HENAN XINXIANG 24MW BIOMASS BASED COGENERATION PROJECT

TÜV Rheinland (China) Ltd.

Project Title	Henan Xinxiang 24MW Biomass based Cogeneration Project
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Summary:

The verification team assigned by the DOE (TÜV Rheinland (China) Ltd.) has performed the verification of the project "Henan Xinxiang 24MW Biomass based Cogeneration Project" (hereafter referred to as "the project") in China, on the basis of requirements of VCS Standard version 3.3.

The project is newly-built biomass used heat and power project with total installed capacity of 24MW while it involves the installation of 2 sets co-generators with 12MW for each. All electricity generated by the project will be supplied to the Central China Power Grid in which the fossil-fuel based power plant are mainly dominated, thus the project achieves GHG emission reductions.

The project has been registered as a CDM project (UNFCCC Ref. No.3054) with the renewable crediting period starting from 11 July 2011. As reflected on the UNFCCC website, the CDM GHG programme validation of the project was completed and submitted to the CDM EB to request for registration on 1 April 2011, which is within two years of the project start date, i.e. starting power generation on 28 October 2009. Therefore, the monitoring period for this verification is selected from 28 October 2009 to 10 July 2011 (incl. both days).

The verification was conducted by the following four steps:

i) Desk review of the VCS monitoring report (Version 01, dated 16/02/2013), the project description(version 01, 16/02/2013) and the registered CDM PDD, the CDM validation report, emission reductions calculation spreadsheet and supporting documents made available to the verification team by the project participant;

ii) Follow-up interviews and site inspection (26 Aug. 2013 to 27 Aug. 2013);

iii) Resolution of outstanding issues and desk review of the revised VCS monitoring report (version 02.0, 30/08/2013); and

iv) Issuance of final verification report.

The verification team confirms that the GHG emission reductions are calculated without material misstatements in a conservative and appropriate manner. Hence, TÜV Rheinland (China) Ltd. is able to certify that the emission reductions resulted from the project is as following:

Reporting Period: From 28 October 2009 to 10 July 2011

Emission Reductions:153,838 tCO2e

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1 INTRODUCTION

The client Climate Bridge Ltd. has commissioned the DOE (TÜV Rheinland (China) Ltd.) to carry out the verification of the project "Henan Xinxiang 24MW Biomass based Cogeneration Project" for the monitoring period from 28/10/2009 to 10/07/2011 (incl. both days) prior to its CDM first crediting period, on the basis of requirements of VCS Standard version 3.3/8/.

For the purpose of the verification report, the following abbreviations apply in the project,

CAR	Corrective Action Request
CDM	Clean Development Mechanism
CL	Clarification request
CO2e	Carbon dioxide equivalent
CCPG	Central China Power Grid
VVB	Validation and Verification Body
EB	Executive Board
FAR	Further Action Request
GHG	Greenhouse Gases
MR	Monitoring Report
MW	Mega Watt
PD	Project Description
PDD	Project Design Document
UNFCCC	United Nations Framework Convention on Climate Change
VCS	Verified Carbon Standard
VCUs	Verified Carbon Units

1.1 Objective

Verification is the periodic independent formal review by the accredited verification body and ex-post determination of the monitored GHG emission reductions during a defined verification period.

A verification statement is the written assurance by a verified body that, during a specific period in time, a project activity achieved the emission reductions as verified.

The objective of this verification is to verify and provide a verification statement of emission reductions of the project "Henan Xinxiang 24MW Biomass based Cogeneration Project" during the monitoring period from 28 October 2009 to 10 July 2011(incl. both days).

1.2 Scope and Criteria

The scope of the verification is:

- To verify that actual monitoring systems and procedures are in compliance with the monitoring systems and procedures described in the monitoring plan;
- To evaluate the GHG emission reduction data and express a conclusion with a reasonable level of assurance about whether the reported GHG emission reduction data is free from material misstatement;
- To verify that reported GHG emissions data is sufficiently supported by evidence.

The criteria of the verification are:

- VCS Standard version 3.3 and other relevant requirements defined by VCSA;
- Approved consolidated baseline and monitoring methodology ACM0006 (version 10).
- Approved consolidated baseline and monitoring methodology ACM0002 (version 11).

The verification is not meant to provide any consulting towards the client. However, stated requests for forward actions and/or corrective actions may provide input for improvement of the project monitoring towards reductions in the GHG emissions.

1.3 Level of assurance

The verification has been planned and organized to achieve a

☒ Reasonable level of assurance

☐ Limited level of assurance

1.4 Summary Description of the Project

The project "Henan Xinxiang 24MW Biomass based Cogeneration Project" is a biomass used heat and power project developed by Xinxiang Tianjie Bio-Power Generation Co.,Ltd., in Huangli Village,Wucun Town, Huixian City, Henan Province, P. R. China, with central geographical coordinates of "113° 30′ 40″ E, 35° 19′ 50″ N"., which is confirmed by using the google-earth GSP tool.

The total installed capacity of the project is 24MW, consisting of total 2 sets of 12MW biomass fired turbo-generators formed by 2 sets of YG-75/3.82-T type biomass boilers and 2sets of C12-3.43/0.98 type steam turbine and 2 sets of QF-15-2 type generators as described in the registered PDD/*4/* and PD/*3/*. The technical agreement for the biomass boilers and the turbine generator units applied in the project was provided to the verification team/*15/*//16/, and showed the key technical data of biomass boiler and turbine-generator in the following tables,

Table 1- Key technical data of biomass boiler and turbo-generator

Item	Biomass boiler	Turbine	generator
Model	YG-75/3.82-T	C12-3.43/0.98	QF-15-2
Quantity	2	2	2
Rated Output	75t/h	12MW	15MW
manufacturer	Jinan Boiler Group Co.,Ltd.	China Changjiang Energy Corp (Group)	China Changjiang Energy Corp (Group)

By utilizing the biomass residues locally, the electricity generated by the project is delivered to Henan power grid of the Central China Power Grid (hereafter referred as "CCPG") via the new Wucun 35kV substation, which is in compliance with the grid-connection electricity purchase agreement of the project*/18/.*

As described in the PDD, heat output has been designed to supply into factories near the project site. But during on-site visit, it was found the project was not able to supply heat to any user during the monitoring period due to the local heat network has not been finished by local government*//47/*, which is out of PP's control. As the emission reduction from the displacement of heat has not been considered in the emission reduction calculation in the PDD, therefore, the project implementation without heat supply in this monitoring period does not have negative effect on the emission reductions claimed in this monitoring period.

The Verification Team has verified the type of biomass residues utilized in this project include maize stalk and waste wood through onsite inspection and reviewing the Monthly Report of biomass residues/35//36/, and confirms it is consistent with that described in the registered PDD. The biomass residues is collected and pre-treated at the stalk collecting site and then transported to the power plant by trucks for the burning. It has been verified during the onsite inspection that only one stalk collecting site has been built up to now, and one electricity meter has been installed there for measuring the on-site electricity consumption.

During the monitoring period from 28 October 2009 to 10 July 2011, the total net electricity supplied to the grid by the project is 156,699.13MWh and 132.23t diesel consumed in the project site and 1011.28MWh consumed in the stalks collection site, thus the VCUs generated by the project is determined as 153,838tCO2e against the registered PDD/4/ , the validation report/5/ and the approved consolidated baseline and monitoring methodology ACM0006 "Consolidated methodology for electricity generation from biomass residues in power and heat plants" (version 10)/13/, detailed assessment as seen in the following section 3.

2 VALIDATION PROCESS, FINDINGS AND CONCLUSION

2.1 Validation Process

- **Method and Criteria**

Since the project is a registered CDM project activity (UNFCCC Ref. No. 3054) as confirmed from the UNFCCC website http://cdm.unfccc.int/Projects/DB/RWTUV1256116990.83/view, only gap validation against the VCS rules is required according to requirement of item 1) of section 3.11.8 of VCS Standard version 3.3/8/.

