the annual meter testing, all the meters were under the permissible limit of error and accordingly none of the meter was calibrated during the current monitoring period.

The line diagram showing all relevant monitoring points for the project activity has been given in Appendix 1.

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

Data / Parameter:	$EF_{CM,y}$
Unit:	tCO <sub>2</sub> e/MWh
Description:	Combined Margin Emission Factor of Southern Regional Electricity Grid.

Source of data:	“CO2 Baseline Database for Indian Power Sector”, version 1.1, published by the Central Electricity Authority, Ministry of Power, Government of India.  The “CO2 Baseline Database for Indian Power Sector” is available at <a href="http://www.cea.nic.in/reports/planning/cdm_co2/cdm_co2.htm">http://www.cea.nic.in/reports/planning/cdm_co2/cdm_co2.htm</a>
Value(s) applied:	= 0.93204
Purpose of data:	Calculation of Baseline Emissions
Additional comment:	None

<b>Data / Parameter:</b>	<b><math>EF_{OM,y}</math></b>								
Unit:	tCO2e/MWh								
Description:	Operating Margin Emission Factor of Southern Regional Electricity Grid								
Source of data:	“CO2 Baseline Database for Indian Power Sector”, version 1.1, published by the Central Electricity Authority, Ministry of Power, Government of India.  The “CO2 Baseline Database for Indian Power Sector” is available at <a href="http://www.cea.nic.in/reports/planning/cdm_co2/cdm_co2.htm">http://www.cea.nic.in/reports/planning/cdm_co2/cdm_co2.htm</a>								
Value(s) applied:	<table border="1"> <tr> <td>2002 – 03</td><td>0.99702</td></tr> <tr> <td>2003 – 04</td><td>1.00937</td></tr> <tr> <td>2004 – 05</td><td>1.00376</td></tr> <tr> <td>Average</td><td>1.00338</td></tr> </table>	2002 – 03	0.99702	2003 – 04	1.00937	2004 – 05	1.00376	Average	1.00338
2002 – 03	0.99702								
2003 – 04	1.00937								
2004 – 05	1.00376								
Average	1.00338								
Purpose of data:	Calculation of Baseline Emissions								
Additional comment:	None								

<b>Data / Parameter:</b>	<b><math>EF_{BM,y}</math></b>		
Unit:	tCO2e/MWh		
Description:	Build Margin Emission Factor of Southern Regional Electricity Grid		
Source of data:	“CO2 Baseline Database for Indian Power Sector”, version 1.1, published by the Central Electricity Authority, Ministry of Power, Government of India.  The “CO2 Baseline Database for Indian Power Sector” is available at <a href="http://www.cea.nic.in/reports/planning/cdm_co2/cdm_co2.htm">http://www.cea.nic.in/reports/planning/cdm_co2/cdm_co2.htm</a>		
Value(s) applied:	<table border="1"> <tr> <td>2004 – 05</td><td>0.71799</td></tr> </table>	2004 – 05	0.71799
2004 – 05	0.71799		
Purpose of data:	Calculation of Baseline Emissions		
Additional comment:	None		

Please refer Annex 1 for combined margin calculation.

There is an inconsistency in the decimal places between the values in section B.6.2 and Annex 3 of the registered PDD. The value mentioned in the Annex 3 of the registered PDD is being consistently used in this section and annex 1 of this MR.

**D.2. Data and parameters monitored**

<b>Data / Parameter:</b>	<b>EG<sub>y</sub></b>
Unit:	MWh (Mega-Watt hour)
Description:	Net electricity supplied to the grid by the Project
Measured/ Calculated / Default:	Calculated
Source of data:	Electricity supplied to the grid as per two joint meter readings (Form B) taken at 33 kV metering point.
Value(s) of monitored parameter:	Net electricity supplied to the grid by the Project = 48,667.964 MWh
Monitoring equipment:	Since it is calculated value, hence not applicable.
Measuring/ Reading/ Recording frequency:	Frequency of recording data: Monthly Refer section C and Annex – 2 for an illustration of the provisions for measurement methods.
Calculation method (if applicable):	The procedures for calculation of net electricity supplied to grid has been followed as per the provisions of the power purchase agreement and details of calculation method has been explained in monitoring plan under section C of monitoring report.
QA/QC procedures:	QA/QC procedures were implemented by state utility pursuant to the provisions of the power purchase agreement except or otherwise explicitly stated in the PDD. The values of net electricity supplied to the grid mentioned in the two joint meter readings (Form B) of the project for 56.8 MW and 12 MW at 33kV metering point can be cross checked with values mentioned in the invoice raised on the state utility. Further no inconsistency was found between the values as mentioned in Form B & invoices raised on state utility during the current monitoring period.. All main & check meters connected at metering points with RR. No. KBCWP 01 (220kV metering point), KBCWP 02 (33kV/metering point) & KBCWP03 (33kV metering point) (please refer project layout Appendix 1) were tested for accuracy on annual basis by state utility and in case of error; meters are calibrated by either of KPTCL or BESCOM. Further during the annual meter testing, all the meters were found under the permissible limit of error and accordingly none of the meter was calibrated during the current monitoring period. Refer Annex – 2 for an illustration of the provisions for QA/QC procedures. Refer Appendix 1 for location of metering points at 33kV and 220 kV.
Purpose of data:	Calculation of Baseline Emissions
Additional comment:	The data has been archived on electronic media as well as on paper. The archive will be kept for the period up to two years after the completion of the crediting period

