



VERIFICATION REPORT

for the CDM Project Activity

GGP Biogas Project

In

Indonesia

Report No. 01 997 9105077145
Version 02, 2014-10-14

Designated Operational Entity (DOE)

TÜV Rheinland (China) Ltd

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I. Project data:

Project title:	GGP Biogas Project		Report No.: 01 997 9105077145
Registration No. / Date:	8101 / 16-11-2012		Current version No.: 02
Monitoring period:	16/11/2012 to 31/12/2012 (including both the days)		Date of current version: 2014-10-14
Methodology:	ACM0014, Version 04.1		Date of first issue: 2013-11-26
Publication of MR:	The monitoring report (version 01, 06/09/2013) was published at UNFCCC website on 31/10/2013.		
Average emission reductions:	Estimated:	5,812*(46/47)=5,688 tCO ₂ e from 16/11/2012 to 31/12/2012 including both days based on emission reductions as indicated in the registered PDD (version 05, dated 23/07/2012) /B04/	Verified for CP1: 2,585 tCO ₂ e from 16/11/2012 to 31/12/2012 (including both days)
			Verified for CP2: NA
GHG reducing measure/technology:	Project to reduce GHG emissions from the wastewater treatment lagoons of GGP and UJA		

Party	Project participants	Party considered a project participant	Contract party
Republic of Indonesia (Host)	PT. Great Giant Pineapple (GGP)	No	<input checked="" type="checkbox"/>
Denmark	Ministry of Climate and Energy, Danish Energy Agency	Yes	<input type="checkbox"/>

II. Verification Team and Technical Reviewer:

Verification Team			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
Mr. Chetan Swaroop Sharma*	India	1.2	X						
Mr. R Narendra Kumar (Ex-Team Leader)**	India	1.2, 3.1	X						
Nagaraju Bellapu (Ex-Auditor)***	India	1.2, 3.1				X			
Mr. Lufaldy Ernanda (Ex-Technical expert)****	Indonesia	1.2, 13.1			X		X		
Mr. Ma. Paa. Puratchikkanal*****	India	1.2, 3.1, 6.1, 13.1/13.2, 15.1					X		

* from 03/06/2014

** till 02/06/2014

*** till 02/06/2014

**** till 02/06/2014

***** from 03/06/2014

Technical Reviewer	Role
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Full name	Affiliation TÜV Rheinland	Appointed for Sectoral Scopes (Technical Areas)	Technical Reviewer	Expert to TR	Trainee TR
Ms. Indumathi C	India	1.2	X		
Mr. Walter Tang	China	1.1, 1.2, 2.1, 2.2, 3.1, 4.3, 4.5, 13.1		X	

Verification Phases	Verification Status
<input checked="" type="checkbox"/> Desk Review <input checked="" type="checkbox"/> Follow up interviews <input checked="" type="checkbox"/> Resolution of outstanding issues	<input type="checkbox"/> Corrective Actions / Clarifications Requested <input checked="" type="checkbox"/> Full Approval and Submission for Issuance <input type="checkbox"/> Rejected

III. Verification Report:

Final approval	Released	Distribution
<input checked="" type="checkbox"/> Date: 2014-10-24	By: Mr. Henri Phan	<input type="checkbox"/> No distribution without permission from the Client or responsible organizational unit <input checked="" type="checkbox"/> Unrestricted distribution

Abbreviations

CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reduction(s)
CH ₄	Methane
CL	Clarification request
COD	Chemical oxygen demand
CO ₂	Carbon dioxide
CO _{2e}	Carbon dioxide equivalent
CP	Commitment Period
CV	Calorific value
DOE	Designated Operational Entity
EB	Executive Board
FAR	Forward Action Request
GHG	Greenhouse Gas(es)
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
MP	Monitoring Plan
MR	Monitoring Report
NA	Not applicable
PDD	Project Design Document
PP	Project Participant
QA/QC	Quality Assurance/Quality Control
SOP	Standard Operating Procedure
TUV R	TUV Rheinland (China) Ltd
UASB	Upflow Anaerobic Sludge Blanket digester
UNFCCC	United Nations Framework Convention on Climate Change
VVS	Validation and Verification Standard
WWT	Waste Water Treatment

Verification opinion — summary

The verification team assigned by the DOE (TÜV Rheinland (China) Ltd.) concludes that the CDM Project Activity “GGP Biogas Project” in Indonesia, as described in the registered PDD (version-05, date-23/07/2012) /B04/ and monitoring report (version-08.1, date-09/10/2014) /P02/, meets all relevant requirements of the UNFCCC for CDM project activities including article 12 of the Kyoto Protocol /P03/, the modalities and procedures for CDM (Marrakesh Accords) project activities including carbon dioxide capture and storage in geological formation and the subsequent decisions by the COP/MOP and CDM Executive Board. The verification is conducted in-line with the VVS requirements.

Verification methodology and process

The verification has been performed as described in the VVS version 07.0 /B10/ and constitutes the following steps:

- Publication of the MR on the UNFCCC website on 31/10/2013
- Desk review of the MR and the relevant documents
- On-site assessment on 21/11/2013
- Issuance of Verification Report

This verification is the first periodic verification. Rules based approach has been employed to perform this verification. In the course of the verification, eleven (11) Corrective Action Requests (CARs) and ten (10) Clarification Requests (CLs) were raised and successfully closed. Two (2) FAR have been raised during this monitoring period and successfully closed.

The verification is based on the above mentioned UNFCCC project page documents (validated PDD /B04/, applied methodology /B01/, validation report /B05/ and monitoring report /P02/, emission reduction calculation spread sheet /P04/ and supporting documents made available by the project participant

As per the registered PDD /B04/, the accuracy class of the flow meters used for the monitoring parameters ($F_{UJA,biogas,y}$, $F_{GGP,biogas,y}$, $F_{Flare,biogas,y}$) should be 1.5% however the meter installed have the accuracy class of 2% which is of inferior quality. As per the CDM project standard Version 07.0, Appendix 1, paragraph 3 “Permanent changes from the registered monitoring plan, applied methodology or applied standardized baseline”, post registration change is submitted for these changes along with this report. Also as per point 4 under paragraph 3, the adjusted values have been applied accordingly for the difference in accuracy class.

Verification team confirmed that the permanent changes made are in compliance as per point 5 (a) under paragraph 3 of the Appendix 1 of “Clean development mechanism project standard” version 07.0 /B12/ and para 293 and 294 (a) of VVS Version 07.0 /B10/. Hence these changes do not require prior approval by the board

The project activity was correctly implemented according to selected monitoring methodology and monitoring plan. The monitoring equipment was installed, calibrated and maintained in a proper manner, while collected monitoring data allowed to verify the amount of achieved GHG emission reductions. The DOE therefore is pleased to issue a positive verification opinion expressed in the attached Certification statement.

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1. Introduction

The Contracting Client Organization has commissioned the DOE TÜV Rheinland (China) Ltd. to perform a verification of the CDM Project Activity “GGP Biogas Project” in Indonesia (hereafter “project activity”). This report summarises the findings of the verification of the project, performed on the basis of paragraph 62 of the CDM modalities and procedures, as well as criteria given to provide for consistent project operations, monitoring and reporting and the subsequent decisions by the CDM Executive Board. Verification is required for all registered CDM project activities intending to confirm their achieved emission reductions and proceed with request for issuance of CERs. This report contains the findings from the verification and a certification statement for the certified emission reductions.

1.1 Objective

Verification is the periodic independent review and *ex post* determination of both quantitative and qualitative information by a Designated Operational Entity (DOE) of the monitored reductions in GHG emissions that have occurred as a result of the registered CDM project activity during a defined monitoring period.

Certification is the written assurance by a DOE that, during a specific period in time, a project activity achieved the emission reductions as verified.

The objective of this verification was to verify and certify emission reductions reported for the “GGP Biogas Project” in country “Indonesia” for the period 16/11/2012 to 31/12/2012 (including both the days).

The purpose of verification is to review the monitoring results and verify that monitoring methodology was implemented according to monitoring plan and monitoring data, used to confirm the reductions in anthropogenic emissions by sources is sufficient, definitive and presented in a concise and transparent manner.

In particular, monitoring plan, monitoring report and the project’s compliance with relevant UNFCCC and host Party criteria are verified in order to confirm that the project has been implemented in accordance with previously registered design and conservative assumptions, as documented and also if the monitoring plan is in compliance with the registered PDD and approved monitoring methodology.

1.2 Scope

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 emission data is sufficiently supported by evidence.
- Where sampling is involved, sampling guidelines are applied to ensure the adequate sampling and survey method is followed in reaching professional judgements.

The verification shall ensure that reported emission reductions are complete and accurate in order to be certified. The verification comprises a review of the monitoring report over the monitoring period from 16/11/2012 to 31/12/2012 (Including both the days) based on registered PDD /B04/ in part of the monitoring parameters and monitoring plan, emission reduction calculation spreadsheet, monitoring methodology and all related evidence provided by project participant.

On-site visit and stakeholders interviews are also performed as part of the verification process.

2. Methodology

The verification consists of the following four phases:

1. Completeness check and webhost of the Monitoring report for UNFCCC public commenting;
2. Desk review of the monitoring plan, monitoring report, monitoring methodology, project design document, applicable tools in particular attention to the frequency of measurements, quality of metering equipment's including calibration requirements, QA/QC procedures and other relevant documents;
3. On-site visit (including follow-up interviews with project stakeholders, when deemed necessary). The on-site assignment includes the following:
 - An assignment of implementation and operation of project activity with respect to registered PDD or approved revised PDD;
 - Review of information flows for generating, aggregating and reporting the monitoring parameters;
 - Interview with relevant personals to determine whether the operational and data collection procedures are implemented and in accordance with monitoring plan of the PDD;
 - Cross check of information and data provided in the monitoring report with plant logbooks, inventories, purchase records or similar data sources;
 - Check of monitoring equipment's, calibration frequency and monitoring practice in-line with methodology and PDD;
 - Review of assumptions made in calculating the emission reduction;
 - Implementation of QA/QC procedure in-line with the PDD and methodology requirement.
4. Resolution of outstanding issues and the issuance of the final Verification report and Certification statement.

The following sections outline each step in more detail.

2.1 Desk review

The following table outlines the documentation reviewed during the verification:

Ref no.	Reference Document
/P01/	Webhosted Monitoring report, version 01, dated 06/09/2013
/P02/	Final Monitoring report, version 08.1, dated 09/10/2014
/P03/	Emission reduction calculation spread sheet corresponding to /P01/
/P04/	Final Emission reduction calculation spread sheet corresponding to /P02/
/P05/	Calibration certificates corresponding to the project activity monitoring parameters covering the monitoring period.
/P06/	<p>Logbooks submitted for all the monitoring parameters monitored during the monitoring period from 16/11/2012 to 31/12/2012. Ref: Raw data.</p> <p>Monitored Data:</p> <ol style="list-style-type: none"> 1. $F_{PJ,dig,m}$ - Recorded data for "Quantity of wastewater that is treated in the anaerobic digester in the project activity in month m" for the period from 16/11/2012 to 31/12/2012. Monitoring Plan Code MP01 2. $W_{COD,dig,m}$ - Laboratory test report for "Average chemical oxygen demand in the wastewater that is treated in the anaerobic digester or under clearly aerobic conditions in the project activity in month m". Monitoring Plan Code MP02 <ol style="list-style-type: none"> a. For the month of November 2012 by Laboratorium Penguji Dan Kalibarsi, sample taken on 06/11/2012. b. For the month of December 2012 by Laboratorium Penguji Dan Kalibarsi, sample taken on 06/12/2012.

	<ol style="list-style-type: none"> 3. $F_{PJ,effl,dig,m}$ - Recorded data submitted for “Quantity of effluent from the digester in month m” for the months of November and December 2012. Monitoring Plan Code MP03 4. $FP_{J,effl,lag,m}$ - Recorded data submitted for “Quantity of effluent from the open lagoon in which the effluent from the digester is treated in month m” of November and December 2012. Monitoring Plan Code MP04 5. EG_y - Recorded data submitted for “Metering the Electricity consumed by the biogas plant that is generated by GGP’s captive power plant in year y” accounted for project emissions for the months of November and December 2012. Monitoring Plan Code MP05 6. $T_{2,m}$ - Recorded data submitted for “Average temperature at the project site in month m” for the months of November and December 2012. Collected data from the BMG (Badan Meteorologi dan Geofisika / Meteorological and Geophysical Agency) for Terbanggi Besar area. Monitoring Plan Code MP06 7. $HG_{PJ,UJA,y}$ – Calculated data submitted for “Net quantity of heat generated in year y in the UJA heaters with biogas from the new anaerobic digester” for the months of November and December 2012. Monitoring Plan code-MP07 and MP-14 (FT-501A and FT-501B) 8. $HG_{PJ,GGP,y}$ – Calculated data submitted for “Net quantity of heat generated in year y in GGP Boilers (2 & 3) with biogas from the new anaerobic digester” for the months of November and December 2012. Monitoring Plan code-MP-08 and MP-15 (FT-501) 9. $W_{COD,effl,dig,m}$ - Laboratory test report for “Average chemical oxygen demand in the effluent from the digester in month m”. Monitoring Plan Code MP09 <ol style="list-style-type: none"> a. For the month of November 2012 by Laboratorium Penguji Dan Kalibarsi, sample taken on 06/11/2012 b. For the month of December 2012 by Laboratorium Penguji Dan Kalibarsi, sample taken on 06/12/2012 10. $W_{COD,effl,lag,m}$ - Laboratory test report for “Average chemical oxygen demand in the effluent from the open lagoon in which the effluent from the digester is treated in month m”. Monitoring Plan Code MP10 <ol style="list-style-type: none"> a. For the month of November 2012 by Laboratorium Penguji Dan Kalibarsi, sample taken on 05/11/2012 b. For the month of December 2012 by Laboratorium Penguji Dan Kalibarsi, sample taken on 05/12/2012 11. $S_{LA,y}$ - Recorded data for “Amount of sludge applied to land in month m” for the month of November and December 2012. Monitoring plan code-MP12 12. $F_{UJA,biogas,y}$ - Recorded data for the “Amount of biogas that is sent to the UJA heaters in year y” for the month of November and December 2012. Monitoring plan code-MP14 FT-501A & FT 501B 13. $F_{GGP,biogas,y}$ - Recorded data for the “Amount of biogas that is sent to the GGP Boilers (B2 & B3) in year y” for the month of November and December 2012. Monitoring plan code-MP15 FT-501. 14. $F_{Flare,biogas,y}$ - Recorded data for the “Amount of biogas that is sent to the flare in year y” for the month of November and December 2012. Monitoring plan code-MP16 FT-105. 15. $w_{CH4,biogas,y}$ - Recorded data submitted for the “Concentration of methane in the biogas in the
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	<p>outlet of the new digester” measured continuously with Gas analyzer for the months of November and December 2012. Monitoring plan code-MP17 AT-101</p> <p>16. $FV_{RG,h}$ - Recorded data submitted for “Volumetric flow rate of the residual gas in dry basis at normal conditions in the hour h” for the months of November and December 2012. Monitoring plan code-MP18</p> <p>17. Flare Efficiency – Recorded data submitted for “time that the flare is on in a given hour” for the months of November and December 2012. Monitoring plan code-MP19</p>
/P07/	Extract of manual of all the major equipment and all meters/measuring equipment clearly indicating their specifications / technical details.
/P08/	Third party energy audit report BPPT Energy technology center dated October 2012 for the efficiency of the GGP boiler.
/P09/	“Thermal Oil Heater Efficiency Measurement” dated 14 April 2014 by “PT. Mitra Ikhtiar Simpati as Authorized Sole Agent of Bosch Boiler” for efficiency of the UJA Heaters.
/P10/	<p>Snap shots of the following</p> <ol style="list-style-type: none"> 1. Equipment (Covering the equipment and their nameplate) under project boundary 2. All the meters and measuring equipment
/P11/	Training document for the biogas system, GGP boilers and UJA heaters
/P12/	Organizational chart
/P13/	Process performance certificate from Global Water Engineering (GWE) Ltd. (who designed, engineered, constructed and commissioned) based on the achieved data from 14-18 October 2011. Biological start-up of the UASB biogas plant successfully on 29/07/2011 document dated 19/10/2011.
/P14/	CDM onsite monitoring manual
/P15/	SOP for biogas plant
/P16/	Proof of competency of the calibrating agencies.
/P17/	Declaration from PP that the second GGP Boiler no. 03 will be retrofitted in the future.
/P18/	PP Confirmation to install flow meter for the monitoring parameter “ $F_{PJ,effl,lag,m}$ ”
/P19/	Relevant SOP for the closure of CAR-10.
/P20/	National standard for the calibration frequency of the energy meter corresponding to monitoring parameter “EGy”
/P21/	Revised PDD version 06, dated 09/10/2014
/P22/	Manufacturer recommendation for the calibration frequency of the flow meter $F_{PJ,effl,dig,m}$

Ref no.	Reference Document
/B01/	Approved monitoring methodology: ACM0014 “Mitigation of greenhouse gas emissions from treatment of industrial wastewater”, version 04.1
/B02/	Kyoto Protocol (1997)
/B03/	Decision 3/CMP. 1 (Marrakesh – Accords)
/B04/	Registered PDD version no-5, dated-23/07/2012, Registration no. 8101, Registration date 16/11/2012 https://cdm.unfccc.int/Projects/DB/DNV-CUK1352367607.78/view
/B05/	Final validation report no. “2010-9161 Revision no. 01”, dated 08/11/2012 http://cdm.unfccc.int/UserManagement/FileStorage/O8453HM6V92XC0YGTP1SFUDAB7QKWE
/B06/	Monitoring Report form, (F-CDM-MR) Version 04.0
/B07/	E-mail from UNFCCC Secretariat confirming the monitoring report made publically available from 31/10/2013, dated 31/10/2013.
/B08/	Guidelines on the application of Materiality in Verifications (version 01.0), Annex 06, EB 69.
/B09/	http://cdm.unfccc.int/index.html

	http://cdm.unfccc.int/methodologies/PAmethodologies/approved http://www.ipcc-nggip.iges.or.jp/public/2006gl/index.html http://www.worldclimate.com/cgi-bin/data.pl?ref=S04E105+1102+96273W http://www.bmkg.go.id/bbmkg_wilayah_2/Profil/stasiun-wilayah-bbmkg2.bmkg http://www.itouchmap.com/latlong.html
/B10/	Clean Development Mechanism Validation and Verification Standard (version 07.0)
/B11/	Clean Development Mechanism Project Cycle Procedure (version 7.0)
/B12/	Clean Development Mechanism Project Standard (version 07.0)

2.2 On-site visit and follow-up interviews with project stakeholders

TÜV Rheinland verification team carried out an on-site visit dated (21/11/2013) and performed interviews with the project representatives and stakeholders.

Prior to the interview salient points to be discussed were planned. Date of interview, interviewee and points discussed are given in the following table.

	Date	Name	Organization	Topic
/i/	21/11/2013	Julius Sugarjanto	CDM/EES manager	Monitoring of operation, project implementation, monitoring plan, reporting and record keeping procedures, Calibration, Provisions for training, operation and maintenance, information flow, emission reductions calculation
/ii/	21/11/2013	Tri Sani	CDM/Mon. officer	
/iii/	21/11/2013	Nunuk Bujihastuti	QA officer	
/iv/	21/11/2013	Suhar yanto	Biogas plant	
/v/	21/11/2013	Supriyano	Biogas plant	
/vi/	21/11/2013	Ida Bagus P.W.	System-biogas plant	
/vii/	21/11/2013	Asep. Muchtar	Biogas plant	
/viii/	21/11/2013	Leonardo Sidabalok	Ass. Project manager South Pole Carbon Asset Management Ltd.	

Verification Team along with onsite observation, objective evidence collections, data generation and recording analysis also considered the views obtained in these interviews while arriving at Verification Opinion.

2.3 Resolution of outstanding issues

The objective of this phase of the verification is to resolve any outstanding issues (issues that require further elaboration, research or expansion) which have to be clarified prior to final DOE's conclusions on the project implementation, monitoring practices and achieved emission reductions. In order to ensure transparency a verification protocol is completed for the project activity. The protocol shows in transparent manner criteria (requirements), means of verification and resulting statements on verification actual project activity against identified criteria.

The verification protocol serves the following purposes:

- It organises in a table form, details and clarifies the requirements, which CDM project is expected to meet CDM requirements;
- It ensures a transparent verification process where the DOE will document how a particular requirement has been verified and the result of the verification.
- It ensures that the issues are accurately identified, formulated, discussed and concluded in the validation report.
- It ensures the determination of achieving credible emission reductions from the project activity.