Main criteria include VCS Standard version 3.3 which is latest version of VCS rules issued.

Validation method includes document review and interview with site inspections.

- **Document Review:**

Relevant documents of project activity based on requirements of VCS standard version 3.3 are collected on site visit and on public website including UNFCCC website and compared against VCS requirements for review and confirmation. Detailed is seen in section 2.2.1

- **Interviews**

Detailed interviewee and topics related is seen in section 3.3.

- **Site Inspections**

Detailed Site Inspections is seen in section 2.2.1 and objectives of site inspections are confirmation of whether or not the project is operated and implemented in line with the registered PDD/4/.

- **Resolution of Any Material Discrepancy**

The process for the resolution of any material discrepancies (corrective actions, clarifications or other findings) raised by the validation team during the validation process is included in section 3.5.

2.2 Validation Findings

2.2.1 Gap Validation

In accordance with the item 1) of section 3.11.8 of VCS Standard version 3.3/8/, the cover page and sections 1.2, 1.3, 1.5, 1.6, 1.7, 1.9, 1.10, 1.12.1, 1.12.3, 1.12.4 and 1.13 of the VCS Project Description Template/11/ have been correctly completed in the project description/3/, and the verification team also have undertaken a validation of same to validate the project's compliance with the VCS rules as following,

1)	Cover page
Validation opinion:	The Cover page of the VCS project description of the project/3/ is verified to be completed in line with the VCS Project Description Template/11/ and correct in respect to the project title etc.
2)	Section 1.2- Sectoral Scope and Project Type
Validation	Based on the registered PDD/4/, as a large scale biomass heat and power project,

opinion:	the project is confirmed to fall in the sectoral scope 1: energy industries (renewable-/non-renewable sources), which has been correctly described in the VCS project description/3/. In addition, the project is checked through UNFCCC website to be a single registered CDM project activity, thus the project can be considered not to be a grouped project.
3)	Section 1.3- Project Proponent
Validation opinion:	The project participant described in the PD/3/ and MR/2/ is Xinxiang Tianjie Bio-Power Generation Co.,Ltd. who is same as the project owner demonstrated in the registered PDD/4/. By means of reviewing its business license/32/, name of Xinxiang Tianjie Bio-Power Generation Co.,Ltd. Is consistent with VCS PD/3/. In addition, based on the on-site interview with the management representative of the Xinxiang Tianjie Bio-Power Generation Co.,Ltd./i/, he confirmed Xinxiang Tianjie Bio-Power Generation Co.,Ltd. agrees to join the VCS project and the contact information described in the VCS PD/3/ is complete and correct as well.
4)	Section 1.5- Project Start Date
Validation opinion:	The project is a registered CDM project activity (UNFCCC Ref. No. 3054) under the approved CDM methodology ACM0006 Version 10 “Consolidated methodology for electricity generation from biomass residues in power and heat plants”, as confirmed from the UNFCCC website http://cdm.unfccc.int/Projects/DB/RWTUV1256116990.83/view The CDM Project activity Registration Form of the project “Henan Xinxiang 24MW Biomass based Cogeneration Project” was checked, and can confirm that the CDM validation report of the project was submitted to the CDM EB to request for registration by the CDM Validation of TUV NORD as DOE on 1 April 2011/6/. As reflected in the daily operation & maintenance logs of the project /17/and its monitoring readings of electricity/19/ and approval letter regarding trial operation of the project by local grid/20/, the project is verified to start operation on 28 October 2009, which is also correctly reported in the VCS monitoring report/2/ and VCS PD/3/. In accordance with the section 3.7.2 and the item 3) of section 3.11.8 of VCS standard version 3.3/8/, the CDM validation of the project is deemed to have been completed within two years of the project start date.
5)	Section 1.6- Project Crediting Period
Validation opinion:	Via UNFCCC website http://cdm.unfccc.int/Projects/DB/RWTUV1256116990.83/view, the project was registered as CDM project activity with UNFCCC Ref. No. 3054, indicating the first renewable 7 years CDM crediting period starting from 11 July 2011. As per the section 4.1.5 of latest version 3.4 of VCS Registration and Issuance Process/9/ and section 3.7.1 and 3.8.1 and 3.8.3 of VCS Standard version 3.3/8/, the project registered under CDM program is eligible to claim Voluntary Carbon Units (VCUs) based on VCS rules generated prior to the CDM program, i.e. the crediting period from 28 October 2009 to 10 July 2011(one year and 256 day in total).

6)	Section 1.7- Project Scale and Estimated GHG Emission Reductions or Removals
Validation opinion:	By means of checking the registered PDD/4/, the annual estimated GHG emission reductions are 123,858tCO2e. In accordance with the VCS program definitions version 3.4/12/, large project is defined as the project that generates 300,000 tonnes CO2e or more of GHG emissions reductions or removals per year. Thus, it is validated that the scale of the project with estimated emission reductions less than 300,000 tonnes CO2e is "Project".
7)	Section 1.9- Project Location
Validation opinion:	The project is located in Huangli Village,Wucun Town, Huixian City, Henan Province, P. R. China, which is consistent with the registered PDD/4/. And also the central geographical coordinates of *"113° 30′ 40″ E, 35° 19′ 50″ N"* for the project can be confirmed with the map tool of professional software "Google Earth".
8)	Section 1.10- Conditions Prior to Project Initiation
Validation opinion:	The registered PDD/4/ was checked and found that the conditions prior to project initiation is that electricity will be supplied by the fossil-fuel based power plants dominated CCPG, and the project has not been implemented to generated GHG emissions for the purpose of their subsequent reduction, removal or destruction, which is demonstrated by FSR approval/33/.
9)	Section 1.12.1- Right of use
Validation opinion:	The letter of approval issued by the national development & reform commission of P.R. China/7/ was reviewed and found that the Xinxiang Tianjie Bio-Power Generation Co.,Ltd. is authorized to carry out the project activity. Further, FSR approval/33/ and EIA approval/34/ was checked to confirm its ownership of the project.
10)	Section 1.12.2- Emissions Trading Programs and Other Binding Limits
Validation opinion:	Via UNFCCC website http://cdm.unfccc.int/Projects/DB/RWTUV1256116990.83/view, the project was registered as CDM project activity with UNFCCC Ref. No. 3054, indicating the first renewable 7 years CDM crediting period starting from 11 July 2011, thus the net GHG emission reductions generated from the reporting period from 28 October 2009 to 10 July 2011 will not be used for compliance with the CDM trading program. In addition, it is demonstrated by going through the public website that it is not found that it is used for compliance with another emission trading program than CDM or to meet binding limits on GHG emissions other than VCS.
11)	Section 1.12.3- Participation under Other GHG Programs
Validation opinion:	The project was registered as CDM project activity with UNFCCC Ref. No. 3054, indicating the first renewable 7 years CDM crediting period starting from 11 July 2011, details as shown in the UNFCCC website http://cdm.unfccc.int/Projects/DB/RWTUV1256116990.83/view,. Thus, the GHG emission reductions during the reporting period from 28 October 2009 to 10 July 2011 can be considered not to be claimed credit under the approved CDM program,

