TÜV NORD CERT GmbH • P.O. Box 10 32 61 • 45032 Essen • Germany

CDM Executive Board

TÜV NORD CERT GmbH
Langemarckstrasse 20
45141 Essen
Germany
Phone: +49 201 825-0
Fax: +49 201 825-2517
Info.tncert@tuev-nord.de
www.tuev-nord-cert.com

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Our / Your Reference	Contact	Direct Dial	Date
	Rainer Winter E-Mail: rwinter@tuev-nord.de	Phone: -3329 Fax: -2139	11.07.2011

Request for Revision of Monitoring Plan
15 MW grid-connected wind power project by MMTC in Karnataka (UNFCCC registration number: 1797)

Dear Chair and Honourable Members of the CDM Executive Board,

Please find below the validation opinion of TÜV NORD JI/CDM Certification Program to the revision of the monitoring plan for the above mentioned project.

If you have any questions do not hesitate to contact us.

Yours sincerely,

Dipl.-Ing. Rainer Winter
Head of TÜV NORD JI/CDM Certification Program

Request for Revision of the Monitoring Plan, acc. to EB 49, Annex 28

For the following changes a revision of the monitoring plan is requested:

Requested Change #1

Type of revision:

☐ *Due to a previously approved deviation from applied Methodology which continued in subsequent monitoring periods*

☒ *Due to a deviation from the registered Monitoring Plan*

A. Description of requested change

Reference from registered PDD	As per Registered PDD	Proposed Revised Monitoring Plan
Description of measurement methods and procedures to be applied for the parameter "Net Electricity supplied to the grid by the WEG project in year *y* (MWh). (**EG_y**)" Section B.7.1, Page 26	- The electricity is measured with the help of electronic meters of accuracy class 0.2 both by the operator and the grid representative. - Calculated from the measured readings, in case of WEGs with common meters - The data is measured hourly and recorded monthly - 100% of the data is monitored - The data will be archived electronically	- Calculated from the measured readings of electricity exported and imported by energy meters of accuracy class 0.2, both by the operator and the grid representative. - In case other than project WEGs jointly metered at MRS, the net electricity will be calculated based on apportioning. - The data for export and import of electricity is measured hourly and recorded monthly. - The net electricity that is delivered is calculated after deduction of transmission line losses. - 100% of the data is monitored - The data will be archived electronically

B. Assessment of requested change
The *description of measurement methods and procedures to be applied* for EG_Y is revised to be more specific and to reflect actual monitoring practices. This change is proposed to bring clarity in the calculation of EG_Y based on energy export, import and transmission losses. The net electricity is derived after deduction of transmission line losses from the gross electricity generation. The details of the calculation of the transmission line losses are found to be given in Appendix I to Annex 4 of the proposed revision in the monitoring plan. Till now the monitoring system involves the WEGs only from project activity. However in future there might be common metering system at MRS, which might include WEGs other than the project activity. Thus the revision in the text of the monitoring plan is proposed to bring more clarity in case common metering systems by describing apportioning approach for calculation of EG_Y. Thus, *description of measurement methods and procedures to be applied* for EG_Y is now more clear and transparent. As only editorial changes have been proposed to have more clarity and there is no impact on emission reduction calculation, the verification team has accepted the same.
C. Validation Opinion
☒ *TÜV NORD herewith confirms that the proposed change ensures that the level of accuracy or completeness in the monitoring and verification process is not reduced.* ☒ *TÜV NORD herewith confirms that the proposed change is in accordance with the applied approved monitoring methodology, or a later version of the same not compromising the conservativeness in the monitoring and verification process and of the emission reduction calculations.* ☒ *TÜV NORD herewith confirms that the findings of previous verification reports, if any, have been taken into account.*

Requested Change #2

Type of revision:

☐ *Due to a previously approved deviation from applied Methodology which continued in subsequent monitoring periods*

☒ *Due to a deviation from the registered Monitoring Plan*

A. Description of requested change

The numbering of all the monitoring parameters

Reference from registered PDD	As per Registered PDD	Proposed Revised Monitoring Plan
Section B.7.1, Page 26-27	a) **EG_y** b) **$EG_{y\ (import)}$** b) **$EG_{y\ (export)}$** b) **EF_y**	a) **EG_y** b) **$EG_{y\ (import)}$** c) **$EG_{y\ (export)}$** d) **EF_y**