<b>Data / Parameter:</b>	<b>EG<sub>export</sub></b>
Unit:	MWh (Mega-Watt hour)
Description:	Summation of electricity Export recorded at meters (two main and two check) connecting 86 machines of the project activity and can be sourced from two joint meter readings (Form B) issued by BESCO for 56.8 MW and 12 MW at 33 kV metering point
Measured/ Calculated / Default:	Measured
Source of data:	Electricity export to the grid as per two joint meter readings (Form B) taken at 33 kV metering point.
Value(s) of monitored parameter:	=49,250.550 MWh
Monitoring equipment:	Please refer section 'C' (Description of monitoring system) for the details of meter type, accuracy class, serial number, meter test checking frequency, date of last meter test checking and validity under the heading 'Meter Test Checking Details'
Measuring/ Reading/ Recording frequency:	Frequency of recording data: Monthly.  Further all the meters have the capability of continuous measurement of data.  Refer section C and Annex – 2 for an illustration of the provisions for measurement methods.
Calculation method (if applicable):	-
QA/QC procedures:	QA/QC procedures were implemented by state utility and the PP except or otherwise explicitly stated in the PDD. Refer Annex – 2 for an illustration of the provisions for QA/QC procedures.
Purpose of data:	Calculation of Baseline Emissions (EG <sub>export</sub> is used to calculate Net electricity supplied to the grid by the Project which is used to calculate baseline emissions)
Additional comment:	The data has been archived on electronic media as well as on paper. The archive will be kept for the period up to two years after the completion of the crediting period.

<b>Data / Parameter:</b>	<b>EG<sub>import</sub></b>
Unit:	MWh (Mega-Watt hour)
Description:	Summation of electricity Import recorded at the meters (two main and two check) connecting 86 machines of the project activity and can be sourced from two joint meter readings (Form B) issued by BESCO for 56.8 MW and 12 MW at 33 kV metering point.
Measured/ Calculated / Default:	Measured
Source of data:	Electricity import from the grid as per two joint meter reading (Form B) taken at 33kV metering point.
Value(s) of monitored parameter:	=0.000 MWh

Monitoring equipment:	Please refer section 'C' (Description of monitoring system) for the details of meter type, accuracy class, serial number, meter test checking frequency, date of last meter test checking and validity under the heading 'Meter Test Checking Details'
Measuring/ Reading/ Recording frequency:	Frequency of recording data: Monthly Further all the meters have the capability of continuous measurement of data. Refer section C and Annex – 2 for an illustration of the provisions for measurement methods.
Calculation method (if applicable):	-
QA/QC procedures:	QA/QC procedures were implemented by state utility and the PP except or otherwise explicitly stated in the PDD. Refer Annex – 2 for an illustration of the provisions for QA/QC procedures.
Purpose of data:	Calculation of Baseline Emissions ( $EG_{import}$ is used to calculate Net electricity supplied to the grid by the Project which is used to calculate baseline emissions)
Additional comment:	The data has been archived on electronic media as well as on paper. The archive will be kept for the period up to two years after the completion of the crediting period.
<b>Data / Parameter:</b>	<b><math>T_E</math></b>
Unit:	MWh (Mega-Watt hour)
Description:	Transmission loss for export between the metering location at 33 kV point and the metering location at 220 kV at the Enercon substation.
Measured/ Calculated / Default:	Calculated
Source of data:	Transmission Loss for export has been sourced from the joint meter reading (Form B) taken at 33kV metering point for the project activity
Value(s) of monitored parameter:	=582.586 MWh
Monitoring equipment:	Since it is calculated value, hence not applicable.
Measuring/ Reading/ Recording frequency:	Frequency of recording data: Monthly Refer section C and Annex – 2 for an illustration of the provisions for measurement methods.
Calculation method (if applicable):	Transmission loss calculation has been done exclusively by officials of electricity board (EB) and PP has no role in calculation of transmission loss. Transmission loss value has been sourced directly from certified joint meter reading (Form B) recorded at 33kV metering point. Please refer section C of monitoring report for calculation method of transmission loss applied by EB officials as per the provision of PPA.