	and its VCU issuance is eligible for the project as per the sections 3.11.5 and 3.11.6 of the version 3.3 of VCS standard/8/. Secondly, for the project registered under CDM program, gap validation is carried out in the section 2.2.1 of VR according to item 1) of section 3.11.8 of VCS standard version 3.3/8/. Thirdly the validation deadline of validation of the project is met as detailed discussion seen in item 4) for section 1.5 'project start date' above.
12)	Section 1.12.4- Other Forms of Environmental Credit
Validation opinion:	During the on-site visit, the management representative, i.e. Mr. LI Yulin/i/, was interviewed and confirmed that no other form of GHG-related environmental credit for GHG emission reductions or removals has been or will be claimed during the VCS monitoring period from 28 October 2009 to 10 July 2011. In addition, it is not found by going through public website that other form of GHG-related environmental credit is related to the VCS project.
13)	Section 1.13- Additional Information Relevant to the Project
Validation opinion:	<u>For Eligibility Criteria</u> In accordance with the registered PDD /4/and validation report /5/ of the project, the project is not a grouped project, thus this item is not applicable to the project. <u>For Leakage Management</u> In accordance with the applied methodology ACM0006 version 10/13/ and the registered PDD/4/, the leakage can be not considered, thus this item is not applicable to the project. <u>For Commercially Sensitive Information</u> As confirmed from the project owner, all information stated in the VCS monitoring report/2/ and VCS PD/3/ is public. <u>For Further Information</u> As reported in the CDM validation report of the project /5/, the CDM validation DOE issued a positive opinion to the project for requesting registration. In addition, the verification team haven't identified any additional information that may have a bearing on the eligibility of the project, the net GHG emission reductions or removals, or the quantification of the project's net GHG emission reductions or removals.

2.2.2 Methodology Deviations

N/A

2.2.3 Project Description Deviations

It is confirmed on site check that no deviation of the project description is occurred.

2.2.4 New Project Activity Instances

N/A

2.3 Validation Conclusion

Based on the assessment in both the above section 2.1 and section 2.2.1 and 2.2.3, the verification team can state that the project described in the VCS PD/3/ and registered PDD/4/, conforms to the validation criteria for projects as set out in the VCS Standard version 3.3/8/ and the VCS Registration and Issuance Process version 3.4/9/.

3 VERIFICATION PROCESS

3.1 Method and Criteria

The qualified verification team is selected for the project as showed in the below table,

Verification and validationTeam			**Role**									
Full name	**Affiliation TÜV Rheinland**	**Appointed for Sectoral Scopes (Technical Areas)**	Team leader	Acting Team Leader	Local Expert	Team Member (Auditor)	Technical Expert	Acting Tech. Expert	Trainee Auditor	Technical Reviewer	Expert to TR	Trainee TR
MA Jian Dong	China	1.1,1.2,4.5	X									
ZHU Jiang	China	1.1,1.2,4.5								X		
Walter TANG	China	1.1,1.2,2.1,2.2,3.1,4.3,4.5,13.1								X		

The verification of the project was performed through means of the following four phases in accordance with the requirement of the registered PDD/4/, the applied methodology/13/, and the VCS standard version 3.3/8/ and other relevant VCS requirements/9/.

- A desk review of the monitoring report and all support documents;
- Follow-up interviews with project stakeholders and site inspection;
- The resolution of outstanding issues and the issuance of the verification report and statement; and
- Issuance of final verification report

The following sections outline each step in more detail.

3.2 Document Review

The following table outlines the documentation reviewed during the verification process:

Ref no.	Reference Document
/1/	VCS Monitoring Report (MR) of Henan Xinxiang 24MW Biomass based Cogeneration Project, version 01, dated 16/02/2013
/2/	VCS MR of Henan Xinxiang 24MW Biomass based Cogeneration Project, version 02.0, 30/08/2013
/3/	VCS PD of Henan Xinxiang 24MW Biomass based Cogeneration Project, version 01, 16/02/2013
/4/	CDM Project Design Document (PDD) of Henan Xinxiang 24MW Biomass based Cogeneration Project, Registration No. 3054, version 10, dated 05/03/2013
/5/	CDM validation report of Henan Xinxiang 24MW Biomass based Cogeneration Project, version 04, dated 07/07/2011
/6/	CDM Project Activity Registration Form of Henan Xinxiang 24MW Biomass based Cogeneration Project submitted by the validation DOE of TUV NORD, dated 1 April 2011
/7/	The letter of approval issued by the National Development & Reform Commission of P.R. China for the CDM project, English version No. 1842, dated in Feb. 2009
/8/	VCS Standard, version 3.3, dated 04/10/2012
/9/	VCS Registration and Issuance Process, version 3.4, dated 04/10/2012
/10/	VCS Monitoring Report Template, version 3.2, dated 04/10/2012
/11/	VCS Project Description Template, version 3.1, dated 04/10/2012
/12/	VCS Program Definitions, version 3.4, dated 04/10/2012
/13/	Approved consolidated baseline and monitoring methodology ACM0006 " Consolidated methodology for electricity generation from biomass residues in power and heat plants", version 10, EB 52, Annex 8
/14/	CDM Executive Board, Tool to calculate baseline, project and/or leakage emissions from electricity consumption, Version 01, Annex 7 of EB39
/15/	Technical Agreement for biomass boilers of Henan Xinxiang 24MW Biomass based Cogeneration Project signed between the project owner and Jinan Boiler Group Co., Ltd., June 2008
/16/	Technical Agreement for Turbines and Generators of Henan Xinxiang 24MW Biomass based Cogeneration Project signed between the project owner and China Changjiang Energy Corp(Group, June 2008
/17/	Daily operation & maintenance logs from Year 2009 to Year 2011
/18/	Huixian Power Bureau & Xinxiang Tianjie Bio-Power Generation Co., Ltd, Power

	Purchase Agreement, 17 October 2009
/19/	Monitoring data records during the monitoring period from 28 October 2009 to 10 July 2011
/20/	Xinxiang Power Grid Company, Approval letter regarding trial operation of the #1 biomass fired boiler and steam turbo-generator of the project, dated 28 October 2009.
/21/	Huixian Power Bureau , Data Reading Records for Electricity Meter(M2), from 28 October 2009 to 10 July 2011
/22/	Huixian Power Bureau, electricity purchase invoices for the Electricity Meter(M2), from 28 October 2009 to 10 July 2011
/23/	Xinxiang Power Bureau of Henan Grid Co., Ltd., Data Recording Records for exported electricity of M1 during the monitoring period from 28 October 2009 to 10 July 2011
/24/	Xinxiang Power Bureau of Henan Grid Co., Ltd., electricity purchase invoices for exported electricity of M1 during the monitoring period from 28 October 2009 to 10 July 2011
/25/	Huixian Power Bureau., Data Recording Records for imported electricity of M1 during the monitoring period from 28 October 2009 to 10 July 2011
/26/	Huixian Power Bureau., electricity purchase invoices for imported electricity of M1 during the monitoring period from 28 October 2009 to 10 July 2011
/27/	Calibration certificates of electric meters applied in the monitoring plan of the project activity issued by Fuxin Testing Centre of Power Measuring Instruments details as following,

Meters	Type	Accuracy	Serial No.	Certificate No.	Validity
Electronic Belt Weight (B1)	ICS-17B-1400	0.5	12060401	Heng2009061500910	15/06/2009-14/06/2010
				Heng2010061500911	15/06/2010-14/06/2011
				Heng2011061500913	15/06/2011-14/06/2012
Weight meter (W1)	XK3190-A9 (SCS-20)	level III	100900352	Heng2009010800807	12/06/2009-11/12/2009
				Heng2009020800801	12/12/2009-11/06/2010
				Heng2010020800803	12/06/2010-11/12/2010
				Heng2010020800805	12/12/2010-11/06/2011
				Heng2011020800801	12/06/2011-11/12/2011
Weight meter (W2)	XK3190-A9 (SCS-80)	level III	0710430	Heng2009010800806	12/06/2009-11/12/2009
				Heng2009020800800	12/12/2009-11/06/2010
				Heng2010020800802	12/06/2010-11/12/2010