B. Assessment of requested change
The numbering of all the monitoring parameters is revised to bring correctness. Since only editorial changes have been done to have more clarity and is still completely in line with section B.7.1 of registered PDD and hence found to be acceptable by the verification team.
C. Validation Opinion
☒ *TÜV NORD herewith confirms that the proposed change ensures that the level of accuracy or completeness in the monitoring and verification process is not reduced.* ☒ *TÜV NORD herewith confirms that the proposed change is in accordance with the applied approved monitoring methodology, or a later version of the same not compromising the conservativeness in the monitoring and verification process and of the emission reduction calculations.* ☒ *TÜV NORD herewith confirms that the findings of previous verification reports, if any, have been taken into account.*

Requested Change #3

Type of revision:

☐ *Due to a previously approved deviation from applied Methodology which continued in subsequent monitoring periods*

☒ *Due to a deviation from the registered Monitoring Plan*

A. Description of requested change

Details of the metering and recording system at the site

Reference	As per Registered PDD	Proposed Revised Monitoring Plan
Paragraph #5, Section B.7.2, Page 28-29	1. There are three metering points for each WEG in the project. 2. All the WEGs for the project have been specifically identified to avoid any confusion regarding the generation by each WEG. The MRS (1&2) is then connected to the Main meter at the nearest Substation handled by KPTCL. 3. In case, more than one	1. There are three metering points for the project activity. 2. All the WEGs for the project have been specifically identified at LCS to avoid any confusion regarding the generation by each WEG. The MRS is then connected to the Main meter at the Bulk meter station handled by HESCOM and KPTCL.

	project WEG's are jointly metered at the Main meter, the electricity generated is apportioned on the basis of the readings at the MRS. 4. A check meter is also provided at the Substation as a back up for any fault in the Main meter. 5. The meters both at substation and MRS would be calibrated regularly and in case of faulty meters, corrective action would be taken immediately.	3. In case, other than the project WEG's are jointly metered at the Main meter (MRS), the electricity generated is apportioned on the basis of the readings at the MRS and individual generation of WEGs at the controller end. 4. A check meter is also provided at the Main Receiving Station (MRS) as a backup for any fault in the Main meters. 5. The meters both at Bulk meter station and MRS would be calibrated regularly and in case of faulty meters, corrective action would be taken immediately.

B. Assessment of requested change

1. Section B.7.2 of registered PDD states three metering points for each WEG in the project, viz. at the controller end (LCS), the MRS and the substation. However, as per on-site observations and interviews[/IM01//IM02/], the monitoring system is found to consists of three metering points for the project activity (rather than for the individual WEGs), and no project activity relevant monitoring is being done at the substation.

   The 3 distinct monitoring points as observed during on site assessment are as follows;

S.No.	Metering Point	Controlled by	Remark
i.	Controller end i.e. LCS at each WEG	RRB Vestas(RRB Energy Ltd)	LCS reading is monitored online through the SCADA system.
ii.	Main Receiving Station (MRS) at project site	HESCOM	Multiple WEGs are connected to a single energy meter at the MRS. The JMR is taken at MRS, from which EG_y is calculated
iii.	Bulk meter station located at project site where the energy is injected from the MRS	HESCOM and KPTCL	All the MRS meters are connected to a single energy meter at the bulk meter station which is being used for calculation of the transmission losses.

   Verification team has also checked the metering requirement from Power Purchase Agreement (PPA)[/PPA/] (Article 7) between Hubli Electricity Supply Company Limited (HESCOM), Govt. of Karnataka and the M/s. MMTC Limited (the PP) and found that the actual practice is in line with the PPA.

   Since the revision is proposed to bring more clarity and to align with the actual

monitoring practices and procedures, which is in line with the PPA, changes in the monitoring plan proposed by the PP is assessed to be appropriate by the verification team. Further it was ascertained that the proposed changes will not have any impact on the realisation of emission reductions.