QA/QC procedures:	QA/QC procedures were implemented by state utility and the PP except or otherwise explicitly stated in the PDD. Refer Annex – 2 for an illustration of the provisions for QA/QC procedures.
Purpose of data:	Calculation of Baseline Emissions ( $T_E$ is used to calculate Net electricity supplied to the grid by the Project which is used to calculate baseline emissions)
Additional comment:	The data has been archived on electronic media as well as on paper. The archive will be kept for the period up to two years after the completion of the crediting period.

### D.3. Implementation of sampling plan

&gt;&gt;

Not applicable

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

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

&gt;&gt;

"The baseline is the kWh produced by the renewable generating unit multiplied by an emission coefficient (measured in kg CO<sub>2</sub>e/kWh) calculated in a transparent and conservative manner as the weighted average emissions (in kg CO<sub>2</sub>e/kWh) as described in registered PDD.

$$BE_y = EG_y * EF_y$$

Where,

$BE_y$  is baseline emissions in year y, tCO<sub>2</sub>e

$EG_y$  is the net electricity supplied to the grid in year y and is applied directly from joint meter readings (Form B) certified by state utility. This value can also be cross checked from monthly invoice.

$EF_y$  is the CO<sub>2</sub> emission factor of the grid (0.93204 tCO<sub>2</sub>e/MWh fixed ex-ante).

#### 1) Generation details for meter KBCWP-02 (56.8 MW)

Months	Export (kWh)	Import (kWh)	Transmission loss (kWh)	Net Export to grid as per joint meter readings (Form B) (kWh)
	[EGexport]	[EGimport]	[ $T_E$ ]	[EGy]
1-Jul-12 to 31-Jul-12	17,760,000	0	203,174	17,556,826
1-Aug-12 to 31-Aug-12	15,802,500	0	191,526	15,610,974
1-Sep-12 to 30-Sep-12	9,296,250	0	112,206	9,184,044

#### 2) Generation details for meter KBCWP-03 (12 MW)

Months	Export (kWh)	Import (kWh)	Transmission loss (kWh)	Net Export to grid as per joint meter readings (Form B) (kWh)
	[EGexport]	[EGimport]	[ $T_E$ ]	[EGy]
1-Jul-12 to 31-Jul-12	2,528,100	0	28,921	2,499,179
1-Aug-12 to 31-Aug-12	2,483,100	0	30,095	2,453,005
1-Sep-12 to 30-Sep-12	1,380,600	0	16,664	1,363,936



**Baseline Emission Reductions calculation for project activity:-**

Months	Net electricity supplied to the grid by the Project 68.8 [MWh] *	Baseline Emission Factor (tCO <sub>2</sub> e/MWh)	Baseline Emissions (tCO <sub>2</sub> e)
	[EGy]	[EFy]	[BEy]
1-Jul-12 to 31-Jul-12	20,056.005	0.93204	18,692
1-Aug-12 to 31-Aug-12	18,063.979	0.93204	16,836
1-Sep-12 to 30-Sep-12	10,547.980	0.93204	9,831
	48,667.964	<b>Total</b>	<b>45,359</b>

\* Summation of Net Export to grid as per joint meter readings (Form B) recorded at meters KBCWP 02 & KBCWP 03.