					Heng2010020800804	12/12/2010-11/06/2011	
					Heng2011020800800	12/06/2011-11/12/2011	
	Moisture analyzer (Ma1)	Sh-10A	0.2%	-	Ce2009050900817	09/05/2009-08/05/2010	
					Ce2010050900817	09/05/2010-08/05/2011	
					Ce2011050900817	09/05/2011-08/05/2012	
	Flow meter(F1)	JYB-60	0.5	11L00621	Rong20090609005	09/06/2009-08/06/2010	
					Rong20100609005	09/06/2010-08/06/2011	
					Rong20110609005	09/06/2011-08/06/2012	
	M1	DTSD 188S	0.5s	G014MS000391	DC2009(DX115)	16/11/2009-15/11/2010	
					DC2010(DX115)	16/11/2010 15/11/2011	
	M1'	DTSD 188S	0.5s	G014MS000383	DC2009(DX119)	16/11/2009-15/11/2010	
					DC2010(DX119)	16/11/2010 15/11/2011	
	M2	DTS72	1.0s	KSE005040	DC2009(DX175)	17/10/2009-16/10/2010	
					DC2010(DX175)	17/10/2010 16/10/2011	

/28/	Administration of Quality and Technology Supervision of Xinxiang City, Certificate of Metrological Authorization to Huixian Quanlity& Technology Supervision Testing Centre, ref No. (YuXin)FAJI(2005)410707, dated 30 December 2005 and valid up to 29 December 2010 Administration of Quality and Technology Supervision of Xinxiang City, Certificate of Metrological Authorization to Huixian Quanlity& Technology Supervision Testing Centre, ref No. (YuXin)FAJI(2010)410702, dated 30 December 2010 and valid up to 29 December 2015
/29/	Administration of Quality and Technology Supervision of Xinxiang City, Certificate of Metrological Authorization to Electricity Measurement Center of Xinxiang Power Bureau, Henan Grid Co., Ltd, Ref No. (YuXin) FaJi (2008) 410712, dated 12/03/2008 and valid to 11/03/2013
/30/	Operation qualifications of staff
/31/	Emission reductions (ER) calculation spreadsheet

/32/	Business license of Xinxiang Tianjie Bio-Power Generation Co.,Ltd. issued by the Administration for Industry and Commerce of Hui County, Registration No. 410782100000522, valid from 18/09/2007 to 17/09/2017, dated 20/12/2012
/33/	Henan Development and Reform Commission, the approval of feasibility study report of Henan Xinxiang 24MW Biomass based Cogeneration Project, dated 13 Aug. 2008
/34/	Henan Environmental Department, the approval of EIA of Henan Xinxiang 24MW Biomass based Cogeneration Project, dated 12 Jun. 2008
/35/	Xinxiang Tianjie Bio-Power Generation Co., Ltd, Daily Log Sheet and Monthly Report for the quantity and moisture content of biomass residues transported, truck load and transportation distance, from 28 October 2009 to 10 July 2011
/36/	Xinxiang Tianjie Bio-Power Generation Co., Ltd, Daily Log Sheet and Monthly Report for the quantity and moisture content of biomass residues combusted, from 28 October 2009 to 10 July 2011
/37/	Xinxiang Tianjie Bio-Power Generation Co., Ltd, Monthly Records on Purchase Quantities and Stock Changes of Biomass residues, from 28 October 2009 to 10 July 2011
/38/	Xinxiang Tianjie Bio-Power Generation Co., Ltd, Monthly consumption Report for the quantity of diesel, from 28 October 2009 to 10 July 2011
/39/	Xinxiang Tianjie Bio-Power Generation Co., Ltd, Records on Purchase Quantities and Stock Changes of diesel, from 28 October 2009 to 10 July 2011
/40/	Xinxiang Tianjie Bio-Power Generation Co., Ltd, Monthly Report of diesel consumption for boiler ignition, from 28 October 2009 to 10 July 2011
/41/	Xinxiang Tianjie Bio-Power Generation Co., Ltd, Monthly Report of diesel consumption onsite(for forklift), from 28 October 2009 to 10 July 2011
/42/	Diesel Purchase Invoices, from 28 October 2009 to 10 July 2011
/43/	Henan Quality Supervision and Inspection Station of Coal Products, NCV Analysis Reports for Maizestalk and Wastewood, 14 July 2009, 14 January 2010 and 14 July 2010, 14 January 2011 and 14 July 2011 Qualification of Henan Quality Supervision and Inspection Station of Coal Products can be verified through the website: http://www.hnmtdz.gov.cn/htm/news/201108/6074.htm
/44/	Huixian Statistic Bureau, Biomass Availability Report of Year 2009
/45/	Huixian Statistic Bureau, Biomass Availability Report of Year 2010
/46/	Huixian Statistic Bureau, Biomass Availability Report of Year 2011
/47/	Huixian Development and Reform Commission, Clarification Letter on the Construction Status of Heat Supply Network, 26 February 2013

3.3 Interviews

From 26 Aug. 2013 to 27 Aug. *2013*, the verification team carried out an on-site visit and performed interviews with the project representatives and stakeholders. The main topics of the interviews are summarized in the table below.

	Date	Name	Organization	Topic
/i/	2013/08/26/-2013/08/27	Mr. LI Yulin (Manager in general) Ms. WEI Xuefeng (Chief engineer) Mr. SUN Jinxun (Quality inspector) Mr.WANG Xiaojun (Operator) Mr. ZHANG Weiguo (Operator)	Xinxiang Tianjie Bio-Power Generation Co.,Ltd. (Project Owner)	- Project Implementation - Project operation - Monitoring devices' calibration - Management and Operational procedures - Data collection procedure - Data QA/QC procedures - Environmental impacts and mitigation measures - Monitoring results reporting - ER calculation
/ii/	2013/08/26/-2013/08/27	Mr. WU Keqiang (Operator)	Wucun substation	- Data collecting and reporting - QA/QC
/iii/	2013/08/26/-2013/08/27	Ms. HUANG Shanfeng	Climate Bridge Ltd.	- Project monitoring staff training - ER calculation

3.4 Site Inspections

From 26 Aug. 2013 to 27 Aug. 2013, the verification team carried out an on-site inspection at Henan Xinxiang 24MW Biomass based Cogeneration Project. During the visit, the verification team verified the actual implementation of the project as described in the VCS monitoring report/2/ and the registered CDM PDD/4/ and VCS PD/3/. The project start date was checked against the daily operation & maintenance logs /17/ with the metering records/19/ and the Approval letter regarding trial operation/20/. The applied biomass boiler and turbo-generator information were cross checked against the technical agreements of biomass boiler/15/ and turbine-generator unit/16/ and the nameplates on site, and then confirmed to be correct. The involved gate electric meters were checked against the power purchase agreement/18/ and found in order. Other meters included in the MR and monitoring plan of the registered PDD were

checked on site with line diagram as indicated in the registered PDD/4/ and MR/2/ and confirmed to be in order.

As discussed in the above section 1.4, the project is implemented in the monitoring period without heat supply due to local heat network being not completed. Thus it does not have negative effect on the emission reduction claimed in this monitoring period,

The evidences of the reported net electricity generation were also verified, i.e. the monthly electricity generation gate meter M1 reading records and M2 for stalk collection site/19/. In addition, the electricity trading notes and electricity purchase invoices /23/ were verified to cross-check the gate meter reading records and records of M2 for stalk collection site/19/.

The reported biomass consumption quantities for power plant were based on log sheet based on weigh meter 1 (W1) and weigh meter 2 (W2) located at the gate of the project site and belt weight (B1) located at the inlet of the boiler and then aggregated into the monthly report/35/ and were cross checked with monthly records on purchase quantities and stock changes of biomass residues/37/ and confirmed to be consistent with it.