2. As per on-site assessment and interviews[/IM01//IM02/], the several MRS meters are connected to a single energy meter at the Bulk meter station handled by HESCOM and KPTCL located at the project site itself. Further, verification team has checked the requirements of Article 7 of PPA[/PPA/] 'Metering and Communication' and found that bulk energy meter is used for the determination of transmission line losses. Hence, as per actual monitoring practices and procedures, change in the monitoring plan is proposed by the PP and same is assessed by the verification team and found that proposed change is in-line with PPA[/PPA/], and have no impact on the realisation of emission reductions. Hence accepted by the verification team.
3. Till now the monitoring system involves the WEGs only from project activity. However in future there might be common metering system at MRS, which may include WEGs other than the project activity. Thus the revision in the text of the monitoring plan is proposed to bring more clarity in case common metering systems by describing apportioning approach for calculation of EG_Y. In future in case, where, other than the project WEG's are included the same will be jointly metered at the main meters installed at MRS. The *apportioning* on the basis of the readings at the MRS and individual generation of each WEG at the controller end will be done. Thus, the monitoring plan is now more specific and made flexible to accommodate the future possibilities. Since the changes are more of editorial in nature hence accepted by the verification team.
4. As described above (#2) metering at the substation end is not required by the PPA[/PPA/] and hence there is no main meter and thus there is no check meter. Moreover, the actual monitoring of the energy generated is being monitored at the MRS as per the PPA. Thus, the check meters are provided at the appropriate location i.e. Main receiving Station (MRS). Since the revision in monitoring plan is proposed in order to reflect the actual monitoring practices and the change does not have any impact on the realisation of ER the verification team has accepted the same.
5. Since there is no meter at substation, the question of calibration does not arise. Thus the substation is replaced with bulk meter station.

The verification team is also confident that the requested changes are consistent with the applied methodology (AMS-I.D, version 11) conditions as well the latest version of AMS.I.D, version 17.

C. Validation Opinion

☒ *TÜV NORD herewith confirms that the proposed change ensures that the level of accuracy or completeness in the monitoring and verification process is not reduced.*

☒ *TÜV NORD herewith confirms that the proposed change is in accordance with the applied approved monitoring methodology, or a later version of the same not compromising the conservativeness in the monitoring and verification process and of the emission reduction calculations.*

☒ *TÜV NORD herewith confirms that the findings of previous verification reports, if any, have been taken into account.*

Requested Change #4

Type of revision:

☐ *Due to a previously approved deviation from applied Methodology which continued in subsequent monitoring periods*

☒ *Due to a deviation from the registered Monitoring Plan*

A. Description of requested change

Details of the metering and recording system at the site

Reference	As per Registered PDD	Proposed Revised Monitoring Plan
Paragraph #6, Section B.7.2, Page 28-29	1. On the first day of every month, readings are taken from the Main meter at the Substation on the basis of which invoices are raised to the HESCOM.	1. On the first day of every month, readings are taken from the Main meters (JMR) at the Main Receiving Station (MRS) on the basis of which invoices are raised to the HESCOM.

B. Assessment of requested change

As discussed in assessment of 1, 4 and 5 (Requested Change #3), followed as per the PPA/PPA/, Joint meter reading will be taken at the main receiving station and bulk meters and Form-B (Joint Meter Readings) will be raised by HESCOM based on MRS reading and transmission losses calculated based on bulk meter reading. The meter reading at the substation is not involved. Thus, source for noting down reading (JMR) and raising invoices is as per the PPA. Hence, accepted by the verification team.

The verification team is also confident that the requested changes are consistent with the applied methodology (AMS-I.D, version 11) conditions as well the latest version of AMS.I.D, version 17.

C. Validation Opinion

☒ *TÜV NORD herewith confirms that the proposed change ensures that the level of accuracy or completeness in the monitoring and verification process is not reduced.*

☒ *TÜV NORD herewith confirms that the proposed change is in accordance with the applied approved monitoring methodology, or a later version of the same not compromising the conservativeness in the monitoring and verification process and of the emission reduction calculations.*

☒ *TÜV NORD herewith confirms that the findings of previous verification reports, if any, have been taken into account.*

Requested Change #5

Type of revision:

☐ *Due to a previously approved deviation from applied Methodology which continued in subsequent monitoring periods*

☒ *Due to a deviation from the registered Monitoring Plan*

A. Description of requested change

Responsibilities for review and issuance of CERs

Reference	As per Registered PDD	Proposed Revised Monitoring Plan
Section B.7.2, Page 28-29	Mr. Ved Prakash General Manager MMTC Core-1, "Scope Complex", 7 Institutional Area, Lodhi Road, New Delhi – 110003, India Mr.Ved Prakash has been assigned overall supervision of the project performance including the following:	The General Manager MMTC Core-1, "Scope Complex", 7 Institutional Area, Lodhi Road, New Delhi – 110003, India The General Manager has been assigned overall supervision of the project performance including the following:

B. Assessment of requested change

The name of specific person "Mr.Ved Prakash" has been removed rather keeping the designation i.e. The General Manager for overall responsibilities for review and issuance of CERs.