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

&gt;&gt;

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. Calculation of leakage**

&gt;&gt;

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

**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 <sub>2</sub> e)	Project emissions or actual net GHG removals by sinks (t CO <sub>2</sub> e)	Leakage (t CO <sub>2</sub> e)	Emission reductions or net anthropogenic GHG removals by sinks (t CO <sub>2</sub> e)
<b>Total</b>	45,359	0	0	45,359

**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
<b>Emission reductions or GHG removals by sinks (t CO<sub>2</sub>e)</b>	37,520 based on number of days (92 days) involved in current monitoring period. (as per registered PDD annual (365 days) emission reductions estimated is 148,858)	<b>45,359</b>

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

&gt;&gt;

The CERs for the current monitoring period is 20.89% higher than the estimated volume in the PDD. This is primarily due to seasonal nature of wind power projects and monitoring period under consideration in this monitoring report covers the high wind season – therefore the expected CERs are more than the estimated in the PDD which provides estimates on annual basis. Further the annual PLF of project activity starting from Oct 2011 till the end of monitoring period i.e. Sep 2012, which comes out 19.76%. PLF of 19.76% is well below than the PLF of 26.5% as mentioned under the registered PDD and project is additional.

**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 <sub>2</sub> e)	45,359	Not applicable

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**Document information**

Version	Date	Description
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

**Annex 1****BASELINE INFORMATION**

The Operating Margin data for the most recent three years and the Build Margin data for the Southern Region Electricity Grid as published in the CEA database version 1.1<sup>2</sup> are as follows:

**Simple Operating Margin**

	<b>tCO<sub>2</sub>e/GWh</b>
Simple Operating Margin - 2002-03	997.02
Simple Operating Margin - 2003-04	1,009.37
Simple Operating Margin - 2004-05	1,003.76
Average Operating Margin of last three years	1,003.38

**Build Margin**

	<b>tCO<sub>2</sub>e/GWh</b>
Build Margin- 2004-05	717.99

**Combined Margin calculations**

	<b>Weights</b>	<b>tCO<sub>2</sub>e/GWh</b>
Operating Margin	0.75	1003.38
Build Margin	0.25	717.99
<b>Combined Margin</b>		<b>932.04</b>

Detailed information on calculation of Operating Margin Emission Factor and Build Margin Emission Factor is available at [http://www.cea.nic.in/reports/planning/cdm\\_co2/cdm\\_co2.htm](http://www.cea.nic.in/reports/planning/cdm_co2/cdm_co2.htm)

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<sup>2</sup> [http://www.cea.nic.in/reports/planning/cdm\\_co2/cdm\\_co2.htm](http://www.cea.nic.in/reports/planning/cdm_co2/cdm_co2.htm)

Annex 2**MONITORING INFORMATION**

- **Metering:** Net electricity supplied to the grid is metered jointly by state utility and Enercon through two sets of main and check meters at 33 kV metering point connecting exclusively the machines of project activity after adjusting for transmission loss.

In addition to this there is one set of main and check meter (Bulk meter) at 220 KV metering point at Enercon substation covering machines of the project activity and machines of other project developers. The schematic diagram indicating location of meters at 33 kV and 220 kV metering points for the project activity is attached as Appendix 1.

- **Metering Equipment:** Metering system for the project activity consists of two sets of main and checks meters at 33kV metering point and one set of main and check meters at 220 kV metering point. All the meters are **two-way Trivector meters capable of recording import and export of electricity**. The meters installed are capable of recording and storing half hourly readings of all electrical parameters for a minimum period of 35 days with digital output.
- **Meter Readings:** The electricity supplied to the grid is recorded by taking two joint meter readings (Form B) at 56.8 MW and 12 MW at 33kV metering point in the presence of representatives of state utility and Enercon. The joint meter readings (Form B) at 33kV metering point contains the value of energy exported, energy imported, transmission loss and net electricity supplied to the grid during the recording period. This joint meter readings (Form B) is certified by the Executive Engineer of the state utility and Enercon. These certified readings are then used to prepare the invoices to be raised on BESCOM. Thus the net electricity supplied to the grid as mentioned in the joint meter readings (Form B) can be crosschecked with the value mentioned in the invoices. Further no inconsistency was found between the values as mentioned in Form B & invoices raised on state utility during the current monitoring period.
- **Inspection of Energy Meters:** All main and check energy meters and all associated instruments, transformers installed at the Project are of 0.2% accuracy class. Each meter is jointly inspected and sealed on behalf of the Parties and is not to be interfered with by either Party except in the presence of the other Party or its authorized representatives.

**Meter Test Checking:** All main and check meters are tested for accuracy with reference to a portable standard meter. The portable standard meter is owned by state utility. The main and check meters shall be deemed to be working satisfactorily if the errors are within specifications for meters of 0.2 accuracy class. The consumption registered by the main meters alone will hold good for the purpose of metering electricity supplied to the grid as long as the error in the main meters is within the permissible limits. All main & check meters connected at metering points with RR. No. KBCWP 01 (220kV metering point), KBCWP 02 (33kV metering point) & KBCWP03 (33kV metering point) (please refer project layout Appendix 1) will be tested for accuracy on annual basis by state utility and in case of error; meters are calibrated by either of KPTCL or BESCOM based on the availability of EB officials. Further during the annual meter testing, all the meters were found under the permissible limit of error and accordingly none of the meter was calibrated during the current monitoring period. KPTCL is a transmission utility and BESCOM is distribution licensee in the state of Karnataka.

