

VERIFICATION & CERTIFICATION REPORT

ENERCON (INDIA) LIMITED

20 MW ENERCON WIND FARMS (SAI)
PVT. LIMITED IN MAHARASHTRA

Monitoring Period
(14/12/2010 to 31/07/2011)
(UNFCCC Ref No. 3854)

REPORT NO.
CDM.11.VER.173.MP01

Date of this issue: 17/01/2012	KBS Ref. No.: CDM.11.VER.173.MP01		
Project Title	20 MW Enercon Wind farms (SAI) Pvt. Limited in Maharashtra		
Organization:	KBS Certification Services Pvt. Ltd.		
Client:	Enercon (India) Limited		
Monitoring Period:	14/12/2010 to 31/07/2011 (including both dates)		
Summary: <p>KBS Certification Services Pvt. Ltd. has performed the first verification of the CDM project “20 MW Enercon Wind farms (SAI) Pvt. Limited in Maharashtra”, and UNFCCC Ref. Number 3854. The verification includes confirming the implementation of the monitoring plan of the registered PDD and the application of the monitoring methodology as per ACM0002, Consolidated baseline methodology for grid-connected electricity generation from renewable sources, Version 11 of 12/02/2010. A site visit was conducted to verify the data submitted in the monitoring report. KBS confirms the following has been reviewed;</p> <ul style="list-style-type: none"> (a) The registered PDD, including the monitoring plan and the corresponding validation opinion(s); (b) The applied monitoring methodology; (c) Relevant decisions, clarifications and guidance from the CMP and the CDM Executive Board; (d) All information and references relevant to the project activity’s resulting in emission reductions <p>KBS Certification Services Pvt. Ltd. confirms that the monitoring system is in place and the emission reductions are calculated without material misstatements.</p> <p>Based on the information verified and evaluated we confirm that the implementation of the project has resulted in 20,054 tCO₂e emission reductions during period 14/12/2010 up to 31/07/2011.</p>			
Subject Group: CDM Verification	Sectoral Scope: 01	Methodology: ACM0002 version 11	
Verification Team:		Monitoring report:	
Team Leader	Vinay Singh	First version	V1 dated 20/09/2011
Verifier	Vinay Singh	Final version	V3 dated 07/01/2012
Local Expert	Vinay Singh		
Sectoral Expert (TA 1.2)	Lalit Dagar	Verification status:	
Independent Technical Reviewer Team:		<input type="checkbox"/> Findings not closed.	
Date	17/01/2012	<input type="checkbox"/> Draft verification opinion	
TR & Manager T&C	Ashok Kumar Gautam	<input checked="" type="checkbox"/> Final verification opinion	
Sectoral Expert (TA 1.2)	Phool Chand		
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Abbreviations

BM	Build Margin
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CM	Combined Margin
CMS	Central Monitoring System
CL	Clarification Request
CER(s)	Certified Emission Reduction(s)
CH ₄	Methane
CO ₂	Carbon dioxide
CO _{2e}	Carbon dioxide equivalent
DNA	Designated National Authority
DOE	Designated Operational Entity
EB	Executive Board
EF	Emission Factor
ER	Emission Reduction
FAR	Forward Action Request
GHG(s)	Green House Gas(es)
GWP	Global Warming Potential
ISO	International Organization for Standardization
IPCC	Intergovernmental Panel on Climate Change
JMR	Joint Meter Reading
kW	kilo Watt
kWh	kilo Watt Hour
L	Leakage
MoEF	Ministry of Environment and Forests
MR	Monitoring Report
MSEDCL	Maharashtra State Electricity Distribution Company Limited
MW	Mega Watt
NEWNE	North East West North Eastern
OM	Operating Margin
O&M	Operation & Maintenance
PDD	Project Design Document
PE	Project Emission
PLF	Plant Load Factor
PP	Project Participant
QA/QC	Quality Assurance / Quality Control
SS(s)	Sectoral Scopes
TR	Technical Reviewer
T&C	Technical and Certification
UID	Unique Identification
UNFCCC	United Nation Framework Convention on Climate Change
VVM	Validation and Verification Manual
V	Version
WTG	Wind Turbine Generator
YMPL	Yadav Measurements Pvt. Ltd.

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1. INTRODUCTION

1.1 Objective

KBS has been commissioned by ENERCON (India) Limited to perform an independent verification of its registered CDM project “20 MW ENERCON WIND FARMS (SAI) PVT. LIMITED IN MAHARASHTRA”, UNFCCC ref. no. 3854, for the reported GHG emission reductions in the given monitoring period 14/12/2010 to 31/07/2011. The CDM projects must undergo periodic audits and verification of emission reductions as the basis for issuance of Certified Emission Reductions (CERs).

The objectives of this verification exercise are, by review of objective evidence, to establish that:

- The emissions report conforms with the requirements of the monitoring plan in the registered PDD and the approved monitoring methodology; and
- The data reported are complete and transparent. This report contains the findings from the verification and a certification statement for the reported certified emission reductions.

1.2 Scope

The scope of the verification is the independent and objective review and ex post determination of the monitored reductions in GHG emissions by the project activity. The verification is based on the registered PDD and the monitoring report. The project is assessed against the requirements of the Kyoto Protocol, the CDM Modalities and Procedures and related rules and guidance.

KBS has, based on the recommendations in the latest version of Validation and Verification Manual, employed a risk-based approach in the verification, focusing on the identification of significant reporting risks and the reliability of project monitoring.

The verification is not meant to provide any consulting towards the client/project participant. However, stated requests for clarifications and/or corrective actions may provide input for improvements of the project design/monitoring report.

1.3 Description of the Project Activity

Project Parties:	India
Title of project activity:	“20 MW ENERCON WIND FARMS (SAI) PVT. LIMITED IN MAHARASHTRA”
UNFCCC Registration No:	3854
Project Participants:	ENERCON (India) Limited
Location of the project activity:	Ahmednagar, Maharashtra, India

The project activity consists of the installation of 25 wind mills with a unit capacity of 0.8 MW, resulting in total capacity of 20 MW. The purpose of the project activity is to generate electricity from renewable wind energy and exports to the NEWNE (earlier called as Western regional grid) grid, thereby leading to the reduction of GHG emissions by displacing the equivalent amount of electricity which would have been generated predominantly from fossil fuel fired power projects connected to NEWNE grid.

2. METHODOLOGY

KBS follows a risk based verification approach, wherein a desk review of the project documentation is undertaken, which is followed by an onsite visit by the members of verification team. The verification protocol is filled by the verification team that is based on standard auditing practices and VVM Version 1.2, to capture the applicable CDM requirements. The verification protocol provides transparent means to record the observations by the verification team members and the nonconformities, if any. The verification protocol is an internal document, and available on request.

Duration of verification

Verification Contract	14/09/2011
Publication of MR	23/09/2011
On site verification	18/11/2011 to 19/11/2011
Draft Verification Report	29/12/2011
Final Verification Report	17/01/2012

2.1 Review of Documentation

A desk review is undertaken, involving but not limited to,

- A review of the data and information presented to verify their completeness;
- A review of the monitoring plan and monitoring methodology, paying particular attention to the frequency of measurements, the quality of metering equipment including calibration requirements, and the quality assurance and quality control procedures;
- An evaluation of data management and the quality assurance and quality control system in the context of their influence on the generation and reporting of emission reductions.

The list of document reviewed is included in the section 'References'

2.2 Site Visits

A site visit is undertaken by members of verification team, involving but not limited to,

- An assessment of the implementation and operation of the proposed CDM project activity as per the registered PDD;
- A review of information flows for generating, aggregating and reporting the monitoring parameters;
- Interviews with relevant personnel to confirm that the operational and data collection procedures are implemented in accordance with the monitoring plan in the PDD;
- A cross-check between information provided in the monitoring report and data from other sources such as plant log books, inventories, purchase records or similar data sources;
- A check of the monitoring equipment including calibration performance and observations of monitoring practices against the requirements of the PDD and the selected methodology;
- A review of calculations and assumptions made in determining the GHG data and emission reductions;
- An identification of quality control and quality assurance procedures in place to prevent or identify and correct any errors or omissions in the reported monitoring parameters.