Since, the designation i.e. The General Manager as a part of top management is still having overall responsibility for review and issuance of CERs. Only the specific name of the person has been removed which at all not affect the QA/QC in monitoring and thus realization of emission reduction achieved. Moreover, it is uncertain that the specific person would remain in the same position for the whole crediting period. Hence, accepted by the verification team.

C. Validation Opinion

☒ *TÜV NORD herewith confirms that the proposed change ensures that the level of accuracy or completeness in the monitoring and verification process is not reduced.*

☒ *TÜV NORD herewith confirms that the proposed change is in accordance with the applied approved monitoring methodology, or a later version of the same not compromising the conservativeness in the monitoring and verification process and of the emission reduction calculations.*

☒ *TÜV NORD herewith confirms that the findings of previous verification reports, if any, have been taken into account.*

Requested Change #6

Type of revision:

☐ *Due to a previously approved deviation from applied Methodology which continued in subsequent monitoring periods*

☒ *Due to a deviation from the registered Monitoring Plan*

A. Description of requested change

EG_y Description of measurement methods and procedures to be applied:

Reference	As per Registered PDD	Proposed Revised Monitoring Plan
B.7.1, page 26	Nil	Appendix I to Annex 4 (Transmission loss calculation)

B. Assessment of requested change

This inclusion is proposed to bring clarity in the calculation of EG_Y based on energy export, import and apportioned value of transmission losses.

Verification team has verified the approach for the calculations of transmission line losses from FORM-B (Joint Meter Reading)/JMR/ issued by Executive Engineer (Electrical), HESCOM, Gadag and same is also checked from the requirements of Power Purchase Agreement. Since the revision is proposed to have more clarity and there is no impact on emission reduction calculation, the verification team has accepted the same.

C. Validation Opinion

☒ *TÜV NORD herewith confirms that the proposed change ensures that the level of accuracy or completeness in the monitoring and verification process is not reduced.*

☒ *TÜV NORD herewith confirms that the proposed change is in accordance with the applied approved monitoring methodology, or a later version of the same not compromising the conservativeness in the monitoring and verification process and of the emission reduction calculations.*

☒ *TÜV NORD herewith confirms that the findings of previous verification reports, if any, have been taken into account.*

Table -2: Documents provided by the project participant(s)

Reference	Document
/**CAL**/	1. Calibration records for the energy meters used for all WEGs in the project boundary throughout the monitoring period dated 2009-07-03. 2. Test/calibration certificates of meters at the time of installation. 3. Copies of the communications sent by the PP to HESCOM requesting calibration of meters dated 2009-06-19.
/**CC**/	Commissioning certificates of all the 25 WEGs dated 2007-03-24 and 2007-03-31 issued from KPTCL.
/**CON**/	The contract between TUV NORD and MMTC Ltd to carry out the CDM verification dated 2010-07-20.
/**INV**/	Invoice copies to cross check the energy supplied to the southern regional grid.
/**JMR**/	Joint Meter Reading (JMR) certificate (B-form) indicating main and check meter numbers and the energy injected covering entire reported monitoring period (2009-02-20 to 2010-03-31).
/**LOG**/	1. Extracts of the log/register books with daily records of generation from each of the 25 WEGs. 2. Copies of daily generation reports of the generation data. 3. Log /register book entry of breakdown details and maintenance operations. 4. Copies of monthly data archived in excel form.
/**MR1**/	The monitoring report of the registered CDM project “15 MW grid-connected wind power project by MMTC in Karnataka” version 01, dated 2010-08-12.
/**OM**/	1. O&M Procedure/schedule 2. Preventive Maintenance schedule 3. Break down memo 4. Extracts of reports of SCADA failure.
/**ORG**/	Organisation structure related to the GHG monitoring
/**PHOTO**/	Photographs of the project activity site, WEGs, SCADA system, the main and check meters in MRS.
/**PPA**/	1. Power Purchase Agreement b/w Hubli Electricity Supply Company Limited (HESCOM), Govt. of Karnataka and the M/s. MMTC Limited to sell electricity form project with capacity of 4.8 MW, dated 2007-05-23. 2. Power Purchase Agreement b/w Hubli Electricity Supply Company Limited (HESCOM), Govt. of Karnataka and the M/s. MMTC Limited to

Reference	Document
	sell electricity form project with capacity of 3 MW, dated 2007-05-23. 3. Power Purchase Agreement b/w Hubli Electricity Supply Company Limited (HESCOM), Govt. of Karnataka and the M/s. MMTC Limited to sell electricity form project with capacity of 2.4 MW, dated 2007-05-23. 4. Power Purchase Agreement b/w Hubli Electricity Supply Company Limited (HESCOM), Govt. of Karnataka and the M/s. MMTC Limited to sell electricity form project with capacity of 4.8 MW, dated 2007-05-23.
/**TRG**/	Training procedure/schedule & record
/**XLS1**/	Excel – Calculation sheets provided by the project participant along with MR1.