If during the meter test checking,

- The main meter is found to be within the permissible limit of error and the corresponding check meter is beyond the permissible limits, then the meter reading will be as per the main meter as usual. The check meter shall, however, be calibrated immediately.
- The main meter is found to be beyond permissible limits of error, but the corresponding check meter is found to be within permissible of error, then the meter reading for the month up to the date and time of such test shall be as per the check meter. There will be a revision in the meter reading for the period from the previous calibration test up to the current test based on the readings of the check meter. The main meter shall be calibrated immediately and meter reading for the period thereafter till the next monthly meter reading shall be as per the calibrated main meter.
- Both the main meters and the corresponding check meters are found to be beyond the permissible limits of error, both the main meters shall be immediately calibrated and the correction applied to the reading registered by the main meter to arrive the correct reading of energy supplied for metering

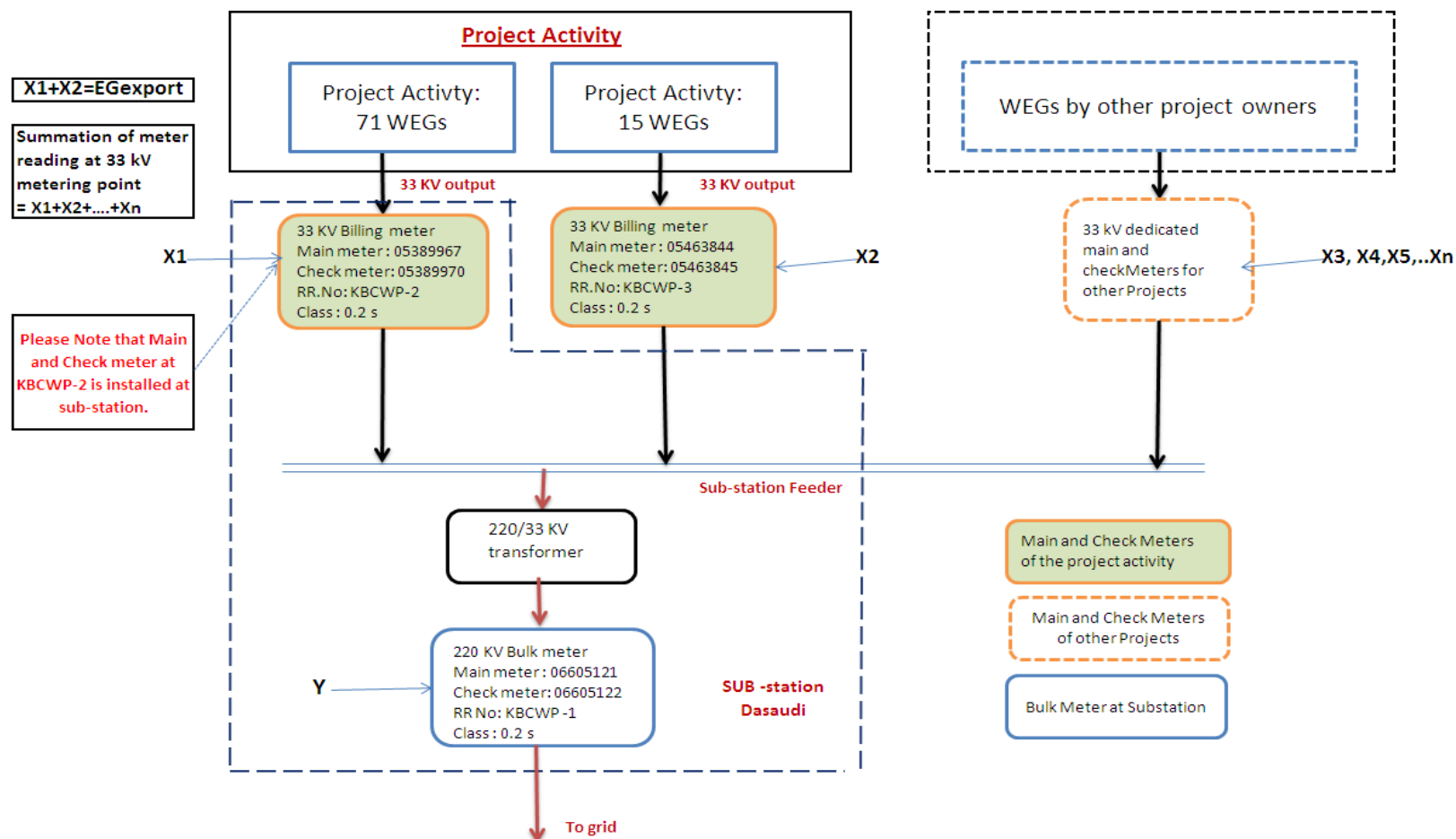
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electricity supplied to the grid for the period from the last month's meter reading up to the current test. Meter reading for the period thereafter till the next monthly reading shall be as per the calibrated main meter.