The reported diesel consumption data were based on log sheet via flow meter/38/ and were checked with an annual energy balance based on purchase quantities and stock changes/39/

All calibration certificates of electric meters involved in the monitoring plan of the project /27/ and the accreditation of calibration entity/29/ were verified authoritative, and found to be valid for the complete reporting period from 28 October 2009 to 10 July 2011.

3.5 Resolution of Any Material Discrepancy

A Corrective Action Request (CAR) shall be raised, where:

a) Non-conformities with the monitoring plan or methodology are found in monitoring and reporting, or if the evidence provided to prove conformity is insufficient;

b) Mistakes have been made in applying assumptions, data or calculations of emission reductions which will impair the estimate or emission reductions;

c) Issues identified in a FAR during validation to be verified verification have not been resolved by the project participants.

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

A Forward Action Request (FAR) shall be raised if the monitoring and reporting require attention and/or adjustment for the next verification period.

During the VCS verification of the project, 1 CL are raised by the verification team and successfully closed, details as following,

CAR/CL	Observation	Reference	Summary of project owner	Verification team

			response	conclusion
CL 1	It is found by checking the calibration records of M1 and M1' that the earliest date of calibration is 16 Nov. 2009, so no evidence is demonstrated that the monitoring data of them covering from 28 Oct. 2009 to 15 Nov.2009 is measured by calibrated meters.	MR ER sheet	According to Section 9.4.4.2, Paragraph 238 of Clean Development Mechanism Validation and Verification Standard (version 3.0), "If, during verification of a certain monitoring period, the DOE identifies that the calibration has been delayed and the calibration has been implemented after the monitoring period in consideration (i.e. the results of delayed calibration are available), the DOE may conclude its verification, provided the following conservative approach is adopted in the calculation of emission reductions: (a) Applying the maximum permissible error of the instrument to the measured values taken during the period between the scheduled date of calibration and the actual date of calibration, if the results of the delayed calibration do not show any errors in the measuring equipment, or if the error is smaller than the maximum permissible error; or (b) Applying the error identified in the delayed calibration test, if the error is beyond the maximum permissible error of the measuring equipment." For this project, the calibration of M1 and M1' has been delayed for couple of days, but the results do not show any errors, therefore, the value of EGimport,y and EGexport,y measured by	It is verified according to VVS version 3.0 that the corrective action for the period from 28 Oct.2009 to 15 Nov.2009 is in line with the CDM requirement regarding delayed calibration. In addition the emission reduction covering the period from 16 Nov. 2009 to 22 Nov.2009 monitored by calibrated meter is deducted by maximal permission error, it is considered conservative. This CL is closed.

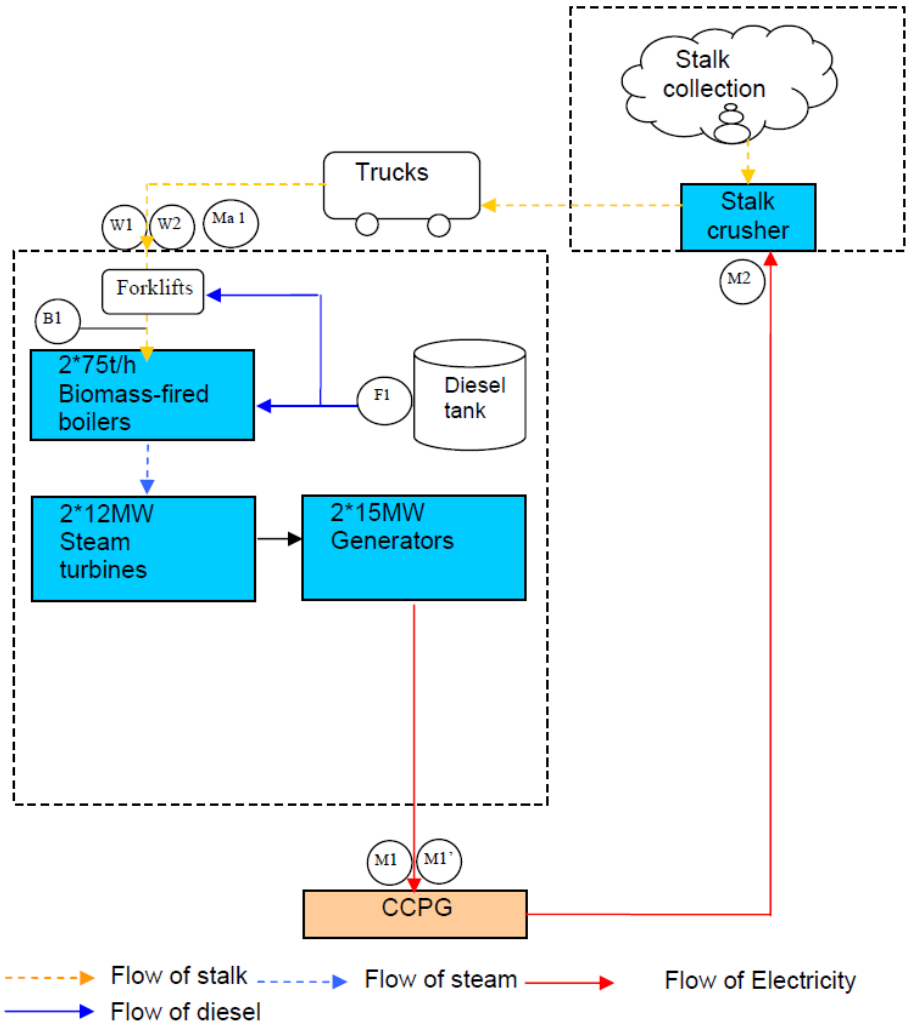
			M1 and M1' during 28/10/2009 (the scheduled calibration date) to 16/11/2009 (the actual calibration date) have been adjusted by applying the max permissible error of the meters (0.5%).	

4 VERIFICATION FINDINGS

4.1 Project Implementation Status

The project was verified to be located in Huangli Village,Wucun Town, Huixian City, Henan Province, P. R. China. As described in the VCS monitoring report/2/ and VCS PD/3/ and the registered PDD/4/, the central geographical coordinates of the project are 113° 30′ 40″ E, 35° 19′ 50″ N, which can be substantiated by means of using the map tool of Google Earth.

The project is a newly built biomass used heat and power project with the total installed capacity of 24MW, consisting of total 2 sets of 12MW biomass fired turbo-generators formed by 2 sets of 2 sets of YG-75/3.82-T type biomass boilers and 2sets of C12-3.43/0.98 type steam turbine and 2 sets of QF-15-2 type generators, whose information is verified to be consistent with the VCS monitoring report/2/, the registered CDM PDD/4/ and the technical agreements for involved biomass boiler/15/ and turbine generator units/16/, which is in line with the VCS monitoring report/2/ and the registered PDD. The monitoring scheme are verified on site to be conform the registered PDD and described as below



As reflected in the daily operation & maintenance logs/17/ and approval letter regarding trial operation of the project/20/, the #1 biomass fired boiler and steam turbine generator started operation on 28 October 2009, which is confirmed to be accurately described in the VCS monitoring report/2/. Besides, it is also verified and confirmed by interview with project representatives/i/ and checking of the daily operation and maintenance logs/17/, that there was no any occurred event or situation which may impact the applicability of the methodology ACM0006 version 10/13/ during the reporting period from 28 October 2009 to 10 July 2011 as described in the MR/2/.

The verification team verified the power purchase agreements of the project/18/ with validity covering the reporting period from 28 October 2009 to 10 July 2011, and then confirmed that after being raised to 35KV by the project site step-up substation controlled by the project owner and Wucun Substation controlled by local grid company, the electricity generated by the project is directly delivered to Xinxiang power grid included in the Henan power grid of CCPG.