The site visit for this verification assessment was undertaken by members of verification team and details are mentioned below;

Location	Ahmednagar, Maharashtra	
Dates	18/11/2011 to 19/11/2011	
Key points discussed	Name of person, interviewed	Designation, Organization
Operational data, O&M, Calibration, Calculation of	Ms. Mallika Bose	Deputy Manager – CDM, Enercon (India) Limited

ERs, CDM requirements		
Data collection, O&M QA/QC procedures	Mr. Prashant B. Patil	Senior Engineer (Supervisor), Enercon (India) Limited
	Mr. Bapun Mishra	Service In-charge (Panchpatta sub-station), Enercon (India) Limited

2.3 Reporting of Findings

During the course of verification the findings may be raised as under;

CAR is raised if one of the following occurs:

- Non-conformities with the monitoring plan or methodology are found in monitoring and reporting, or if the evidence provided to prove conformity is insufficient;
- Mistakes have been made in applying assumptions, data or calculations of emission reductions that will impair the estimate of emission reductions;
- Issues identified in a FAR during validation to be verified during verification have not been resolved by the project participants.

Clarification request (CL) is raised if information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met.

All CARs and CLs raised during verification shall be resolved prior to submitting a request for issuance. FAR is raised if the monitoring and reporting require attention and/or adjustment for the next verification period. The verification report contains all CARs, CLs and no FARs has been raised during this verification.

2.4 Verification Assessment

Based on the desk review and site visit the Team Leader fills in the verification protocol to identify and record the findings in the context of the project activity. The findings are communicated to the client. The project documentations, including responses to the findings are reviewed by the Team Leader in consultation with team members, as appropriate. The Team Leader prepares the draft verification report subject to closure or non closure of the findings.

It is the responsibility of the Team Leader to confirm that the verification assessment has been undertaken in accordance with the procedures adopted by KBS as well as in accordance with the standards, procedures, guidance and decision established by CDM EB and related bodies.

2.5 Internal Quality Control

The draft verification report prepared by Team Leader is reviewed by an independent technical reviewer (having competence of relevant technical area himself or through an independent technical area expert) to confirm the internal procedures established by KBS are duly followed and the verification report/opinion is reached in an objective manner and complies with the applicable CDM requirements.

The independent technical reviewer may approve or reject the draft verification report. The findings may be identified at this stage, which needs to be satisfactorily resolved, before the request for issuance is submitted to UNFCCC. The final decision is taken by the Manager Technical and Certification. The Technical Reviewer and Manager T&C can be same person.

The final decision is authorized by Managing Director, KBS once the report is approved by the Manager T&C.

3. VERIFICATION FINDINGS

3.1 Project Implementation

Discussion:

The project has been registered as CDM activity on 14/12/2010 having the reference number 3854 (see: <http://cdm.unfccc.int/Projects/DB/DNV-CUK1279516994.31/view>) /01/.

This is the first monitoring period (14/12/2011 to 31/07/2011) of the project activity. The project has been implemented as per the registered PDD /01/.

The project activity consists of the installation of 25 WTGs with a unit capacity of 0.8 MW. The commissioning date and the unique identification number of each WTGs are mentioned below as verified on site;

S.NO.	WTG Location no.	Unique Identification No.	Date of Commissioning
1	523	EWFSPL -01	17 March, 2009
2	524	EWFSPL -02	26 February, 2009
3	525	EWFSPL -03	26 February, 2009
4	526	EWFSPL -04	11 February, 2009
5	527	EWFSPL -05	11 February, 2009
6	79	EWFSPL -06	22 May, 2008
7	529	EWFSPL -07	26 February, 2009
8	530	EWFSPL -08	17 March, 2009
9	504	EWFSPL -09	17 March, 2009
10	506	EWFSPL -10	26 February, 2009
11	507	EWFSPL -11	11 February, 2009
12	521	EWFSPL -12	4 December, 2008
13	510	EWFSPL -13	4 December, 2008
14	512	EWFSPL -14	4 December, 2008
15	513	EWFSPL -15	13 September, 2008
16	514	EWFSPL -16	13 September, 2008
17	35	EWFSPL -17	28 February, 2007
18	36	EWFSPL -18	28 February, 2007
19	37	EWFSPL -19	28 February, 2007
20	38	EWFSPL -20	28 February, 2007
21	39	EWFSPL -21	28 February, 2007
22	516	EWFSPL -22	13 September, 2008
23	517	EWFSPL -23	24 September, 2008
24	518	EWFSPL -24	4 December, 2008
25	519	EWFSPL -25	4 December, 2008

Findings:

CAR#01 was raised as there was inconsistency between the notations of parameters used in the ER sheet and MR from the registered PDD for the following parameters:

- $E_{JMR, Export}$
- $E_{JMR, Import}$
- Summation of the $EG_{gross,y}$

In response, the PP modified the notation of the parameters in the MR. The notations of the parameters are correct and in line with the registered PDD. Hence, CAR#01 was closed out.

CAR#02 was raised as MR did not contain the UID No. and the geographical co-ordinates of the WTGs were incomplete and the Line diagram in Appendix 1 of the MR were not legible.

In response, the PP revised the MR which included the UID number and complete geographical co-ordinates of WTGs and the line diagram were clear. The revised MR was accepted and CAR#02 was closed out.

CL#05 was raised to seek additional information on;

- a) Increased electricity generation during the current monitoring period as per the requirement VVM para 195.
- b) In the MR, the accuracy class of the meters used for measuring the import and export (main and check meters) is 0.2s, however in the registered PDD it is 0.5s. During the site verification it was observed that the all the installed meters (main and check) are of 0.2s class.

In response, the PP provided following information;

- a) The PLF value (22.09%) is higher by 5.20% in the monitoring report as it is calculated on the basis of the generation data of seven months as compared to the annual PLF value (21%) considered in the investment analysis of the registered PDD. This is due to the reason that the PLF for wind projects follow a seasonal pattern and the present monitoring period of this project covers the peak wind season. Accordingly, the resulting emission reduction value is higher (3.09%) than the estimated emission reduction value mentioned in the registered PDD. Moreover, this electricity generation from wind is beyond the control of Project Proponent (PP). In the registered PDD, 10% sensitivity of the PLF has been performed and has been shown that the return is not crossing the benchmark value. Hence, this variation in the PLF has been already covered in the sensitivity analysis of the project in the registered PDD.
- b) At the time of project registration, the PPA has been signed considering the meter accuracy as 0.5 (for main and check meters), which is also being reflected in the registered PDD. But afterwards the meters have been installed with an accuracy class of 0.2. Accordingly, the accuracy class for the meters has been mentioned as 0.2 in the monitoring report. This has no impact on the monitoring procedures as the meters installed are of higher accuracy and leads to a more accurate and conservative approach.

The verification team resolved the CL#05 based on following reasoning;

- a) The slight increase may be attributed to seasonal variation in wind pattern and availability in particular when the current monitoring period is not a complete year. Therefore, in the opinion of assessment team and technical expert slight increase or decrease is reasonable for shorter period. It has further been seen the project activity has demonstrated the sensitivity on PLF upto 10% without impacting the additionality. Therefore, the slight increase (3.09%) is accepted by the assessment team.
- b) The accuracy of current installed meters (main and check meters) is higher than what is prescribed in the registered PDD and therefore the current set up is found meeting the requirements prescribed in the monitoring plan of the registered PDD.

Thus, CL#05 was closed out.

Opinion:

- The project activity consists of 25 WTGs of 800 kW each of ENERCON Make. All the WTGs are commissioned and are operational. The same was verified during the site inspection and found to be correct confirming the implementation of the project activity;
- The actual operation of the project activity started on 28/02/2007 and the last WTG was commissioned on 17/02/2009. The verification team cross verified the implementation of all the WTGs by site (Panchpatta site of Ahmednagar district of Maharashtra) inspection and with the commissioning certificates /18/ and found the details in monitoring report to be correct and in line with the registered PDD;
- In the current monitoring period 3.09% increase in ERs is noticed. In the opinion of verification team, the increase in ERs over the registered PDD is due to the higher PLF (by 5.20%) over the estimates in the registered PDD. The justification for increase is covered above under finding CL#05(a);
- The implementation and operation of the project activity is line with the registered PDD;
- There is no deviation, revision in monitoring plan or notification/request for approval for the changes from the description in the registered PDD in the current monitoring period.