The verification protocol consists of three tables. Table 1 reflects the verification requirements and reference to the materials used to verify the project activity against those requirements, as well as means of verification, reference to Table 2 and preliminary and final opinion of the DOE on every particular requirement. Table 3 reflects the carry forward actions initiated by the verification team if the monitoring and reporting require

attention and/or adjustment for the next verification period. The completed verification protocol for this project is enclosed in Appendix A to this report.

Findings during the verification can be interpreted as a non-compliance with CDM criteria or a risk to the compliance. Corrective action requests (CARs) are raised, in case:

- (a) Non-conformities with the monitoring plan or methodology are found in monitoring and reporting and has not been sufficiently documented by the project participants, or if the evidence provided to prove conformity is insufficient;
- (b) Modifications to the implementation, operation and monitoring of the registered project activity has not been sufficiently documented by the project participants;
- (c) Mistakes have been made in applying assumptions, data or calculations of emission reductions which will impair the estimate of emission reductions;
- (d) Issues identified in a FAR during validation/previous verification(s) that are not been resolved by the project participant(s) to be verified during current verification.

Requests for clarification (CLs) are raised, if information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met.

A forward action request (FAR) is raised during verification to highlight issues related to project implementation/monitoring that require review during the subsequent verification of the project activity. FARs shall not relate to the CDM requirements for issuance.

2.4 Internal quality control

The final verification report underwent a technical review by a qualified independent reviewer before requesting issuance of the project activity. The technical review was performed by a technical reviewer qualified in accordance with TÜV Rheinland's qualification scheme for CDM validation and verification that meets the criteria of EB guidelines for qualification.

2.5 Verification Team and Technical Reviewer

Before the assessment begins, members of the verification team are ensured to cover the technical area(s), sectoral scope(s) and relevant host country experience including local language ability for evaluating the CDM verification activity. The qualification of the team is as per the criterias defined by the EB guidelines for qualification.

Verification Team			Type of Involvement					
Full name	Affiliation TÜV Rheinland	Appointed for Sectoral Scopes (Technical Areas)	Supervising the work	Desk review	Site Visit + Interview	Report and protocol Writing	Technical Expert Input	Reporting Support
Mr. Chetan Swaroop Sharma	India	1.2	X	X		X		X
Mr. R Narendra Kumar (Ex-Team Leader)	India	1.2, 3.1	X	X	X	X		X
Nagaraju Bellapu (Ex-Auditor)	India	1.2, 3.1		X	X	X		X
Mr. Lufaldy Ernanda (Ex-Technical expert)	Indonesia	1.2, 13.1			X	X	X	
Mr. Ma. Paa. Puratchikkanal	India	1.2, 3.1, 6.1, 13.1/13.2, 15.1				X	X	

Technical Reviewer			Type of Involvement		
Full name	Affiliation TÜV Rheinland	Appointed for Sectoral Scopes (Technical Areas)	Technical Reviewer	Expert to Technical Reviewer	Trainee TR
Ms. Indumathi C	India	1.2	X		
Mr. Walter Tang	China	1.1, 1.2, 2.1, 2.2, 3.1, 4.3, 4.5, 13.1		X	

3. Verification findings

The findings of the verification are described in the following sections. The verification criteria (requirements), the means of verification and the results of verification are documented in detail in the verification protocol in Appendix A.

3.1 Project implementation

3.1.1 The implementation of the project activity

Project Participants:	PT. Great Giant Pineapple (GGP)
Project Parties:	Ministry of Climate and Energy, Danish Energy Agency (Denmark)
Title of project activity:	GGP Biogas Project
UNFCCC registration No:	8101
Baseline and monitoring methodology:	ACM0014, Version 04.1
Project Type:	Waste Water Treatment
Project Scale:	Large Scale
Location of the project activity:	Tebanggi Besar, Central Lampung Regency, Province of Lampung, Indonesia
Project's crediting period:	16/11/2012 to 15/11/2022
Total Duration of the project:	10 years (fixed)
Period verified in this verification:	16/11/2012 to 31/12/2012 (including both the days)

As part of the site visit the verification team was able to confirm that the project implementation is in accordance with the project description contained in registered PDD (version-05, dated-23/07/2012) /B04/. The verification took cognizance of § 238, 239 & 240 of CDM Project Standard /P12/.

PT. Gunung Sewu Kencana's (GSK) agribusiness operations in Lampung, Indonesia, consist of two partially integrated commercial activities each operated by a subsidiary of GSK as follows:

- PT. Great Giant Pineapple (GGP), which operates the single largest vertically integrated pineapple plantation, cannery and juice concentrate operations in the world.
- PT. Umas Jaya Agrotama (UJA), a Tapioca Starch Division, currently is the third largest domestic producer in Indonesia.

This Project activity involves the installation of a new closed anaerobic wastewater treatment facility (Upflow Anaerobic Sludge Blanket digester, UASB) with biogas recover system. The installation of this new UASB wastewater treatment facility (WWT) replaces all of the existing anaerobic lagoons of GGP and UJA. This is except for UJA Lagoon 1 (anaerobic lagoon) which is redeveloped for mixing the effluent streams of UJA and GGP and stabilizing the highly acidic effluent from GGP prior to entry into the UASB facility. Of the existing aerobic lagoons only the aerobic lagoons of UJA used under the project activity for final "polishing" of the

UASB effluent prior to release into the environment. The entire lagoon based WWT system of GGP, including the forced aeration, are not required under the project activity. The same has verified during the site visit of the project activity /P10/.

Biogas generated and captured in the UASB digester under the project activity is used for:

- Displacement of 100% of the HFO used in the two (2) thermal boilers that provide heat for UJA's cassava processing by retrofitting the HFO burners of the two thermal boilers with Bio Burners.
- Substitution of coal by biogas for steam generation in the coal fired boiler of GGP Power Plant. Due to limited energy availability from the biogas the use of only one boiler is viable but due to operational rotation of boilers during the year two (2) of the three (3) boilers were planned to be retrofitted with biogas burners to provide year long utilization of the biogas however out of the two (2) GGP power plant boilers (Boilers No 2 & 3) only one of the boiler (Boiler No. 2) has been retrofitted with biogas burner to enable this boiler to use coal and biogas simultaneously. CAR-09 has been raised in this regard and successfully closed. PP will also retrofit the Boiler 3 in future with biogas burner, FAR-01 has been raised in this respect and successfully closed.
- For operational and safety reasons an "Open Flare" is installed under the project activity for methane destruction when required.

Biogas start up of the UASB digester biogas plant started production process in 29/07/2011 /P13/, and currently full system is in operation, comprising biogas production facility, biogas burner and flare system.

The geo-coordinates of the project location are 4° 49' 18.71" S and 105° 13' 53.75" E as reported in the monitoring report /P02/. From the review of the MR /P02/ and independent web search /B09/, verification team has found that the Latitude and longitude reported in the MR /P02/ are consistent with the registered PDD /B04/ and also corresponds to the actual location of the project activity.

The verification team has verified the implementation of the project activity as per § 262 (b) (i), 270(a), 271, 272 and 273 of VVS ver 7.0 and found correct. The project activity has been implemented and operated as stated in the registered PDD /B04/ which has been verified during the site visit.

There was no diversion from the implementation details given in the registered PDD during this reported monitoring period.

Herewith, the Verification Team summarizes *major* changes between webhosted Monitoring Report and final version of Monitoring Report for submission as follows:

Subject	Webhosted Monitoring Report (MR)	Correction to webhosted MR in the final MR submission for issuance with DOE assessment and reason of acceptance.
Consistency		
MR (project title / report date and version etc.)	Project title: GGP Biogas Project Monitoring Report: version-01, dated-06/09/2013 /P01/.	No change except monitoring report Final Monitoring Report version-08.1, dated-09/10/2014 /P02/.
Methodologies (title and version numbers) PDD and its version	Methodologies (title and version numbers): ACM0014, Version 04.1 PDD and its version: version 05, dated 23/07/2012	No change
CER calculations (amount of emission reduction)	Emission reductions = 2,476 tCO ₂ e in the web hosted MR /P01/	Emission reductions = 2,585 tCO ₂ e in the Final MR /P02/ The reason for the increase in ER units is because of the combined effect of the raised CAR/CL during this monitoring period. Checked and confirmed by the verification

		team. Please refer to raised CAR/CL for further information.
Registration date	Registration Date: 16/11/2012	No Change
Monitoring (period dates)	16/11/2012 to 31/12/2012 (including both the days)	No change
Crediting period (type / start date)	Fixed Type 16/11/2012 to 15/11/2022	No change

Please refer to Appendix A of this report for details of each change between webhosted MR and the final MR for submission. The Verification Team has carried out the verification process based on the Webhosted MR and raised CARs/CLs against the project by issuing the verification protocol.

With the updated information and corrections done on final MR, the PP has addressed all the CARs /CLs that were raised by the Verification Team.

It is concluded that the Verification Team has reviewed the project in line with the VVS (version 07.0) and all the evidence, corrections, justifications and updating done on the final MR with respect to CARs /CLs raised are accepted and closed by the Verification Team, issuing the positive verification opinion for project registration.

TÜV Rheinland verification team considers the project description of the project contained in the registered PDD to be complete and accurate. The PDD complies with the relevant methodology, tools, forms and guidance at the time of PDD submission for registration.

3.1.2 The actual operation of the CDM project activity

The verification team has verified during the site visit and from the document review /P05/, /P06/ and /P10/ that the project activity has been operated as per the registered PDD /B04/ and all the physical features of the project activity are in place during this reported monitoring period (16/11/2012 to 31/12/2012 (including both the days)).

Project physical features (technology, project equipment, monitoring and metering equipment)	The project activity involves installation of a new closed anaerobic wastewater treatment facility (Upflow Anaerobic Sludge Blanket digester, UASB) with biogas recover system. The same has verified during the site visit of project activity /P10/. The commissioning date of the UASB digester was 29/07/2011 /P13/.	
Any Project Design Change been sought and approved by EB for the project?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	NA
Any Revision in Monitoring plan is sought and approved by EB for the project?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	NA
Does the monitoring report provide line diagram showing all relevant monitoring points?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	The verification team verified the same on the site visit and confirms that the monitoring points are implemented in accordance to the diagram and is adequate to ensure the actual emission reduction.

The timeline of the project's implementation is as follow:

Milestone of the project activity	Timeline	Assessment by the verification team
Starting date of operation:	The commissioning date of the UASB digester is 29/07/2011 and the operation is started from the same date.	Verification team has verified the same from the document /P13/ and found OK.
Registration of the project activity	16/11/2012	Verification team has checked the same from the UNFCCC website /B09/

Milestone of the project activity	Timeline	Assessment by the verification team
Crediting period: 16/11/2012 to 15/11/2022		
1st monitoring period	16/11/2012 to 31/12/2012 (including both the days)	Verification team has checked the same from the UNFCCC website /B09/

In summary, the monitoring period is reasonable and the actual implementation of the project activity is appropriate to its CDM development. The verification took cognizance of § 240,241 and 242 of CDM Project Standard.

3.2 Compliance of the monitoring plan with the monitoring methodology including applicable tool(s)

The verification team has reviewed the monitoring plan as stated in the registered PDD /B04/ against the monitoring methodology of the applied methodology ACM0014 (version 04.1) /B01/. Based on the review, the verification team confirms that the monitoring plan as stated in the registered PDD /B04/ conforms to the monitoring methodology of the applied methodology ACM0014 (version 04.1) /B01/.

The verification team determined against all the information provided in MR, whether in-line with the applied monitoring methodology.

Determination Requirements	Criteria fulfilled	Determination and reporting by the verification team
Any Deviation been sought and approved by EB for the project.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	NA
Is complete set of data for the specified monitoring period is available	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Complete set of data for the specified monitoring period is available.
Is the required information provided in the monitoring report has been cross-checked with other sources (ex – plant logbooks, inventories, purchase records, laboratory analysis)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	The monitoring parameters given in the final monitoring report /P02/ are cross checked as per the requirements of the registered monitoring plan /B04/.
Is the calculation of baseline emissions and project activity emissions and leakage been in accordance with the formulae and methods described in monitoring plan and the applied methodology?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Yes, the calculations of baseline emissions and project activity emissions and leakage are in accordance with the formulae and methods described in monitoring plan and the applied methodology.
Is all assumptions used for emission calculation have been justified	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Yes
Is appropriate emission factors, IPCC default values and other reference values have been correctly applied	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Yes

The DOE verification team is able to confirm that the monitoring plan contained in the registered PDD (version 05, dated 23/07/2012) is in accordance with the approved methodology applied by the project activity, i.e. ACM0014, Version 04.1 /B01/.

3.3 Compliance of the Actual monitoring with monitoring plan in the PDD

Referring to the § 270 (c), § 278, § 280 and § 281 of VVS version 7.0, DOE verification team has confirmed through on-site verification and from the document review /P05/, /P06/, /P07/, /P10/, /P16/ and /P21/ that the actual monitoring system complies with the monitoring plan contained in the registered PDD (version 05, dated 23/07/2012) /B04/.

3.3.1 Monitored parameters

During this verification each of the monitoring parameter (as listed in Section B.7.1 of the PDD) has been verified. DOE has also confirmed that all the monitoring parameters have monitored and updated.

Referring to § 259, § 260, § 262 (a, b), § 281 of VVS ver 7.0 /B10/, the below tables provide a short summary on the verification of every parameter listed in the monitoring plan. For further details the Section 4 of the Table 1 (project specific verification checklist) can be referred for the following monitoring parameters:

Ex-Post Parameters:

Monitoring Parameter Requirement	Assessment/ Observation by the DOE						
Data / Parameter: (as in monitoring plan of PDD):	$F_{PJ,dig,m}$ - Quantity of wastewater that is treated in the anaerobic digester in the project activity in month m						
Measuring frequency/Time Interval:	Continuous measuring, daily recording.						
Reporting frequency:	Daily reporting, consolidated and compiled on a monthly/yearly basis						
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes						
Type of monitoring equipment:	Flow meter (accuracy class: $\pm 0.5\%$) has used for the measurement of the parameter which is also in-line with the registered monitoring plan /B04/.						
Is accuracy of the monitoring equipment as stated in the PDD? If the PDD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	The accuracy of the flow meter represent good monitoring practise. The accuracy class has been verified during the onsite visit /P10/ and from the technical description/manufacturer's specification /P07/ of the meter.						
Calibration frequency /interval: Is it Board guidance / local or national standards / manufacturers specification	Annually. The calibration of the meter is done by the government authority. Flow meter corresponding to the parameter is calibrated annually as per the government recommendation /P05/ which is a good monitoring practice.						
Is the calibration interval in line with the monitoring plan of the PDD? If the PDD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	Flow meter corresponding to the parameter is calibrated annually by a government authority /P05/ which is a good monitoring practice.						
Company performing the calibration:	Kementerian Perdagangan, Republik Indonesia – Direktorat Metrologi (Ministry of Commerce, Republic of Indonesia – Directorate of Metrology) /P05/. The calibration agency is a government authority.						
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	Yes, the records of calibration /P05/ have been verified by the verification team and found OK.						
Is (are) calibration(s) valid for the whole reporting period?	Yes. For the calibration details, please refer table under section 3.3.3 of this report.						
If applicable, has the reported data been cross-checked with other available data?	N/A						
How were the values in the monitoring report verified?	<table border="1"> <thead> <tr> <th>Month, year</th><th>Value (m³)</th></tr> </thead> <tbody> <tr> <td>16-30 November 2012</td><td>41,674</td></tr> <tr> <td>December 2012</td><td>84,438</td></tr> </tbody> </table> <p>Verification team has checked the value of the parameter from /P06-1/ and found OK.</p>	Month, year	Value (m ³)	16-30 November 2012	41,674	December 2012	84,438
Month, year	Value (m ³)						
16-30 November 2012	41,674						
December 2012	84,438						
Does the data management (from monitoring equipment to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes						
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been	N/A						

approved?	
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Monitoring Parameter Requirement	Assessment/ Observation by the DOE						
Data / Parameter: (as in monitoring plan of PDD):	$w_{\text{COD,dig,m}}$ - Average chemical oxygen demand in the wastewater that is treated in the anaerobic digester or under clearly aerobic conditions in the project activity in month m						
Measuring frequency/Time Interval:	Laboratory analysis on the wastewater samples collected from the wastewater inlet of the digesters. A monthly measurements /P06-2/ have been done by the Laboratory of Testing and Calibration of Bandar Lampung Research Center and Industry Standardization (Laboratorium Pengujian dan Kalibrasi - Balai Riset dan Standardisasi Industri Bandar Lampung / Baristand) an accredited third party laboratory which meets the requirements of the Committee of National Accreditation (Komite Akreditasi Nasional / KAN) standard						
Reporting frequency:	Monthly and aggregated annually						
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes, the measuring and reporting frequency is as per the registered monitoring plan /B04/.						
Type of monitoring equipment:	N/A						
Is accuracy of the monitoring equipment as stated in the PDD? If the PDD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	N/A						
Calibration frequency /interval: Is it Board guidance / local or national standards / manufacturers specification	N/A						
Is the calibration interval in line with the monitoring plan of the PDD? If the PDD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	N/A						
Company performing the calibration:	N/A						
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	N/A						
Is (are) calibration(s) valid for the whole reporting period?	N/A						
If applicable, has the reported data been cross-checked with other available data?	N/A						
How were the values in the monitoring report verified?	<table border="1"> <thead> <tr> <th>Month, year</th><th>Value (tCOD/m³)</th></tr> </thead> <tbody> <tr> <td>16-30 November 2012</td><td>0.0192</td></tr> <tr> <td>December 2012</td><td>0.0140</td></tr> </tbody> </table> <p>Verification team has checked the value of the parameter from /P06-2/ and found OK.</p> <p>Unit Conversion of COD, mg/L into tCOD/m³</p>	Month, year	Value (tCOD/m ³)	16-30 November 2012	0.0192	December 2012	0.0140
Month, year	Value (tCOD/m ³)						
16-30 November 2012	0.0192						
December 2012	0.0140						
Does the data management (from monitoring equipment to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes Aerobic lagoons are used to reduce the COD in the digester effluent to meet the Provincial Government of Lampung's environmental regulations. 160 mg/L for fruit processing and 300 mg/L for tapioca processing. Verification team has checked the same and found OK.						
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically	N/A						

possible been applied or has a request for deviation been approved?	
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Monitoring Parameter Requirement	Assessment/ Observation by the DOE						
Data / Parameter: (as in monitoring plan of PDD):	$F_{PJ,effl,dig,m}$ - Quantity of effluent from the digester in month m						
Measuring frequency/Time Interval:	Continuous measuring, daily recording.						
Reporting frequency:	Daily reporting, consolidated and compiled on a monthly/yearly basis						
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes						
Type of monitoring equipment:	Flow meter (accuracy class: $\pm 2\%$) has used for the measurement of the parameter which is also in-line with the registered monitoring plan /B04/.						
Is accuracy of the monitoring equipment as stated in the PDD? If the PDD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	The accuracy of the flow meter represent good monitoring practise. The accuracy class has been verified during the onsite visit /P10/ and from the technical description/manufacturer's specification /P07/ of the meter.						
Calibration frequency /interval: Is it Board guidance / local or national standards / manufacturers specification	Annually. Flow meter corresponding to the parameter is calibrated annually. As per the registered PDD /B04/, the calibration frequency is once in three years however the same is done on yearly basis which is conservative.						
Is the calibration interval in line with the monitoring plan of the PDD? If the PDD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	The calibration frequency represents good monitoring practice.						
Company performing the calibration:	Georg Fischer Signet LLC (Manufacturer) /P05/ Verification team has checked the competency of the laboratory /P16/ and found OK.						
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	Yes, the records of calibration /P05/ have been verified by the verification team and found OK.						
Is (are) calibration(s) valid for the whole reporting period?	No, the calibration is not valid for the whole monitoring period hence conservatively maximum permissible error of the meter is applied to the values of the parameter for the whole monitoring period as per para 283 (a) of CDM VVS, Version 07 to ensure the conservative calculation of the emission reduction. For the calibration details, please refer table under section 3.3.3 of this report.						
If applicable, has the reported data been cross-checked with other available data?	N/A						
How were the values in the monitoring report verified?	<table border="1"> <thead> <tr> <th>Month, year</th><th>Value (m³)</th></tr> </thead> <tbody> <tr> <td>16-30 November 2012</td><td>43,051</td></tr> <tr> <td>December 2012</td><td>87,254</td></tr> </tbody> </table> <p>Verification team has checked the value of the parameter from /P06-3/ and found OK.</p>	Month, year	Value (m ³)	16-30 November 2012	43,051	December 2012	87,254
Month, year	Value (m ³)						
16-30 November 2012	43,051						
December 2012	87,254						
Does the data management (from monitoring equipment to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes						
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	N/A						