The measurement meters were installed in accordance with the registered PDD/4/. The project has been operated by the PP in compliance with the VCS monitoring report of the project/2/ and its registered PDD/4/ and VCS PD/3/.The monitoring organization has been set up, all monitoring staffs have been trained and their qualifications have been provided to the verification team/30/. The calibration certificates of meters /27/ are provided to the verification team and confirmed to be conducted in compliance with the VCS monitoring report of the project/2/ and its registered PDD/4/. For electricity delivered to the grid and consumed by the project, Meter reading records of the meters are based on continuous measurement by the PP/19/, and also the electricity trading notes and purchase invoices are used to cross-check the electricity supplied to the grid and the electricity imported from the grid for quality assurance/23/. For dry biomass residues such as waste wood and maize stalk transported to the project site and consumed by the project, reading records of the weight meter (W1 and W2) and belt weight meter (B1) are based on continuous measurement by the PP/35/ and are cross checked with monthly records on purchase quantities and stock changes of biomass residues/37/. For diesel consumption in the project site and power plant, the records of the flow meter are based on continuous measurement/38/ and cross checked with an annual energy balance based on purchase quantities and stock changes/39/.

After checking the CDM validation report of the project/5/, the verification team can confirm that there were no any remaining issues in the previous CDM validation.

4.2 Accuracy of GHG Emission Reduction or Removal Calculations

The Verification Team confirms the emission reductions formula applied in the Monitoring Report/2/ is correctly referred from monitoring methodology ACM0006, Ver.10/13/, and the Monitoring Plan. The Emission Reduction Calculation Spreadsheet/31/ is available to the Verification Team.

Baseline Emissions:

1). Emission reductions due to displacement of electricity ($ER_{electricity,y}$)

$ER_{electricity,y}$ equals to the ex-ante emission factor ($EF_{electricity,y}$) mutiplies the net quantity of electricity generated in the project plant(EGy). The calculation formula is:

$$ER_{electricity,y} = EG_y \bullet EF_{electricity,y} = EG_{projectplant,y} \bullet EF_{grid,CM,y}$$

For the ex-ante parameter $EF_{grid,CM,y}$, the emission factor of CCPG, the Verification Team has confirmed that: the value of 0.9735 tCO2e/MWh is correctly applied and consistent with registered PDD.

For the net quantity of electricity generated in the project plant ($EG_{projectplant,y}$), it is the difference between exported electricity and imported electricity, both of which are measured by the bidirectional meter M1.

The Verification Team confirms the data of exported and imported electricity applied in the Emission Reduction Calculation Spreadsheet/31/ are fully consistent with Data Recording Records/23//25/ and purchase invoice of electricity sales/24//26/ issued by the grid to the proposed project. Furthermore, the ending meter reading of the last monitoring date in previous month is confirmed as exactly the same with the starting meter reading of the upcoming month. Hence no double counting is revealed.

The Verification Team confirms the following approaches have been adopted by the PP to make the emission reduction calculation results conservative:

- For the electricity exported to the grid, the smaller one among the Data Recording Records and transaction note of electricity sales are selected by the PP in emission reduction calculation;

- For the imported electricity amount from the grid, the larger one among the Data Recording Records and transaction note of electricity sales are selected by the PP in emission reduction calculation;

Hence the net quantity of electricity generation by the project in this monitoring period is confirmed to be correctly calculated as 156,699.13MWh, which result in 152,547tCO2e baseline emission reductions. The detailed calculation has been reflected in the Emission Reduction Calculation Spreadsheet/31/.

2). Emission reductions or increases due to displacement of heat ($ER_{heat,y}$)

As per Registered PDD/4/, this project does not claim for the emission reductions due to displacement of heat, thus the Verification Team confirms $ER_{heat,y}$ = 0.

3). Baseline emissions due to natural decay or uncontrolled burning of anthropogenic sources of biomass residues ($BE_{biomass,y}$)

As per Registered PDD/4/, the calculation formula is:

$$BE_{biomass,y} = GWP_{CH_4} \bullet \sum_k BF_{PJ,k,y} \bullet NCV_k \bullet EF_{burning,CH_4,k,y} ,$$

Here, $\sum_k BF_{PJ,k,y} = \sum_k BF_{k,y} = BF_{maizestalk,y} + BF_{wastewood,y}$

As confirmed in the registered PDD for the first commitment period, the value for the ex-ante parameters of GWP_{CH_4} and NCV_k*$EF_{burning,CH4,k,y}$ is respectively 21 tCO2e/tCH4 and 0.001971t CH4/t.

The quantity of dry biomass $BF_{maizestalk,y}$ and $BF_{wastewood,y}$ have been correctly determined by adjusting for the moisture content as shown in the ER calculation spreadsheet/31/. In accordance with the Monitoring Plan in the PDD, the mean value of moisture content is a reported annually. By verifying the Monthly Report of moisture content/35/, the Verification Team confirms the moisture content of maize stalk and waste wood for each year(mean value) is correctly calculated. And the data of wet quantity of $BF_{maizestalk,y}$ and $BF_{wastewood,y}$ for each monitoring period is also confirmed to be consistent with its data source, i.e. Monthly Report for Biomass Residues Combusted/36/. Thus, the quantity of biomass residues combusted in this monitoring period is 184,063t (dry matter), which results in 7,619 tCO2e emission reduction. The detailed calculation has been reflected in the Emission Reduction Calculation Spreadsheet/31/.

Project Emissions (PEy)

The project emissions include emissions from transportation of biomass residues to the project site (PET_y), emissions from on-site consumption of fossil fuel by the project ($PEFF_y$), emissions from consumption of electricity ($PE_{EC,y}$), and methane emissions from combustion of biomass residues ($PE_{biomass,CH4,y}$):

$$PE_y = PET_y + PEFF_y + PE_{EC,y} + GWP_{CH_4} \bullet PE_{biomass,CH_4,y}$$

1) Carbon dioxide emissions from combustion of fossil fuels for transportation of biomass residues to the project plant (PET_y)

$$PET_y = \frac{\sum_k BF_{T,k,y}}{TL_y} \bullet AVD_y \bullet EF_{km,CO_2,y}$$

Here, $\sum_k BF_{T,k,y} = BF_{T,maizestalk,y} + BF_{T,wastewood,y}$

For the ex-ante parameters of $EF_{km,CO_2,y}$, the value has been confirmed as 0.001097tCO2/km in the registered PDD/4/. The verification Team has verified the data of $BF_{T,maizestalk,y}$ and $BF_{T,wastewood,y}$ in the ER calculation by cross checking its data source Monthly Report for Biomass Residues Transported/35/. By checking the Monthly Report of Trcuk Load/35/, the Verification Team confirms the average truck load TLy for each year (mean value aggregated annually) is correctly calculated. Furthermore, all the transportation distances for each time of transportation are confirmed within 50km of the project site, which has been reported in the Monthly Report/35/. Hence, the Verification Team confirms this approach ensures the conservative project emission calculation. The combustion of fossil fuels for the transportation of biomass residues makes 2,124 tCO2e project emissions. The detailed calculation has been reflected in the Emission Reduction Calculation Spreadsheet/31/.