3.2 Compliance of Monitoring Plan with the Monitoring Methodology

Discussion:

As per the monitoring plan of the registered PDD /1/, the electricity generated through the WTGs is measured through a two step procedure wherein the first metering is carried out at the electronic meter inbuilt in the WTGs controller panel. The monitoring of all these wind turbines is done from a central monitoring station (CMS).

The second metering is carried out at grid interconnection point (sub-station) wherein the Joint Meter Reading (JMR) is carried out on first day of every month in presence of the representatives of the project proponent & the state electricity utility (MSEDCL). Then MSEDCL issues a monthly credit report (also called as JMR) to the PP. This monthly credit report is used for calculation of the amount of electricity supplied to the grid against which the state utility makes the payment to the project proponent.

Findings:

No finding, relevant to this section, was raised.

Opinion:

In the opinion of the verification team the registered monitoring plan of the registered PDD complies with the requirement of the applied methodology ACM0002 Version 11 in the context of the project activity. The provisions defined therein, allows proper determination of the emission reductions.

3.3 Compliance of Monitoring with Monitoring Plan

3.3.1. Data/Parameter:

EGy	Net electricity supplied to the grid by the machines of the project
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	The monitoring equipments used are electronic tri-vector energy meters as installed at MSEDCL sub-station Panchpatta site, these meters measure import and export of electricity supplied by the all the WTGs connected to the particular feeder. The calibration of the substation meters (main and check) is carried out annually /10/. Refer Annexure I for monitoring equipment details
Measuring/Reading/Recording frequency	The measurement is continuous and monthly recorded in Credit Notes/JMR /11/.
Data collection (from	The value is calculated as the difference between EG_{Export} and EG_{Import}

data generation, aggregation, to recording, calculation and reporting)	for the project activity WTGs. Please refer EG _{Export} and EG _{Import} for details. The verification team confirms the data collection procedures are correctly indicated in the MR Version 03.
Verified value, Unit	22,125 MWh
Cross checks	The verification team verified the reported monthly values with the Monthly Credit Notes /11/, and the Invoices /12/ raised by PP to MSEDCL and payment made by MSEDCL to Enercon /17/. The verification team confirms that the net electricity supplied by the project activity is in compliance with the monitoring plan of registered PDD.
QA/QC procedures applied	QA/QC procedures have been implemented by MSEDCL pursuant to the provisions of the Power Purchase Agreement (PPA) /19/. The value of electricity supplied to the grid mentioned in the invoices has been cross checked with the payments received from the State Utility /17/ and found to be correct

3.3.2. Data/Parameter:

EG_{JMR,Export}	Electricity Export recorded at main meters connected to the feeders at the MSEDCL substation
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	The monitoring equipments used are electronic tri-vector energy meters as verified during the site inspection. Refer Annexure I for the details of the meters.
Measuring/Reading/Recording frequency	It is measured continuously and recorded monthly in the JMR /11/.
Data collection (from data generation, aggregation, to recording, calculation and reporting)	The monitored data is recorded at each feeder at grid sub station. The recorded values in the JMR are used to apportion the exported electricity for each connected WTG. The credit notes /11/ have been verified and found to be consistent with the reported values. The verification team confirms the data collection procedures are correctly indicated in the MR Version 03.
Verified value, Unit	44,039 MWh
Cross checks	The verification team verified the monthly credit notes /11/ and also cross verified the recording procedure during the site inspection
QA/QC procedures applied	The calibration of main and check meter is performed annually and no gap was found in the current monitoring period /10/. The details are provided in Annexure I of this report.

3.3.3. Data/Parameter:

EG_{JMR,Import}	Electricity import, recorded at main meters, connected to the feeders at MSEDCL sub-station
Monitoring equipment	The monitoring equipments used are electronic tri-vector energy

(type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	meters as verified during the site inspection. Refer Annexure I for the details of the meters.
Measuring/Reading/Recording frequency	It is measured continuously and recorded monthly in the JMR /11/
Data collection (from data generation, aggregation, to recording, calculation and reporting)	The monitored data is recorded at each feeder at grid sub station. The recorded values in the JMR are used to apportion the exported electricity for each connected WTG. The credit notes /11/ have been verified and found to be consistent with the reported values. The verification team confirms the data collection procedures are correctly indicated in the MR Version 03.
Verified value, Unit	36.20 MWh
Cross checks	The verification team verified the monthly credit notes /11/ and also cross verified the recording procedure during the site verification
QA/QC procedures applied	The calibration of main and check meter is performed annually and no gap was found in the current monitoring period /10/. The details are provided in Annexure I of this report.

3.3.4. Data/Parameter:

M $\sum EG_{gross, y}$ y=0	Summation of $EG_{gross, y}$ is the electricity generated from individual wind turbines other than the project activity connected to common MSEDCL meter measured through its panel.
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	LCS Electronic Meter in-built in the Controller Panel of WTGs.
Measuring/Reading/Recording frequency	The gross generation at the WTGs (other than the project activity) but connected to the same feeder (to which the project activity WTGs are connected) is measured continuously and daily and monthly recorded at CMS /21/ for each.WTG.
Data collection (from data generation, aggregation, to recording, calculation and reporting)	The monitored data is received at the CMS /21/ and archived therein. The verification team confirms the data collection procedures are correctly indicated in the MR Version 03.
Verified value, Unit	22,315 MWh
Cross checks	The verification team verified the monthly generation data as recorded in the credit notes /11/ issued by MSEDCL.
QA/QC procedures applied	The monitored data is archived at CMS in accordance with the QA/QC procedures defined in the registered PDD.

3.3.5. Data/Parameter:

N Σ EG_{gross, y} y=0	Summation of EG_{gross, y} is the electricity generated from wind turbines of the project activity measured through WTGs controller panel
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	LCS Electronic Meter in-built in the Controller Panel of WTGs (refer ANNEXURE II for equipment details)
Measuring/Reading/Recording frequency	The gross generation at the WTGs (project activity) but connected to the same feeder (to which other WTGs are connected) is measured continuously and daily and monthly recorded at CMS /21/ for each WTG.
Data collection (from data generation, aggregation, to recording, calculation and reporting)	The monitored data is received at the CMS /21/ and archived therein. The verification team confirms the data collection procedures are correctly indicated in the MR Version 03.
Verified value, Unit	23,016 MWh
Cross checks	The verification team verified the daily generation data of each WTGs in the wind farm at the CMS /21/ during the site inspection and cross verified them with the LCS Electronic reading, monthly credit notes /11/ issued by MSEDCL and against the Invoices /12/ raised by the PP.
QA/QC procedures applied	The monitored data is archived at CMS in accordance with the QA/QC procedures defined in the registered PDD.

3.3.6. Data/Parameter, Unit:

EG_{Export}	Electricity exported by the project activity to the grid
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	The monitoring equipments used are electronic tri-vector energy meters as installed at MSEDCL sub-station Panchpatta site, these meters provide electricity export by the all the WTGs in the wind farm site. The meters were verified during the site inspection and found to be in line and correct. The calibration of the substation meters (main and check) is carried out annually /10/. Refer Annexure I for the details of the meters.
Measuring/Reading/Recording frequency	The export is measured continuously at sub station main and check meters at each feeder. The monitored values are recorded monthly /11/.
Data collection (from data generation, aggregation, to recording, calculation and reporting)	The monthly exported quantity of the electricity by all the WTGs is distributed based on their Gross generated recorded at WTG in built meters monitored in CMS /21/. The calculations have been checked and found to be correct and the verified value is for the project activity WTGs.
Verified value, Unit	22,151 MWh
Cross checks	The verification team verified the daily generation data of each WTGs in the wind farm at the CMS /21/ during the site inspection and cross

	verified them with the monthly credit notes /11/ issued by MSEDCL and against the Invoices /12/ raised by the PP.
QA/QC procedures applied	<p>The calibration of main and check meter is performed annually and no gap was found in the current monitoring period. The details are provided in Annexure I of this report.</p> <p>However, the calibration of the in-built (LCS) meter at project activity WTG was not performed by PP in the current monitoring period /Annexure II/.</p> <p>The PP applied the correction factor 0.64% in accordance with EB52 Annex60 para4(b) conservatively at the exported quantity (-0.64%) to deal with the delay in the calibration. The approach and calculation were checked and found correct.</p>