- During the monitoring period all the meter were found under the permissible limit of error and accordingly none of the meter was calibrated, and there was no occurrence of emergency events.

The schematic showing the location of meters for the project activity is given in Appendix 1:

Appendix 1: Schematic for location of meters at 33kV metering points and the bulk meter at 220 kV at Enercon sub-station.



Appendix 2: WEG Performance Report<sup>3</sup>

State	KARNATAKA			WEG Performance Report				Date:01/07/2012-30/09/2012		
WEG No.	Generation		Lack Of Wind (hh:mm:ss)	Down Time (hh:mm:ss)				Machine Availability (%)	Capacity Factor (%)	Grid Availability (%)
	KWh	Hrs (hh:mm:ss)		Machine		Grid				
				Fault	Shutdown	Fault	Shutdown			
KBCWP 03			ENERCON WINDFARMS (HINDUSTAN) PVT LIMITED						Total WEC : 15	
EWHP-72	410948	2110:00:00	72:57:00	17:19	3:35	10:38	0	99.05	23.26	99.52
EWHP-73	442328	2143:00:00	52:26:00	0:47	5:00	10:38	0	99.74	25.04	99.52
EWHP-74	447711	2126:00:00	56:55:00	10:17	7:44	10:38	0	99.18	25.35	99.52
EWHP-75	435569	2118:00:00	64:42:00	13:43	4:07	10:38	0	99.19	24.66	99.52
EWHP-76	452890	2130:00:00	56:41:00	1:49	11:25	10:38	0	99.4	25.64	99.52
EWHP-77	422760	2128:00:00	65:09:00	1:47	5:33	10:38	0	99.67	23.93	99.52
EWHP-78	427488	2077:00:00	78:14:00	21:41	21:55	10:38	0	98.03	24.2	99.52
EWHP-79	472878	2128:00:00	56:39:00	10:30	3:55	10:38	0	99.35	26.77	99.52
EWHP-80	487213	2143:00:00	52:55:00	0:23	2:55	10:38	0	99.85	27.58	99.52
EWHP-81	483687	2143:00:00	51:06:00	1:00	4:08	10:38	0	99.77	27.38	99.52
EWHP-82	454039	2115:00:00	69:03:00	13:37	5:27	10:38	0	99.14	25.7	99.52
EWHP-83	371405	2122:00:00	72:42:00	1:51	3:18	10:38	0	99.77	21.03	99.52
EWHP-84	378107	2101:00:00	84:25:00	9:08	5:45	10:40	0	99.33	21.41	99.52
EWHP-85	421367	2121:00:00	72:02:00	1:35	3:45	10:38	0	99.76	23.85	99.52
EWHP-86	416808	2101:00:00	83:49:00	9:34	5:48	10:38	0	99.3	23.6	99.52
Total	6525198	31806:00	989:45:00	115:01:00	94:20:00	159:32:00	0	99.37	24.63	99.52
KBCWP 02			ENERCON WINDFARMS (HINDUSTAN) PVT LIMITED						Total WEC : 71	
EWHP-01	637396	2089:00:00	67:11:00	62:56:00	5:00	10:45	0	96.92	36.08	99.51
EWHP-02	673202	2119:00:00	64:52:00	33:05:00	4:38	10:55	0	98.29	38.11	99.51
EWHP-03	608731	2123:00:00	60:05:00	28:30:00	5:00	10:45	0	98.48	34.46	99.51
EWHP-04	726185	2134:00:00	62:30:00	3:00	4:45	10:45	0	99.65	41.11	99.51

<sup>3</sup> WEG Performance report is provided by O & M contract ("Enercon").