2) Carbon dioxide emissions from on-site consumption of fossil fuels ($PEFF_y$)

The calculation formula is: $PEFF_y = \sum_i FC_{i,j,y} \bullet COEF_{i,y}$,

Here $\sum_i FC_{i,j,y} = FF_{projectplant,diesel,y} + FF_{projectsite,diesel,y}$, $COEF_{i,y} = NCV_{i,y} \bullet EF_{CO_2,i,y}$

By onsite interview and checking Monthly Report of diesel consumption for boiler ignition/40/, the Verification Team confirms there is no diesel used for boiler ignition as the biomass residues is very easily get fired and the boiler is manually ignited. Therefore, $FF_{projectplant,\ diesel,y}$ is confirmed as zero in this monitoring period. The data of diesel for forklift($FF_{projectsite,diesel,y}$) has been verified by cross checking Monthly Report of diesel consumption onsite for forklift operation/41/ with Diesel Purchase Invoices/42/. For the ex-ante parameter $EF_{CO2,\ diesel,y}$ and $NCV_{diesel,y}$, the value have been confirmed as 0.0741 tCO2/GJ and 42.652 GJ/t respectively.Thus, the quantity of fossil fuels combusted in this monitoring period is 132.23t, which results in 418 tCO2e project emission. The detailed calculation has been reflected in the Emission Reduction Calculation Spreadsheet/31/.

3) CO2 emissions from electricity consumption ($PE_{EC,y}$)

$PE_{EC,y} = EC_{PJ,y} \bullet EF_{grid,y} \bullet (1 + TDL_y)$

The emission factor 0.9735tCO2e/MWh is applied, and 20% was chosen as the default value of TDL_y in accordance with "Tool to calculate baseline, project and/or leakage emissions from electricity consumption"/14/. The quantity of electricity consumption on the stalk collection site on the Data Reading Records of M2/21/ is exactly the same as that in electricity purchase invoices of Electricity Purchase for M2/22/, and total amount is verified as 1,011.28MWh. The corresponding emission is 1,181CO2e and the detailed calculation has been reflected in the Emission Reduction Calculation Spreadsheet/31/.

4) Methane emissions from combustion of biomass residues ($PE_{biomass,CH_4,y}$)

$$PE_{biomass,CH_4,y} = EF_{CH_4,BF} \bullet \sum_k BF_{k,y} \bullet NCV_k ,$$

Here, $\sum_k BF_{k,y} \bullet NCV_k = BF_{maizestalk,y} \bullet NCV_{maizestalk} + BF_{wastewood,y} \bullet NCV_{wastewood}$

For the ex-ante parameter , its value 0.0000411 tCH4/GJ has been confirmed in the registered PDD. The quantity of dry biomass $BF_{maizestalk,y}$ and $BF_{wastewood,y}$ have been correctly determined by adjusting for the moisture content as shown in the ER calculation spreasheet/31/. The NCV value for each half year is correctly applied in this calculation spreadsheet, which is from the NCV analysis Reports/43/ issued by qualified third party. The project emission due to methane emissions from combustion of biomass residues is calculated as 124 tCH4. The detailed calculation has been reflected in the Emission Reduction Calculation Spreadsheet/31/.

Furthermore, by onsite visiting the stalk collecting site and the power plant, the verification team confirmed that the project activity does not result in any wastewater from the treatment of biomass residues, i.e. simple physical treatment of shredding, there is no waste water originating from the treatment of the biomass under anaerobic conditions. Therefore, the Verification Team concludes that the project emission of this project does not include the methane emissions from waste water treatment.

Leakage (Ly)

The Verification Team has checked the Biomass Availability Reports for Year 2009 and 2010 and 2011/44//45//46/, and confirms that the quantity of available biomass residue in 50km radius around the project site is at least 25% larger than the quantity of biomass that is utilized, including the project plant. Hence, the leakage for the project activity is considered as zero.

As indicated in the registered PDD/4/ and VCS monitoring report/2/, monitoring system and procedure is verified as following:

For monitoring electricity data, the bi-directional main meter M1 (with check meter M1') installed at the inlet of the power grid of new Wucun 35KV substation is used for measuring the electricity supplied to and purchased from the grid by the project which is confirmed by the power purchase agreement/18/. In addition, the only one site electricity meter M2 installed at only one stalk collecting site of the project is used for measuring the electricity consumed for collecting stalks.

For monitoring biomass residues data, the electronic belt weight (B1) is installed at the feeding inlet of the biomass boiler to measure the quantities of utilized biomass residues for power and heat plant.

For monitoring transported biomass residues data, the electronic weight meters (W1 and W2) are installed at the gate of the project site for measuring the weight of the trucks when it goes in and out of the project site.

For monitoring fossil fuel data, flow meter (F1) is installed at the diesel tank house for measuring the diesel used for ignition of the boiler and forklift operation.

Designated personnel of the project owner and Grid Company jointly read and record the main meter reading on the 22nd day of each month.

During the reporting period from 28 October 2009 to 10 July 2011, there was no any change of monitoring meters as reflected in the daily operation & maintenance logs/17/. All monitoring meters except electricity meter M1 and M1' for the measurement of parameters used for emission reduction covering the monitoring period have been strictly calibrated in accordance with the VCS monitoring report of the project/2/ and its registered PDD/4/, detailed calibration information in their calibration certificates/27/ as shown in the below table,

Meter	Type	Accuracy	Serial No.	Calibration frequency	name of the certifier calibration	Calibration certificate No.	Validity
B1	ICS-17B-1400	0.5	12060401	Once a year	Huixian Quanlity& Technology Supervision Testing Centre	Heng2009061500910	15/06/2009-14/06/2010
						Heng2010061500911	15/06/2010-14/06/2011
						Heng2011061500913	15/06/2011-14/06/2012
W1	XK3190-A9 (SCS-20)	level III	100900352	Once a half year	Huixian Quanlity& Technology Supervision Testing Centre	Heng2009010800807	12/06/2009-11/12/2009
						Heng2009020800801	12/12/2009-11/06/2010
						Heng2010020800803	12/06/2010-11/12/2010
						Heng2010020800805	12/12/2010-11/06/2011
						Heng2011020800801	12/06/2011-11/12/2011
W2	XK3190-A9 (SCS-80)	level III	0710430	Once a half year	Huixian Quanlity& Technology Supervision Testing Centre	Heng2009010800806	12/06/2009-11/12/2009
						Heng2009020800800	12/12/2009-11/06/2010
						Heng2010020800802	12/06/2010-11/12/2010
						Heng2010020800804	12/12/2010-11/06/2011
						Heng2011020800800	12/06/2011-11/12/2011
Ma1	Sh-10A	0.2%	-	Once a year	Huixian Quanlity& Technology	Ce2009050900817	09/05/2009-08/05/2010

					Supervision Testing Centre	Ce2010050900817	09/05/2010-08/05/2011
						Ce2011050900817	09/05/2011-08/05/2012
F1	JYB-60	0.5	11L00621	Once a year	Huixian Quanlity& Technology Supervision Testing Centre	Rong20090609005	09/06/2009-08/06/2010
						Rong20100609005	09/06/2010-08/06/2011
						Rong20110609005	09/06/2011-08/06/2012
M1	DTSD188S	0.5s	G014MS000391	Once a year	Electricity Measurement Center of Xinxiang Power Bureau, Henan Grid Co., Ltd	DC2009(DX115)	16/11/2009-15/11/2010
						DC2010(DX115)	16/11/2010 15/11/2011
M1’	DTSD188S	0.5s	G014MS000383	Once a year	Electricity Measurement Center of Xinxiang Power Bureau, Henan Grid Co., Ltd	DC2009(DX119)	16/11/2009-15/11/2010
						DC2010(DX119)	16/11/2010 15/11/2011
M2	DTS72	1.0s	KSE005040	Once a year	Electricity Measurement Center of Xinxiang Power Bureau, Henan Grid Co., Ltd	DC2009(DX175)	17/10/2009-16/10/2010
						DC2010(DX175)	17/10/2010 16/10/2011

The calibration of meters was carried out respectively by Huixian Quanlity& Technology Supervision Testing Centre and Electricity Measurement Center of Xinxiang Power Bureau, Henan Grid Co., Ltd. as described in the above table, whose accreditation was provided to the verification team/28//29/ and could confirm that its accreditation validity is respectively from 30/12/2005 to 29/12/2015/28/ and from 12/03/2008 to 11/03/2013/29/. Thus, the calibration certificates of meters are considered credible, and accordingly the accuracy and validity of meters can ensure the accurate measurement of parameters included in the monitoring plan of the registered PDD/4/ and VCS monitoring report/2/ during the reporting period from 28 October 2009 to 10 July 2011.