3.3.7. Data/Parameter:

EG Import	The electricity imported by project activity from the grid
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	<p>The monitoring equipments used are electronic tri-vector energy meters as installed at MSEDCL sub-station Panchpatta site, these meters provide electricity import by the all the WTGs in the wind farm site. The meters were verified during the site inspection and found to be in line and correct. The calibration of the substation meters (main and check) is carried out annually /10/.</p> <p>Refer Annexure I for the details of the meters.</p>
Measuring/Reading/Recording frequency	The import is measured continuously at sub station main and check meters at each feeder. The monitored values are recorded monthly.
Data collection (from data generation, aggregation, to recording, calculation and reporting)	The monthly imported quantity of the electricity by all the WTGs is distributed proportionately based on their Gross generated recorded at WTG in built meters monitored in CMS. The calculations have been checked and found to be correct and the verified value is for the project activity WTGs.
Verified value, Unit	25.51 MWh
Cross checks	The verification team verified the daily generation data of each WTGs in the wind farm at the CMS /21/ during the site inspection and cross verified them with the monthly credit notes /11/ issued by MSEDCL and against the Invoices /12/ raised by the PP.
QA/QC procedures applied	<p>The calibration of main and check meter is performed annually and no gap was found in the current monitoring period. The details are provided in Annexure I of this report.</p> <p>However, the calibration of the in built meter at project activity WTG was not performed by PP in the current monitoring period /Annexure II/. The PP applied the correction factor 0.64% in accordance with EB52 Annex60 para4(b) conservatively at the imported quantity (+0.64%) to deal with the delay in the calibration. The approach and calculation were checked and found correct.</p>

Findings:

CAR#03 was raised for following non-conformities

- The units of the parameters (electricity import and export) were not been mentioned in the Emission reduction sheet and also the format of the date was not DD/MM/YYYY

- b) In the ER sheet the stating date of the monitoring period was inconsistent with the Monthly Credit Notes (for December 2010) issued by MSEDCL.
- c) MR was not transparent on how the ERs for the period 14/12/2010 to 31/12/2010, which was not a full month, were calculated.
- d) Calibration frequency of LCS meters was not in line with registered PDD and same is not transparent in the MR

In response, the PP,

- a) Provided the revised MR and ER spreadsheet which included the units of the monitored parameters correctly
- b) Clarified that monitoring period start date is 14/12/2010 as per registration date but ERs are claimed from 31/12/2010.
- c) Clarified that the ERs for the period between 14/12/2010 and 31/12/2010 are not claimed due to difficulty in calculating the same as it is not a full month.
- d) Applied the correction factor on Exported and Imported Electricity conservatively using 0.64% error in accordance with EB52 Annex60 para 4(b).

The verification team found the additional information and revised MR and ER spreadsheet satisfactory and therefore CAR#03 was closed out.

CL#04 was raised to obtain the supporting documents in support of

- a) data/values mentioned in the ER sheet.
- b) calibration certificates of the meters (installed energy meters (export, import of auxiliary and main) /10/
- c) Commissioning certificates /18/
- d) JMR/meter reading report /11/
- e) Invoices as raised to state utility /12/
- f) Bank statements/cheques/receipts /13/
- g) Documents of the training procedure /16/

Internal audit and management review documents

In response, the PP provided the scanned copies of the document, which was found consistent with the data reported in the MR. Thus, CL#04 was closed out.

Opinion:

The verification team on-site checked the meters and verified the calibration records and authenticity of the calibration organization. All meters were properly configured and checked annually and are within accuracy level required in the registered PDD /1/.

Corresponding to the paragraph 206 of VVM version 01.2, KBS Certification can confirm that:

- The monitoring has been carried out in accordance with the monitoring plan contained in the registered PDD
- All parameters stated in the monitoring plan of the registered PDD have been sufficiently monitored and correctly listed. The monitored data for required parameters have been verified and found complete and consistent by checking the whole procedure for information aggregation.

3.4 Data not monitored (ex ante or external parameters)

3.4.1. Data/Parameter, Unit: $EF_{OM,y}$, tCO₂e/MWh

	Discussion and verification assessment
Verified value	0.9985, Operating Margin Emission Factor of Western Regional Electricity Grid
Source of value	"CO ₂ Baseline Database for Indian Power Sector", version 2, http://www.cea.nic.in/reports/planning/cdm_co2/user_guide_ver2.pdf
Justification	Consistent with registered PDD page 24 and defined fixed ante.

3.4.2. Data/Parameter, Unit: $EF_{BM,y}$, tCO₂e/MWh

	Discussion and verification assessment
Verified value	0.6300, Build Margin Emission Factor of Western Regional Electricity Grid
Source of value	“CO ₂ Baseline Database for Indian Power Sector”, version 2, http://www.cea.nic.in/reports/planning/cdm_co2/user_guide_ver2.pdf
Justification	Consistent with registered PDD page 24 and defined fixed ante.

3.4.3. Data/Parameter, Unit: $EF_{CM,y}$, tCO₂e/MWh

	Discussion and verification assessment
Verified value	0.90641, Combined Margin Emission Factor of Western Regional Electricity Grid
Source of value	“CO ₂ Baseline Database for Indian Power Sector”, version 2, http://www.cea.nic.in/reports/planning/cdm_co2/user_guide_ver2.pdf
Justification	Consistent with registered PDD page 25 and defined fixed ante.

The verification team has verified the value with the Central Electricity Authority data base user guide version 2.0 /20/ and registered PDD /1/ and found to it to be correct and consistent. Hence accepted the default value used in the project activity.

3.5 Remaining Issues, CARs, FARs from Previous Validation or Verification

The verification team has reviewed the validation report /05/ and confirms that no outstanding issue remains. Further, this being the first verification of the project activity there is no verification history and issues.

3.6 Assessment of data and calculation of GHG emission reductions

The start date of the monitoring period is 14/12/2010, which is consistent with the registration date of the project activity. However, the monitored data to determine emission reductions have been used from 31/12/2010 to 31/07/2011. During the on site assessment it was identified that no monitoring data for the period 14/12/2010 to 31/12/2010 is utilized for the purpose of emission reductions citing the unavailability of monitored data. The verification team confirmed this through interactions with the project participant and that the recording of key parameters to determine emission reductions is done on monthly basis (full month basis, as monthly recording takes place on the last day of each month) and therefore the monitoring data is available on full month basis and not part of it.

The project participant, under these situations, proposed to forfeit the emission reductions for the period 14/12/2010 to 31/12/2010, which cannot be further distinguished from a full month data. The verification team reviewed the credit notes /11/ for the month of Dec 2010 (from 30/11/2010 to 31/12/2010) and established that project activity has exported 1,575.245 MWh electricity and imported 4.561 MWh in the same month. It was confirmed that the net electricity supplied to the grid was 1,570.684 and therefore forfeiting the ERs is reasonable and conservative. Further, the PP has added 4.561 MWh (imported electricity by the project activity between 30/11/2010 to 31/12/2010) to be on theoretically conservative side.

In the opinion of the verification team, the approach adopted by the PP for the monitoring period 14/12/2010 to 31/12/2010 for which the monitoring data is not distinctively available, is theoretically most conservative in accordance with VVM Version 1.2 para 209(a). There being no other project or leakage emissions for the project activity, the approach by PP was accepted.

The critical parameter used for the determination of the Emission Reductions is the EGy.

The data pertaining to the above parameter are maintained in the identified records. All the data are in compliance with that stated in the Monitoring Report version 03 /2/.

As per the methodology ACM0002 Version 11 /06/ and the registered PDD /01/, the emission reductions for the Project are calculated as the baseline emissions minus the project emissions and leakage. Hence, the emission reductions are determined by the following formula

$$ER_y = BE_y - PE_y - L_y$$

Where:

ER_y = Emission reductions

BE_y = Baseline emissions

PE_y = Project emissions

L_y = Leakage emissions

As the applied methodology does not prescribe any project emissions and leakages and review of the project implementation and operation at site by the verification team established there are no project emissions and leakages associated with the project activity.