Monitoring Parameter Requirement	Assessment/ Observation by the DOE						
Data / Parameter: (as in monitoring plan of PDD):	$F_{PJ,effl,lag,m}$ - Quantity of effluent from the open lagoon in which the effluent from the digester is treated in month m.						
Measuring frequency/Time Interval:	Continuous measuring, daily recording.						
Reporting frequency:	Daily reporting, consolidated and compiled on a monthly/yearly basis						
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes						
Type of monitoring equipment:	<p>“V Notch weir 90⁰” is used for the measurement of the parameter from the beginning of the project activity which does not have any calibration procedure. V-Notch flowmeter installed at outlet channel of Open Lagoon #15, this flowmeter has been designed and manufactured by in-house engineering department of GGP (PT. GGP)</p> <p>CAR-11 has been raised in this respect and successfully closed. Again FAR-02 is raised for the future monitoring of this parameter in an accurate manner and successfully closed. Refer CAR-11 and FAR-02 in table 2 and table 3 of this report.</p>						
Is accuracy of the monitoring equipment as stated in the PDD? If the PDD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	The equipment used does not have any accuracy class. CAR-11 has been raised in this respect and successfully closed. Refer CAR-11 in table 2 of this report.						
Calibration frequency /interval: Is it Board guidance / local or national standards / manufacturers specification	The equipment does not have any calibration procedure. CAR-11 has been raised in this respect and successfully closed. Refer CAR-11 in table 2 of this report.						
Is the calibration interval in line with the monitoring plan of the PDD? If the PDD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	The equipment does not have any calibration procedure. CAR-11 has been raised in this respect and successfully closed. Refer CAR-11 in table 2 of this report.						
Company performing the calibration:	The equipment does not have any calibration procedure. CAR-11 has been raised in this respect and successfully closed. Refer CAR-11 in table 2 of this report.						
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	The equipment does not have any calibration procedure. CAR-11 has been raised in this respect and successfully closed. Refer CAR-11 in table 2 of this report.						
Is (are) calibration(s) valid for the whole reporting period?	The equipment does not have any calibration procedure. CAR-11 has been raised in this respect and successfully closed. Refer CAR-11 in table 2 of this report.						
If applicable, has the reported data been cross-checked with other available data?	N/A						
How were the values in the monitoring report verified?	<table border="1"> <thead> <tr> <th>Month, year</th><th>Value (m³)</th></tr> </thead> <tbody> <tr> <td>16-30 November 2012</td><td>0</td></tr> <tr> <td>December 2012</td><td>0</td></tr> </tbody> </table> <p>For conservativeness, the value of the monitoring parameter is considered zero (0) for this monitoring period. Refer CAR-11 in table 2 of this report.</p>	Month, year	Value (m ³)	16-30 November 2012	0	December 2012	0
Month, year	Value (m ³)						
16-30 November 2012	0						
December 2012	0						
Does the data management (from monitoring equipment to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes						
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	N/A						

Monitoring Parameter Requirement	Assessment/ Observation by the DOE						
Data / Parameter: (as in monitoring plan of PDD):	EG,y - Metering the electricity consumed by the biogas plant that is generated by GGP's captive power plant in year y						
Measuring frequency/Time Interval:	Measured continuously using electricity meter						
Reporting frequency:	daily recording, compiled on monthly basis						
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes						
Type of monitoring equipment:	Measured continuously using electricity meter (accuracy class: 1%) has used for the measurement of the parameter which is also in-line with the registered monitoring plan /B04/.						
Is accuracy of the monitoring equipment as stated in the PDD? If the PDD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	The accuracy of the energy meter represent good monitoring practise. The accuracy class has been verified during the onsite visit /P10/ and from the technical description/manufacturer's specification /P07/ of the meter.						
Calibration frequency /interval: Is it Board guidance / local or national standards / manufacturers specification	Once in ten year. Verification team has checked the national guideline for the calibration frequency of the energy meter /P20/ and found the calibration frequency ok.						
Is the calibration interval in line with the monitoring plan of the PDD? If the PDD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	The calibration frequency is as per the national guideline.						
Company performing the calibration:	Balai Metrologi – Pemerintah Provinsi Daerah Khusus Ibukota Jakarta (Metrology Services - Provincial Government of Jakarta) which is a government authority.						
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	Yes, the records of calibration /P05/ have been verified by the verification team and found OK.						
Is (are) calibration(s) valid for the whole reporting period?	No, the calibration is not valid for the whole monitoring period hence conservatively maximum permissible error of the meter is applied to the values of the parameter for the whole monitoring period as per para 283 (a) of CDM VVS, Version 07 to ensure the conservative calculation of the emission reduction. The maximum permissible error of the meter has been applied in the calculation of the emission reduction for conservative calculation of the emission reduction as the error mentioned in the delayed calibration report is within limit. For the calibration details, please refer table under section 3.3.3 of this report.						
If applicable, has the reported data been cross-checked with other available data?	N/A						
How were the values in the monitoring report verified?	<table border="1"> <thead> <tr> <th>Month, year</th><th>Value (MWh)</th></tr> </thead> <tbody> <tr> <td>16-30 November 2012</td><td>14.16</td></tr> <tr> <td>December 2012</td><td>30.01</td></tr> </tbody> </table> <p>Verification team has checked the value of the parameter from /P06-5/ and found OK.</p> <p>Measured data is compared with the Baseline Yearly Electricity Consumption GGP (refer to PDD, page 84) value of 723 MWh/year, giving daily average of 723 MWh/year / 365 days/year = 1.98 MWh/day. Since energy meter shows daily consumption average value of 44.17 MWh / 46 days = 0.96 MWh/day, which is lower than the above Baseline value of 1.98 MWh/day, then $PE_{EC,y}$ calculation gives negative value (which means higher ER result).</p>	Month, year	Value (MWh)	16-30 November 2012	14.16	December 2012	30.01
Month, year	Value (MWh)						
16-30 November 2012	14.16						
December 2012	30.01						

	For conservative, this $PE_{EC,y}$ is taken as zero.
Does the data management (from monitoring equipment to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	N/A

Monitoring Parameter Requirement	Assessment/ Observation by the DOE						
Data / Parameter: (as in monitoring plan of PDD):	$T_{2,m}$ - Average temperature at the project site in month m						
Measuring frequency/Time Interval:	Daily Source: Region weather statistic from BMG (<i>Badan Meteorologi dan Geofisika</i> / Meteorological and Geophysical Agency) for Terbanggi Besar area. Reference: http://www.bmkg.go.id/bmkg_wilayah_2/Profil/stasiun-wilayah-bmkg2.bmkg						
Reporting frequency:	Daily and monthly average						
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes						
Type of monitoring equipment:	N/A						
Is accuracy of the monitoring equipment as stated in the PDD? If the PDD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	N/A						
Calibration frequency /interval: Is it Board guidance / local or national standards / manufacturers specification	N/A						
Is the calibration interval in line with the monitoring plan of the PDD? If the PDD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	N/A						
Company performing the calibration:	N/A						
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	N/A						
Is (are) calibration(s) valid for the whole reporting period?	N/A						
If applicable, has the reported data been cross-checked with other available data?	N/A						
How were the values in the monitoring report verified?	<table border="1"> <thead> <tr> <th>Month, year</th><th>Average Temperature (K)</th></tr> </thead> <tbody> <tr> <td>16-30 November 2012</td><td>300.58</td></tr> <tr> <td>December 2012</td><td>300.21</td></tr> </tbody> </table> <p>Verification team has checked the daily value of the temperature from /P06-6/ and found OK.</p> <p>The daily average temperature of region weather statistic from BMG (<i>Data-data Klimatologi</i>) have been aggregated during each month, and then resulted in monthly average data.</p>	Month, year	Average Temperature (K)	16-30 November 2012	300.58	December 2012	300.21
Month, year	Average Temperature (K)						
16-30 November 2012	300.58						
December 2012	300.21						
Does the data management (from monitoring equipment to emission reduction calculation) ensure correct transfer	Yes						

of data and reporting of emission reductions and are necessary QA/QC processes in place?	
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	N/A

Monitoring Parameter Requirement	Assessment/ Observation by the DOE															
Data / Parameter: (as in monitoring plan of PDD):	HG _{PJ,UJA,y} - Net quantity of heat generated in year y in the UJA heaters with biogas from the new anaerobic digester															
Measuring frequency/Time Interval:	Calculated. Calculated from the measurement of the volume of biogas received and used for heat generation multiplied by the methane content of the gas, CV methane, and the efficiency of the boiler.															
Reporting frequency:	Calculated and aggregated monthly.															
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes															
Type of monitoring equipment:	It is a calculated parameter, which is calculated from monitored parameters. Refer parameters for calibration.															
Is accuracy of the monitoring equipment as stated in the PDD? If the PDD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	It is a calculated parameter, which is calculated from monitored parameters. Refer parameters for calibration.															
Calibration frequency /interval: Is it Board guidance / local or national standards / manufacturers specification	It is a calculated parameter, which is calculated from monitored parameters. Refer parameters for calibration.															
Is the calibration interval in line with the monitoring plan of the PDD? If the PDD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	It is a calculated parameter, which is calculated from monitored parameters. Refer parameters for calibration.															
Company performing the calibration:	It is a calculated parameter, which is calculated from monitored parameters. Refer parameters for calibration.															
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	It is a calculated parameter, which is calculated from monitored parameters. Refer parameters for calibration.															
Is (are) calibration(s) valid for the whole reporting period?	It is a calculated parameter, which is calculated from monitored parameters. Refer parameters for calibration.															
If applicable, has the reported data been cross-checked with other available data?	N/A															
How were the values in the monitoring report verified?	<p>Calculated from the measurement of the volume of biogas received and used for heat generation multiplied by the methane content of the gas, CV methane, and the efficiency of the boiler.</p> <p>MP14 data (FT-501A / UJA Boiler A and FT-501B / UJA Boiler B)</p> <table><tr><th>Month, year</th><th>FT-501A (Nm³)</th><th>FT-501B (Nm³)</th><th>Total A+B (Nm³)</th><th>HG_{PJ,UJA,v} (TJ)</th></tr><tr><td>16-30 November 2012</td><td>38,736</td><td>40,262</td><td>78,998</td><td>0.90</td></tr><tr><td>December 2012</td><td>84,760</td><td>107,299</td><td>192,059</td><td>2.21</td></tr></table> <p>Note : NCV = 0.0000230274 TJ/Nm³ η_{PJ,UJA_heater} = 0.85 ^{*)} ^{*)} Refer: ”Thermal Oil Heater Efficiency Measurement”. 14</p>	Month, year	FT-501A (Nm ³)	FT-501B (Nm ³)	Total A+B (Nm ³)	HG _{PJ,UJA,v} (TJ)	16-30 November 2012	38,736	40,262	78,998	0.90	December 2012	84,760	107,299	192,059	2.21
Month, year	FT-501A (Nm ³)	FT-501B (Nm ³)	Total A+B (Nm ³)	HG _{PJ,UJA,v} (TJ)												
16-30 November 2012	38,736	40,262	78,998	0.90												
December 2012	84,760	107,299	192,059	2.21												

	April 2014, PT. Mitra Ikhtiar Simpati. Verification team has checked the values of this parameter from /P04/ and found OK.
Does the data management (from monitoring equipment to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	All instruments used to collect data for this calculation have been periodically calibrated in order to secure accuracy.
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	N/A

Monitoring Parameter Requirement	Assessment/ Observation by the DOE		
Data / Parameter: (as in monitoring plan of PDD):	HG _{PJ,GGP,y} - Net quantity of heat generated in year y in GGP Boilers (2 & 3) with biogas from the new anaerobic digester		
Measuring frequency/Time Interval:	Calculated. Calculated from the measurement of the volume of biogas received and used for heat generation multiplied by the methane content of the gas, NCV methane, and the efficiency of the boiler.		
Reporting frequency:	Calculated and aggregated monthly.		
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes		
Type of monitoring equipment:	It is a calculated parameter, which is calculated from monitored parameters. Refer parameters for calibration.		
Is accuracy of the monitoring equipment as stated in the PDD? If the PDD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	It is a calculated parameter, which is calculated from monitored parameters. Refer parameters for calibration.		
Calibration frequency /interval: Is it Board guidance / local or national standards / manufacturers specification	It is a calculated parameter, which is calculated from monitored parameters. Refer parameters for calibration.		
Is the calibration interval in line with the monitoring plan of the PDD? If the PDD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	It is a calculated parameter, which is calculated from monitored parameters. Refer parameters for calibration.		
Company performing the calibration:	It is a calculated parameter, which is calculated from monitored parameters. Refer parameters for calibration.		
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	It is a calculated parameter, which is calculated from monitored parameters. Refer parameters for calibration.		
Is (are) calibration(s) valid for the whole reporting period?	It is a calculated parameter, which is calculated from monitored parameters. Refer parameters for calibration.		
If applicable, has the reported data been cross-checked with other available data?	N/A		
How were the values in the monitoring report verified?	Calculated from the measurement of the volume of biogas received and used for heat generation multiplied by the methane content of the gas, CV methane, and the efficiency of the boiler.		
	MP15 data (DCS code: FT-501)		
	Month, year	FT-501 (Nm ³)	HG _{PJ,GGP,y} (TJ)
	16-30 November 2012	176,744	1.87
	December 2012	284,055	3.03
	Note :		

	$NCV = 0.0000230274 \text{ TJ/Nm}^3$ $\eta_{PJ,GGP_boiler} = 0.7961$ *) *) Refer: "Report Energy Audit in Power Plant PT. Great Giant Pineapple (GGP) Lampung", October 2012, BPPT. Verification team has checked the values of this parameter from /P04/ and found OK.
Does the data management (from monitoring equipment to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	All instruments used to collect data for this calculation have been periodically calibrated in order to secure accuracy.
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	N/A

Monitoring Parameter Requirement	Assessment/ Observation by the DOE						
Data / Parameter: (as in monitoring plan of PDD):	$W_{COD,effl,dig,m}$ - Average chemical oxygen demand in the effluent from the digester in month m						
Measuring frequency/Time Interval:	Laboratory analysis on the wastewater samples collected from wastewater inlet of Lagoon #5 A monthly measurement /P06-9/ have been done by the Laboratory of Testing and Calibration of Bandar Lampung Research Center and Industry Standardization (<i>Laboratorium Pengujian dan Kalibrasi - Balai Riset dan Standardisasi Industri Bandar Lampung / Baristand</i>) an accredited third party laboratory which meets the requirements of the Committee of National Accreditation (<i>Komite Akreditasi Nasional / KAN</i>) standard.						
Reporting frequency:	Monthly and aggregated annually						
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes, the measuring and reporting frequency is as per the registered monitoring plan /B04/.						
Type of monitoring equipment:	N/A						
Is accuracy of the monitoring equipment as stated in the PDD? If the PDD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	N/A						
Calibration frequency /interval: Is it Board guidance / local or national standards / manufacturers specification	N/A						
Is the calibration interval in line with the monitoring plan of the PDD? If the PDD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	N/A						
Company performing the calibration:	N/A						
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	N/A						
Is (are) calibration(s) valid for the whole reporting period?	N/A						
If applicable, has the reported data been cross-checked with other available data?	N/A						
How were the values in the monitoring report verified?	<table border="1"> <thead> <tr> <th>Month, year</th><th>Value (tCOD/m³)</th></tr> </thead> <tbody> <tr> <td>16-30 November 2012</td><td>0.00134</td></tr> <tr> <td>December 2012</td><td>0.00188</td></tr> </tbody> </table> Verification team has checked the value of the parameter from /P06-9/ and found OK.	Month, year	Value (tCOD/m ³)	16-30 November 2012	0.00134	December 2012	0.00188
Month, year	Value (tCOD/m ³)						
16-30 November 2012	0.00134						
December 2012	0.00188						

	Unit Conversion of COD, mg/L into tCOD/m ³
Does the data management (from monitoring equipment to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes Aerobic lagoons have been used to reduce the COD in the digester effluent to meet the Provincial Government of Lampung's environmental regulations. 160 mg/L for fruit processing and 300 mg/L for tapioca processing.
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	N/A

Monitoring Parameter Requirement	Assessment/ Observation by the DOE						
Data / Parameter: (as in monitoring plan of PDD):	$W_{COD,effl,lag,m}$ - Average chemical oxygen demand in the effluent from the open lagoon in which the effluent from the digester is treated in month <i>m</i>						
Measuring frequency/Time Interval:	Laboratory analysis on the wastewater samples collected from the effluent wastewater output of Lagoon #15 Monitoring Plan Code : MP10 A monthly measurement /P06-10/ have been done by the Laboratory of Testing and Calibration of Bandar Lampung Research Center and Industry Standardization (<i>Laboratorium Penguji dan Kalibrasi - Balai Riset dan Standardisasi Industri Bandar Lampung / Baristand</i>) an accredited third party laboratory which meets the requirements of the Committee of National Accreditation (<i>Komite Akreditasi Nasional / KAN</i>) standard.						
Reporting frequency:	Monthly and aggregated annually						
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes, the measuring and reporting frequency is as per the registered monitoring plan /B04/.						
Type of monitoring equipment:	N/A						
Is accuracy of the monitoring equipment as stated in the PDD? If the PDD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	N/A						
Calibration frequency /interval: Is it Board guidance / local or national standards / manufacturers specification	N/A						
Is the calibration interval in line with the monitoring plan of the PDD? If the PDD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	N/A						
Company performing the calibration:	N/A						
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	N/A						
Is (are) calibration(s) valid for the whole reporting period?	N/A						
If applicable, has the reported data been cross-checked with other available data?	N/A						
How were the values in the monitoring report verified?	<table border="1"> <thead> <tr> <th>Month, year</th><th>Value (tCOD/m³)</th></tr> </thead> <tbody> <tr> <td>16-30 November 2012</td><td>0.000141</td></tr> <tr> <td>December 2012</td><td>0.000124</td></tr> </tbody> </table> Verification team has checked the value of the parameter from /P06-10/ and found OK.	Month, year	Value (tCOD/m ³)	16-30 November 2012	0.000141	December 2012	0.000124
Month, year	Value (tCOD/m ³)						
16-30 November 2012	0.000141						
December 2012	0.000124						

	Conversion of COD, mg/L into tCOD/m ³
Does the data management (from monitoring equipment to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes Aerobic lagoons have been used to reduce the COD in the digester effluent to meet the Provincial Government of Lampung's environmental regulations. 160 mg/L for fruit processing and 300 mg/L for tapioca processing.
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	N/A

Monitoring Parameter Requirement	Assessment/ Observation by the DOE						
Data / Parameter: (as in monitoring plan of PDD):	$W_{\text{sludge,COD,LA,m}}$ - Chemical oxygen demand (COD) of the sludge applied to land after the dewatering process in month <i>m</i>						
Measuring frequency/Time Interval:	Monthly Measured Monthly and Annual values calculated. Laboratory analysis on the sludge samples collected from the digester. Measurement to be done by accredited laboratory. During this monitoring period there was no sludge.						
Reporting frequency:	Monthly and aggregated annually						
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes, the measuring and reporting frequency is as per the registered monitoring plan /B04/.						
Type of monitoring equipment:	N/A						
Is accuracy of the monitoring equipment as stated in the PDD? If the PDD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	N/A						
Calibration frequency /interval: Is it Board guidance / local or national standards / manufacturers specification	N/A						
Is the calibration interval in line with the monitoring plan of the PDD? If the PDD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	N/A						
Company performing the calibration:	N/A						
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	N/A						
Is (are) calibration(s) valid for the whole reporting period?	N/A						
If applicable, has the reported data been cross-checked with other available data?	N/A						
How were the values in the monitoring report verified?	Sludge flow is zero during this monitoring period (no cleaning / desludging activity occurred) <table border="1" data-bbox="863 1800 1453 1951"> <thead> <tr> <th>Month, year</th><th>Value (tCOD/m)</th></tr> </thead> <tbody> <tr> <td>16-30 November 2012</td><td>-</td></tr> <tr> <td>December 2012</td><td>-</td></tr> </tbody> </table> Conversion of COD, mg/L into tCOD/m ³	Month, year	Value (tCOD/m)	16-30 November 2012	-	December 2012	-
Month, year	Value (tCOD/m)						
16-30 November 2012	-						
December 2012	-						
Does the data management (from monitoring equipment to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are	Yes						

necessary QA/QC processes in place?	
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	N/A