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EWHP-05	746021	2130:00:00	59:34:00	12:32	4:40	10:45	0	99.22	42.23	99.51
EWHP-06	716187	2142:00:00	60:00:00	7:35	0	10:55	0	99.66	40.54	99.51
EWHP-07	632610	2133:00:00	70:55:00	0	0	10:45	0	100	35.81	99.51
EWHP-08	580042	2109:00:00	93:04:00	8:56	0	10:45	0	99.6	32.84	99.51
EWHP-09	578438	2099:00:00	90:20:00	8:15	5:00	10:45	0	99.4	32.75	99.51
EWHP-10	859817	2130:00:00	60:20:00	2:20	0	9:55	7:15	99.89	48.68	99.22
EWHP-11	831839	2140:00:00	54:40:00	0:38	0	9:25	7:15	99.97	47.09	99.25
EWHP-12	734297	2127:00:00	54:59:00	5:46	4:46	9:25	7:15	99.52	41.57	99.25
EWHP-13	665939	2088:00:00	95:40:00	0	9:52	9:25	7:15	99.55	37.7	99.25
EWHP-14	641223	2127:00:00	53:14:00	3:10	8:56	9:35	7:15	99.45	36.3	99.24
EWHP-15	648248	2132:00:00	49:15:00	8:13	9:13	9:55	7:15	99.21	36.7	99.22
EWHP-16	793943	2074:00:00	82:12:00	37:57:00	11:00	10:05	6:15	97.78	44.95	99.26
EWHP-17	770960	2115:00:00	69:14:00	0:30	10:26	9:55	6:15	99.5	43.65	99.27
EWHP-18	843932	2139:00:00	50:46:00	0	2:04	9:55	6:15	99.91	47.78	99.27
EWHP-19	797347	2115:00:00	71:48:00	3:14	4:11	9:55	6:15	99.66	45.14	99.27
EWHP-20	829847	2129:00:00	59:40:00	6:35	3:30	9:55	6:15	99.54	46.98	99.27
EWHP-21	786660	2073:00:00	80:19:00	44:25:00	4:45	24:14:00	6:38	97.77	44.53	98.6
EWHP-22	830442	2095:00:00	90:56:00	4:05	4:00	24:14:00	6:38	99.63	47.01	98.6
EWHP-23	793979	2109:00:00	79:14:00	2:03	4:44	24:14:00	6:38	99.69	44.95	98.6
EWHP-24	833760	2106:00:00	77:31:00	1:57	4:04	24:14:00	6:38	99.73	47.2	98.6
EWHP-25	829883	2123:00:00	65:48:00	0	4:00	24:14:00	6:38	99.82	46.98	98.6
EWHP-26	742815	2093:00:00	86:34:00	2:54	4:00	24:14:00	6:38	99.69	42.05	98.6
EWHP-27	787883	2026:00:00	133:10:00	36:23:00	4:30	24:14:00	6:38	98.15	44.6	98.6
EWHP-28	689467	2010:00:00	161:06:00	6:00	4:42	24:14:00	6:38	99.52	39.03	98.6
EWHP-29	661244	2074:00:00	110:15:00	2:13	4:23	24:14:00	6:38	99.7	37.43	98.6
EWHP-30	678434	2108:00:00	81:03:00	0	4:20	24:14:00	6:38	99.8	38.41	98.6
EWHP-31	646071	2051:00:00	88:34:00	60:27:00	4:30	23:18	6:38	97.06	36.58	98.64
EWHP-32	665826	2099:00:00	86:02:00	2:59	5:00	24:14:00	6:38	99.64	37.69	98.6
EWHP-33	669987	2109:00:00	77:45:00	2:20	4:12	25:31:00	9:12	99.7	37.93	98.43
EWHP-34	704070	2089:00:00	73:31:00	37:04:00	4:00	24:14:00	5:28	98.14	39.86	98.66