A complete set of data of monitoring parameter included in the monitoring plan of the registered PDD/3/ and VCS monitoring report/2/ from 28/10/2009 to 10/07/2011 are available for verification/18/. In order to ensure the accuracy and credible of measurement, the net electricity supplied to the grid ($EG_{projectplant,y}$) has been cross-checked with the electricity trading invoices covering the reporting period. If the measured electricity is different from sold electricity, the most conservative value is applied, in which the smaller value is taken as the electricity supplied to the grid, while the bigger value is taken as the electricity purchased from the grid, as presented in the emission reduction calculation spreadsheet/30/. The utilized diesel measured has been cross checked with diesel purchase invoice and storage changes.

For net electricity supplied to the grid measured by M1(M1'), the measured values from 28 Oct. 2009 to 15 Nov. 2009 is derived from non-calibrated meter M1(M1'), as indicated in the above table for calibration of meters and instruments. Project participants applied the maximal permission error of the meter to the measured values taken during the period from the scheduled date of calibration and the actual date of calibration for calculating the emission reduction covering the period. Considering the results of calibration of M1 (M1') dated 16 Nov.2009 do not show any errors in the meter, it is considered that the adjustment of the data by the project participants for the period is reasonable and credible according to the CDM VVS version 3.0.

In addition, since the electricity data recordings provided by local power grid is covering the period from 1 Nov. 2009 to 22 Nov. 2009, although the period from 16 Nov.2009 to 22 Nov.2009 is under calibrated meter as indicated in the above table for calibration meter and instruments, project participants also applied the maximal permission error to the measured value in the conservative manner. Verification team so considers it reasonable.

Emission reductions:

The emission reductions of the project are calculated as follows,

Reporting period	BE_y (tCO2e)	PE_y (tCO2e)	LE_y (tCO2e)	$ER_y = BE_y – PE_y - LE_y$ (tCO2e)
From 28 Oct.2009 to 22 Dec. 2009	9,447	345	0	9,102

From 23 Dec. 2009 to 22 Dec. 2010	74,538	2,836	0	71,702
From 23 Dec. 2010 to 10 Jul. 2011	76,179	3,145	0	73,034
Total for the report period from 28 October 2009 to 10 July 2011	160,165	6,327	0	153,838

Based on the above assessment, the emission reductions resulted from the monitoring period from 28 October 2009 to 10 July 2011 is verified as 153,838tCO2e. Further, compared against the registered PDD/4/, the actual emission reductions of 153,838tCO2e is 26.99%[1] lower than the estimated 210,728tCO2e under the same days of 621 during the reporting period from 28 October 2009 to 10 July 2011 (i.e. (123,858tCO2e/365days)*621days=210,728tCO2e).

Validation of the energy balance during the monitoring period

It is verifying the recordings from the biomass residues/36/ and fossil fuel/40/ used for power generation and electricity generated/23/ and confirmed that the conversion efficiency of the power plant is 18.7% for the monitoring period.

[1] (the estimated emission reduction based on estimated annual ER of the registered PDD same as the report time-actual achieved emission reduction)/the same time estimated emission reduction

4.3 Quality of Evidence to Determine GHG Emission Reductions or Removals

As discussed in the above sections 4.1 and 4.2, the accuracy of GHG emission reductions for the reporting period is deemed credible via following quality assessments of evidences,

- The VCS monitoring report/2/ and VCS PD/3/ is prepared in line with the latest version 3.2 of VCS monitoring report template/10/ and the latest version 3.1 of VCS Project Description Template/11/ respectively;

- The daily operation & maintenance logs /17/ were verified and found that no any event or situation which may impact the applicability of the methodology ACM0006 version 10/13/ occurred to the project activity during the reporting period;

- All involved meters in the monitoring plan of the registered PDD/4/ are appropriately calibrated, and their calibration certificates were verified valid by checking the accreditation of calibration entity/27//28//29/. Further, the validity of calibration certificates are confirmed to cover the reporting period;

- All monitoring personal of the project were well trained and got the relevant national operation qualifications/30/;

- A complete monitoring data records/19//21//23//25//35//36//37//38//39//40//41/ were provided for verification during the site inspection, and the electricity trading invoices are used to cross check both the electricity supplied to the grid and the electricity purchased from the grid, where conservative values are taken to determine the net electricity supplied to the grid for ensuring the quality of baseline emissions; consumed diesel has been cross checked with the purchase invoices and storage changes records.

- The emission reductions during the reporting period can be transparently reproducible against the emission reductions calculation spreadsheet/31/.

4.4 Management and Operational System

During the on-site visit, the verification team interviewed with the management representative and on-site operators/i//ii/, and confirmed that the structure of monitoring management team and the responsibilities of team have been defined and followed well in accordance with the registered PDD/4/. The monitoring personnel are well trained and have got relevant national operation qualifications/30/, which demonstrates that they have sufficient competence to carry out the relevant monitoring tasks.

An internal data are subjected to QA/QC measures. All monitored data will be archived in electronic form and be kept for at least 2 years after the end of the last crediting period or till the last issuance of VERs for the project activity whichever occurs later.

The QA/QC measures were further verified reliable by checking the daily operation & maintenance logs/17/.

5 VERIFICATION CONCLUSION

The verification team assigned by the DOE (TÜV Rheinland (China) Ltd.) has performed the verification of the project "Henan Xinxiang 24MW Biomass based Cogeneration Project" (hereafter referred to as "the project") in China, on the basis of requirements of VCS Standard version 3.3/8/.

All electricity generated by the project will be supplied to the CCPG of China in which the fossil-fuel based power plant are mainly dominated, thus the project achieves GHG emission reductions.

The verification was conducted by the following four steps:

i) Desk review of the VCS monitoring report (version 01, dated 16/02/2013), the registered CDM PDD, the CDM validation report, emission reductions calculation spreadsheet and supporting documents made available to the verification team by the project participant;
ii) Follow-up interviews and site inspection (26 Aug. 2013 to 27 Aug. 2013);
iii) Resolution of outstanding issues and desk review of the revised VCS monitoring report (version 02.0, 30/08/2013); and
iv) Issuance of final verification report.

Based on the above, the verification team can conclude as follows in detail,

- All operations of the project are implemented and installed as planned and described in the registered PDD;
- The monitoring plan is in compliance with the applied approved methodology ACM0006 "Consolidated methodology for electricity generation from biomass residues in heat and power plant" (version 10);
- The meters applied to monitor parameters required for calculating emission reductions are calibrated appropriately;
- The monitoring system and QA/QC procedures have been in place and all operation staff has got qualifications to operate and monitor the project activity.

Therefore, the verification team confirms that the GHG emission reductions are calculated without material misstatements in a conservative and appropriate manner. TÜV Rheinland (China) Ltd. hereby is able to certify that the emission reductions resulted from the project "Henan Xinxiang 24MW Biomass based Cogeneration Project" during the monitoring period from 28 October 2009 to 10 July 2011 amount to 153,838 tonnes of CO2 equivalent, detailed as below,

Reporting period: From 28 October 2009 to 10 July 2011

Verified GHG emission reductions or removals in the above reporting period:

GHG Emission Reductions or Removals	tCO_2e
Baseline Emissions	160,165
Project Emissions	6,327

Leakage	0
Net GHG emission reductions or removals	153,838