Monitoring Parameter Requirement	Assessment/ Observation by the DOE						
Data / Parameter: (as in monitoring plan of PDD):	$S_{LA,y}$ - Amount of sludge applied to land in month m						
Measuring frequency/Time Interval:	Measurement of each time of removal and transportation out daily but aggregated monthly for calculations.						
Reporting frequency:	Measurement of each time of removal and transportation out daily but aggregated monthly for calculations. During this monitoring period there was no sludge.						
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes, the measuring and reporting frequency is as per the registered monitoring plan /B04/.						
Type of monitoring equipment:	Weighbridge (class III) has used for the measurement of the parameter.						
Is accuracy of the monitoring equipment as stated in the PDD? If the PDD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	The accuracy of the weighbridge represent good monitoring practise. The accuracy class has been verified during the onsite visit /P10/.						
Calibration frequency /interval: Is it Board guidance / local or national standards / manufacturers specification	Annually. The calibration of the weighbridge is done by the government authority. Weighbridge corresponding to the parameter is calibrated annually as per the government recommendation /P05/ which is a good monitoring practice.						
Is the calibration interval in line with the monitoring plan of the PDD? If the PDD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	Weighbridge corresponding to the parameter is calibrated annually as per the government recommendation /P05/ which is a good monitoring practice.						
Company performing the calibration:	UPTD (Unit Pelaksana Teknis Daerah) Balai Metrologi – Pemerintah Provinsi Lampung (Metrology Services of Regional Technical Implementation Unit - Provincial Government of Lampung) /P05/. The calibration agency is a government authority.						
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	Yes, the records of calibration /P05/ have been verified by the verification team and found OK.						
Is (are) calibration(s) valid for the whole reporting period?	Yes. For the calibration details, please refer table under section 3.3.3 of this report.						
If applicable, has the reported data been cross-checked with other available data?	N/A						
How were the values in the monitoring report verified?	Sludge flow is zero during this monitoring period (no cleaning / desludging activity occurred) <table border="1" data-bbox="821 1753 1412 1904"> <thead> <tr> <th>Month, year</th><th>Value (t)</th></tr> </thead> <tbody> <tr> <td>16-30 November 2012</td><td>0</td></tr> <tr> <td>December 2012</td><td>0</td></tr> </tbody> </table> Verification team has checked the value of the parameter from /P06-11/ and found OK.	Month, year	Value (t)	16-30 November 2012	0	December 2012	0
Month, year	Value (t)						
16-30 November 2012	0						
December 2012	0						
Does the data management (from monitoring equipment to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are	Yes						

necessary QA/QC processes in place?	
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	N/A

Monitoring Parameter Requirement	Assessment/ Observation by the DOE											
Data / Parameter: (as in monitoring plan of PDD):	$w_{N,sludge,y}$ - Mass fraction of nitrogen in the sludge applied to land in month m											
Measuring frequency/Time Interval:	Parameter will be monitored continuously in the event that there is sludge application Laboratory analysis on the sludge samples collected from the digester. There was no sludge during this monitoring period.											
Reporting frequency:	Reporting in the event that there is sludge application											
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes											
Type of monitoring equipment:	N/A											
Is accuracy of the monitoring equipment as stated in the PDD? If the PDD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	N/A											
Calibration frequency /interval: Is it Board guidance / local or national standards / manufacturers specification	N/A											
Is the calibration interval in line with the monitoring plan of the PDD? If the PDD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	N/A											
Company performing the calibration:	N/A											
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	N/A											
Is (are) calibration(s) valid for the whole reporting period?	N/A											
If applicable, has the reported data been cross-checked with other available data?	N/A											
How were the values in the monitoring report verified?	Sludge flow is zero during this monitoring period (no cleaning / desludging activity occurred) <table><tr><th colspan="2">Month, year</th><th>Value (t N/t sludge)</th></tr><tr><td>16-30 November</td><td>2012</td><td>-</td></tr><tr><td>December</td><td>2012</td><td>-</td></tr></table>			Month, year		Value (t N/t sludge)	16-30 November	2012	-	December	2012	-
Month, year		Value (t N/t sludge)										
16-30 November	2012	-										
December	2012	-										
Does the data management (from monitoring equipment to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes											
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	N/A											

Monitoring Parameter Requirement	Assessment/ Observation by the DOE
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Data / Parameter: (as in monitoring plan of PDD):	F _{UJA,biogas,y} - Amount of biogas that is sent to the UJA heaters in year y																			
Measuring frequency/Time Interval:	Continuous measurement using flow meter and daily recording Measured at the UJA off-take point from the main biogas line from the digester. Parameter monitored continuously but aggregated annually for calculations.																			
Reporting frequency:	Daily recording and it is aggregated monthly/annually for calculations																			
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes																			
Type of monitoring equipment:	Flow meter (accuracy class: ±2%) has used for the measurement of the parameter.																			
Is accuracy of the monitoring equipment as stated in the PDD? If the PDD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	No, as per the registered monitoring plan /B04/, the accuracy class of the flow meter should be 1.5% however the meter of accuracy class 2% has been installed. CL-07 has been raised in this respect and successfully closed. Measured values have been adjusted to due to decrease in accuracy class. Refer CL-07 in table 2 of this report. PRC has been submitted along with this report. The accuracy class of the installed meter has been verified during the onsite visit /P10/ and from the technical description/manufacturer's specification /P07/ of the meter.																			
Calibration frequency /interval: Is it Board guidance / local or national standards / manufacturers specification	The meter has been periodically calibrated in every 18 months according to the manufacturer's recommendation /P05/ which is a good monitoring practice.																			
Is the calibration interval in line with the monitoring plan of the PDD? If the PDD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	Flow meter corresponding to the parameter is calibrated in every 18 months according to the manufacturer's recommendation /P05/ which is a good monitoring practice.																			
Company performing the calibration:	Fluid Components International (Manufacturer), PT. Wifgasindo Dinamika Instrument Engineering Verification team has checked the competency of the laboratory /P16/ and found OK.																			
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	Yes, the records of calibration /P05/ have been verified by the verification team and found OK.																			
Is (are) calibration(s) valid for the whole reporting period?	Yes																			
If applicable, has the reported data been cross-checked with other available data?	N/A																			
How were the values in the monitoring report verified?	<table><tr><th colspan="2">Month, year</th><th>Value (Nm³)</th></tr><tr><td>16-30 November</td><td>2012</td><td>79,395</td></tr><tr><td>December</td><td>2012</td><td>193,024</td></tr></table> Adjusted value (with deduction of 0.5% accuracy due to installed equipment has a lower accuracy class than in the PDD). <table><tr><th colspan="2">Month, year</th><th>Value (Nm³)</th></tr><tr><td>16-30 November</td><td>2012</td><td>78,998</td></tr><tr><td>December</td><td>2012</td><td>192,059</td></tr></table> Adjusted value (with addition of 0.5% accuracy due to installed equipment has a lower accuracy class than in the		Month, year		Value (Nm ³)	16-30 November	2012	79,395	December	2012	193,024	Month, year		Value (Nm ³)	16-30 November	2012	78,998	December	2012	192,059
Month, year		Value (Nm ³)																		
16-30 November	2012	79,395																		
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Month, year		Value (Nm ³)																		
16-30 November	2012	78,998																		
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	<p>PDD).</p> <table border="1"> <thead> <tr> <th>Month, year</th><th>Value (Nm³)</th></tr> </thead> <tbody> <tr> <td>16-30 November 2012</td><td>79,792</td></tr> <tr> <td>December 2012</td><td>193,989</td></tr> </tbody> </table> <p>Verification team has checked the value of the parameter from /P06-12/ and found OK.</p>	Month, year	Value (Nm ³)	16-30 November 2012	79,792	December 2012	193,989
Month, year	Value (Nm ³)						
16-30 November 2012	79,792						
December 2012	193,989						
Does the data management (from monitoring equipment to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes						
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	N/A						

Monitoring Parameter Requirement	Assessment/ Observation by the DOE
Data / Parameter: (as in monitoring plan of PDD):	F _{GGP,biogas,y} - Amount of biogas that is sent to GGP Boilers (B2 & B3) in year y
Measuring frequency/Time Interval:	<p>Continuous measurement using flow meter and daily recoding.</p> <p>Measured at the GGP off-take point from the main biogas line from the digester.</p> <p>Parameter monitored continuously but aggregated annually for calculations.</p>
Reporting frequency:	Daily recording and it is aggregated monthly/annually for calculations
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Type of monitoring equipment:	Flow meter (accuracy class: $\pm 2\%$) has used for the measurement of the parameter.
Is accuracy of the monitoring equipment as stated in the PDD? If the PDD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	<p>No, as per the registered monitoring plan /B04/, the accuracy class of the flow meter should be 1.5% however the meter of accuracy class 2% has been installed. CL-07 has been raised in this respect and successfully closed. Measured values have been adjusted to due to decrease in accuracy class. Refer CL-07 in table 2 of this report. PRC has been submitted along with this report.</p> <p>The accuracy class of the installed meter has been verified during the onsite visit /P10/ and from the technical description/manufacturer's specification /P07/ of the meter.</p>
Calibration frequency /interval: Is it Board guidance / local or national standards / manufacturers specification	The meter has been periodically calibrated in every 18 months according to the manufacturer's recommendation /P05/ which is a good monitoring practice.
Is the calibration interval in line with the monitoring plan of the PDD? If the PDD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	Flow meter corresponding to the parameter is calibrated in every 18 months according to the manufacturer's recommendation /P05/ which is a good monitoring practice.
Company performing the calibration:	<p>Fluid Components International (Manufacturer), PT. Wifgasindo Dinamika Instrument Engineering</p> <p>Verification team has checked the competency of the laboratory /P16/ and found OK.</p>
Did calibration confirm proper functioning of	Yes, the records of calibration /P05/ have been verified by the

monitoring equipment? (Yes / No):	verification team and found OK.																		
Is (are) calibration(s) valid for the whole reporting period?	Yes																		
If applicable, has the reported data been cross-checked with other available data?	N/A																		
How were the values in the monitoring report verified?	<table border="1"> <thead> <tr> <th>Month, year</th><th>Value (Nm³)</th></tr> </thead> <tbody> <tr> <td>16-30 November 2012</td><td>177,632</td></tr> <tr> <td>December 2012</td><td>285,482</td></tr> </tbody> </table> <p>Adjusted value (with deduction of 0.5% accuracy due to installed equipment has a lower accuracy class than in the PDD).</p> <table border="1"> <thead> <tr> <th>Month, year</th><th>Value (Nm³)</th></tr> </thead> <tbody> <tr> <td>16-30 November 2012</td><td>176,744</td></tr> <tr> <td>December 2012</td><td>284,055</td></tr> </tbody> </table> <p>Adjusted value (with addition of 0.5% accuracy due to installed equipment has a lower accuracy class than in the PDD).</p> <table border="1"> <thead> <tr> <th>Month, year</th><th>Value (Nm³)</th></tr> </thead> <tbody> <tr> <td>16-30 November 2012</td><td>178,520</td></tr> <tr> <td>December 2012</td><td>286,909</td></tr> </tbody> </table> <p>Verification team has checked the value of the parameter from /P06-13/ and found OK.</p>	Month, year	Value (Nm ³)	16-30 November 2012	177,632	December 2012	285,482	Month, year	Value (Nm ³)	16-30 November 2012	176,744	December 2012	284,055	Month, year	Value (Nm ³)	16-30 November 2012	178,520	December 2012	286,909
Month, year	Value (Nm ³)																		
16-30 November 2012	177,632																		
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Month, year	Value (Nm ³)																		
16-30 November 2012	176,744																		
December 2012	284,055																		
Month, year	Value (Nm ³)																		
16-30 November 2012	178,520																		
December 2012	286,909																		
Does the data management (from monitoring equipment to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes																		
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	N/A																		

Monitoring Parameter Requirement	Assessment/ Observation by the DOE
Data / Parameter: (as in monitoring plan of PDD):	$F_{\text{Flare, biogas, y}}$ - Amount of biogas that is sent to the flare in year y
Measuring frequency/Time Interval:	<p>Continuous measurement using flow meter and daily recording.</p> <p>Measured at the Flare off-take point from the main biogas line from the digester.</p> <p>Parameter monitored continuously but aggregated annually for calculations.</p>
Reporting frequency:	Daily recording and it is aggregated monthly/annually for calculations
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Type of monitoring equipment:	Flow meter (accuracy class: $\pm 2\%$) has used for the measurement of the parameter.
Is accuracy of the monitoring equipment as stated in the PDD? If the PDD does not specify the accuracy of the	No, as per the registered monitoring plan /B04/, the accuracy class of the flow meter should be 1.5% however the meter of

monitoring equipment, does the monitoring equipment represent good monitoring practise?	accuracy class 2% has been installed. CL-07 has been raised in this respect and successfully closed. Measured values have been adjusted to due to decrease in accuracy class. Refer CL-07 in table 2 of this report. PRC has been submitted along with this report. The accuracy class of the installed meter has been verified during the onsite visit /P10/ and from the technical description/manufacturer’s specification /P07/ of the meter.									
Calibration frequency /interval: Is it Board guidance / local or national standards / manufacturers specification	The meter has been periodically calibrated in every 18 months according to the manufacturer’s recommendation /P05/ which is a good monitoring practice.									
Is the calibration interval in line with the monitoring plan of the PDD? If the PDD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	Flow meter corresponding to the parameter is calibrated in every 18 months according to the manufacturer’s recommendation /P05/ which is a good monitoring practice.									
Company performing the calibration:	Fluid Components International (Manufacturer), PT. Wifgasindo Dinamika Instrument Engineering Verification team has checked the competency of the laboratory /P16/ and found OK.									
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	Yes, the records of calibration /P05/ have been verified by the verification team and found OK.									
Is (are) calibration(s) valid for the whole reporting period?	Yes									
If applicable, has the reported data been cross-checked with other available data?	N/A									
How were the values in the monitoring report verified?	Adjusted value (with addition of 0.5% accuracy due to installed equipment has a lower accuracy class than in the PDD). <table><tr><th colspan="2">Month, year</th><th>Value (Nm³)</th></tr><tr><td>16-30 November</td><td>2012</td><td>8,026</td></tr><tr><td>December</td><td>2012</td><td>34,987</td></tr></table> Verification team has checked the value of the parameter from /P06-14/ and found OK.	Month, year		Value (Nm ³)	16-30 November	2012	8,026	December	2012	34,987
Month, year		Value (Nm ³)								
16-30 November	2012	8,026								
December	2012	34,987								
Does the data management (from monitoring equipment to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes									
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	N/A									

Monitoring Parameter Requirement	Assessment/ Observation by the DOE
Data / Parameter: (as in monitoring plan of PDD):	$w_{CH_4, biogas, y}$ - Concentration of methane in the biogas in the outlet of the new digester
Measuring frequency/Time Interval:	Measured and Calculated Volumetric fraction of methane in the biogas in the outlet of the new digester ($f_{V, CH_4, biogas, y}$) has been continuous measurement using gas analyser and maximum value of the day has been taken as a conservative measure. Also hourly average value has been used for the project emission from flaring. Calculated from the measurement of the volumetric fraction

	<p>of methane in the residual gas ($f_{vCH_4,biogas,y}$) multiplied by the density of methane ($\rho_{CH_4,n,y}$).</p> $w_{CH_4,biogas,y} = f_{vCH_4,biogas,y} \times \rho_{CH_4,n,y}$ <p>Note: $\rho_{CH_4,n,y} = 0.716 \text{ kg/m}^3$</p>						
Reporting frequency:	Daily and aggregated monthly						
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes						
Type of monitoring equipment:	Gas analyser (accuracy class: $\pm 4\%$) has been used for the measurement of $f_{vCH_4,biogas,y}$						
Is accuracy of the monitoring equipment as stated in the PDD? If the PDD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	The accuracy of the gas analyser is a good monitoring practise.						
Calibration frequency /interval: Is it Board guidance / local or national standards / manufacturers specification	The instrument used to collect data for this calculation has been every 6 months periodically calibrated in order to secure accuracy according to the manufacturer's recommendation /P05/ which is a good monitoring practice.						
Is the calibration interval in line with the monitoring plan of the PDD? If the PDD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	The calibration frequency is a good monitoring practise.						
Company performing the calibration:	<p>Dräger Safety AG & Co. KGaA (Manufacturer)</p> <p>Verification team has checked the competency of the laboratory /P16/ and found OK.</p>						
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	Yes, the records of calibration /P05/ have been verified by the verification team and found OK.						
Is (are) calibration(s) valid for the whole reporting period?	<p>No, the calibration is not valid for the whole monitoring period hence conservatively maximum permissible error of the meter is applied to the values of the parameter for the whole monitoring period as per para 283 (a) of CDM VVS, Version 07 to ensure the conservative calculation of the emission reduction.</p> <p>For the calibration details, please refer table under section 3.3.3 of this report.</p>						
If applicable, has the reported data been cross-checked with other available data?	N/A						
How were the values in the monitoring report verified?	<table border="1"> <thead> <tr> <th>Month, year</th><th>kgCH₄/m³</th></tr> </thead> <tbody> <tr> <td>16-30 November 2012</td><td>0.4736</td></tr> <tr> <td>December 2012</td><td>0.4778</td></tr> </tbody> </table> <p>Note: Conservative (with addition of 4% maximum permissible error due to a delayed calibration schedule).</p> <p>Verification team has checked the value of the parameter from /P06-15/ and found OK.</p>	Month, year	kgCH ₄ /m ³	16-30 November 2012	0.4736	December 2012	0.4778
Month, year	kgCH ₄ /m ³						
16-30 November 2012	0.4736						
December 2012	0.4778						
Does the data management (from monitoring equipment to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes						
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	N/A						

Monitoring Parameter Requirement	Assessment/ Observation by the DOE						
Data / Parameter: (as in monitoring plan of PDD):	$FV_{RG,h}$ - Volumetric flow rate of the residual gas in dry basis at normal conditions in the hour h						
Measuring frequency/Time Interval:	Continuous measurement using flow meter Measured continuously and averaged hourly.						
Reporting frequency:	Measured continuously and averaged hourly.						
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes						
Type of monitoring equipment:	Flow meter (accuracy class: $\pm 2\%$) has used for the measurement of the parameter.						
Is accuracy of the monitoring equipment as stated in the PDD? If the PDD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	The accuracy class of the installed meter has been verified during the onsite visit /P10/ and is a good monitoring practise.						
Calibration frequency /interval: Is it Board guidance / local or national standards / manufacturers specification	The meter has been periodically calibrated in every 18 months according to the manufacturer's recommendation /P05/ which is a good monitoring practise.						
Is the calibration interval in line with the monitoring plan of the PDD? If the PDD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	Flow meter corresponding to the parameter is calibrated in every 18 months according to the manufacturer's recommendation /P05/ which is a good monitoring practice.						
Company performing the calibration:	Fluid Components International (Manufacturer), PT. Wifgasindo Dinamika Instrument Engineering Verification team has checked the competency of the laboratory /P16/ and found OK.						
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	Yes, the records of calibration /P05/ have been verified by the verification team and found OK.						
Is (are) calibration(s) valid for the whole reporting period?	Yes						
If applicable, has the reported data been cross-checked with other available data?	N/A						
How were the values in the monitoring report verified?	<table border="1"> <thead> <tr> <th>Month, year</th><th>FV_{RG} (Nm³)</th></tr> </thead> <tbody> <tr> <td>16-30 November 2012</td><td>8,026</td></tr> <tr> <td>December 2012</td><td>34,987</td></tr> </tbody> </table> Verification team has checked the value of the parameter from /P06-16/ and found OK.	Month, year	FV_{RG} (Nm ³)	16-30 November 2012	8,026	December 2012	34,987
Month, year	FV_{RG} (Nm ³)						
16-30 November 2012	8,026						
December 2012	34,987						
Does the data management (from monitoring equipment to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes						
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	N/A						

Monitoring Parameter Requirement	Assessment/ Observation by the DOE
Data / Parameter: (as in monitoring plan of PDD):	Flare Efficiency - Flare efficiency of the open flare
Measuring frequency/Time Interval:	Continuous measurement According to the "Tool to determine project emissions from flaring gases containing methane" for an open flare, the default efficiency to be applied is:

	<ul style="list-style-type: none"> • 0% if the flame is not detected for more than 20 minutes during the hour h. • 50%, if the flame is detected for more than 20 minutes during the hour h. <p>Therefore, the duration that the flare is 'on' in a given hour has been monitored.</p>
Reporting frequency:	hourly recording
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Type of monitoring equipment:	-
Is accuracy of the monitoring equipment as stated in the PDD? If the PDD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	-
Calibration frequency /interval: Is it Board guidance / local or national standards / manufacturers specification	-
Is the calibration interval in line with the monitoring plan of the PDD? If the PDD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	-
Company performing the calibration:	-
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	
Is (are) calibration(s) valid for the whole reporting period?	-
If applicable, has the reported data been cross-checked with other available data?	N/A
How were the values in the monitoring report verified?	<p>Please see ER calculation MS Excel spreadsheet (for the time that the flare is on and the flare efficiency).</p> <p>Verification team has verified the "duration for which the flare was on" and the flare efficiency from /P06-17/ and found ok.</p>
Does the data management (from monitoring equipment to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	N/A

In summary, verification team confirms that all the ex-post parameters are monitored in accordance to the approved monitoring plan /B04/ and applied methodology /B01/. The verification took cognizance of § 243,244 and 245 of CDM Project Standard /B12/.