Consequently,

$$ER_y = BE_y$$

Baseline emissions

Baseline emissions in year *y* (tCO₂/yr)

$$BE_y = EG_y * EF_y$$

Where;

EG_y is the net electricity supplied to the grid in year *y* and is applied directly from the invoice

EF_y is the CO₂ emission factor of the grid = 0.90641 tCO₂e/ MWh; (fixed ex-ante)

Therefore, the net electricity supplied to the grid is calculated as follows:

$$EG_y = EG_{\text{Export}} - EG_{\text{Import}}$$

EG_{export}, the electricity exported to the grid by the project activity is calculated as follows:

$$EG_{\text{export}} = \frac{EG_{MR, \text{export}} \times \sum_{y=0}^n EG_{\text{gross}, y}}{\left(\sum_{y=0}^n EG_{\text{gross}, y} + \sum_{y=0}^m EG_{\text{gross}, y} \right)}$$

EG_{import}, the electricity drawn from the grid by the project activity is calculated as follows:

$$EG_{\text{import}} = \frac{EG_{MR, \text{import}} \times \sum_{y=0}^n EG_{\text{gross}, y}}{\left(\sum_{y=0}^n EG_{\text{gross}, y} + \sum_{y=0}^m EG_{\text{gross}, y} \right)}$$

Therefore, emission reductions would have been calculated (if there would not have been any delay in the calibration of LCS meters) as under:

$$ER_y = BE_y = (EG_{\text{Export}} - EG_{\text{Import}}) * EF_y$$

$$ER_y = BE_y = (22,294 \text{ MWh} - 25.35 \text{ MWh}) * (0.90641 \text{ tCO}_2/\text{MWh})$$

$$= (22,268 \text{ MWh}) * (0.90641 \text{ tCO}_2\text{e}/\text{MWh})$$

$$= 20,184 \text{ tCO}_2\text{e}$$

However, as the calibration of LCS meters (in built meters at WTGs) of the project activity was not conducted in the monitoring period, an error 0.64% was observed in the delayed calibration results. The error has been multiplied conservatively on the EG_{Export} and EG_{Import} to recalculate the emission reductions after applying EB52 Annex60 para 4(b) as under:

$$ER_y = BE_y = [(22,294 \text{ MWh}) * (1-0.64\%) - (25.35 \text{ MWh}) * (1+0.64\%)] * [0.90641 \text{ tCO}_2/\text{MWh}]$$

$$= [22,125 \text{ MWh}] * [0.90641 \text{ tCO}_2\text{e}/\text{MWh}]$$

$$= 20,054 \text{ tCO}_2\text{e (Rounded down)}$$

Therefore, the verified emission reductions for the current monitoring period are 20,054 tCO₂e.

Comparison of estimated ERs and actual ERs

The annual estimated emission reductions are 33,348 tCO₂e as per the registered PDD /1/. The estimated emission reductions for the monitoring period from 14/12/2010 to 31/07/2011 are

approximately 19,453 tCO₂e considering seven months (as the baseline emission are claimed only for seven months i.e. from 31/12/2010 to 31/07/2011) as per the registered PDD.

The actual emission reductions from 14/12/2010 to 31/07/2011, is 20,054 tCO₂e, which is higher than the corresponding estimated emission reductions, as per the PDD is 19,453 tCO₂e for a comparable period. The increase in the ERs is only slight and complete justification has been included under CL#05 (a).

Findings:

CL#05 (a) was raised and closed out. The information on CL#5(a) is already provided in section 3.1. Please refer section 7 for detailed information.

Opinion:

In the opinion of the verification team,

- The data used for the determination of the emission reductions were available completely for the period 31/12/2010 to 31/07/2011 and for the monitoring period 14/12/2010 to 31/12/2010 (for which data is not available due to monthly monitoring recordings) theoretically most conservative approach has been adopted in accordance with VVM V1.2 para209(a);
- The reported data has been cross checked with the recorded data in the CMS, JMR/Invoice/Credit Notes and calibration certificates. The monitored data was cross checked during site visit by the verification team and electronic copy of records was collected;
- The methods and formulae for calculating baseline emissions, project emissions and leakages has been properly followed in accordance with the provisions in the registered PDD and applied methodology;
- The assumptions, emission factors and default values that were applied in the monitoring report and the calculations have been justified.

3.7 Quality of Evidence to Determine Emission Reductions

The reported values, notation, units and sources in the monitoring report for all the monitoring parameters have being cross checked with the emission reduction sheet and with revised monitoring report. During verification, the data is cross verified with the reading mentioned in the Monitoring report, the procedure for data transfer and compilation was also verified and found in compliance with the requirement.

Furthermore, the cross checks have been performed during site inspection on the continuous operation of the monitoring equipment and procedures. The audit team verified on site data from the CMS, controller panel of the WTGs and electricity generation reports.

3.8 Management System and Quality Assurance

Quality Management procedures for measurements, collection and compilation of data, data storage and archiving, calibration, maintenance and training of personnel in the framework of this CDM project activity have been defined. Enercon (India) Limited has training centre for training the person involved in the O&M of the project activity. On basis of site verification and document review (training certificate of personnel involved) the verification team confirms that the CDM responsibility allocated is followed at the site and is the one as described in the registered PDD. Quality assurance procedures are in place and PP conducts the third party audit to determine whether data is compiled accurately as per the monitoring plan. Staffs are made aware of the quality assurance procedures. The same has been cross checked with ISO certification (ISO 9001:2000 and ISO 9001:2008) /16/ of Enercon (India) Limited.

The operation and maintenance of the project activity is carried out by the O&M team. During the site visit, the team has interviewed the site personnel, who are involved in data collection, monitoring and archiving. The team found that these people are competent enough to carry out



their duties and confirmed that organization structure followed as defined in the monitoring plan.

The site visit confirmed that monitoring and reporting is carried out consistently and records are kept in a secure and consistent manner.

4. RECOMMEDATIONS / FORWARD ACTION REQUEST

No forward action request is raised.

5. VERIFICATION & CERTIFICATION STATEMENT

KBS Certification Services Ltd. has been contracted by Enercon (India) Limited to undertake independent verification and certification for the greenhouse gas (GHG) emission reductions reported from the “20 MW Enercon Wind farms (SAI) Pvt. Limited in Maharashtra”, UNFCCC Ref. No. 3854 for the monitoring period 14/12/2010 up to 31/07/2011 in the Monitoring Report Version 03 dated 07/01/2012.

The verification is based on the validated and registered PDD and the monitoring report for this project. Our verification approach is based on the requirements as defined under the Kyoto Protocol, Marrakech accord, as well as those defined by the CDM Executive Board.

The management of the Enercon (India) Limited is responsible for the preparation of the GHG emissions data and the reported GHG emissions reductions on the basis set out within the project Final Monitoring Report version 03 dated 07/01/2012. The calculation and determination of GHG emission reductions from the project is the responsibility of the management of the “20 MW Enercon Wind farms (SAI) Pvt. Limited in Maharashtra”. The development and maintenance of records and reporting procedures are in accordance with the Monitoring Report version 03 dated 07/01/2012.

It is our responsibility to express an independent GHG verification opinion on the GHG emissions and on the calculation of GHG emission reductions from the project for the period 14/12/2010 up to 31/07/2011 based on the reported emission reductions in the Final Monitoring Report version 03 dated 07/01/2012 for the same period.

Based on an understanding of the risks associated with reporting GHG emissions data and the controls in place to mitigate these, KBS planned and performed our work to obtain the information and explanations that we considered necessary to provide sufficient evidence for us to give reasonable assurance that this reported amount of GHG emission reductions for the period is fairly stated.

KBS confirms that the project is implemented and operated as per registered PDD. KBS confirms that it has verified and certified 20,054 tCO₂e of emission reductions in the reported monitoring period the project activity.

UNFCCC Ref. No.	3854
Project Title	20 MW Enercon Wind farms (SAI) Pvt. Limited in Maharashtra
Registered PDD	PDD Version 04 dated 12/04/2010
Registration Date	14/12/2010
Applied Methodology	ACM0002 Version 11
Crediting Period	14/12/2010 – 13/12/2020 (Fixed)
Monitoring Period	14 December 2010 to 31 July 2011
Certified emission reductions (CERs)	20,054 tCO₂e

Location: Faridabad, Haryana

Date: 19/01/2012



Kaushal Goyal, Managing Director
KBS Certification Services Pvt. Ltd.