Table 7-2: Background investigation and assessment documents

Reference	Document
/**AMS-I.D.**/	Grid connected renewable electricity generation"; version 11
/**CEA**/	CO2 Baseline Database for the Indian Power Sector, November 2008, published by Central Electricity Authority, Ministry of Power, Government of India
/**CPM**/	TÜV NORD JI / CDM CP Manual (incl. CP procedures and forms)
/**KP**/	Kyoto Protocol (1997)
/**MA**/	Decision 3/CMP. 1 (Marrakesh – Accords)
/**PDD**/	Project Design Document for registered CDM project: "15 MW grid-connected wind power project by MMTC in Karnataka" version 04, dated 2008-10-31
/**VAL**/	Validation Report for CDM project "15 MW grid-connected wind power project by MMTC in Karnataka", report no. 53216407-07/114, dated 2008-11-05.
/**VVM**/	UNFCCC Validation and Verification Manual (Version as per EB 54)

Table 7-3: Websites used

Reference	Link	Organisation
/**dna**/	http://cdmindia.nic.in/	Indian DNA (National CDM Authority, MoEF, India)
/**ipcc**/	www.ipcc-nggip.iges.or.jp	IPCC publications
/**moef**/	http://moef.nic.in/	Ministry of Environment and Forest, Government of India
/**kptcl**/	http://www.kptcl.com/	Karnataka Power Transmission Corporation Ltd
/**hescom**/	http://www.hescom.co.in/	Hubli Electricity Supply Company Limited (HESCOM)
/**mmtc**/	http://www.mmtclimited.com/home.php	MMTC Limited
/**unfccc**/	http://cdm.unfccc.int	UNFCCC
/**vestas**/	http://www.indiabuildinginfo.com/virtual-clean/vestas/Vestas%20RRB.htm	Vestas RRB India Limited

Table 7-4: List of interviewed persons

Reference	MoI[1]		Name	Organisation / Function
/**IM01**/	V	☒ Mr. ☐ Ms	Sandeep Kumar	DGM, MMTC Limited
/**IM01**/	V	☒ Mr. ☐ Ms	S. M. Kori	Manager, MMTC Limited
/**IM02**/	V	☒ Mr. ☐ Ms	Neelakant K. Lomaini	OA, Vestas RRB India Ltd.
/**IM02**/	V	☒ Mr. ☐ Ms	M. Salish	Technician, Vestas RRB India Ltd.
/**IM02**/	V	☒ Mr. ☐ Ms	K. Shashi Kumar	Technician, Vestas RRB India Ltd.

Reference	MoI[1]		Name	Organisation / Function
/**IM02**/	V	☒ Mr. ☐ Ms	M. Antony Xavier	Technician, Vestas RRB India Ltd.
/**IM02**/	V	☒ Mr. ☐ Ms	Vishwanath K. Devagiri	Technician, Vestas RRB India Ltd.
/**IM02**/	V	☒ Mr. ☐ Ms	T. Rechapathi	Technician, Vestas RRB India Ltd.
/**IM02**/	V	☐ Mr. ☒ Ms	Priyanka Abbi	Consultant, Synergy Global
/**IM03**/	V	☒ Mr. ☐ Ms	Sam Shekhar	Local villager (Guard)

[1)] Means of Interview: (**T**elephone, **E**-Mail, **V**isit)

Appendix 1

ABBREVIATIONS

CDM	Clean Development Development
CER	Certified Emission reduction
CO_2	Carbon dioxide
EB	Executive Board
GHG	Greenhouse Gas
HESCOM	Hubli Electricity Supply Company Limited
JMR	Joint Meter Reading
KPTCL	Karnataka Power Transmission Corporation Ltd
LCS	Local controller system
MRS	Main Receiving station
PA	Project activity
P &C	Personal and Commercial
QA/QC	Quality assurance and Quality Control
PDD	Project Design Document
UNFCCC	United Nations Framework Convention on Climate Change
WEG	Wind Energy Generator