Also Verification team confirms that ex-ante parameters claimed are in accordance to the approved monitoring plan /B04/ and applied methodology /B01/.

3.3.2 Monitoring responsibility

The DOE has confirmed during the on-site interview that the responsibilities and the authorities for monitoring and reporting are in accordance with the responsibilities and authorities stated in the monitoring plan /B04/.

During the on-site interview (refer section 2.2 of the report) it was found that the responsible personnel are clearly aware of their roles and responsibilities and are able to carry on their responsibility. Also the actual

monitoring system presently practiced complies with the registered monitoring plan and the monitoring methodology.

Furthermore, the monitoring personnel of PT. Great Giant Pineapple (GGP) are well trained /P11/ and follow reproducible routines. The training of the employees of the biogas system, GGP boilers and UJA heaters was conducted regularly during this monitoring period.

3.3.3 Accuracy of equipment

The calibration performance of the equipment used under the project activity during this monitoring period was checked and found that the calibration result for all the equipment was within error limit. The calibration details are given in the below table.

The monitoring equipment's have been installed in the project activity according to registered monitoring plan /B04/. The table below summarizes relevant specifications of monitoring equipment's:

Monitoring Equipment:	Flow meter	Flow meter
Function:	Quantity of wastewater that is treated in the anaerobic digester in the project activity in month m	Quantity of effluent from the digester in month m
Monitored parameter:	$F_{PJ,dig,m}$	$F_{PJ,eff,dig,m}$
Type:	50W DN250	Signet 2552 Magmeter
Serial number:	D40A5819000	61108050153
Accuracy:	$\pm 0.5 \%$	$\pm 2\%$ of measured value
Last calibration date:	14/08/2012	15/08/2011
Calibration certificate no. and name of the certifier	Certificate no. - 219/SPK.5.8.10/KHP/DL/09/2012 Certifier: Kementerian Perdagangan, Republik Indonesia – Direktorat Metrologi (Ministry of Commerce, Republic of Indonesia – Directorate of Metrology)	Certifier: Georg Fischer Signet LLC
Expiration date of calibration:	14/08/2013	15/08/2012
Current calibration date:	-	-
Calibration certificate no. and name of the certifier	-	-
Expiration date of calibration:	-	-
Frequency of calibration:	Yearly	Yearly

Monitoring Equipment:	Energy meter		
Function:	Metering the electricity consumed by the biogas plant that is generated by GGP's captive power plant in year y		
Monitored parameter:	EG_y		
Type:	FF23H	Electronic kWh Meter	FF23H
Serial number:	1007034682 (Replaced on 28/06/2013)	11010117 (Replaced on 03/02/2014)	1309039721
Accuracy:	Class 1.0	Class 1.0	Class 1.0
Last calibration date:	Not available	Not available	26/09/2013
Calibration certificate no. and name of the certifier	Not available	Not available	Calibration certificate no.: 1546/-1.821.1 Name of the certifier: Balai Metrologi – Pemerintah Provinsi Daerah Khusus Ibukota Jakarta (Metrology Services - Provincial Government of Jakarta)
Expiration date of calibration:	Not available	Not available	26/09/2023

Current calibration date:	Not available	Not available	-
Calibration certificate no. and name of the certifier	Not available	Not available	-
Expiration date of calibration:	Not available	Not available	-
Frequency of calibration:	10 years	10 years	10 years

Monitoring Equipment:	Weighbridge
Function:	Amount of sludge applied to land in month m
Monitored parameter:	$S_{LA,y}$
Type:	Electronic Weighbridge Newton NT-502 A
Serial number:	070900497
Accuracy:	Class III
Last calibration date:	30/07/2012
Calibration certificate no. and name of the certifier	Calibration certificate no.: 66/III.11/MET/TJ/VII/2012 Name of the certifier: UPTD (Unit Pelaksana Teknis Daerah) Balai Metrologi – Pemerintah Provinsi Lampung (Metrology Services of Regional Technical Implementation Unit - Provincial Government of Lampung)
Expiration date of calibration:	15/07/2013
Current calibration date:	-
Calibration certificate no. and name of the certifier	-
Expiration date of calibration:	-
Frequency of calibration:	Yearly

Monitoring Equipment:	Flow meter			
Function:	Amount of biogas that is sent to the UJA heaters in year y			
Monitored parameter:	$F_{UJA,biogas,y}$			
Type:	ST51-CF32FA00	ST51-CF32FA00		
Serial number:	324939	324940		
Accuracy:	±2% reading	±2% reading		
Last calibration date:	05/05/2010	02/08/2012	05/05/2010	01/08/2012
Calibration certificate no. and name of the certifier	Name of the certifier: Fluid Components International	Name of the certifier: PT. Wifgasindo Dinamika Instrument Engineering	Name of the certifier: Fluid Components International	Name of the certifier: PT. Wifgasindo Dinamika Instrument Engineering
Expiration date of calibration:	05/11/2011	31/01/2014	05/11/2011	31/01/2014
Current calibration date:	-	-	-	-
Calibration certificate no. and name of the certifier	-	-	-	-
Expiration date of calibration:	-	-	-	-
Frequency of	18 Months	18 Months	18 Months	18 Months

calibration:				
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Monitoring Equipment:	Flow meter		
Function:	Amount of biogas that is sent to GGP Boilers (B2 & B3) in year y		
Monitored parameter:	$F_{GGP,biogas,y}$		
Type:	ST51-CF32FA00		
Serial number:	328867		
Accuracy:	±2% reading		
Last calibration date:	09/08/2010	02/08/2012	
Calibration certificate no. and name of the certifier	Name of the certifier: Fluid Components International	Name of the certifier: PT. Wifgasindo Dinamika Instrument Engineering	
Expiration date of calibration:	09/02/2012	31/01/2014	
Current calibration date:	-	-	
Calibration certificate no. and name of the certifier	-	-	
Expiration date of calibration:	-	-	
Frequency of calibration:	18 Months	18 Months	

Monitoring Equipment:	Flow meter		
Function:	Amount of biogas that is sent to the flare in year y		
Monitored parameter:	$F_{Flare,biogas,y}$		
Type:	ST51-CF32FA00		
Serial number:	324938		
Accuracy:	±2% reading		
Last calibration date:	06/05/2010	02/08/2012	
Calibration certificate no. and name of the certifier	Name of the certifier: Fluid Components International	Name of the certifier: PT. Wifgasindo Dinamika Instrument Engineering	
Expiration date of calibration:	06/11/2011	31/01/2014	
Current calibration date:	-	-	
Calibration certificate no. and name of the certifier	-	-	
Expiration date of calibration:	-	-	
Frequency of calibration:	18 Months	18 Months	

Monitoring Equipment:	Gas analyser		
Function:	Volumetric fraction methane in the biogas in the outlet of the new digester		
Monitored parameter:	$w_{CH_4,biogas,y}$		
Type:	15.10.C1		
Serial number:	ARBD-0036		
Accuracy:	±4% max. linearity error		
Last calibration date:	04/05/2010		
Calibration certificate no. and name of the certifier	Calibration certificate no.: 81087066 Name of the certifier: Dräger Safety AG & Co. KGaA		
Expiration date of calibration:	04/11/2010		
Current calibration date:	-		
Calibration certificate no. and name of the certifier	-		
Expiration date of calibration:	-		
Frequency of calibration:	6 months		

Monitoring Equipment:	flow meter		
Function:	Volumetric flow rate of the residual gas in dry basis at normal conditions in the hour h		
Monitored parameter:	$FV_{RG,h}$		
Type:	ST51-CF32FA00		
Serial number:	324938		
Accuracy:	±2% reading		
Last calibration date:	06/05/2010	02/08/2012	
Calibration certificate no. and name of the certifier	Name of the certifier: Fluid Components International	Name of the certifier: PT. Wifgasindo Dinamika Instrument Engineering	

Expiration date of calibration:	06/11/2011	31/01/2014
Current calibration date:	-	-
Calibration certificate no. and name of the certifier	-	-
Expiration date of calibration:	-	-
Frequency of calibration:	18 month	18 month

The information in the above table was verified by the verification team during onsite visit directly from the meter installed and document review /P05/, /P07/, /P16/ and /P21/.

In summary, the verification team is able to verify that the accuracy the monitoring equipment's were set according to the registered monitoring plan and relevant sectoral standard of country Indonesia / Technical specification. Furthermore, all calibration procedures were carried out according to the monitoring plan and /or manufacturer specifications. Therefore, accuracy of monitoring equipment's is assured. The verification took cognizance of § 244 of CDM Project Standard /B12/.

3.3.4 Deviation from and/or Revision of the registered monitoring plan

Post-registration changes assessment Opinion of permanent changes from the registered monitoring plan /B04/:

As per the registered PDD /B04/, the accuracy class of the flow meters used for the monitoring parameters ($F_{UJA,biogas,y}$, $F_{GPP,biogas,y}$, $F_{Flare,biogas,y}$) should be 1.5% however the meter installed have the accuracy class of 2% which is of inferior quality. As per the CDM project standard Version 07.0, Appendix 1, paragraph 3 "Permanent changes from the registered monitoring plan, applied methodology or applied standardized baseline", post registration change is submitted for these changes along with this report. Also as per point 4 under paragraph 3, the adjusted values have been applied accordingly for the difference in accuracy class. The monitored values of the parameters are adjusted in a conservative manner so that the emission reduction is low.

Verification team confirmed that the permanent changes made are in compliance as per point 5 (a) under paragraph 3 of the Appendix 1 of "Clean development mechanism project standard" version 07.0 /B12/ and para 293 and 294 (a) of VVS Version 07.0 /B10/. Hence these changes do not require prior approval by the board

Moreover the Registered PDD /B04/ has been updated in the latest PDD form available under VVS. Also Verification team confirms that the transfer of information from the old form to the new form is correct and materially the same as the information in the registered PDD /B04/.

3.4 Assessment of data and calculation of greenhouse gas emission reductions

All the parameters and corresponding data were monitored in accordance with the monitoring plan and were available for verification for this monitoring period. The methods and formulae use to obtain the baseline and project emissions are appropriate and in accordance with the monitoring plan. There is no leakage emission

No lack of evidence and missing data were detected during on-site verification. All the values as per the monitoring plan were crosschecked by the verification team against basic monitored data (refer section 3.3.1 of the report) and the calculations were found to be correct.

Against the Guidelines on the Applicability of Materiality in Verifications, version 01.0, the verification team further assessed the materiality in verification on the project activity and interpreted as follows:

Reference	Requirement	Verification team assessment
Section 10	The CMP materiality decision prescribes the thresholds for the application of materiality in verifications, by defining that information is material if it might lead, at an aggregated level, to an overestimation of the total emission reductions or removals achieved by a CDM project activity equal to or higher than:	As per registered PDD /B04/, the estimated CERs of the project is 40,813 tCO ₂ e annually, thus meets the item (d) of the para 10 in the Materiality guideline /B08/. Therefore, the threshold for the application of materiality in this verification is 5 per cent as per guideline /B08/.

	<p>(a) 0.5 per cent of the emission reductions or removals for project activities achieving a total emission reduction or removal of equal to or more than 500,000 tons of carbon dioxide equivalent per year;</p> <p>(b) 1 per cent of the emission reductions or removals for project activities achieving a total emission reduction or removal between 300,000 and 500,000 tons of carbon dioxide equivalent per year;</p> <p>(c) 2 per cent of the emission reductions or removals for large-scale project activities achieving a total emission reduction or removal of 300,000 tons of carbon dioxide equivalent per year or less;</p> <p>(d) 5 per cent of the emission reductions or removals for small-scale project activities other than project activities covered under subparagraph (e) below;</p> <p>(e) 10 per cent of the emission reductions or removals for the type of project activities referred to in decision 3/CMP.6, paragraph 38 (referred to as microscale project activities).</p>	
Section 24	The DOE should describe in its certification/certification report the risks, the risk assessment undertaken and how the verification and sampling plans were designed to respond to these risks and ensure that all material errors, omissions or misstatements were detected.	<p>The risk assessment has been undertaken by the verification team by means of onsite physical inspection, stakeholder's interview and document review to all the raw data /P06/.</p> <p>For details please refer to section 3.3 of this report. No sampling plan is required in the monitoring plan /B04/ and the verification team is able to confirm that all parameters are properly monitored. All the data reported in the ER spread sheet /P04/ has been completely verified against the raw data /P05/ and the data management system and QA/QC process are carried out appropriately. Thus no material errors, omissions or misstatements were detected by the verification team during the risk assessment.</p>
Section 25	The DOE should also describe whether and how the verification and sampling plans were revised to take into account the need for further audit procedures due to the nature/type of errors, omissions or misstatements detected.	N/A, no sampling plan is required in the monitoring plan /B04/
Section 26	The DOE should also document how materiality was applied in determining whether a detected error, omission or misstatement was material or immaterial either individually or in aggregate.	N/A, as verified before, no material errors, omissions or misstatements were detected by the verification team during the risk assessment.
Section 27	The DOE should state in its certification/certification opinion that the claimed emission reductions or removals are free from material errors, omissions or misstatements, with a reasonable level of assurance.	Refer to Certification statement of this report.

It could be evidenced that the monitoring system ensures for continuous (except some routine breakdowns or outage) operation.

The verifier confirms that the default values (ex-ante values from the PDD) have been correctly taken.

The methods and formula used to obtain the baseline emissions and project emissions are appropriate and in accordance with the monitoring plan /B04/. *All the formulas used in the Spread sheet has been checked and found correct.*

The verification team confirms that the emission reductions are real and measurable. The monitored data are archived partly in physical (Hard copy of daily monitored data) and partly in electronic form (Soft copy of the monthly data). The archived data will be kept for the whole crediting period and additional 2 years as given in the registered CDM-PDD.

The closer of the CARs and CLs issued above resulted in increase of Emission reduction from 2,476 to 2,585 tCO₂ of the Emission Reduction. The reason for the increase in ER units is because of the combined effect of the raised CAR/CL during this monitoring period. Checked and confirmed by the verification team. Please refer to raised CAR/CL for further information. There is no overestimation of the emission reduction and the decrease in emission reduction is OK.

Verified emission in this monitoring period:

Project emissions: 1,022 tCO₂ equivalents

Leakage Emissions: 0 tCO₂ equivalents

Baseline emissions: 3,607 t CO₂ equivalents

Emission reductions: 2,585 t CO₂ equivalents (round down)

The verification team confirms the total emission reduction by the project activity for this monitoring period is 2,585 tCO₂.

3.4.1 Assessment of actual emission reductions with the estimate emission reductions in PDD

Estimated Emission Reduction as per Registered/Approved PDD:	5,688 tCO ₂ e
Actual Emission Reduction for the Monitoring Period	2,585 tCO ₂ e
Is any increase of CER's occurred?	No
Reason for Increase of CER's	Not Applicable

In summary, verification team confirms that actual emission reduction is lower than the estimate of the registered for the current monitoring period.

The verification took cognizance of § 247 & 248 of CDM Project Standard /B12/.

3.5 Issues remaining from the validation

This is the 1st periodic verification of the project activity. All raised CARs and CLs were successfully closed during the validation of the project activity. One FAR (FAR-01) was raised during the validation of the project activity for which CAR-10 is raised during the current monitoring period i.e. 16/11/2012 to 31/12/2012 of the project activity; CAR-10 is successfully closed.

Appendix A

CDM Verification protocol

GGP Biogas Project
in
Indonesia

to Report No. 01 997 9105077145

Checklist question	Ref.	MoV ¹	Findings, comments, references, data sources	Draft conclusion	Final conclusion
1. Implementation					
1.1 Have all physical features proposed in the registered PDD been implemented at the project site? § 239 of CDM Project Standard	/P01/	DR,I	Yes, All the physical features proposed in the registered PDD been installed at the project site. DOE has confirmed the same during the onsite visit	OK	OK
1.2 Has the project activity been operated in accordance with the project scenario described in the registered PDD and relevant guidance? Reference: < http://cdm.unfccc.int/EB/033/eb33rep.pdf >, §75 § 237 of CDM Project Standard	/P01/	DR,I	Yes, the project activity has been continuously operated without any major outages during the 1 st verification period as described in the registered PDD. DOE has also observed the operation during the onsite visit and found to functional. However CAR-09, CAR-11, CL-07 are raised in this regards.	CAR-09, CAR-11, CL-07	OK
1.3 If the project activity is implemented on a number of different locations, has the Monitoring report provided the verifiable starting dates for each site? § 240 of CDM Project Standard	/P01/	DR,I	The project activity was installed and operated in a single project location as mentioned in the registered PDD. However the start dates of the relevant CDM project operation are not documented in the MR. Hence CAR-02 is raised in this regards	CAR-02	OK
1.4 Is the start date of monitoring period consistent?	/P01/ /B06/	DR	Yes, the start date of the current monitoring period is 16/11/2012 Which is consistently mentioned in the entire monitoring report.	OK	OK

¹ MoV = Means of Verification, DR = Document Review, I = Interview, www = internet search.

Checklist question	Ref.	MoV ¹	Findings, comments, references, data sources	Draft conclusion	Final conclusion
1.5 Is the monitoring report consistently filled with respect to all sections as required by its guideline of filling the monitoring report?	/P01/	DR	No, certain parameters are not consistent in the MR. Emission reductions and other parameters are not consistent in the MR and ER sheet Hence CL-02 & CL-07 are raised.	CL-02, CL-07	OK
1.6 Does the CER's obtained for the monitoring period within the limit of estimate in the registered PDD?	/P01/ /P04/	DR	The amount of CERs obtained for the first verification period is below the value estimated in the registered PDD.	OK	OK
1.7 Is the monitoring system provided in line diagrams showing all relevant monitoring points?	/P01/	DR	Yes, PP has provided the line diagrams in the MR showing the complete monitoring mechanism as well as metering arrangement.	OK	OK
2. Monitoring plan and methodology					
2.1 Is the monitoring plan established in accordance with the monitoring methodology? § 238 of CDM Project Standard	/P01/ /B01/	DR	Yes, the monitoring plan described and implemented in accordance to the methodology ACM0014 version 4.1 and the registered PDD. However few parameters are not monitored as described in the registered PDD. Hence CAR-05, CAR-07 and CAR-08 are raised	CAR-05 CAR-07 CAR-08	OK
2.2 In case the implemented monitoring plan defers from the monitoring methodology, has any requests for revision to or deviation from the monitoring methodology been officially communicated to the CDM EB? Reference: § 258,259,260 of CDM Project Standard (for	/P01/ /B01/	DR	Yes, During the site visit it is observed that the parameter $F_{PJ, effl, lag, m}$ is not monitored as required by the methodology. Hence CAR-08 is raised. Also CL-07 is raised and a PRC is submitted along this verification.	CAR-08 CL-07	OK

Checklist question	Ref.	MoV ¹	Findings, comments, references, data sources	Draft conclusion	Final conclusion
temporary deviation) § 261,262 of CDM Project Standard (for permanent change)					
2.2.1 Have the above changes to the monitoring plan been approved by the CDM EB?	/P01/ /B01/	DR	Applied to EB based on the closure of the CL-07	CL-07	OK
3. Monitoring and the monitoring plan					
3.1 Is monitoring established in full compliance with the monitoring plan, contained in the registered PDD (or new monitoring plan approved by the CDM EB)? § 264 of CDM Validation and Verification Standard	/P01/ /B01/	DR	Yes, Monitoring has been established in compliance with the monitoring plan contained in the registered PDD. However CAR-05 is raised.	CAR-05	OK
3.2 Are all baseline emission parameters monitored and updated in accordance with monitoring plan, monitoring methodology and relevant CDM EB decisions?	/P01/ /B01/	DR	No, few parameters are not monitored in accordance with the monitoring plan described in the registered PDD and the monitoring methodology. Hence CAR-05, CAR-07 and CAR-08 are raised.	CAR-05 CAR-07 CAR-08	OK
3.2.1 Was the monitoring equipment for baseline emission parameters controlled and monitoring results recorded as per approved frequency?	/P01/ /B01/	DR	Yes, all the monitoring equipment was installed and all the data relevant to the baseline as well as project emissions was continuously monitored and the results were recorded for the current monitoring period. All the data was submitted for verification. However few meters were not installed and monitored as required by the methodology Hence CAR-07 and CAR-05 are raised.	CAR-05 CAR-07	OK