6. REFERENCES

- /1/ Registered PDD Version 04 dated 12/04/2010
<http://cdm.unfccc.int/Projects/DB/DNV-CUK1279516994.31/view>
- /2/ a) MR Version 01 dated 20/09/2011 (web hosted)
b) MR Version 02 dated 28/12/2011
c) MR Version 03 dated 07/01/2012 (final)
- /3/ a) ER spreadsheet Version 01 dated 29/11/2011 (corresponding to MR V1)
b) ER spreadsheet Version 02 dated 28/12/2011 (corresponding to MR V2)
c) ER spreadsheet Version 03 dated 07/01/2012 (corresponding to MR V3)
- /4/ Enercon (India) Limited: Apportionment sheet,
a) Version 01 dated 29/11/2011
b) Version 02 dated 28/12/2011
- /5/ DNV: Validation report no 2009-0327, revision no. 05 dated 30/06/2010
- /6/ ACM0002 – “Consolidated baseline methodology for grid-connected electricity generation from renewable sources”, version 11 dated 12/02/2010
- /7/ EB 52 Annex 60- Guideline for Assessing Compliance with the Calibration Frequency requirements, Version 01 dated 12/02/2010
- /8/ Validation and Verification Manual, Version 01.2 dated 30/07/2010
- /9/ Guidelines for completing the monitoring report form (CDM-MR), version 01, EB 54, Annex 34 dated 28/05/2010

- /10/ Calibration Certificates:
Main meters
- a) MSEDCL: Meter No. 04862979, Ref. No. EE/TD/Nashik/Tech/No 00934, Report dated 30/07/2011, issued by Executive Engineer, MSEDCL Nashik
 - b) MSEDCL: Meter No. 04862986, Ref. No. EE/TD/Nashik/Tech/No 00945, Report dated 30/07/2011, issued by Executive Engineer, MSEDCL Nashik
 - c) MSEDCL: Meter No. 04862984, Ref. No. EE/TD/Nashik/Tech/No 00943, Report dated 30/07/2011, issued by Executive Engineer, MSEDCL Nashik
 - d) MSEDCL: Meter No. 04862987, Ref. No. EE/TD/Nashik/Tech/No 00948, Report dated 30/07/2011, issued by Executive Engineer, MSEDCL Nashik
 - e) MSEDCL: Meter No. 04862979, Ref. No. EE/TD/Nashik/Tech/No 443, Report dated 03/01/2011, issued by Executive Engineer, MSEDCL Nashik
 - f) MSEDCL: Meter No. 04862986, Ref. No. EE/TD/Nashik/Tech/No 432, Report dated 03/01/2011, issued by Executive Engineer, MSEDCL Nashik
 - g) MSEDCL: Meter No. 04862987, Ref. No. EE/TD/Nashik/Tech/No 259, Report dated 21/10/2010, issued by Executive Engineer, MSEDCL Nashik
 - h) MSEDCL: Meter No. 04862984, Ref. No. EE/TD/Nashik/Tech/No 255, Report dated 21/10/2010, issued by Executive Engineer, MSEDCL Nashik
- Check Meters
- a) MSEDCL: Meter No. 04961781, Ref. No. EE/TD/Nashik/Tech/No 00948, Report dated 30/07/2011, issued by Executive Engineer, MSEDCL Nashik
 - b) MSEDCL: Meter No. 04862988, Ref. No. EE/TD/Nashik/Tech/No 00944, Report dated 30/07/2011, issued by Executive Engineer, MSEDCL Nashik
 - c) MSEDCL: Meter No. 05126137, Ref. No. EE/TD/Nashik/Tech/No 00942, Report dated 30/07/2011, issued by Executive Engineer, MSEDCL Nashik
 - d) MSEDCL: Meter No. 04862982, Ref. No. EE/TD/Nashik/Tech/No 00949, Report dated 30/07/2011, issued by Executive Engineer, MSEDCL Nashik
 - e) MSEDCL: Meter No. 04961781, Ref. No. EE/TD/Nashik/Tech/No 434, Report dated 03/01/2011, issued by Executive Engineer, MSEDCL Nashik
 - f) MSEDCL: Meter No. 04862988, Ref. No. EE/TD/Nashik/Tech/No 436, Report dated 03/01/2011, issued by Executive Engineer, MSEDCL Nashik
 - g) MSEDCL: Meter No. 05031636, Ref. No. EE/TD/Nashik/Tech/No 256, Report dated 21/10/2011, issued by Executive Engineer, MSEDCL Nashik
 - h) MSEDCL: Meter No. 04862982, Ref. No. EE/TD/Nashik/Tech/No 260, Report dated 21/10/2011, issued by Executive Engineer, MSEDCL Nashik
- /11/ MSEDCL: Monthly Credit Notes in Respect of M/s Enercon (India) Ltd for the period Dec 2010 to July 2011
- /12/ Enercon (India) Limited: Invoices raised to MSEDCL, for the period Dec 2010 to July 2011
- /13/ Yadav Measurements Pvt. Ltd. (NABL Accredited Calibration Laboratory No. C-035): Certificate of Calibration for LCS Electronic Meter (Static Energy Meter) for 25 WTGs
- /14/ MAHA VITRAN: Apportioned "Units Sold to MSEDCL", for each WTGs of the project activity from the period Jan. 2011 to Jul. 2011
- /15/ Enercon (India) Limited: Training Programme on Operation and Maintenance of the Wind Turbine Generators (WTGs) of Enercon Wind Farms, between 24/08/2008 to 09/02/2009
- /16/ (a) The Germanischer Lloyd Certification: ISO 9001:2000 to Enercon (India) Limited dated 08/02/2007
(b) The Germanischer Lloyd Certification: ISO 9001:2008 to Enercon (India) Limited dated 08/02/2010
- /17/ CA Certified- AXIS BANK STATEMENT: Transaction details on the payment made by MSEDCL to M/s Enercon Wind Farms (Sai) Private Limited, for the net electricity supplied by Enercon (India) Limited.

- /18/ MSEDCL: Commissioning certificates of Wind Energy Generators, dated 28 February 2007, 13 September 2008, 24 September 2008, 4 December 2008, 11 February 2009, 26 February 2009 and 17 March 2009
- /19/ Power purchase agreement signed for the project activity dated 21 May 2007, 3 August 2008, 1 October 2008, 10 December 2008, 17 March 2009 and 30 March 2009
- /20/ Ministry of Power (Gov. of India) - 'CO₂ Baseline Database for Indian Power Sector', version 2, dated June 2007,
http://www.cea.nic.in/reports/planning/cdm_co2/user_guide_ver2.pdf (Language-English, retrieved on 07/01/2012)
- /21/ Central Monitoring System Archived Data (current monitoring period) maintained by Enercon (India) Limited.

7. FINDINGS DOCUMENT

Summary of findings	CAR	CL	FAR
	03	02	NA

Date	Type & Number	Raised by	Reference
08/12/2011	CAR 01	Vinay Singh/Lalit Dagar	CDM D-29
Non conformities raised			
The following monitoring parameters mentioned in the Emission Reduction Sheet and Monitoring report are not in line with the registered PDD especially for the notations;			
<div>- E_{JMR}, Export</div> <div>- E_{JMR}, Import</div> <div>- Summation of the EG_{gross,y}</div>			
Project participant response		Date: 23/12/2011	
The Emission Reduction sheet and monitoring report have been revised.			
Documentation Provided as Evidence by Project Participant			
Revised Emission Reduction sheet and the revised monitoring report, section C.			
Information Verified by Team Leader		Date of review: 29/12/2011	
PP has revised the MR and the information is correct.			
Reasoning for not acceptance or close out			
The MR is in line with the registered PDD and the same is found to be correct.			
Date of acceptance or non expectance		Date: 29/12/2011	Status: Closed