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EWHP-35	708894	2105:00:00	83:38:00	1:00	3:00	24:14:00	5:28	99.82	40.13	98.66
EWHP-36	714123	2107:00:00	76:58:00	5:16	5:00	24:14:00	5:28	99.53	40.43	98.66
EWHP-37	684222	2094:00:00	87:03:00	7:48	4:30	24:14:00	5:28	99.44	38.74	98.66
EWHP-38	613161	2097:00:00	81:14:00	7:51	4:33	24:14:00	5:28	99.44	34.71	98.66
EWHP-39	603583	2116:00:00	75:13:00	0:30	3:00	24:14:00	5:28	99.84	34.17	98.66
EWHP-40	599425	2099:00:00	87:23:00	0	4:00	24:14:00	5:28	99.82	33.93	98.66
EWHP-41	584211	2115:00:00	78:00:00	1:10	5:08	9:59	0:55	99.71	33.07	99.51
EWHP-42	556311	2102:00:00	91:28:00	0	6:07	9:59	0:55	99.72	31.49	99.51
EWHP-43	585408	2108:00:00	81:58:00	7:02	4:18	9:59	0:55	99.49	33.14	99.51
EWHP-44	565311	2082:00:00	110:36:00	2:19	5:26	9:59	0:55	99.65	32	99.51
EWHP-45	533130	2109:00:00	84:10:00	0	5:33	9:59	0:55	99.75	30.18	99.51
EWHP-46	499407	2105:00:00	87:34:00	1:00	5:28	9:59	0:55	99.71	28.27	99.51
EWHP-47	584311	2116:00:00	70:57:00	7:34	5:00	10:07	0:55	99.43	33.08	99.5
EWHP-48	563240	2107:00:00	85:34:00	0	5:00	9:59	0:55	99.77	31.89	99.51
EWHP-49	531146	2121:00:00	72:02:00	0	5:15	9:59	0:55	99.76	30.07	99.51
EWHP-50	613041	2094:00:00	83:46:00	12:50	5:46	10:07	6:36	99.16	34.71	99.24
EWHP-51	613478	2100:00:00	72:36:00	23:33	4:25	10:07	6:36	98.73	34.73	99.24
EWHP-52	509599	2115:00:00	78:38:00	2:03	4:52	10:07	6:36	99.69	28.85	99.24
EWHP-53	525804	2120:00:00	59:06:00	3:05	13:43	10:15	6:36	99.24	29.77	99.24
EWHP-54	509836	2118:00:00	56:44:00	4:57	14:14	10:07	6:36	99.13	28.86	99.24
EWHP-55	510746	2091:00:00	78:43:00	11:10	14:19	10:07	6:36	98.85	28.91	99.24
EWHP-56	499986	2124:00:00	67:48:00	0	3:18	10:15	6:36	99.85	28.31	99.24
EWHP-57	452366	2126:00:00	66:26:00	0:38	3:08	10:07	6:36	99.83	25.61	99.24
EWHP-58	449060	2130:00:00	61:06:00	0	3:29	10:07	6:36	99.84	25.42	99.24
EWHP-59	509362	2115:00:00	67:46:00	8:13	4:20	10:07	6:36	99.43	28.84	99.24
EWHP-60	511512	2114:00:00	72:02:00	2:33	4:56	10:07	6:36	99.66	28.96	99.24
EWHP-61	578139	2125:00:00	64:09:00	2:38	3:19	10:07	6:36	99.73	32.73	99.24
EWHP-62	493537	2078:00:00	109:05:00	4:56	4:43	10:07	6:36	99.56	27.94	99.24
EWHP-63	497292	2115:00:00	75:26:00	0:38	4:38	10:07	7:02	99.76	28.15	99.22
EWHP-64	478247	2116:00:00	74:06:00	0:40	4:30	10:07	6:36	99.77	27.07	99.24

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EWHPL-65	446766	2098:00:00	91:06:00	1:26	5:36	10:07	6:36	99.68	25.29	99.24
EWHPL-66	418208	2100:00:00	84:25:00	9:19	4:12	10:07	6:36	99.39	23.68	99.24
EWHPL-67	413986	2085:00:00	99:55:00	3:36	4:00	10:15	8:53	99.66	23.44	99.13
EWHPL-68	412663	2097:00:00	91:09:00	7:33	0	10:07	6:36	99.66	23.36	99.24
EWHPL-69	392520	2104:00:00	89:05:00	0:47	1:34	10:07	6:36	99.89	22.22	99.24
EWHPL-70	396772	2103:00:00	84:45:00	5:57	0	10:15	7:36	99.73	22.46	99.19
EWHPL-71	409627	2121:00:00	72:43:00	0	5:23	10:07	6:36	99.76	23.19	99.24
<b>Total</b>	<b>44205155</b>	<b>149531:00</b>	<b>5576:30:00</b>	<b>584:04:00</b>	<b>339:54:00</b>	<b>1002:36:00</b>	<b>358:59:00</b>	<b>99.41</b>	<b>35.25</b>	<b>99.13</b>