Checklist question	Ref.	MoV ¹	Findings, comments, references, data sources	Draft conclusion	Final conclusion
3.2.2 Was the monitoring equipment for baseline emission parameters calibrated in accordance with QA&QC procedures described in the registered monitoring plan?	/P01/ /B01/	DR	No, few equipment are not calibrated in time as specified by the manufacturer specifications. However PP had applied the correction to the data recorded during the monitoring period. Hence CL-06 is raised	CL-06	OK
3.3 Are all project emission parameters monitored and updated in accordance with monitoring plan, monitoring methodology and relevant CDM EB decisions?	/P01/ /B01/	DR	Yes, all the project emission parameters monitored and updated in accordance with monitoring plan described in the registered PDD.	OK	OK
3.3.1 Was the monitoring equipment for project emission parameters controlled and monitoring results recorded as per approved frequency?	/P01/ /P07/	DR	Yes, all the equipment was controlled and results were continuously recorded for calculation purpose.	OK	OK
3.3.2 Was the monitoring equipment for project emission parameters calibrated in accordance with QA&QC procedures described in the registered monitoring plan?	/P01/ /P07/	DR	No, the energy meters are not calibrated with in the specified time of validity however PP has applied the maximum error in a conservative manner to the results.	OK	OK
3.4 Are all leakage emission parameters monitored and updated in accordance with monitoring plan, monitoring methodology and relevant CDM EB decisions?	/P01/ /B01/	DR	No leakage emissions are identified for the project activity	OK	OK
3.4.1 Was the monitoring equipment for leakage emission parameters controlled and monitoring results recorded as per approved frequency?	/P01/ /B01/	DR	Not applicable	OK	OK
3.4.2 Was the monitoring equipment for leakage emission parameters calibrated in accordance with QA&QC procedures described in the registered monitoring plan?	/P01/ /B06/	DR	Not applicable	OK	OK
3.5 Were all monitoring parameters available and	/P01/	DR,I	Yes, All the monitoring parameters are	OK	OK

Checklist question	Ref.	MoV ¹	Findings, comments, references, data sources	Draft conclusion	Final conclusion
verifiable through the whole monitoring period?	/B06/		available for the verification and same have been verified during the onsite visit.		
3.5.1 In case, only partial monitoring data is available and PP(s) provide estimations or assumptions for the rest of data, was it possible to verify those estimations and assumptions? Reference: < http://cdm.unfccc.int/EB/026/eb26rep.pdf >,	/P01/ /P05/	DR,I	PP had submitted the data for the complete monitoring period.	OK	OK
3.6 Was management and operation system established and operated in accordance with the monitoring plan?	/P01/ /B06/	DR,I	Yes, management system for the monitoring has been established and operated in accordance with the monitoring plan documented in the registered PDD.	OK	OK
3.7 Was is it possible to verify that involved management and operation personal is fully aware of the responsibilities and perform all operations according to the registered monitoring plan and internally developed manuals?	/P01/ /B06/	DR,I	Yes, It has been verified from the interviews with the plant personnel during the onsite visit and also verified from the training records and manuals submitted for the verification	OK	OK
3.8 Does the monitoring system provide organizational structure, role and responsibilities, emergency procedures?	/P01/ /B06/	DR,I	Yes, MR has been reported the organization chart for the monitoring and responsibilities of each individual.	OK	OK
3.9 Does any uncertainties identified and addressed?	/P01/ /B06/ /B01/	DR,I	No uncertainties have been reported in this period.	OK	OK
4. Parameters					

Checklist question	Ref.	MoV ¹	Findings, comments, references, data sources	Draft conclusion	Final conclusion									
<p>4.1 Monitored parameter</p> <p>Title: Quantity of waste water that is treated in the anaerobic digester in the project activity in month m</p> <p>Indication: F_{pj, dig,m}</p> <p>Units: m3/month</p> <p>Estimated value (<i>ex-ante</i>):</p> <p>Measured value (<i>ex-post</i>):</p> <table><tr><td colspan="2">Month, year</td><td>Value (m³/month)</td></tr><tr><td>November</td><td>2012</td><td>41,674</td></tr><tr><td>December</td><td>2012</td><td>84,438</td></tr></table>	Month, year		Value (m ³ /month)	November	2012	41,674	December	2012	84,438	/P01/ /B06/ /B01/	DR,I	This parameter has been continuously monitored with flow meter and the recorded data has been submitted for verification	OK	OK
Month, year		Value (m ³ /month)												
November	2012	41,674												
December	2012	84,438												
<p>4.2 Monitored parameter</p> <p>Title: Average chemical oxygen demand in the wastewater that is treated in the anaerobic digester or under clearly aerobic conditions in the project activity in month m</p> <p>Indication: W_{COD,dig,m}</p> <p>Units: t COD/m³</p> <p>Estimated value (<i>ex-ante</i>):</p> <p>Measured value (<i>ex-post</i>):</p> <table><tr><td colspan="2">Month, year</td><td>Value (t COD/m3)</td></tr><tr><td>November</td><td>2012</td><td>0.0192</td></tr><tr><td>December</td><td>2012</td><td>0.0140</td></tr></table>	Month, year		Value (t COD/m3)	November	2012	0.0192	December	2012	0.0140	/P01/ /B06/ /B01/	DR,I	This has been determined by the third party laboratory on monthly basis. Which is not in line with the monitoring plan described in the methodology Hence CAR-05 is raised	CAR-05	OK
Month, year		Value (t COD/m3)												
November	2012	0.0192												
December	2012	0.0140												

Checklist question	Ref.	MoV ¹	Findings, comments, references, data sources	Draft conclusion	Final conclusion						
4.3 Monitored parameter Title: Quantity of effluent from the digester in month m Indication: $F_{PJ,effl,dig,m}$ Units: m ³ /month Estimated value (ex-ante): Measured value (ex-post): <table><tr><th>Month, year</th><th>Value (m³/month)</th></tr><tr><td>November 2012</td><td>43,051</td></tr><tr><td>December 2012</td><td>87,254</td></tr></table>	Month, year	Value (m ³ /month)	November 2012	43,051	December 2012	87,254	/P01/ /B06/ /B01/	DR,I	<p>This parameter has been continuously monitored with flow meter and the recorded data has been submitted for verification.</p> <p>However the values mentioned in the MR are contradicting with the ER sheet. CL-07 is raised</p>	CL-07	OK
Month, year	Value (m ³ /month)										
November 2012	43,051										
December 2012	87,254										
4.4 Monitored parameter Title: Quantity of effluent from the open lagoon in which the effluent from the digester is treated in month m. Indication: $F_{PJ,effl,lag,m}$ Units: m ³ /month Estimated value (ex-ante): Measured value (ex-post): <table><tr><th>Month, year</th><th>Value (m³/month)</th></tr><tr><td>November 2012</td><td>60,674</td></tr><tr><td>December 2012</td><td>206,636</td></tr></table>	Month, year	Value (m ³ /month)	November 2012	60,674	December 2012	206,636	/P01/ /B06/ /B01/	DR,I	<p>This parameter has been continuously monitored with flow meter and the recorded data has been submitted for verification.</p> <p>However Calibration certificates are not submitted for verification CL-04 is raised</p>	CL-04	OK
Month, year	Value (m ³ /month)										
November 2012	60,674										
December 2012	206,636										

Checklist question	Ref.	MoV ¹	Findings, comments, references, data sources	Draft conclusion	Final conclusion						
4.5 Monitored parameter Title: Metering the electricity consumed by the biogas plant that is generated by GGP’s captive power plant in year y. Indication: EG _y Units: MWh/y Estimated value (ex-ante): Measured value (ex-post): <table><tr><th>Month, year</th><th>Value (MWh/month)</th></tr><tr><td>November 2012</td><td>14.16</td></tr><tr><td>December 2012</td><td>30.01</td></tr></table>	Month, year	Value (MWh/month)	November 2012	14.16	December 2012	30.01	/P01/ /B06/ /B01/	DR,I	This parameter has been continuously measured with the energy meters. Calibration certificates are not submitted for verification Hence CL-07 is raised	CL-07	OK
Month, year	Value (MWh/month)										
November 2012	14.16										
December 2012	30.01										
4.6 Monitored parameter Title: Average temperature at the project site in month m Indication: T _{2,m} Units: K Estimated value (ex-ante): Measured value (ex-post): <table><tr><th>Month, year</th><th>K</th></tr><tr><td>November 2012</td><td>300.58</td></tr><tr><td>December 2012</td><td>300.21</td></tr></table>	Month, year	K	November 2012	300.58	December 2012	300.21	/P01/ /B06/ /B01/	DR,I	This is default value taken from the Region weather statistic from BMG. The monthly average values have been provided to the DOE for verification	OK	OK
Month, year	K										
November 2012	300.58										
December 2012	300.21										

Checklist question	Ref.	MoV ¹	Findings, comments, references, data sources	Draft conclusion	Final conclusion								
4.7 Monitored parameter Title: Net quantity of heat generated in year y in the UJA heaters with biogas from the new anaerobic digester Indication: $HG_{PJ,UJA,y}$ Units: TJ/year Estimated value (ex-ante): Measured value (ex-post): <table><tr><th colspan="2">Month, year</th><th>TJ/year</th></tr><tr><td>November</td><td>2012</td><td>0.90</td></tr><tr><td>December</td><td>2012</td><td>2.21</td></tr></table>	Month, year		TJ/year	November	2012	0.90	December	2012	2.21	/P01/ /B06/ /B01/	DR,I	<p>This is calculated from the biogas received and used for heat generation multiplied by the methane content of the gas, CV methane, and the efficiency of the boiler.</p> <p>However efficiency has not been considered for the project equipment as required by the methodology.</p> <p>CAR-06 is raised in this regards</p>	CAR-06 OK
Month, year		TJ/year											
November	2012	0.90											
December	2012	2.21											
4.8 Monitored parameter Title: Net quantity of heat generated in year y in GGP Boilers (2 & 3) with biogas from the new anaerobic digester Indication: $HG_{PJ,GGP,y}$ Units: TJ/year Estimated value (ex-ante): Measured value (ex-post): <table><tr><th colspan="2">Month, year</th><th>TJ/year</th></tr><tr><td>November</td><td>2012</td><td>1.87</td></tr><tr><td>December</td><td>2012</td><td>3.03</td></tr></table>	Month, year		TJ/year	November	2012	1.87	December	2012	3.03	/P01/ /B06/ /B01/	DR,I	<p>This is calculated from the biogas received and used for heat generation multiplied by the methane content of the gas, CV methane, and the efficiency of the boiler.</p> <p>However efficiency has not been considered for the project equipment as required by the methodology.</p> <p>CAR-06 is raised in this regards</p>	CAR-06 OK
Month, year		TJ/year											
November	2012	1.87											
December	2012	3.03											

Checklist question	Ref.	MoV ¹	Findings, comments, references, data sources	Draft conclusion	Final conclusion								
4.9 Monitored parameter Title: Average chemical oxygen demand in the effluent from the digester in month m digester Indication: $W_{\text{COD,effl,dig,m}}$ Units: t COD/m ³ Estimated value (ex-ante): Measured value (ex-post): <table><tr><th colspan="2">Month, year</th><th>t COD/m³</th></tr><tr><td>November</td><td>2012</td><td>0.00134</td></tr><tr><td>December</td><td>2012</td><td>0.00188</td></tr></table>	Month, year		t COD/m ³	November	2012	0.00134	December	2012	0.00188	/P01/ /B06/ /B01/	DR,I	This has been determined by the third party laboratory on monthly basis. Which is not in line with the monitoring plan described in the methodology Hence CAR-05 is raised	CAR-05 OK
Month, year		t COD/m ³											
November	2012	0.00134											
December	2012	0.00188											
4.10 Monitored parameter Title: Average chemical oxygen demand in the effluent from the open lagoon in which the effluent from the digester is treated in month m Indication: $W_{\text{COD,effl,log,m}}$ Units: t COD/m ³ Estimated value (ex-ante): Measured value (ex-post): <table><tr><th colspan="2">Month, year</th><th>t COD/m³</th></tr><tr><td>November</td><td>2012</td><td>0.000141</td></tr><tr><td>December</td><td>2012</td><td>0.000124</td></tr></table>	Month, year		t COD/m ³	November	2012	0.000141	December	2012	0.000124	/P01/ /B06/ /B01/	DR,I	This has been determined by the third party laboratory on monthly basis. Which is not in line with the monitoring plan described in the methodology Hence CAR-05 is raised	CAR-05 OK
Month, year		t COD/m ³											
November	2012	0.000141											
December	2012	0.000124											

Checklist question	Ref.	MoV ¹	Findings, comments, references, data sources	Draft conclusion	Final conclusion									
<p>4.11 Monitored parameter</p> <p>Title: Chemical oxygen demand (COD) of the sludge applied to land after the dewatering process in month m</p> <p>Indication: $W_{\text{sludge,COD,LA,m}}$</p> <p>Units: t COD/t sludge</p> <p>Estimated value (<i>ex-ante</i>):</p> <p>Measured value (<i>ex-post</i>):</p> <table><tr><th colspan="2">Month, year</th><th>t COD/m³</th></tr><tr><td>November</td><td>2012</td><td>0</td></tr><tr><td>December</td><td>2012</td><td>0</td></tr></table>	Month, year		t COD/m ³	November	2012	0	December	2012	0	/P01/ /B06/ /B01/	DR,I	Not Applicable	OK	OK
Month, year		t COD/m ³												
November	2012	0												
December	2012	0												
<p>4.12 Monitored parameter</p> <p>Title: Amount of sludge applied to land in month m</p> <p>Indication: $S_{\text{LA,y}}$</p> <p>Units: t/month</p> <p>Estimated value (<i>ex-ante</i>):</p> <p>Measured value (<i>ex-post</i>):</p> <table><tr><th colspan="2">Month, year</th><th>(t/m)</th></tr><tr><td>November</td><td>2012</td><td>0</td></tr><tr><td>December</td><td>2012</td><td>0</td></tr></table>	Month, year		(t/m)	November	2012	0	December	2012	0	/P01/ /B06/ /B01/	DR,I	Measured with weighbridge as and when the sludge removed	OK	OK
Month, year		(t/m)												
November	2012	0												
December	2012	0												

Checklist question	Ref.	MoV ¹	Findings, comments, references, data sources	Draft conclusion	Final conclusion									
4.13 Monitored parameter Title: Mass fraction of nitrogen in the sludge applied to land in month m Indication: $W_{N,sludge,y}$ Units: t N/t sludge Estimated value (ex-ante): Measured value (ex-post): <table><tr><th colspan="2">Month, year</th><th>(t N/t sludge)</th></tr><tr><td>November</td><td>2012</td><td>0</td></tr><tr><td>December</td><td>2012</td><td>0</td></tr></table>	Month, year		(t N/t sludge)	November	2012	0	December	2012	0	/P01/ /B06/ /B01/	DR,I	Measured by the third party laboratory	OK	OK
Month, year		(t N/t sludge)												
November	2012	0												
December	2012	0												
4.14 Monitored parameter Title: Amount of biogas that is sent to the UJA heaters in year y Indication: $F_{UJA,biogas,y}$ Units: Nm ³ /yr Estimated value (ex-ante): Measured value (ex-post): <table><tr><th colspan="2">Month, year</th><th>(Nm³/month)</th></tr><tr><td>November</td><td>2012</td><td>79,395</td></tr><tr><td>December</td><td>2012</td><td>193,024</td></tr></table>	Month, year		(Nm ³ /month)	November	2012	79,395	December	2012	193,024	/P01/ /B06/ /B01/	DR,I	Continuously measured with the flow meters. Data has been recorded and submitted for the verification. However the values mentioned in the MR are contradicting with the ER sheet Hence CL-07 is raised	CL-07	OK
Month, year		(Nm ³ /month)												
November	2012	79,395												
December	2012	193,024												

Checklist question	Ref.	MoV ¹	Findings, comments, references, data sources	Draft conclusion	Final conclusion									
<p>4.15 Monitored parameter</p> <p>Title: Amount of biogas that is sent to GGP Boilers (B2 & B3) in year y</p> <p>Indication: $F_{\text{GGP,biogas},y}$</p> <p>Units: Nm³/yr</p> <p>Estimated value (<i>ex-ante</i>):</p> <p>Measured value (<i>ex-post</i>):</p> <table><tr><th colspan="2">Month, year</th><th>(Nm³/month)</th></tr><tr><td>November</td><td>2012</td><td>177,632</td></tr><tr><td>December</td><td>2012</td><td>285,482</td></tr></table>	Month, year		(Nm ³ /month)	November	2012	177,632	December	2012	285,482	/P01/ /B06/ /B01/	DR,I	Continuously measured with the flow meters. Data has been recorded and submitted for the verification.	OK	OK
Month, year		(Nm ³ /month)												
November	2012	177,632												
December	2012	285,482												
<p>4.16 Monitored parameter</p> <p>Title: Amount of biogas that is sent to the flare in year y</p> <p>Indication: $F_{\text{flare,biogas},y}$</p> <p>Units: Nm³/yr</p> <p>Estimated value (<i>ex-ante</i>):</p> <p>Measured value (<i>ex-post</i>):</p> <table><tr><th colspan="2">Month, year</th><th>(Nm³/month)</th></tr><tr><td>November</td><td>2012</td><td>8,026</td></tr><tr><td>December</td><td>2012</td><td>34,987</td></tr></table>	Month, year		(Nm ³ /month)	November	2012	8,026	December	2012	34,987	/P01/ /B06/ /B01/	DR,I	Continuously measured with the flow meters. Data has been recorded and submitted for the verification.	OK	OK
Month, year		(Nm ³ /month)												
November	2012	8,026												
December	2012	34,987												

Checklist question	Ref.	MoV ¹	Findings, comments, references, data sources	Draft conclusion	Final conclusion								
4.17 Monitored parameter Title: Concentration of methane in the biogas in the outlet of the new digester Indication: $W_{CH4 \rightarrow biogas, y}$ Units: % Estimated value (<i>ex-ante</i>): Measured value (<i>ex-post</i>): <table><tr><th colspan="2">Month, year</th><th>Value (x100) %</th></tr><tr><td>November</td><td>2012</td><td>0.4736</td></tr><tr><td>December</td><td>2012</td><td>0.4778</td></tr></table>	Month, year		Value (x100) %	November	2012	0.4736	December	2012	0.4778	/P01/ /B06/ /B01/	DR,I	Continuous measured using the Gas analyser. Data has been recorded and submitted for the verification. However the parameter was not monitored as per the methodology requirement. Hence CAR-05 is raised	CAR-05 OK
Month, year		Value (x100) %											
November	2012	0.4736											
December	2012	0.4778											
4.18 Monitored parameter Title: Volumetric flow rate of the residual gas in dry basis at normal conditions in the hour h Indication: $FV_{RG, h}$ Units: Nm^3/h Estimated value (<i>ex-ante</i>): Measured value (<i>ex-post</i>): <table><tr><th colspan="2">Month, year</th><th>Value ($Nm^3/month$)</th></tr><tr><td>November</td><td>2012</td><td>8,026</td></tr><tr><td>December</td><td>2012</td><td>34,987</td></tr></table>	Month, year		Value ($Nm^3/month$)	November	2012	8,026	December	2012	34,987	/P01/ /B06/ /B01/	DR,I	Continuously measured with the flow meters. Data has been recorded and submitted for the verification.	OK OK
Month, year		Value ($Nm^3/month$)											
November	2012	8,026											
December	2012	34,987											

Checklist question	Ref.	MoV ¹	Findings, comments, references, data sources	Draft conclusion	Final conclusion
4.19 Monitored parameter Title: Flare efficiency of the open flare Indication: Flare Efficiency Units: % Estimated value (ex-ante): Measured value (ex-post): Default value considered from the Methodological “Tool to determine project emissions from flaring gases containing methane”	/P01/ /B06/ /B01/	DR,I	Default value considered from the Methodological “Tool to determine project emissions from flaring gases containing methane”	OK	OK
4.2 Default parameters					
Title: Maximum methane producing capacity, expressing the maximum amount of CH ₄ that can be produced from a given quantity of chemical oxygen demand (COD) Indication: Bo Units: tCH ₄ /tCOD Default/Used value: 0.21 kg	/P01/ /B06/ /B01/	DR,I	Default value considered from the methodology ACM0014 version 04.1.0	OK	OK
Title: Factor expressing the influence of the depth of the lagoon on methane generation. Indication: f _d Units: - Default/Used value: F _{d UJA} = 50%, F _{d GGP} = 70%	/P01/ /B06/ /B01/	DR,I	Default value considered from the methodology ACM0014 version 04.1.0	OK	OK