Date	Type & Number	Raised by	Reference
08/12/2011	CAR 02	Vinay Singh/Lalit Dagar	CDM D-29
Non conformities raised			
MR does not contain the UID No. and the geographical co-ordinates of the WTGs are not complete and the Line diagram in Appendix 1 of the MR are not legible.			
Project participant response		Date: 23/12/2011	
The monitoring report has been revised.			
Documentation Provided as Evidence by Project Participant			
Revised monitoring report, section B.1 & Appendix 1.			
Information Verified by Team Leader		Date of review: 29/12/2011	
PP has revised the MR and the information is correct.			
Reasoning for not acceptance or close out			
The revised MR is clear and complete. The corrections have been correctly incorporated,			
Date of acceptance or non acceptance		Date: 29/12/2011	Status: Closed

Date	Type & Number	Raised by	Reference
08/12/2011	CAR 03	Vinay Singh/Lalit Dagar	CDM D-29
Non conformities raised			

<p>a) The units of the parameters (electricity import and export) have not been mentioned in the Emission reduction sheet and also the format of the date is not DD/MM/YYYY (as required by UN).</p> <p>b) In the ER sheet the stating date of the monitoring period is inconsistent with the Monthly Credit Notes (for December 2010) issued by MSEDCL.</p> <p>c) MR is not transparent on how the ERs for the period 14/12/2010 to 31/12/2010, which is not a full month, have been calculated. The PP is requested to clarify/justify the same.</p> <p>d) Calibration frequency of LCS meters is not in line with the registered PDD and the same is not transparent in the MR. PP is requested to justify the same and substantiate with the supporting evidence.</p>	
Project participant response	Date: 23/12/2011
<p>a) The Emission Reduction sheet and the monitoring report have been revised.</p> <p>b) The Emission Reduction sheet and the monitoring report have been revised.</p> <p>c) The crediting period start date is on 14 December, 2010, but PP has considered the generation from 31st December, 2010 (as per the billing cycle) – 31st July, 2011 for simplification, to estimate the emission reduction for the monitoring period. This is conservative also. PP is not claiming the ER for the period prior to that from 14th December, 2010.</p> <p>d) The Emission Reduction (ER) sheet has been revised applying the correction factor in line with “Guidelines for assessing Compliance with the Calibration frequency requirements” EB 52, Annex 60, Point B, 4, b).</p>	
Documentation Provided as Evidence by Project Participant	
Revised Emission Reduction sheet and the monitoring report, section E.4.	
Information Verified by Team Leader	Date of review: 29/12/2011, 06/01/2012
<p>a) PP has revised the MR and ER sheet with the unit of the parameters and date is in correct format.</p> <p>b) PP has considered the starting date of the monitoring period as 14/12/2010 as per the registration date of the project activity, however the PP is claiming the emission reduction for the period starting from 31/12/2010 to 31/07/2011 as per the credit notes (for same period) are issued by MSEDCL.</p> <p>c) The verification team has cross verified the monthly credit reports issued by MSEDCL and found that the PP is considering and claiming the emission reduction from the period 31/12/2011 to 31/07/2011. As this is conservative approach and correct, so the verification team has accepted the same.</p> <p>d) The verification team has cross checked the LCS calibration report issued by M/s Yadav Measurements Private Limited which a NABL Accredited Laboratory.</p>	
Reasoning for not acceptance or close out	
<p>a) The revised MR and ER spreadsheet contains the information in correct manner. Closed.</p> <p>b) The monitoring period start date is 14/12/2010, however the ERs have been claimed from 31/12/2010. Closed.</p> <p>c) The ERs for the period between 14/12/2010 and 31/12/2010 are not claimed by PP due to difficulty in calculating the same as it is not a full month. The approach adopted by PP is conservative and considering there are no PE, LE same has been accepted. Closed.</p> <p>d) Regarding the delay in calibration of LCS meters, PP has taken into account the maximum error factor as per the EB 52 Annex 60 guideline and deducted the same amount from the actual emission reductions. The maximum error factor is 0.64% as per the calibration report. However, the correction factor is applied on the emission reductions which is not consistent with para 4 of EB52 Annex 60. Open.</p>	
Project participant response	Date: 07/01/2012
d) Revised ER sheet and MR is provided to the DOE.	
Documentation Provided as Evidence by Project Participant	
Revised Emission Reduction sheet and the monitoring report, section E.4.	
Information Verified by Team Leader	Date of review: 07/01/2012
The revised ER spreadsheet and MR were reviewed.	
Reasoning for not acceptance or close out	

d) The revised MR and ER sheet has been reviewed and the correction factor has now been applied on the monitoring values instead of emission reductions in conservative manner. Since, all the LCS meters are of 0.5s accuracy class, the observed error applied (0.64%) is correct in accordance with the procedures. Closed.

All other issues (a to c) of the findings were closed before therefore CAR#03 is closed out.

Date of acceptance or non acceptance	Date: 07/01/2012	Status: Closed
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Date	Type & Number	Raised by	Reference
08/12/2011	CL 04	Vinay Singh/Lalit Dagar	CDM D-29

Non conformities raised

The PP is required to provide the copies of the following documents in support to;

- data/values mentioned in the ER sheet.
- calibration certificates of the meters (installed energy meters (export, import of auxiliary and main))
- Commissioning certificates
- JMR/meter reading report
- Invoices as raised to state utility
- Bank statements/cheques/receipts
- Documents of the training procedure
- Internal audit and management review documents

Project participant response	Date: 23/12/2011
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The copies of the following documents have been provided.

- Monthly credit notes and invoices to support the data/ values mentioned in the revised ER sheet.
- Calibration certificates of the meters (installed energy meters (export, import of auxiliary and main))
- Commissioning certificates
- Month Credit Notes (JMR/meter reading report)
- Invoices as raised to state utility
- Bank statements/ cheques
- Training certificate
- ISO Certificates

Documentation Provided as Evidence by Project Participant

The following supporting documents:

- Monthly credit notes and invoices to support the data/ values mentioned in the revised ER sheet.
- Calibration certificates of the meters (installed energy meters (export, import of auxiliary and main))
- Commissioning certificates
- Month Credit Notes (JMR/meter reading report)
- Invoices as raised to state utility
- Bank statements
- Training certificate
- ISO Certificates

Information Verified by Team Leader	Date of review: 29/12/2011
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The verification team has cross verified all the supporting documents provided by the PP.

Reasoning for not acceptance or close out

PP has provided the monthly credit notes, calibration certificates, commissioning certificates, invoices raised, certified bank statements, training and ISO certificates.

PP has conducted the third party audit (ISO audit) for better management review and internal audit. PP has provided the ISO report, the verification team cross checked it and found it to be correct.

The requested documents were provided as an evidence and were found consistent with the reported data. Thus, CL#04 is closed out.

Date of acceptance or non acceptance	Date: 29/12/2011	Status: Closed
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Date	Type & Number	Raised by	Reference
08/12/2011	CL 05	Vinay Singh/LalitDagar	CDM D-29
Non conformities raised			
The PP is requested to clarify in detail regarding the ;			
a) Increased generation during the current monitoring period as per the requirement VVM para 195			
b) In the MR, the accuracy class of the meters used for measuring the import and export (main and check meter) is 0.2s, however in the registered PDD it is 0.5s. During the site verification it was observed that the all the installed meters (main and check) are of 0.2s class.			
Project participant response		Date: 23/12/2011	
a) The PLF value (22.09%) is higher by 5.20% in the monitoring report as it is calculated on the basis of the generation data of seven months as compared to the annual PLF value (21%) considered in the investment analysis of the registered PDD. This is due to the reason that the PLF for wind projects follow a seasonal pattern and the present monitoring period of this project covers the peak wind season. Accordingly, the resulting emission reduction value is higher (3.09%) than the estimated emission reduction value mentioned in the registered PDD. Moreover, this electricity generation from wind is beyond the control of Project Proponent (PP). In the registered PDD, 10% sensitivity of the PLF has been performed and has been shown that the return is not crossing the benchmark value. Hence, this variation in the PLF has been already covered in the sensitivity analysis of the project in the registered PDD.			
b) At the time of project registration, the PPA has been signed considering the meter accuracy as 0.5 (for main and check meters), which is also being reflected in the registered PDD. But afterwards the meters have been installed with an accuracy class of 0.2. Accordingly, the accuracy class for the meters has been mentioned as 0.2 in the monitoring report. This has no impact on the monitoring procedures as the meters installed are of higher accuracy and leads to a more accurate and conservative approach.			
Documentation Provided as Evidence by Project Participant			
Registered PDD and page no. 23, article 11, point c of the Power Purchase Agreement (PPA).			
Information Verified by Team Leader		Date of review: 29/12/2011	
The meters are of accuracy class 0.2s and within permissible limit of 0.5s as per the registered PDD.			
Reasoning for not acceptance or close out			
a) The PLF was found to be slightly higher (5.20%) during the current monitoring period for which the emission reductions are claimed. The higher PLF has resulted in 3.09% increase in the ERs for comparable period over the estimates in the registered PDD. However, the slight increase may be attributed to seasonal variation in wind pattern and availability in particular when the current monitoring period is not a complete year. Therefore, in the opinion of assessment team and technical expert slight increase or decrease is reasonable. Further, the PLF is not control of PP as wind is intermittent in nature. It has further been seen the project activity has demonstrated the sensitivity on PLF upto 10% without impacting the additionality. Therefore, the slight increase (3.09%) is accepted by the assessment team. Closed.			
b) All the energy meters (main and check meters) of the project activity are of 0.2s class accuracy level in contrast to 0.5s as written in the registered PDD. The accuracy of current installed meters (main and check) is much higher than what is prescribed in the registered PDD and therefore the current set up is found meeting the requirements in the monitoring plan of the registered PDD. Closed.			
The response was found satisfactory and accordingly CL#05 was closed out.			
Date of acceptance or non acceptance		Date: 29/12/2011	Status: Closed

8. CERTIFICATE OF COMPETENCE

Personnel Name:		Vinay Singh	
Qualified to work as:			
Team Leader	<input checked="" type="checkbox"/>	Technical Expert	<input type="checkbox"/>
Validator/Verifier	<input checked="" type="checkbox"/>	Financial Expert	<input type="checkbox"/>
Technical Reviewer	<input type="checkbox"/>	Local Expert (India)	<input checked="" type="checkbox"/>
Area(s) of Technical Expertise			
Sectoral Scope		Technical Area	
N/A		N/A	
Approved by (Manager C & T)		Mayank Kumar Jain	
Approval date:		12/12/2011	

Personnel Name:		Lalit Dagar	
Qualified to work as:			
Team Leader	<input type="checkbox"/>	Technical Expert	<input checked="" type="checkbox"/>
Validator/Verifier	<input checked="" type="checkbox"/>	Financial Expert	<input type="checkbox"/>
Technical Reviewer	<input type="checkbox"/>	Local Expert (India)	<input checked="" type="checkbox"/>
Area(s) of Technical Expertise			
Sectoral Scope		Technical Area	
Energy Industries (renewable/non-renewable)		TA 1.2: Energy generation from renewable energy sources	
Approved by (Manager C & T)		Mayank Kumar Jain	
Approval date:		12 /12/2011	

Personnel Name:		Ashok Kumar Gautam	
Qualified to work as:			
Team Leader	<input checked="" type="checkbox"/>	Technical Expert	<input checked="" type="checkbox"/>
Validator/Verifier	<input checked="" type="checkbox"/>	Financial Expert	<input type="checkbox"/>
Technical Reviewer	<input checked="" type="checkbox"/>	Local Expert (India)	<input checked="" type="checkbox"/>
Area(s) of Technical Expertise			
Sectoral Scope		Technical Area	
Energy industries (renewable/non-renewable sources)		TA 1.1: Thermal energy generation from fossil fuels and biomass including thermal electricity from solar	
Waste handling and disposal		TA 13.1: Waste handling and disposal	
Approved by (Manager C & T)		Mayank Kumar Jain	
Approval date:		12/12/2011	

Personnel Name:		Phool Chand	
Qualified to work as:			
Team Leader	<input type="checkbox"/>	Technical Expert	<input checked="" type="checkbox"/>
Validator/Verifier	<input checked="" type="checkbox"/>	Financial Expert	<input type="checkbox"/>
Technical Reviewer	<input type="checkbox"/>	Local Expert (India)	<input checked="" type="checkbox"/>
Area(s) of Technical Expertise			
Sectoral Scope		Technical Area	
Energy industries (renewable/non-renewable sources)		TA 1.2: Energy generation from renewable energy sources	
Approved by (Manager C & T)		Mayank Kumar Jain	
Approval date:		12/12/2011	

History of the document/template

Version	Date	Nature of revision	Reviewed by	Approved by
2.0	21/12/2011	Comprehensively revised	Manager CDM Quality 21/12/2011	Managing Director 21/12/2011



ANNEXURE I (Main Meter and Check Meter)

Feeder No.	Meter type	Meter Serial No.	Accuracy Class	Manufacturer	Calibration Entity	Calibration On	Calibration Due Date
F 2	Main Meter	4862979	0.2	Elster	MSEDCL	07/12/2010; 14/06/2011	14/06/2012
	Check Meter	4961781	0.2	Elster	MSEDCL	07/12/2010; 14/06/2011	14/06/2012
F 3	Main Meter	4862986	0.2	Elster	MSEDCL	07/12/2010; 14/06/2011	14/06/2012
	Check Meter	4862988	0.2	Elster	MSEDCL	07/12/2010; 14/06/2011	14/06/2012
F 4	Main Meter	4862984	0.2	Elster	MSEDCL	28/07/2010; 14/06/2011	14/06/2012
	Check Meter	5126137	0.2	Elster	MSEDCL	28/07/2010; 14/06/2011	14/06/2012
F 6	Main Meter	4862987	0.2	Elster	MSEDCL	28/07/2010; 14/06/2011	14/06/2012
	Check Meter	4862982	0.2	Elster	MSEDCL	28/07/2010; 14/06/2011	14/06/2012



ANNEXURE II

LCS meters in-built in the controller panel of the WTGs

S. No.	WTGs Loc. No.	Commissioning Date	Meter, Serial No.	Make	Calibration Entity	Date of Calibration	Due Date of Calibration
1.	523	17/03/2009	01183959	ELSTER	YMPL	22/10/2011	21/10/2012
2.	524	26/02/2009	01215610	ELSTER	YMPL	22/10/2011	21/10/2012
3.	525	26/02/2009	475537	NZR	YMPL	22/10/2011	21/10/2012
4.	526	11/02/2009	475553	NZR	YMPL	22/10/2011	21/10/2012
5.	527	11/02/2009	475728	NZR	YMPL	22/10/2011	21/10/2012
6.	79	25/05/2008	475533	NZR	YMPL	21/10/2011	20/10/2012
7.	529	26/02/2009	01184004	ELSTER	YMPL	22/10/2011	21/10/2012
8.	530	17/03/2009	01215541	ELSTER	YMPL	22/10/2011	21/10/2012
9.	504	17/03/2009	01215571	ELSTER	YMPL	22/10/2011	21/10/2012
10.	506	26/02/2009	01215575	ELSTER	YMPL	22/10/2011	21/10/2012
11.	507	11/02/2009	475489	NZR	YMPL	22/10/2011	21/10/2012
12.	521	04/12/2008	475521	NZR	YMPL	22/10/2011	21/10/2012
13.	510	04/12/2008	475523	NZR	YMPL	22/10/2011	21/10/2012
14.	512	04/12/2008	475541	NZR	YMPL	22/10/2011	21/10/2012
15.	513	13/09/2008	475760	NZR	YMPL	22/10/2011	21/10/2012
16.	514	13/09/2008	475543	NZR	YMPL	22/10/2011	21/10/2012
17.	35	28/02/2007	475519	NZR	YMPL	21/10/2011	20/10/2012
18.	36	28/02/2007	475094	NZR	YMPL	21/10/2011	20/10/2012
19.	37	28/02/2007	475558	NZR	YMPL	21/10/2011	20/10/2012
20.	38	28/02/2007	475560	NZR	YMPL	21/10/2011	20/10/2012
21.	39	28/02/2007	475095	NZR	YMPL	21/10/2011	20/10/2012
22.	516	13/09/2008	475545	NZR	YMPL	22/10/2011	21/10/2012
23.	517	24/09/2008	475294	NZR	YMPL	22/10/2011	21/10/2012
24.	518	04/12/2008	475536	NZR	YMPL	22/10/2011	21/10/2012
25.	519	04/12/2008	475709	NZR	YMPL	22/10/2011	21/10/2012