Checklist question	Ref.	MoV ¹	Findings, comments, references, data sources	Draft conclusion	Final conclusion
Title: Fraction of biogas that leaks from the digester Indication: $FL_{\text{biogas,digest,y}}$ Units: m ³ biogas leaked / m ³ biogas produced Default/Used value: 0.05	/P01/ /B06/ /B01/	DR,I	Applied the IPCC default value	OK	OK
Title: CO ₂ emission factor of the fossil fuel Coal used in the boiler for heat generation in the absence of the project activity Indication: $EF_{\text{CO}_2,\text{FF},\text{GGP_Coal}}$ Units: tCO ₂ / TJ Default/Used value: 92.8	/P01/ /B06/ /B01/	DR,I	IPCC default value.	OK	OK
Title: CO ₂ emission factor of the fossil fuel Heavy Fuel Oil (HFO) used in the heaters for process heat generation in the absence of the project activity Indication: $EF_{\text{CO}_2,\text{FF},\text{UJA_HFO}}$ Units: tCO ₂ / TJ Default/Used value: 75.5	/P01/ /B06/ /B01/	DR,I	IPCC default value	OK	OK
Title: Efficiency of the boiler that would be used for heat generation in the absence of the project activity. Indication: $\eta_{\text{BL},\text{GGP_boiler}}$ Units: % Default/Used value: 86.33%	/P01/ /B06/ /B01/	DR,I	Determined by the third party operational study	OK	OK
Title: Efficiency of the heaters that would be used for heat generation in the absence of the project activity. Indication: $\eta_{\text{BL},\text{UJA_heater}}$ Units: % Default/Used value: 85.0%	/P01/ /B06/ /B01/	DR,I	Determined by the third party operational study	OK	OK

Checklist question	Ref.	MoV ¹	Findings, comments, references, data sources	Draft conclusion	Final conclusion
Title: Global warming potential for CH ₄ Indication: GWP _{CH₄} Units: tCO ₂ /tCH ₄ Default/Used value: 21	/P01/ /B06/ /B01/	DR,I	IPCC default value	OK	OK
Title: Density of methane at normal conditions Indication: ρ _{CH₄,n,h} Units: kg/m ³ Default/Used value: 0.7168	/P01/ /B06/ /B01/	DR,I	Default value given in the Methodological “Tool to determine project emissions from flaring gases containing methane”	OK	OK
Title: Design COD Removal Efficiency of UASB digester (minimal) Indication: RR _{Digester} Units: % Default/Used value: 90%	/P01/ /B06/ /B01/	DR,I	GWE Technical Design Document	OK	OK
Title: Average temperature at the project site Indication: Average Temperature Units: °C Default/Used value: 27.1	/P01/ /B06/ /B01/	DR,I	At the weather station MENGGALA/ASTRA KSETR at about 4.45°S 105.10°E. reference: http://www.worldclimate.com/cgi-bin/data.pl?ref=S04E105+1102+96273W	OK	OK
Title: COD of the effluent in the period x. Indication: COD _{in,x,UJA} Units: tonne COD / year Default/Used value: 8,725	/P01/ /B06/ /B01/	DR,I	Determined from the 10 days sampling study of UJA effluent prior to entering lagoon 1 of their WWT system	OK	OK

Checklist question	Ref.	MoV ¹	Findings, comments, references, data sources	Draft conclusion	Final conclusion
Title: COD directed to the open lagoons (scenario 1) in the period x. Indication: $COD_{out,x,UJA}$ Units: tonne COD / year Default/Used value: 493	/P01/ /B06/ /B01/	DR,I	Determined from the 10 days sampling study of UJA effluent prior to entering lagoon 1 of their WWT system	OK	OK
Title: Average depth of the lagoon Indication: D_{UJA} Units: m Default/Used value: 3.24	/P01/ /B06/ /B01/	DR,I	Directly measured with the project proponent	OK	OK
Title: Surface of the lagoon Indication: A_{UJA} Units: Unit of area (ha) Default/Used value: 1.72	/P01/ /B06/ /B01/	DR,I	Project Entity UJA	OK	OK
Title: COD directed to the open lagoons (scenario 1) in the period x Indication: $COD_{in,x,GGP}$ Units: tonne COD / year Default/Used value: 9,712	/P01/ /B06/ /B01/	DR,I	Determined from the 10 days sampling study of UJA effluent prior to entering lagoon 1 of their WWT system	OK	OK
Title: COD directed to the open lagoons (scenario 1) in the period x Indication: $COD_{out,x,GGP}$ Units: tonne COD / year Default/Used value: 1,942	/P01/ /B06/ /B01/	DR,I	Determined from the 10 days sampling study of UJA effluent prior to entering lagoon 1 of their WWT system	OK	OK

Checklist question	Ref.	MoV ¹	Findings, comments, references, data sources	Draft conclusion	Final conclusion
Title: Average depth of the lagoon Indication: D _{GGP} Units: m Default/Used value: > 5	/P01/ /B06/ /B01/	DR,I	Consultant's report "Improvement Of Anaerobic Lagoon Performance PT. GGP Waste Water Treatment Lagoons"	OK	OK
Title: Surface of the lagoon Indication: A _{GGP} Units: Unit of area (ha) Default/Used value: 3.351	/P01/ /B06/ /B01/	DR,I	Project Entity GGP	OK	OK
5. Calculations					
5.1 Have all the calculations related to the baseline emissions been carried according to the formulae and methods described in the registered PDD and applied methodology? § 246 of CDM Project Standard	/P01/ /P04/ /B01/	DR,I	Yes, all the calculations are correctly applied as described in the registered PDD.	OK	OK
5.2 Have all the calculations related to the project emissions been carried according to the formulae and methods described in the registered PDD and applied methodology?	/P01/ /P04/ /B01/	DR,I	Yes	OK	OK
5.3 Have all the calculations related to the leakage emissions been carried according to the formulae and methods described in the registered PDD and applied methodology?	/P01/ /P04/ /B01/	DR,I	Not Applicable	OK	OK

Table 2: List of Requests for Corrective Action (CAR) and Clarification (CL)

No.	Type of request	Observation	Reference (Table 1)	Summary of project owner response	Verification team conclusion
1.	CAR-01	As per the EB guidelines, the CDM-MR-FORM should not be altered. However, Cover page doesn't contain all the options of the Original Form.	-	PP Response #1: The cover page has been revised to contain all the options of the original form as per the EB Guidelines the CDM-MR-FORM. The revised word file of MR is being submitted.	DOE Assessment#1: The revised MR has been submitted is in line with the CDM-MR-FORM version 04. All the sections including cover page has been filled accordingly to the guideline. Hence CAR-01 is successfully closed.
2.	CAR-02	As per the attachment "Instructions for filling out the monitoring report Form" under CDM-MR-FORM version 04.0, Following details are missing in the MR. 1. Section A.1 of the MR is not described about the Brief description of installed technology and equipment and relevant dates for the project activity (eg. Construction, commissioning and continued operation periods, etc) 2. Section A.2 of the MR is also not filled as per the requirements.	1.3	PP Response #1: 1. Section A.1 of the MR has been revised to describe about the Brief description of installed technology and equipment and relevant dates for the project activity (eg. Construction, commissioning and continued operation periods, etc). 2. The Section A.2 of the MR has been filled as per the requirements of guideline.	DOE Assessment#1: 1. Necessary details are included in section A.1 of the MR and same has been verified from the revised MR. 2. Project activity location details have been documented in line with the guideline. Hence CAR-02 is closed.
3.	CAR-03	MR should document all the parameters fixed ex-ante during the validation in the Monitoring report. Whereas it is sighted that	-	PP Response#1: The missing parameters fixed ex-ante have been added in the	DOE Assessment#1: The missing parameters RR _{Digester} , Average Temperature, A _{UJA} and A _{GGP}

		few parameters are missing in the MR. Justification required for the same.		revised MR Section D.1.	have been added in the MR. MR has been verified and found to be ok. Hence CAR-03 is closed.
4.	CAR-04	<p>For all the parameters monitored during the monitoring period following corrections are required</p> <ol style="list-style-type: none"> 1. The QA/QC procedures are not adequately documented in the MR. PP shall document all the required details such as Accuracy, Calibration frequency and maintenance schedule as appropriate. 2. For Every parameter it is found that test was conducted by third party laboratory. Shall provide the Name of the laboratory as well as name of the calibrator as appropriate for all the parameters. 3. Validity of the calibration is missing for certain parameters. 4. Unable to verify the average temperature at the project region. Needs to be evidenced in the MR? 	-	<p>PP Response#1:</p> <ol style="list-style-type: none"> 1. The QA/QC procedures have been adequately documented in the revised MR. 2. The name of the laboratory as well as name of the calibrator has been provided for all parameters in the revised MR. 3. The missing validity of the calibration for certain parameters have been added in the revised MR. 4. The average temperature at the project region has been evidenced in the revised MR. 	<p>DOE Assessment#1:</p> <ol style="list-style-type: none"> 1. Yes the QA/QC procedure has been verified from the revised MR and found to be appropriate. 2. All the details have been provided and verified from the MR. The details have been cross verified from the calibration certificates and found to correct. 3. Details are provided and found to be Ok. 4. In the revised MR it has been clarified that PP has taken the daily average temperature of the project region. Since the data has been considered from the publicly available data hence it is deemed appropriate. PP has also provided the source weblink in the MR which is found to be correct. <p>Hence CAR -04 is successfully closed.</p>

5.	CAR-05	<p>1. Monitoring frequency of the parameter COD is not in line with the methodology. It should be regularly monitored. Explain how the monthly test report shall be appropriate?</p> <p>2. As per the registered PDD and the methodology the Parameter $W_{CH4,biogas,y}$ should be monitored however PP has not monitored the same clarify?</p>	<p>2.1, 3.1, 3.2, 3.2.1, 4.2, 4.9, 4.10, 4.17</p>	<p>PP Response#1:</p> <p>1. As per registered PDD the monitoring frequency of the parameter COD is monthly measurement.</p> <p>2. The parameter $W_{CH4,biogas,y}$ is monitored through calculation from the measurement of the volumetric fraction of methane in the biogas ($fv_{CH4,biogas,y}$) multiplied by the density of methane ($\rho_{CH4,n,h}$).</p>	<p>DOE Assessment#1:</p> <p>1. It is found that COD has been monitored as the registered monitoring plan in the PDD. PP has regularly monitored the values every month and aggregated yearly which is also in line with the methodology. Hence this point of CAR is closed.</p> <p>2. The verification team has checked the same from monitored data /P06/ and ER calculation sheet /P04/ and found the response OK.</p> <p>Hence CAR-05 is closed.</p>
6.	CAR-06	<p>ER sheet:</p> <p>1. Explain how the quantity of the effluent from the lagoon is more than the effluent from the digester and the quantity of wastewater to the digester?</p>	<p>4.7, 4.8</p>	<p>PP Response #1:</p> <p>1. The quantity of the effluent from the lagoon (FT-OL15) is more because the effluent from the digester (FT-MR05) has more quantity compare to the quantity of wastewater to the digester</p>	<p>DOE Assessment#1:</p> <p>1. Though the Explanation is reasonable PP needs to submit the technical evidence from the manufacturer for the same. This point of CAR-06 is closed.</p>

		<p>2. Explain why Input values considered for $COD_{in, design}$ and $COD_{out, design}$ only limited to UJA where as Wastewater is coming from both GGP and UJA?</p>	<p>(FT-100). Or, $FT-100 < FT-MR05 < FT-OL15$. This happens because the pressure inside the digester (reactor) is not constant. This leads to the effluent output flow from the digester is unstable. If the high pressure inside the digester happen then effluent output flow from the digester would be high, and vice versa.</p> <p>2. The input values for $COD_{in, design}$ and $COD_{out, design}$ only limited to UJA because:</p> <ul style="list-style-type: none"> • Due to the wastewater from project activity is now a combine flow (both from GGP and UJA), hence one input value has been used (instead of two input values) • The aerobic lagoons #5 - #15 of UJA are still used for wastewater treatment of effluent from the digester, as per registered PDD, Section B.3, page 14, Figure 2. Schematic of the Project Activity Boundary. • Input value of UJA has 	<p>2. The explanation provided is correct. Verification team has also visited the site and found that after the project implementation Wastewater from the four lagoons is entering in to a common equalising lagoon from where the waste water enters to the digester. This point of CAR-06 is closed</p> <p>3. PP has considered the new efficiencies of the boilers and heaters which are being used in the project activity. Efficiency of the boiler has been verified from the third party energy audit report BPPT Energy technology center dated October 2012 /P08/. However the efficiency calculation provided for UJA heaters is not acceptable without proper evidence.</p>
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		<p>3. Efficiencies of the boilers and heaters considered for the calculation of Thermal energy generated by the biogas is not in line with the methodology. As per the methodology efficiency of the project equipment should be considered where as PP has considered the baseline efficiencies of the boiler and heater. Correction required?</p>		<p>been used for conservativeness</p> <p>3. The new efficiency measurement of GGP boilers and UJA heaters have been considered in the revised MR. The “Report Energy Audit in Power Plant PT. Great Giant Pineapple (GGP) Lampung”, October 2012, and DATA BOILER UJA 2014.xls are being submitted.</p> <p>4. The original electricity use has been revised to be estimated for the monitoring period not for the year (worksheet "other PE", column D66). The excel file of ER sheet is being submitted.</p>	<p>This point of CAR-06 is Open</p> <p>4. The calculation has been revised and found to be correct. This point of CAR-06 is closed</p> <p>Hence CAR-06 is open</p>
		<p>4. Other PE: cell D66: Comparison of original electricity use and the actual electricity consumed during the monitoring period is not appropriate. Original electricity use should</p>		<p>PP Response#2:</p> <p>3. The new efficiency measurement of UJA heaters have been considered in the revised MR. the “Thermal Oil Heater Efficiency Measurement”, 14 April</p>	<p>DOE Assessment#2:</p> <p>3. The document /P09/ has been checked by the verification team and found ok. The efficiency measurement of the UJA heaters has been done by “PT. Mitra Ikhtiar Simpati as Authorized Sole Agent of Bosch Boiler”</p> <p>Hence CAR-06 is closed.</p>

		also be estimated for the monitoring period not for the year.		2014 is being submitted.	
7.	CAR-07	As per the Tool to determine project emissions from flaring gases containing methane fv_{i,h} Volumetric fraction of component i in the residual gas in the hour h should be monitored. Clarify.	2.1, 3.2, 3.2.1	<p>PP Response#1: As per the “Tool to determine project emissions from flaring gases containing methane” EB 28, Annex 13, page 12, section III, Parameter fv_{i,h}, Any comment : “As a simplified approach, project participants may only measure the methane content of the residual gas and consider the remaining part as N₂.”, hence $fv_{N_2, RG, h} = 100\% - fv_{CH_4, RG, h}$.</p> <p>The parameter fv_{i,h} is related to parameter fv_{CH₄, RG, h} where parameter fv_{CH₄, RG, h} has been measured with continuous gas analyser (Monitoring Plan Code : MP17) to calculate parameter w_{CH₄, biogas, y}. Hence it can be concluded that this parameter is already monitored for calculating the parameter w_{CH₄, biogas, y}.</p>	<p>DOE Assessment#1: Verification team has checked the parameter w_{CH₄, biogas, y} in the MR and found the PP response ok. The parameter fv_{CH₄, RG, h} is already measured to calculate the parameter w_{CH₄, biogas, y} and hence individual monitoring of the parameter fv_{CH₄, RG, h} is not required. Here parameter fv_{CH₄, RG, h} is equal to fv_{CH₄, Biogas, h}.</p> <p>Hence CAR-07 is closed.</p>

8.	CAR-08	<p>The parameter “Quantity of effluent from the open lagoon in which the effluent from the digester is treated in month m” FPJ_{effl,lag,m} is not monitored as per the monitoring plan registered in the PDD. During the site visit it is observed that the effluent was monitored at the output of the lagoon 15 where as the effluent from the digester was entering into the lagoon number 5. Clarify?</p>	<p>/2.1/ /2.2/ /3.2/</p>	<p>PP Response#1:</p> <p>As per registered PDD, section B.3, page 14, Figure 2. Schematic of the Project Activity Boundary, the parameter “Quantity of effluent from the open lagoon in which the effluent from the digester is treated in month m”, FPJ_{effl,lag,m}, is entering at open lagoon #5 and begin to treated (conditioning of the effluent) in the open lagoon #5 until #15 (the effluent not only treated in open lagoon #5, but flow along until open lagoon #15), hence the effluent was monitored at final discharge of the output of the open lagoon #15 and open lagoon #5 was not monitored.</p>	<p>DOE Assessment#1:</p> <p>The verification team has found the PP response OK.</p> <p>Hence CAR 08 is closed.</p>
9.	CAR-09	<p>During the site visit it is found that only out of two GGP boilers only one boiler was replaced with Biogas burner. However the description in the MR is contradicting with the same. Clarify?</p>	<p>1.2</p>	<p>The description in the MR has been corrected in section A.1. in regards with only one boiler of GGP boilers that was replaced with biogas burner. In addition, PP has planned to retrofit the other boiler with biogas burner in</p>	<p>The correction has been done in the revised MR and found OK. PP has planned to retrofit the second GGP boiler (boiler no. 3) with the biogas. There is no impact on the project design of the project activity due to this change. Also there is no impact of this change in the emission reduction calculation of the project activity.</p>

				the future.	However FAR-01 is raised in this respect. Hence CAR 09 is closed.
10.	CAR-10	<p>For the FAR (FAR-01) raised during the validation of the project activity.</p> <p>Procedures for data management and quality assurance are briefly described in the PDD (i.e. procedures for training of monitoring personnel, procedures for emergency preparedness for cases where emergencies can cause unintended emissions, procedures to identify corrective actions in order to provide for more accurate future monitoring and reporting, etc.).</p>	-	<p>PP Response#1:</p> <p>The documents of procedures are:</p> <ul style="list-style-type: none"> • SOP for Training.pdf • SOP for checking leakage of methane in pipe.pdf • SOP for emergency preparedness.pdf • SOP for CDM Onsite Monitoring Manual.pdf • SOP for Control of Non Conformity.pdf • SOP for Corrective Action and Precaution.pdf • SOP for biogas plant operational.pdf • SOP for data processing for flare system.pdf • SOP for Health and Safety Working in Biogas Plant.pdf • SOP for monitoring of biogas performance_051211.pdf • SOP for monitoring of 	<p>Verification team has verified the submitted documents /P15/ and found OK.</p> <p>PP has developed appropriate procedure for the data management and quality assurance as described in the registered PDD /B04/.</p> <p>Hence CAR-10 is closed.</p>

				biogas performance_220813.pdf All those documents are being submitted.	
11.	CAR-11	In the registered PDD /B04/: Under the heading “QA/QC procedures to be applied:” for the monitoring parameter “FPJ,effl,lag,m”, it is mentioned that “The meters will be calibrated every three years or as specified by manufacturer, whichever is earliest.” However in the MR /P01/ calibration information is missing. PP need to provide the same.	1.2	The V-Notch weir does not have any calibration procedure. PP is planning to install a flowmeter for which will be calibrated every three years or as specified by manufacturer, whichever is earliest. Also for the conservativeness, the values of the parameter F _{PP,effl,lag,m} during this monitoring period have been considered as zero (0).	Verification team has checked the declaration from PP /P18/ and found OK. Verification team has raised a FAR (FAR-02) corresponding to same. The meter installation and monitoring will be checked during next periodic verification. Moreover the value of the parameter is considered zero in the emission reduction calculation which is most conservative approach and accepted. Hence CAR-11 is closed.
12.	CL-01	Correction needs to applied for the following sections: 1. Estimated amount of GHG emission reductions for this monitoring period is not correctly estimated. 2. Emission reductions during the monitoring period should be represented with the number of days for the transparency. It is applicable for all sections	-	PP Response#1: 1. The estimated amount of GHG emission reductions for this monitoring period has been correctly estimated in the revised MR as per the registered PDD. 2. The emission reductions during the monitoring period have been represented with the number of days in the revised MR.	DOE Assessment#1: 1. Correction has been made in the revised MR and same has been verified to be ok. 2. Necessary correction has been done in the revised MR CL-01 is successfully closed

		in the MR.			
13.	CL-02	It is noticed that Emission reductions value is not consistently mentioned throughout the MR.	1.5	PP Response#1: The emission reductions value has been revised to be consistently mentioned throughout the revised MR.	DOE Assessment#1: The Emission reduction value made consistent in all corresponding documents. CL-02 is successfully closed.
14.	CL-03	As per the attachment "Instructions for filling out the monitoring report Form" under CDM-MR-FORM version 04.0, Monitoring Report is not adequately filled in the following sections 1. UNFCCC reference to the methodologies and tools used in the project activity shall be provided in section A.4 2. CDM organization chart provided in the MR is not clear. 3. QA/QC procedures are not adequately explained in the table provided in section C of the MR. 4. In section C description of monitoring equipment is missing. Table shall be provided for all the monitoring equipment with the all the details		PP Response#1: 1. UNFCCC reference to the methodologies and tools used in the project activity have been provided in section A.4 of revised MR. 2. The CDM organization chart has been revised to make it more clear in the Figure 4, Section C. 3. The QA/QC procedures have been adequately explained in the new table (Equipment ID, CDM ID, Parameter Unit, Description of the Parameters Monitored, Measuring Equipment specification, and Calibration Frequency) in section C of the revised MR. 4. The description of monitoring equipment has been provided in the table (Equipment ID, CDM ID, Parameter Unit, Description of the Parameters Monitored,	DOE Assessment#1: 1. Reference links to the methodologies and tools are provided in the revised MR. 2. Correction has been made and verified to be ok 3. Revised MR has clearly explained the QA/QC procedures in line with the methodology requirements. 4. All the necessary details are provided in the revised MR and same has been verified to be ok. CL-03 is successfully closed.

		including calibration dates.		Measuring Equipment specification, and Calibration Frequency) have been provided in the table section C of the revised MR.	
15.	CL-04	Units of all the parameters documented in the MR are not correct. Correction required.	/4.4/	PP response#1: Units of all the parameters documented in the MR have been corrected in the revised MR.	DOE Assessment#1: All units are corrected in the revised MR. CL-04 is closed.
16.	CL-05	From the MR it was found that monitored data has been represented for the month of November and December 2012 where as it is considered from 15 th November 2012. It shall be represented in the date format for transparency.	-	PP Response#1: The monitored data has been represented in the date format for the 16 th November 2012 and December 2012 where as it is considered from 16 th November 2012.	DOE Assessment#1: Corrections has been made in the revised MR same has been verified to be ok. CL-05 is successfully closed.
17.	CL-06	Corrections required for the following monitoring parameters as the values mentioned in the MR are contradicting with the emission reduction sheet. <ol style="list-style-type: none"> 1. $F_{PJ,effl,dig,m}$ - Quantity of effluent from the digester in month m 2. $F_{UJA,biogas,y}$ - Amount of biogas that is sent to the UJA heaters 3. Latest calibration certificate for the electricity meters 	3.2.2	PP Response#1: The following monitoring parameters have been corrected in the revised MR: <ol style="list-style-type: none"> 1. $F_{PJ,effl,dig,m}$ - Quantity of effluent from the digester in month m 2. $F_{UJA,biogas,y}$ - Amount of biogas that is sent to the UJA heaters 3. Latest calibration certificate for the electricity meters 	DOE Assessment#1: <ol style="list-style-type: none"> 1. Both the values are corrected in the revised MR. 2. The response is incomplete and the certificates were also not submitted. CL-06 is open

				PP Response#2: The complete response should be as follows: 3. The electricity meters have been replaced two times, 1 st meter of S/N 1007034682 has been replaced on 28/06/2013 and 2 nd meter of S/N 11010117 has been replaced on 03/02/2014. The 3 rd meter of S/N 1309039721 has been installed and ongoing operated. The calibration certificates of 1st and 2 nd meters not available, hence the conservativeness of value of a maximum permissible error has been applied in the ER calculation for current monitoring period. The calibration certificate of 3 rd meter is being submitted.	DOE Assessment#2: 3. Checked to be OK. Hence CL 06 is closed.
	CL-07	Accuracy class of all the flow meters is inconsistent in the Monitoring period. Submit the manufacturer specifications to confirm. Moreover as per the registered PDD /B04/, the accuracy class of the flow meters used for the	1.2, 2.2, 2.2.1, 1.5, 4.3, 4.5, 4.14	PP Response#1: The accuracy class of all the flow meters have been corrected to be consistent in the revised Monitoring report. The manufacturer specifications are being submitted.	DOE Assessment#1: This has been consistently mentioned for all the meters in the revised MR and technical specifications for all the meters have been submitted for verification. Also verification team has checked the adjustment of the measured value of the monitoring parameters ($F_{UJA,biogas,y}$, $F_{GGP,biogas,y}$,

		monitoring parameters ($F_{UJA,biogas,y}$, $F_{GGP,biogas,y}$, $F_{Flare,biogas,y}$) should be 1.5% however the meter installed have the accuracy class of 2% which is of inferior quality. PP need to clarify the same.		Yes, the flowmeters of accuracy class 2% have been installed. Consequently, as per the CDM project standard Version 07.0, Appendix 1, paragraph 3 “Permanent changes from the registered monitoring plan, applied methodology or applied standardized baseline”, post registration change has been applied. Also, as per paragraph 4, the adjusted value has been applied accordingly for the difference in accuracy class.	$F_{Flare,biogas,y}$) used in the ER calculation and found OK. PRC submitted for the change of the accuracy class of the meters is inline as per the requirement of CDM project standard. CL-07 is successfully closed.
	CL-08	All the formulas for the calculation of baseline emissions and Project emissions are not reflecting in the MR and the ER sheet.	-	PP Response#1: All the formulas for the calculation of baseline emissions and Project emissions have been revised in the MR and the ER sheet.	DOE Assessment#1: All the formulas have been documented in the revised MR which has been verified to be in line with the methodology. CL-08 is successfully closed.
	CL-09	Section E.1 of the MR is not adequately filled. Equations should be substituted with the input values.	-	PP Response#1: Section E.1 of the MR has been adequately filled. Equations have been substituted with the input values.	DOE Assessment#1: All the equations have been transparently substituted with the monitored values in the revised MR. CL-09 is successfully closed.
	CL-10	Calibration certificates are required for the following parameter and need to mentioned in the MR. 1. $w_{CH4,biogas,y}$	-	PP Response#1: The latest calibration certificates are being submitted for the following parameter	DOE Assessment#1 Verification team has checked the revised MR with the calibration report /P05/ and found OK. Hence CL -10 is closed.

				$w_{CH_4, biogas, y}$ The calibration information of meter for $f_{v_{CH_4, biogas, y}}$ (in related to $w_{CH_4, biogas, y}$) has been mentioned in the MR.	
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Table 3: List of forward action requests (FARs)

FAR number	Observation	Reference	Summary of project participants' response	Verification team conclusion
FAR-01	During the site visit it is found that out of the two GGP boilers only one boiler was retrofitted with Biogas burner. However as per the registered PDD (section A.2, page 3), due to the operational rotation of the boilers during the year two (2) of the three (3) boilers will be retrofitted with biogas burners to provide year long utilization of the biogas.	-	PP has planned to retrofit the other boiler with biogas burner in the future.	Verification team has checked the declaration from the PP /P10/ and found OK. PP will retrofit the second boiler with the biogas burner in future which will be verified during next verifications.
FAR-02	As per the closure of CAR-11, PP need to specify the provision for the accurate monitoring of the monitoring parameter "FPJ,effl,lag,m".	-	The V-Notch weir does not have any calibration procedure. PP is planning to install a flowmeter for which will be calibrated every three years or as specified by manufacturer, whichever is earliest. Also for the conservativeness, the values of the parameter $F_{PJ,effl,lag,m}$ during this monitoring period have been considered as zero (0).	Verification team has checked the declaration from the PP /P18/ and found OK. PP will install the flow meter in future for the accurate monitoring of the parameter which will be verified during next verifications.

Appendix B

Certification statement
to the Verification Report 01 997 9105077145

Certification statement

TUV Rheinland (China) Ltd., the DOE, has performed the verification of the registered CDM project activity “UNFCCC Registration № 8101”, “GGP Biogas Project” in Indonesia. The project activity is designed to reduce GHG emissions from the wastewater treatment lagoons of GGP and UJA.

The project participants are responsible for the collection of data in accordance with the monitoring plan and the reporting of GHG emissions reductions from the project. It is DOE’s responsibility to express an independent verification statement on the reported GHG emission reductions from the project. The DOE does not express any opinion on the selected baseline scenario or on the validated and registered PDD. The verification is carried out in-line with the VVS requirements.

The verification was performed to identify the compliance of the project activity with implementation and monitoring requirements, and to verify the actual amount of achieved emission reductions, through obtaining evidence and information on-site that included i) checking whether the provisions of the monitoring methodology and the monitoring plan were consistently and appropriately applied, ii) the collection of evidence supporting the reported data and iii) emission reductions that are claimed is free from material errors, omissions or misstatements.

The verification is based on:

- PDD (version 05, dated 23/07/2012), registered with the CDM Executive Board on 16/11/2012 and its monitoring plan;
- Revised PDD (version 06, dated 09/10/2014)
- Approved monitoring methodology ACM0014 “Mitigation of greenhouse gas emissions from treatment of industrial wastewater”, version 04.1;
- Approved validation report, “2010-9161 Revision no. 01” dated 08/11/2012;
- Monitoring report version 08.1, dated 09/10/2014.

This statement covers verification period of 46 days between 16/11/2012 and 31/12/2012 (including both the days).

The DOE has raised 10 clarification and 11 corrective action requests, all of which have been successfully resolved by PPs. 2 Forward action requests have been also raised and shall be addressed and verified during the next periodic verification.

The DOE considers necessary to give reasonable assurance that reported GHG emission reductions were calculated correctly on the basis of the approved baseline and monitoring methodology and the monitoring plan contained in the registered PDD are fairly stated.

The DOE , hereby certifies that the project activity, achieved emission reductions by sources of GHG equal to 2,585 tCO₂ equivalent and all monitoring requirements have been fulfilled.

The DOE states that the Claimed emission reductions are free from material errors, omissions and misstatements with a reasonable level of assurance.

2014-10-24

Date



Mr. Henri Phan
DOE Manager
TUV Rheinland (China) Ltd.

2014-10-20

Date



Ms. Indumathi C
Technical Reviewer
TUV Rheinland (India) Pvt. Ltd.

2014-10-14

Date



Mr. Chetan Swaroop Sharma
Team Leader
TUV Rheinland (India) Pvt. Ltd.

Appendix C

CERTIFICATES OF COMPETENCE

Qualification

Sharma, Chetan Swaroop /

Emission Trading

United Nations Framework Convention on Climate Change

Auditor No.:
(AuditorenRegNr)

Appointed:
(Zugelassen)

☒ ja

Qualification Level:
(Qualifikationsstufe)

Lead Auditor

External:
(Externer)

☐ ja

Add. reviewer:
(Zusätzlicher Prüfer)

☐ yes

EAC Scopes:
(EAC Branchen)

CDM 01 - Energy industries (renewable - / non-renewable sources)

Add. qualification:
(zus. Qualifikation)

Gold Standard Webinars

First Appointment:
(Erstberufung)

20-10-2009

Valid to:
(Gültig bis)

18-10-2015

Remarks:

T.A 1.2

Languages:

Hindi
English

Experience Exchange

Date

Location

Remarks

Accreditation(s)

Monitoring

Latest Monitoring:
(letzte Beurteilung)

Next Monitoring:
(nächste Beurteilung)

Remarks:

[View / Edit Monitoring](#)

History of scope allocation

Date: 2013-01-11
Change: EAC CDM added
By: Praveen Urs
Reason:

Date: 2011-05-30

Change: Non-EAC Gold Standard Webinars added
By: Manfred Brinkmann
Reason:

History

Created:	11-05-2011 14:24:02	Chetan Sharma/Ind/TUV
Modified:	11-01-2013 15:05:00 ZE8	Praveen Urs/Chn/TUV
	08-11-2012 12:45:01 ZE8	Manfred Brinkmann/Jpn/TUV
	14-07-2012 12:51:08 ZE8	Manfred Brinkmann/Jpn/TUV
	14-07-2012 12:51:06 ZE8	Manfred Brinkmann/Jpn/TUV
	30-05-2011 14:58:51 ZE9	Chetan Sharma/Ind/TUV
	30-05-2011 12:01:09 ZE9	
	30-05-2011 12:00:57 ZE9	
	11-05-2011 14:24:16	

Export to ICMS

Last Export:

Qualification

R, Narendra Kumar /

Emission Trading

United Nations Framework Convention on Climate Change

Auditor No.:
(AuditorenRegNr)

Appointed:
(Zugelassen)

☒ ja

Qualification Level:
(Qualifikationsstufe)

Lead Auditor

External:
(Externer)

☐ ja

Add. reviewer:
(Zusätzlicher Prüfer)

☐ yes

EAC Scopes:
(EAC Branchen)

CDM 03 - Energy demand
CDM 01 - Energy industries (renewable - / non-renewable sources)

Add. qualification:
(zus. Qualifikation)

First Appointment:
(Erstberufung)

15-05-2012

Valid to:
(Gültig bis)

14-05-2015

Remarks:

TA. 1.2, 3.1

Languages:

Tamil
English
Hindi

Experience Exchange

Date

Location

Remarks

Accreditation(s)

Monitoring

Latest Monitoring:
(letzte Beurteilung)

Next Monitoring:
(nächste Beurteilung)

Remarks:

History of scope allocation

Date:

2012-06-29

Change:

EAC CDM removed; CDM added

By:

Praveen Urs

Reason:

Date: 2012-06-28
Change: EAC CDM, CDM added
By: Praveen Urs
Reason:

History

Created:	27-06-2012 12:58:24	Kaustubh Rane/Ind/TUV
Modified:	29-06-2012 18:18:45 ZE8	Praveen Urs/Chn/TUV
	28-06-2012 18:04:05 ZE8	Kaustubh Rane/Ind/TUV
	27-06-2012 12:58:53	

Export to ICMS

Last Export:

Qualification

Bellapu, Nagaraju /

Emission Trading

United Nations Framework Convention on Climate Change

Auditor No.:
(AuditorenRegNr)

Appointed:
(Zugelassen)

☒ ja

Qualification Level: Auditor
(Qualifikationsstufe)

External:
(Externer)

☐ ja

Add. reviewer: ☐ yes
(Zusätzlicher Prüfer)

EAC Scopes:
(EAC Branchen)

CDM 01 - Energy industries (renewable - / non-renewable sources)
CDM 03 - Energy demand

Add. qualification:
(zus. Qualifikation)

First Appointment:
(Erstberufung)

14-03-2012

Valid to:
(Gültig bis)

13-03-2015

Remarks: TA 1.2, 3.1

Languages: English
Hindi

Experience Exchange

Date	Location	Remarks	Accreditation(s)
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Monitoring

Latest Monitoring:
(letzte Beurteilung)

Next Monitoring:
(nächste Beurteilung)

Remarks:

History of scope allocation

Date:	2012-07-08
Change:	EAC CDM removed
By:	Praveen Urs
Reason:	
Date:	2012-07-08
Change:	EAC CDM, CDM, CDM added

By: Praveen Urs
Reason:

History

Created:	04-07-2012 09:53:10	Kaustubh Rane/Ind/TUV
Modified:	22-01-2013 15:33:50 ZE8	Praveen Urs/Chn/TUV
	08-07-2012 18:22:28 ZE8	Kaustubh Rane/Ind/TUV
	08-07-2012 18:13:43 ZE8	
	08-07-2012 18:10:54 ZE8	
	04-07-2012 09:53:34	

Export to ICMS

Last Export:

Qualification

Ernanda, Lufaldy Ernanda /

Emission Trading

United Nations Framework Convention on Climate Change

Auditor No.:

(AuditorenRegNr)

Appointed:
(Zugelassen)

☒ ja

Qualification Level:
(Qualifikationsstufe)

Expert

External:
(Externer)

☐ ja

Add. reviewer:
(Zusätzlicher Prüfer)

☐ yes

EAC Scopes:
(EAC Branchen)

CDM 01 - Energy industries (renewable - / non-renewable sources)
CDM 13 - Waste handling and disposal

Add. qualification:
(zus. Qualifikation)

First Appointment:
(Erstberufung)

14-07-2013

Valid to:
(Gültig bis)

13-07-2016

Remarks:

TA 1.2 and TA 13.1

Languages:

Indonesian
English

Experience Exchange

Date

Location

Remarks

Accreditation(s)

Monitoring

Latest Monitoring:
(letzte Beurteilung)

Next Monitoring:
(nächste Beurteilung)

Remarks:

History of scope allocation

Date:

2013-07-17

Change:

EAC CDM, CDM added

By:

Henri Phan

Reason:

TA 1.2 and TA 13.1

History

Created:	08-07-2013 09:44:33 ZE7	Lufaldy Ernanda/Idn/TUV
Modified:	17-07-2013 14:37:00 ZE8	Henri Phan/Chn/TUV
	08-07-2013 09:45:06 ZE7	

Export to ICMS

Last Export:

Qualification

MP, Kanal /

Emission Trading

United Nations Framework Convention on Climate Change

Auditor No.:
(AuditorenRegNr)Appointed:
(Zugelassen)☒ jaQualification Level:
(Qualifikationsstufe)

Lead Auditor

External:
(Externer)☐ jaAdd. reviewer:
(Zusätzlicher Prüfer)☒ yesEAC Scopes:
(EAC Branchen)CDM 01 - Energy industries (renewable - / non-renewable sources)
CDM 03 - Energy demand
CDM 06 - Construction
CDM 13 - Waste handling and disposal
CDM 15 - AgricultureAdd. qualification:
(zus. Qualifikation)First Appointment:
(Erstberufung)

02-06-2012

Valid to:
(Gültig bis)

02-05-2015

Remarks:

TA. 1.2, 3.1, 6.1, 13.1/13.2, 15.1

Languages:

English
Tamil
Hindi

Experience Exchange

Date

Location

Remarks

Accreditation(s)

Monitoring

Latest Monitoring:
(letzte Beurteilung)Next Monitoring:
(nächste Beurteilung)

Remarks:

History of scope allocation

Date: 2012-07-04

Change: EAC CDM, CDM, CDM, CDM, CDM added

By: Praveen Urs
Reason:

History

Created:	12-03-2012 13:18:50	Kanal MP/Ind/TUV
Modified:	31-07-2013 18:20:20 ZE8	Henri Phan/Chn/TUV
	04-07-2012 14:21:23 ZE8	Kanal MP/Ind/TUV
	29-06-2012 13:57:34 ZE8	
	12-03-2012 13:19:19	

Export to ICMS

Last Export:

Qualification

C, Indumathi /

Emission Trading

United Nations Framework Convention on Climate Change

(The following data is set by the certification body)

Auditor No.:

(AuditorenRegNr)

Appointed:
(Zugelassen)

ja

Qualification
Level:
(Qualifikationsstufe)

Lead Auditor

External:
(Externer)

Add. reviewer: yes
(Zusätzlicher
Prüfer)

EAC Scopes:
(EAC Branchen)

CDM 01 - Energy industries (renewable - / non-renewable sources)

Add.
qualification:
(zus. Qualifikation)

First
Appointment:
(Erstberufung)

06-07-2012

Valid to:
(Gültig bis)

06-05-2015

Remarks:

TA 1.2

Languages:

Tamil

English

Hindi

Experience Exchange

Date

Location

Remarks

Accreditation(s)

Monitoring

Latest Monitoring:
(letzte Beurteilung)

Next Monitoring:
(nächste Beurteilung)

Remarks:

History

Created:	30-07-2012 12:45:55	Kaustubh Rane/Ind/TUV
Modified:	26-08-2013 14:58:11 ZE8	Henri Phan/Chn/TUV
	02-08-2012 17:58:28 ZE8	Kaustubh Rane/Ind/TUV
	30-07-2012 12:46:56	

Export to ICMS

Last Export:

Qualification

Tang, Walter /

Emission Trading

United Nations Framework Convention on Climate Change

Auditor No.:

(AuditorenRegNr)

Appointed:
(Zugelassen)

☒ ja

Qualification Level:
(Qualifikationsstufe)

Lead Auditor

External:
(Externer)

☐ ja

Add. reviewer:
(Zusätzlicher Prüfer)

☒ yes

EAC Scopes:
(EAC Branchen)

CDM 01 - Energy industries (renewable - / non-renewable sources)
CDM 02 - Energy distribution
CDM 03 - Energy demand
CDM 13 - Waste handling and disposal
CDM 04 - Manufacturing industries

Add. qualification:
(zus. Qualifikation)

First Appointment:
(Erstberufung)

10-10-2011

Valid to:
(Gültig bis)

10-09-2015

Remarks:

Appointed as Technical Reviewer for TA 1.1, 1.2, 2.1, 2.2, 3.1 Direct work experience. TA 4.3, 4.5 based on EB 75, Annex 3 (Transitional provisions)

Languages:

Chinese simplified
English

Experience Exchange

Date

Location

Remarks

Accreditation(s)

Monitoring

Latest Monitoring:
(letzte Beurteilung)

Next Monitoring:
(nächste Beurteilung)

Remarks:

History of scope allocation

Date: 2012-02-13
Change: EAC CDM added
By: Praveen Urs
Reason:

Date: 2012-02-13
Change: EAC CDM, CDM, CDM, CDM added
By: Praveen Urs
Reason:

History

Created:	06-12-2011 17:00:51 ZE8	Walter Tang/Chn/TUV
Modified:	01-08-2014 11:43:45 ZE8	Henri Phan/Chn/TUV
	03-07-2014 16:09:13 ZE8	Henri Phan/Chn/TUV
	01-11-2013 14:50:03 ZE8	Henri Phan/Chn/TUV
	06-07-2012 16:47:48 ZE8	Nelly Yong/MY/TUV
	02-07-2012 15:08:57 ZE8	Walter Tang/Chn/TUV
	02-07-2012 15:08:48 ZE8	
	15-05-2012 15:30:46 ZE8	
	13-02-2012 20:00:10 ZE8	
	06-12-2011 17:01:30 ZE8	

Export to ICMS

Last Export: