VERIFICATION AND CERTIFICATION REPORT

- 4TH PERIODIC –

THAI BIOGAS ENERGY COMPANY LIMITED

CHAO KHUN AGRO BIOGAS ENERGY PROJECT

UNFCCC REF. NO. : 2138

Monitoring Period: 2014-01-01 to 2014-10-31
(incl. both days)

Report No: MY-PVer 14/30 – 14/153

Date: 2015-06-04

TÜV NORD CERT GmbH
JI/CDM Certification Program
Langemarckstraße, 20
45141 Essen, Germany
Phone: +49-201-825-3329
Fax: +49-201-825-2139
www.tuev-nord.de
www.global-warming.de

Verification Report:	***Report No.***		***Rev. No.***	***Date of 1st issue:***	***Date of this rev.***
	MY-PVer 14/30 – 14/153		0	2015-06-04	2015-06-04
Project:	***Title:***			***Registration date:***	***UNFCCC-No.:***
	Chao Khun Agro Biogas Energy Project			2009-03-09	2138
				Verification No.:	
				4th periodic verification	
	Crediting period:			***From:***	***To:***
	☐ *Renewable (7y)* ☒ *Fixed (10y)*			2009-03-09	2019-03-08
	Project Scale:				
	☒ *Large Scale* ☐ *Small Scale*				
Project Participant(s):	***Client:***				
	Thai Biogas Energy Company Limited				
	Non Annex 1 country:			***Annex 1 country:***	
	Thailand			Sweden	
	PP from non Annex 1 country:			***PP from Annex 1 country:***	
	Thai Biogas Energy Company Limited			Swedish Energy Agency	
Applied methodology/ies:	***Title:***			***No.:***	***Scope(s) / TA(s)***
	Avoided Wastewater and On-site Energy Use Emissions in the Industrial Sector			AM0022 ver. 04	13 / 13.1
Monitoring period and monitoring report	***Monitoring period (MP):***			***Monitoring Report:***	
	From:	***To:***	***No. of days:***	***Draft version:***	***Final version:***
	2014-01-01	2014-10-31	304	2014-11-27 v. 01.	2015-06-03 v. 05
Verification team / Technical Review and Final Approval:	***Verification Team:***			***Technical review:***	***Final approval:***
	Cheong, Chun Yuen (Robert) – TL / TE			Stefan Winter	Stefan Winter
Key dates of verification:	***Publication of MR :***		***DVerR issued:***	***On-site (from):***	***On-site (to):***
	2014-12-03		2015-01-20	2015-01-12	2015-01-13

Summary of Verification opinion

Thai Biogas Energy Company Limited has commissioned the TÜV NORD JI/CDM Certification Program to carry out the 4th periodic verification of the project: "Chao Khun Agro Biogas Energy Project", with regard to the relevant requirements for CDM project activities.

As a result of this verification, the verifier confirms that:

☒ all operations of the project are implemented and installed as planned and described in the validated project design document,

☒ the monitoring plan is in accordance with the applied approved CDM methodology,

☒ the installed equipment essential for measuring parameters required for calculating emission reductions are calibrated appropriately,

☒ the monitoring system is in place and functional. The project has generated GHG emission reductions, and

☒ the GHG emission reductions are calculated without material misstatements in a conservative and appropriate manner.

TÜV NORD JI/CDM CP herewith confirms that the project has achieved emission reductions in the above mentioned reporting period as listed below (verified amount).

Emission reductions: [t CO_2e]	***Total verified amount***	***As per draft MR:***	***As per PDD:***
		55,398	48,167/a
	54,937	***ER achieved up to 2012-12-31***	***ER achieved from 2013-01-01***
		NA	122,841

Document information:	*Filename:*	*No. of pages:*
	14-153 CKA MR4 FVerR	101

Abbreviations:

CA	**Corrective Action / Clarification Action**
CAR	**Corrective Action Request**
CDM	**Clean Development Mechanism**
CER	**Certified Emission Reduction**
CO_2	**Carbon dioxide**
CO_{2eq}	**Carbon dioxide equivalent**
CL	**Clarification Request**
DVerR	**Draft Verification Report**
ER	**Emission Reduction**
FAR	**Forward Action Request**
GHG	**Greenhouse gas(es)**
MP	**Monitoring Plan**
MR	**Monitoring Report**
PA	**Project Activity**
PDD	**Project Design Document**
PP	**Project Participant**
QA/QC	**Quality Assurance / Quality Control**
UNFCCC	**United Nations Framework Convention on Climate Change**
VVS	**Validation and Verification Standard**
XLS	**Emission Reduction Calculation Spread Sheet**

Table of Contents *Page*

1. INTRODUCTION

Thai Biogas Energy Company Limited has commissioned the TÜV NORD JI/CDM Certification Program (CP) to carry out the 4th periodic verification of the project

"Chao Khun Agro Biogas Energy Project"

with regard to the relevant requirements for CDM project activities. The verifiers have reviewed the implementation of the monitoring plan (MP) in the registered CDM project.

GHG data for the monitoring period was verified in detailed manner applying the set of requirements, audit practices and principles as required under the Validation and Verification Standard /VVS/ of the UNFCCC.

This report summarizes the findings and conclusions of this 4th periodic verification of the above mentioned UNFCCC registered project activity.

1.1. Objective

The objective of the verification is the review and ex-post determination by an independent entity of the GHG emission reductions. It includes the verification of the:

- implementation and operation of the project activity as given in the PDD,
- compliance with applied approved methodology and the provisions of the monitoring plan,
- data given in the monitoring report by checking the monitoring records, the emissions reduction calculation and supporting evidence,
- accuracy of the monitoring equipment,
- quality of evidence,
- significance of reporting risks and risks of material misstatements.

1.2. Scope

The verification of this registered project is based on the validated project design document /PDD/, the monitoring report /MR/, emission reduction calculation spread sheet /XLS/, supporting documents made available to the verifier and information collected through performing interviews and during the on-site assessment. Furthermore publicly available information was considered as far as available and required.

The verification is carried out on the basis of the following requirements, applicable for this project activity:

- Article 12 of the Kyoto Protocol /KP/,

- guidelines for the implementation of Article 12 of the Kyoto Protocol as presented in the Marrakech Accords under decision 3/CMP.1 /MA/, and subsequent decisions made by the Executive Board and COP/MOP,
- other relevant rules, including the host country legislation,
- CDM Validation and Verification Standard /VVS/,
- monitoring plan as given in the registered PDD /PDD/,
- Approved CDM Methodology/AM22/.

2. GHG PROJECT DESCRIPTION

2.1. Technical Project Description

The project activity involved an installed Covered In-Ground Anaerobic Reactor (CIGAR) biogas recovery system for treatment of wastewater from starch factory.

The amount of biogas generated is sent for combustion in boilers to generate heat for starch drying process. Surplus amount of biogas will be flared.

The key parameters of the project are given in **Fehler! Verweisquelle konnte nicht gefunden werden.**:

Parameter	Unit	Value
Anaerobic Digester		
Type		Covered In-Ground Anaerobic Reactor (CIGAR)
Capacity	m^3	41,000
Number of unit	-	1
Boiler		
Manufacturer	-	Loos
Capacity	kg/hr	15,000
Steam property	-	13 bar, 195^oC
Number of unit	-	1
Burner		
Manufacture	-	Weishaupt WKGMS 70/2-A
Rating	kW	min: 1,400, max: 10,800
Supply pressure	mbar	min: 15, max: 500
Flare system		
Type	-	Open flare
Capacity	m^3/hr	2,000
Number of unit	-	1

2.2. Project Location

The details of the project location are given in Table 2-1:

Table 2-1: Project Location

No.	Project Location
Host Country	Thailand
Region:	Saraburi province

No.	Project Location
Project location address:	Chao Khun Agro Products Project, 44 Moo 2, Songkorn, Kaengkoi, Saraburi, 18110
Latitude:	14° 35' 59.28" N
Longitude:	101° 00' 41.30" E

2.3. Project Verification History

Essential events since the registration of the project are presented in the following Table 2-2.

Table 2-2: Status of previous Monitoring Periods

#	Item	Time	Status
1	1st Monitoring period	2009-03-09 to 2011-03-31	Issued
2	2nd Monitoring period	2011-04-01 to 2012-12-31	Issued
3	3rd Monitoring period	2013-01-01 to 2013-12-31	Issued
4	4th Monitoring period	2014-01-01 to 2014-10-31	Issuance request

An overview of all Post Registration Changes is given in the following table.

Table 2-4: Overview Post Registration Changes

#	Applicable from – to / as of	MP	Type of post registration change [1)]	Description	Status[2)] / Date
1	2010-04-02 to 2010-05-10	1	TDfrMP	PRC-2138-001: The portable gas analyzer, periodic measurement, was introduced for monitoring C_{CH4} and $FV_{CH4,y}$ as a backup plan in case of malfunction of continuous gas analyzer.	Approved 2013-08-23

1) TDfrMP : Temporary deviation from registered monitoring plan
TDfMM : Temporary deviation from the monitoring methodology
CrPDD : Corrections to the registered PDD
PCfrMP : Permanent changes from registered Monitoring Plan
PCfMM : Permanent changes from Monitoring Methodology
CoPD : Changes to the project design of a registered project activity

2) Approval (by EB) or Acceptance (by DOE)

3. METHODOLOGY AND VERIFICATION SEQUENCE

3.1. Verification Steps

The verification consisted of the following steps:

- Contract review
- Appointment of team members and technical reviewers
- Publication of the monitoring report
- A desk review of the Monitoring Report /MR/ submitted by the client and additional supporting documents with the use of customised verification protocol /CPM/ according to the Validation and Verification Standard /VVS/,
- Verification planning,
- On-Site assessment,
- Background investigation and follow-up interviews with personnel of the project developer and its contractors,
- Draft verification reporting
- Resolution of corrective actions (if any)
- Final verification reporting
- Technical review
- Final approval of the verification.

3.2. Contract review

To assure that

- the project falls within the scopes for which accreditation is held,
- the necessary competences to carry out the verification can be provided,
- Impartiality issues are clear and in line with the CDM accreditation requirements

a contract review was carried out before the contract was signed.

3.3. Appointment of team members and technical reviewers

On the basis of a competence analysis and individual availabilities a verification team, consisting of one team leader was appointed.

The list of involved personnel, the tasks assigned and the qualification status are summarized in the Table 3-1 below.

Table 3-1: Involved Personnel

	Name	Company	Function [1]	Qualification Status [2]	Scheme competence [3]	Technical competence [4]	Verification competence [5]	Host country Competence	On-site visit
☒ Mr. ☐ Ms.	Cheong, Chun Yuen (Robert)	TN Malaysia	TL	SA	☒	13.1	☒	☐	☒
☒ Mr. ☐ Ms.	Stefan Winter	TN Cert	/TRFA[B])	SA	☒	13.1	☒	☐	-

1) TL: Team Leader; TM: Team Member, TR: Technical review; OT: Observer-Team, OR: Observer-TR; FA: Final approval

2) GHG Auditor Status: A: Assessor; LA: Lead Assessor; SA: Senior Assessor; T: Trainee; TE: Technical Expert

3) GHG auditor status (at least Assessor)

4) As per S01-MU03 or S01-VA070-A2 (such as 1.1, 1.2, …)

5) In case of verification projects

A) Team Member: GHG auditor (at least Assessor status), Technical Expert (incl. Host Country Expert or Verification Expert), not ETE

B) No team member

All team members contributed to the review of documents, the assessment of the project activity and to the preparation of this report under the leadership of the team leader.

Technical experts contributed to the assessment of special aspects of the project activity, e.g. technical or host country aspects.

Statements of competence for the above mentioned team members are enclosed in annex 2 of this report.

3.4. Publication of the Monitoring Report

In accordance with the CDM M&P (§ 62) the draft monitoring report, as received from the project participants, has been made publicly available on the dedicated UNFCCC CDM website prior to the verification activity commenced. Comments received are taken into account in the course of the verification, if applicable.

3.5. Verification Planning

In order to ensure a complete, transparent and timely execution of the verification task the team leader has planned the complete sequence of events necessary to arrive at a substantiated final verification opinion.

Various tools have been established in order to ensure an effective verification planning.

Risk analysis and detailed audit testing planning

For the identification of potential reporting risks and the necessary detailed audit testing procedures for residual risk areas table A-1 is used. The structure and content of this table is given in Table 3-2 below.

Table 3-2: Table A-1; Identification of verification risk areas

Table A-1: GHG calculation procedures and management control testing / Detailed audit testing of residual risk areas and random testing				
Identification of potential reporting risk	**Identification, assessment and testing of management controls**	**Areas of residual risks**	**Additional verification testing performed**	**Conclusions and Areas Requiring Improvement (including *Forward Action Requests*)**
The following potential risks were identified and divided and structured according to the possible areas of occurance.	*The potential risks of raw data generation have been identified in the course of the monitoring system implementation.* *The following measures were taken in order to minimize the corresponding risks.* *The following measures are implemented:*	*Despite the measures implemented in order to reduce the occurrence probability the following residual risks remain and have to be addressed in the course of every verification.*	*The additional verification testing performed is described. Testing may include:* - *Sample cross checking of manual transfers of data* - *Recalculation* - *Spreadsheet 'walk throughs' to check links and equations* - *Inspection of calibration and maintenance records for key equipment* - *Check sampling analysis results* *Discussions with process engineers who have detailed knowledge of process uncertainty/error bands.*	*Having investigated the residual risks, the conclusions should be noted here. Errors and uncertainties are highlighted.*

The completed table A-1 is enclosed in Annex 1 (table A-1) to this report.

Project specific periodic verification checklist

In order to ensure transparency and consideration of all relevant assessment criteria, a project specific verification protocol has been developed. The protocol shows, in a transparent manner, criteria and requirements, means and results of the verification. The verification protocol serves the following purposes:

- It organises, details and clarifies the requirements a CDM project is expected to meet for verification
- It ensures a transparent verification process where the verifying DOE documents how a particular requirement has been proved and the result of the verification.

The basic structure of this project specific verification protocol for the periodic verification is described in Table 3-3.

Table 3-3: Table A-2; Structure of the project specific periodic verification checklist

Table A-2: Periodic verification checklist				
Checklist Item	***Reference***	***Verification Team Comments***	***Draft Conclusion***	***Final Conclusion***
The checklist items in Table A-2 are linked to the various require-ments the monitoring of the project should meet. The checklist is organised in various sections as per the requirements of the topic and the individual project activity. It further includes guidance for the verification team.	*Gives reference to the information source on which the assessment is based on.*	*The section is used to elaborate and discuss the checklist item in detail. It includes the assessment of the verification team and how the assessment was carried out. The reporting requirements of the VVS shall be covered in this section.*	*Assessment based on evidence provided if the criterion is fulfilled (OK), or a CAR, CL or FAR (see below) is raised. The assessment refers to the draft verifi-cation stage.*	*In case of a corrective action or a clarification the final assessment at the final verification stage is given.*

The periodic verification checklist (verification protocol) is the backbone of the complete verification starting from the desk review until final assessment. Detailed assessments and findings are discussed within this checklist and not necessarily repeated in the main text of this report.

The completed verification protocol is enclosed in Annex 1 (table A-2) to this report.

3.6. Desk review

During the desk review all documents initially provided by the client and publicly available documents relevant for the verification were reviewed. The main documents are listed below:

- the last revision of the PDD including the monitoring plan/PDD/,
- the last revision of the validation report/VAL/,
- documentation of previous verifications/VER/
- the monitoring report, including the claimed emission reductions for the project/MR/,
- the emission reduction calculation spreadsheet/XLS/.

Other supporting documents, such as publicly available information on the UNFCCC website and background information were also reviewed.

3.7. On-site assessment

As most essential part of the verification exercise it is indispensable to carry out an inspection on site in order to verify that the project is implemented in accordance with the applicable criteria. Furthermore the on-site assessment is necessary to check the monitoring data with respect to accuracy to ensure the calculation of emission reductions. The main tasks covered during the site visit include, but are not limited to:

- The monitoring data were checked completely.
- An assessment of the implementation and operation of the registered project activity as per the registered PDD or any approved revised PDD;
- A review of information flows for generating, aggregating and reporting the monitoring parameters;
- The data aggregation trails were checked via spot sample down to the level of the meter recordings.
- Interviews with relevant personnel to determine whether the operational and data collection procedures are implemented in accordance with the monitoring plan in the PDD;
- A cross check between information provided in the monitoring report and data from other sources such as plant logbooks, inventories, purchase records or similar data sources;
- A check of the monitoring equipment including calibration performance and observations of monitoring practices against the requirements of the PDD and the selected methodology and corresponding tool(s), where applicable;
- A review of calculations and assumptions made in determining the GHG data and emission reductions;
- An identification of quality control and quality assurance procedures in place to prevent or identify and correct any errors or omissions in the reported monitoring parameters.

Before and during the on-site visit the verification team performed interviews with the project participants to confirm selected information and to resolve issues identified in the document review.

Representatives of Thai Biogas Energy Company Limited including the operational staff of the plant was interviewed. The main topics of the interviews are summarised in Table 3-4.

Table 3-4: Interviewed persons and interview topics

Interviewed Persons / Entities	Interview topics
1. Projects & Operations Personnel Thai Biogas Energy Company Limited	- General aspects of the project - Technical equipment and operation - Changes since validation / previous verification - Monitoring and measurement equipment - Remaining issues from validation/ previous verification - Calibration procedures - Quality management system - Involved personnel and responsibilities - Training and practice of the operational personnel - Implementation of the monitoring plan - Monitoring data management - Data uncertainty and residual risks - GHG emission reduction calculation - Procedural aspects of the verification - Maintenance - Environmental aspects

The list of interviewees is included in chapter 7.4.

3.8. Draft verification reporting

On the basis of the desk review, the on-site visit, follow-up interviews and further background investigation the verification protocol is completed. This protocol together with a general project and procedural description of the verification and a detailed list of the verification findings form the draft verification report. This report is sent to the client for resolution of raised CARs, CLs and FARs.

3.9. Resolution of CARs, CLs and FARs

Nonconformities raised during the verification can either be seen as a non-fulfilment of criteria ensuring the proper implementation of a project or where a risk to deliver high quality emission reductions is identified.

Corrective Action Requests (CARs) are issued, if:

- Non-conformities with the monitoring plan or methodology are found in monitoring and reporting, or if the evidence provided to prove conformity is insufficient;
- Mistakes have been made in applying assumptions, data or calculations of emission reductions which will impair the estimate of emission reductions;

- Issues identified in a FAR during validation or previous verifications requiring actions by the project participants to be verified during verification have not been resolved.

The verification team uses the term Clarification Request (CL), which is be issued if:

- information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met.

Forward Action Requests (FAR) indicate essential risks for further periodic verifications. Forward Action Requests are issued, if:

- the monitoring and reporting require attention and / or adjustment for the next verification period.

For a detailed list of all CARs, CLs and FARs raised in the course of the verification pl. refer to chapter 4.

3.10. Final reporting

Upon successful closure of all raised CARs and CLs the final verification report including a positive verification opinion can be issued. In case not all essential issues could finally be resolved, a final report including a negative verification opinion is issued.

The final report summarizes the final assessments w.r.t. all applicable criteria.

3.11. Technical review

Before submission of the final verification report a technical review of the whole verification procedure is carried out. The technical reviewer is a competent GHG auditor being appointed for the scope this project falls under. The technical reviewer is not considered to be part of the verification team and thus not involved in the decision making process up to the technical review.

As a result of the technical review process the verification opinion and the topic specific assessments as prepared by the verification team leader may be confirmed or revised. Furthermore reporting improvements might be achieved.

3.12. Final approval

After successful technical review an overall (esp. procedural) assessment of the complete verification will be carried out by a senior assessor located in the accredited premises of TÜV NORD.

After this step the request for issuance can be started.

4. VERIFICATION FINDINGS

In the following paragraphs the findings from the desk review of the monitoring report[/MR/], the calculation spreadsheet[/XLS/], PDD[/PDD/], the Validation Report[/VAL/] and other supporting documents, as well as from the on-site assessment and the interviews are summarised.

The summary of CAR, CL and FAR issued are shown in Table 4-1:

Table 4-1: Summary of CAR, CL and FAR

Verification topic	No. of CAR	No. of CL	No. of FAR
A – Description of project activity	1	0	0
B – Implementation of project activity	1	0	0
C – Description of monitoring system	0	0	0
D – Data and parameters	8	1	0
E - Calculation of Emission Reductions	5	2	0
SUM	**15**	**3**	**0**

The following tables include all raised CARs, CLs and FARs and the assessments of the same by the verification team. For an in depth evaluation of all verification items it should be referred to the verification protocols (see Annex).

Finding	**A1**		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	MR version 01 Cover page and Section E.7: 1. During this monitoring period there are no ERs achieved up to 2012-12-31. 2. The actual GHG emissions achieved during the period from 1 January 2013 is incorrect.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details. In case the MR is changed as part of the CA, the PP is requested to indicate the revised sections as well as the new version No.*	1. This monitoring period is 01/01/2014 – 31/10/2014, therefore, no value achieved in 2012. Hence, the MR, version 02 has been revised the ERs achieved up to 31/12/2012 to be " - ". 2. The MR, version 02 has been revised to be consistent with the actual GHG emissions achieved from 01/01/2013 - 31/10/2014.		
	☒ Changes in MR	Section(s): Cover Page	New version No.: 02
	☐ Changes in XLS	Worksheet(s):	New version No.:

Finding	**A1**
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	MR version 02, Cover page and Section E.7: 1. The ERs achieved up to 2012-12-31 is corrected as NA which is correct since the monitoring period does not include year 2012. 2. The actual GHG emissions achieved from 2013-01-01 is corrected accordingly covering the period from 2013-01-01 to 2014-10-31.
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed

Finding	**B1**		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	MR version 01, Section B.1: The exchange of flow meter FT01 and gas analyser was not reported.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details. In case the MR is changed as part of the CA, the PP is requested to indicate the revised sections as well as the new version No.*	There were two changes of the flowmeter for parameter 'WW_{input}' and the gas analyser 'C_{CH4}'. The MR, version 02 section B.1 has been revised as mentioned above.		
	☒ Changes in MR	Section(s): B.1	New version No.: 02
	☐ Changes in XLS	Worksheet(s):	New version No.:
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	MR version 02, Section B.1: The exchange of flow meter FT01 and gas analyser are added and in accordance with the equipment records. /WO1/WO2/		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed		

Finding	**D1**		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	MR version 01, Section D.2, Parameter WW_{input}: During the onsite inspection, it was found the flow meter was exchanged and calibrated on 2014-07-18. The information was not reported.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details. In case the MR is changed as part of the CA, the PP is requested to indicate the revised sections as well as the new version No.*	The MR, version 02 section D.2 has been revised by adding information of an exchanged and calibrated flowmeter 'WW_{input}'.		
	☒ Changes in MR	Section(s): D.2	New version No.: 02
	☐ Changes in XLS	Worksheet(s):	New version No.:

Finding	D1		
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	MR version 02, Section D.2, Parameter WW_{input}: The specification and calibration information for the exchange flow meter is added and in accordance to the technical specification. However, the calibration report is not submitted to confirm the correctness for the calibration date stated. OPEN		
Corrective Action #2 *This section shall be filled by the PP. It shall address the corrective action taken in details. In case the MR is changed as part of the CA, the PP is requested to indicate the revised sections as well as the new version No.*	The calibration certification by "Miracle International Technology Co., Ltd. (MIT)", dated 17/07/2014 has been submitted to DOE.		
	☒ Changes in MR	Section(s): D.2	New version No.: 03
	☐ Changes in XLS	Worksheet(s):	New version No.:
DOE Assessment #2 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	MR version 03, Section D.2, Parameter WW_{input}: The calibration report is submitted and the date stated in MR is consistent with the report. /C1/		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed		

Finding	D2		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	MR version 01, Section D.2, Parameter WW_{output}: During the onsite inspection, it was found the flow meter was calibrated on 2014-05-07 and was not reported.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details. In case the MR is changed as part of the CA, the PP is requested to indicate the revised sections as well as the new version No.*	Flowmeter 'WW_{output}' has been calibrated and still be in due date of calibration. Hence, the new calibration record of flowmeter 'WW_{output}' has been added in the MR, version 02 section D.2.		
	☒ Changes in MR	Section(s): D.2	New version No.: 02
	☐ Changes in XLS	Worksheet(s):	New version No.:
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	MR version 02, Section D.2, Parameter WW_{output}: The calibration information is added and in accordance to the calibration report. /C2/		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed		

Finding	**D3**		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	MR version 01, Section D.2, Parameters COD_{input}, COD_{output}, $C_{SO}^{2-}{}_{in}$, $C_{SO}^{2-}{}_{out}$: 1. During the onsite inspection, it was found the spectrophotometer and COD reactor was calibrated on 2014-09-17. The information was not reported. 2. The equipment information for the COD reactor is not stated.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details. In case the MR is changed as part of the CA, the PP is requested to indicate the revised sections as well as the new version No.*	Both of equipment calibration records have been added in the MR, version 02 section D.2, parameter 'COD_{input}, COD_{output}, $C_{SO}^{2-}{}_{in}$, $C_{SO}^{2-}{}_{out}$'. 1. The new calibration record of 'Spectrophotometer' has been added the calibration on 17/09/2014. 2. Information of 'COD reactor' has been added the calibration on 19/09/2013 and 17/09/2014.		
	☒ Changes in MR	Section(s): D.2	New version No.: 02
	☐ Changes in XLS	Worksheet(s):	New version No.:
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	MR version 02, Section D.2, Parameters COD_{input}, COD_{output}, $C_{SO}^{2-}{}_{in}$, $C_{SO}^{2-}{}_{out}$: 1. The calibration information for spectrophotometer and COD reactor is added and in accordance to the calibration report. /C7/ 2. The equipment information for the COD reactor is added and in accordance with the equipment technical specification. /ES4/		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed		

Finding	**D4**		
Classification	☒ CAR	☐ CL	☒ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	MR version 01, Section D.2, Parameter Biogas loss from pipeline: During the onsite inspection, it was found the most recent test was conducted on 2014-08-04. The data stated in MR is incorrect.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details. In case the MR is changed as part of the CA, the PP is requested to indicate the revised sections as well as the new version No.*	The inspection report of the Biogas loss from pipeline has been revised in the MR, version 02 section D.2, parameter "Biogas loss from pipeline".		
	☒ Changes in MR	Section(s): D.2	New version No.: 02
	☐ Changes in XLS	Worksheet(s):	New version No.:
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	MR version 01, Section D.2, Parameter Biogas loss from pipeline: The test information is corrected and in accordance with the test report. /TC3/		

Finding	D4
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed

Finding	D5		
Classification	☐ CAR	☒ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	MR version 01, Section D.2, Parameter NCV_{biogas}: The monitoring period is from 2014-01-01 to 2014-10-31. However, the validity of the testing is until 2014-08-28. During the onsite inspection, it was found the annual test was conducted on 2014-12-15, the PP is requested to clarify the value applied in the MR and ER calculation is conservative.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details. In case the MR is changed as part of the CA, the PP is requested to indicate the revised sections as well as the new version No.*	1. The MR, version 02 has been revised by adding the test record of parameter "NCV_{biogas}" on 15/12/2014. 2. The ER calculation sheet, version02, has been added the value of NCV_{biogas} in 2014, 2013, and the averaged value between year 2013 and 2014 in sheet 'Raw data' cell 'B319'. Therefore, to be most conservativeness, the latest 2014 value of 528 Btu/sft^3 is used for the calculation. The calculation is showed in the ER calculation sheet, version02, sheet 'CERs Cal.'.		
	☒ Changes in MR	Section(s): D.2	New version No.: 02
	☒ Changes in XLS	Worksheet(s): 'Raw data' cell 'B319-B321' and 'CERs Cal.' cell 'H74, H80'	New version No.: 02
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	MR version 02, Section D.2, Parameter NCV_{biogas}: 1. The date for the tested conducted on 2014-12-15 is included and in accordance to the test report. CLOSED 2. The value stated in ER calculation raw data sheet cell B319 is not the average of 2013 and 2014 test values. B319 is 2014 test value. The date stated in Raw Data sheet cells B320 and D320 is incorrect. CER Cal sheet. Data in Cell H77 is linked to Raw Data Tab cell E323. Data in E323 is linked to C321 which is the average and not the 2014 test result. Therefore, the value 528Btu/sft3 is not applied in the calculation. Raw data sheet cell B325 is linked to average of B326. However, data in cell B326 is keyed-in value which is average value from the test report. The PP is requested to demonstrate how this average value is determined. OPEN		

Finding	D5		
Corrective Action #2 *This section shall be filled by the PP. It shall address the corrective action taken in details. In case the MR is changed as part of the CA, the PP is requested to indicate the revised sections as well as the new version No.*	2. The value in ER calculation sheet tab 'Raw data', cell 'B319' is 2014-tested value. While data cell 'B320' is 2013-tested value and cell 'B321' is averaged value between 2013 and 2014. The data stated in tab 'Raw Data' cell B320 and D320 are correct. The value of '567 Btu/st^3' is a tested value as showed in the NCV certification # COA-EX-1309-00143. From tab 'CERs Cal.' cell 'H77' is described as an average value between 2013 and 2014 which is linked to tab 'Raw data' cell 'E323', this is corrected. The data in tab 'CERs Cal.' cell 'H80' is the value that linked to 2014-tested value in tab 'Raw data' cell 'B323'. However, to be the most conservative emission reductions calculation, the value of '528 Btu/sf^3' is used for the monitoring period. This is showed in the ER calculation sheet tab 'CERs Cal.' Cell 'H80' and this value is then used to calculate 'F' parameter (cell 'D75 and D81'). The value in tab 'Raw data' cell 'B325' has been revised by adding all testing value from the combustion efficiency tested (report# 1073), and then calculated as an average value, as showed in cell 'B325'.		
	☒ Changes in MR	Section(s): D.2	New version No.: 03
	☒ Changes in XLS	Worksheet(s): 'CERs Cal.' Cell 'D75', 'H80', 'D81'	New version No.: 03
DOE Assessment #2 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	MR version 03, Section D.2, Parameter NCV_{biogas}: 2. Refer raw data tab cell B319 is corrected and refer to year 2014 test value. Cell B320 is corrected and refer to year 2013 test value of 567Btu/st^3. Whilst cell B321 is the average value for year 2013 and year 2014 test values. /TC2/ Refer CERs Cal tab, cell H77 is the average value from year 2013 & 2014 test values linked to Raw Data tab cell E323 is correct. Cell H80 value in CERs Cal tab is linked to Raw data tab cell B323 which is year 2014 test value. 'F' parameter value is calculated data in cells D75 and D81 of CERs Cal tab is linked to H80 whereby year 2014 test value is applied. /TC2/ Therefore, year 2014 test value of 528Btu/sf^3 is applied for the monitoring period is conservative as leading to lower ER result. The value in cell B325 Raw data tab is revised and is the average combustion efficiency test value for year 2014. Therefore, is correct. /TC1/		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed		

Finding	D6		
Classification	☒ CAR	☐ CL	☐ FAR

Finding	D6		
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	MR version 01, Section D.2, Parameter F: This parameter is calculated using data from V_{heat} and NCV_{biogas}. The value stated is incorrect since the NCV_{biogas} value is based on 2013 test results and has not considered 2014 test results.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details. In case the MR is changed as part of the CA, the PP is requested to indicate the revised sections as well as the new version No.*	The value of parameter 'F' has been revised as well as the value showed in the ER calculation sheet, version 02, tab 'CERs Cal.' cell 'D81'. Moreover, the additional comment has been added in the MR, section D.2.		
	☒ Changes in MR	Section(s): D.2	New version No.: 02
	☒ Changes in XLS	Worksheet(s): 'CERs Cal.'	New version No.: 02
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	MR version 02, Section D.2, Parameter F: Although the value is corrected, however the calculation in CERs Cal sheet D81 is not in accordance to the additional comments stated. OPEN		
Corrective Action #2 *This section shall be filled by the PP. It shall address the corrective action taken in details. In case the MR is changed as part of the CA, the PP is requested to indicate the revised sections as well as the new version No.*	Parameter "F" in section D.2 of the MR version 03 has been revised as showed in ER calculation sheet tab 'CERs Cal.' It is a value calculated by using unit conversion to calculate from Nm^3 to be dm^3(see the calculation cell 'D81')		
	☒ Changes in MR	Section(s): D.2	New version No.: 03
	☒ Changes in XLS	Worksheet(s): "CERs Cal." cell D81	New version No.: 03
DOE Assessment #2 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	MR version 03, Section D.2, Parameter F: The value stated in parameter is based on the calculated value as linked to cell D81 in CERs Cal tab. Therefore is correct.		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed		

Finding	D7		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	MR version 01, Section D.2, Parameter C_{CH4} (also $FV_{CH4,y}$): During the onsite inspection, it was found the analyser was exchanged and was calibrated on 2014-04-17. The information is not stated.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details. In case the MR is changed as part of the CA, the PP is requested to indicate the revised sections as well as the new version No.*	The MR, version 02 section D.2 has been revised by adding information of an exchanged and calibrated, gas analyser parameter 'C_{CH4}'		
	☒ Changes in MR	Section(s): D.2	New version No.: 02
	☐ Changes in XLS	Worksheet(s):	New version No.:

Finding	D7
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	MR version 02, Section D.2, Parameter C_{CH4} (also $FV_{CH4,y}$): The exchange gas analyser specification and calibration information is added and in accordance to the technical documentation and calibration report. /C6/ES7/
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed

Finding	D8		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	MR version 01, Section D.2, Parameter f_{heat}: During the onsite inspection, it was found the test was conducted on 2014-05-20. The value stated in MR and ER is incorrect.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details. In case the MR is changed as part of the CA, the PP is requested to indicate the revised sections as well as the new version No.*	The value of parameter 'f_{heat}' in the MR, version 02 section D.2 has been revised to be consistent with the actual value which has been conducted on 20/05/2014.		
	☒ Changes in MR	Section(s): D.2	New version No.: 02
	☒ Changes in XLS	Worksheet(s): 'Raw data' cell 'B326'	New version No.: 02
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	MR version 02, Section D.2, Parameter f_{heat}: The value is corrected and in accordance to the test conducted on 2014-05-20. /TC1/		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed		

Finding	D9		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	MR version 01, Section D.2, Parameter $M_{Removed}$: The data stated is incorrectly determined in lieu of the COD_{in} and COD_{out} tests results conducted internally and externally are not compared to obtain the conservative value.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details. In case the MR is changed as part of the CA, the PP is requested to indicate the revised sections as well as the new version No.*	The comparisons of the COD_{in} and COD_{out} have been made in the calculation sheet, tab 'COD Tested'. Hence, the actual value of $M_{Removed}$ has been revised to be consistent with the new value after the recalculated of the COD_{in} and COD_{out}.		
	☒ Changes in MR	Section(s): D.2	New version No.: 02
	☒ Changes in XLS	Worksheet(s): 'Raw data' cell 'C329'	New version No.: 02

Finding	D9
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	MR version 02, Section D.2, Parameter $M_{Removed}$: The value is corrected and in accordance to the recalculated data after comparison between the internal and external tests results for COD_{in} and COD_{out}. /DML2/DML3/ The ER spreadsheet was reviewed to verify the results are applied correctly.
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed

Finding	E1		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	MR version 01, sections E1, E.2, E.3, E.4 and ER spreadsheet: The ER calculations to be corrected due the values for several parameters listed above are incorrect.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details. In case the MR is changed as part of the CA, the PP is requested to indicate the revised sections as well as the new version No.*	Sections E.1, E.2, E.3, E.4 in the MR, version 02 and the ER spreadsheet, version02 have been revised after correction of all data.		
	☒ Changes in MR	Section(s): E.1, E.2, E.3 and E.4	New version No.: 02
	☒ Changes in XLS	Worksheet(s): 'CERs Cal.'	New version No.: 02
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	MR version 02, sections E1, E.2, E.3, E.4 and ER spreadsheet: All relevant corrections are made in the respective sections of MR and ER spreadsheet.		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed		

Finding	E2		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	MR version 01, Section E.1: 1. During the review of the conservative check, it was found the E_{BL} is positive. The sentence in the MR indicates is negative which is incorrect. 2. The sentence above the table baseline emissions or baseline net GHG removals by sinks is incorrectly presented since the emissions are not the final.		

Finding	**E2**		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details. In case the MR is changed as part of the CA, the PP is requested to indicate the revised sections as well as the new version No.*	1. The word in the MR has been revised to be positive since the result for E_{BL} is positive. 2. The sentence above the table is revised to total baseline emissions.		
	☒ Changes in MR	Section(s): E.1	New version No.: 02
	☐ Changes in XLS	Worksheet(s):	New version No.:
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	MR version 02, Section E.1: 1. The sentence is corrected since E_{BL} is positive. 2. The sentence above the table is corrected as total baseline emissions.		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed		

Finding	**E3**		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	MR version 01, Section E.5: The PP is requested to demonstrate on how the values estimated in ex-ante calculation of registered PDD is determined.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details. In case the MR is changed as part of the CA, the PP is requested to indicate the revised sections as well as the new version No.*	The value showed in the MR, section E.5 is calculated from the annual estimation reductions from the ex-ante calculation registered PDD; 48,167tCO_2e. Then, the interpolation of estimated value with the actual monitoring days; 01/01/2014 - 31/10/2014 which is 304 days. Hence, the estimated amount of emission reductions during this monitoring period is 40,117tCO_2e. The explanation has been added in the MR, version 02 section E.5.		
	☒ Changes in MR	Section(s): E.5	New version No.: 02
	☐ Changes in XLS	Worksheet(s):	New version No.:
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	MR version 02, Section E.5: The PP has demonstrated the ex-ante ERs calculation for the monitoring period and is correctly determined.		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed		

Finding	**E4**		
Classification	☒ CAR	☐ CL	☐ FAR

Finding	**E4**		
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	MR version 01, Section E.6: The reference cell G376 for the COD out value from the Raw Data sheet is incorrect.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details. In case the MR is changed as part of the CA, the PP is requested to indicate the revised sections as well as the new version No.*	A typo error for the 'G376' in the MR. The reference cell from Raw data sheet 'G315' has been put in the MR, version 02 section E.6.		
	☒ Changes in MR	Section(s): E.6	New version No.: 02
	☐ Changes in XLS	Worksheet(s):	New version No.:
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	MR version 02, Section E.6: The reference cell for the COD out value is corrected to G315 and in accordance to the Raw Data sheet.		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed		

Finding	**E5**		
Classification	☐ CAR	☒ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	MR version 01, Section E.6: The PP is requested to justify the increase in ERs for this monitoring period.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details. In case the MR is changed as part of the CA, the PP is requested to indicate the revised sections as well as the new version No.*	The explanation of the difference between the estimated emission reductions amount from the registered PDD and the actual amount achieved in the project activity during this monitoring period has been added in the MR, version 02 section E.6. Moreover, the summary table to clarify the explanation has also been added at the end of section E.6.		
	☒ Changes in MR	Section(s): E.6	New version No.: 02
	☐ Changes in XLS	Worksheet(s):	New version No.:
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	MR version 02, Section E.6: The increased in ex-post ERs for the monitoring period as compared to the registered PDD is justified appropriately and accepted.		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed		

Finding	**E6**		
Classification	☒ CAR	☐ CL	☐ FAR

Finding	**E6**		
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	ER spreadsheet version 01: Raw Data sheet: 1. The year stated is not for the monitoring period. 2. The internal and external COD_{input} and COD_{output} tests data comparison is not included to confirm the lower COD_{input} data will be applied for baseline emissions and higher COD_{output} data will be applied for project emissions.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details. In case the MR is changed as part of the CA, the PP is requested to indicate the revised sections as well as the new version No.*	1. The year in the ER spreadsheet, tab 'Raw data' has been corrected to be consistent with the actual data. 2. The comparison between the internal and external of COD_{input} and COD_{output} tests data have been made and confirmed that the lower COD_{input} data are used for baseline emissions and the higher COD_{output} data are used for project emissions.		
	☐ Changes in MR	Section(s):	New version No.:
	☒ Changes in XLS	Worksheet(s): 'COD Tested'	New version No.: 02
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	ER spreadsheet version 02: Raw Data sheet: 1. The year is corrected to reflect the monitoring period. 2. e internal and external COD_{input} and COD_{output} tests data comparison is included. The lower COD_{input} value is applied for baseline emissions and higher COD_{output} value is applied for project emissions		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed		

Finding	**E7**		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	ER spreadsheet version 01: Flaring sheet: There are no data for cell F63 and G142.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details. In case the MR is changed as part of the CA, the PP is requested to indicate the revised sections as well as the new version No.*	The missing data in the ER spreadsheet, version 02, tab 'Flaring' cell 'F63 and G142' has been corrected as "0".		
	☐ Changes in MR	Section(s):	New version No.:
	☒ Changes in XLS	Worksheet(s): 'Flaring' cell 'F63 and G142'	New version No.: 02
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	ER spreadsheet version 02: Flaring sheet: The data in cells F63 and G142 are corrected to read as "0" since the flare is not in operation during the respective date and time.		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed		

5. SUMMARY OF VERIFICATION ASSESSMENTS

The following paragraphs include the summary of the final verification assessments after all CARs and CLs are closed out. For details of the assessments pl. refer to the discussion of the verification findings in chapter 4 and the verification protocol (Annex 1).

5.1. Involved Parties and Project Participants

The following parties to the Kyoto Protocol and project participants are involved in this project activity.

Table 5-1: Project Parties and project participants

Characteristic	Party	Project Participant
Non-Annex 1	Thailand	Thai Biogas Energy Company Limited
Annex 1	Sweden	Swedish Energy Agency

5.2. Implementation of the project

During the verification a site visit on 2015-01-12 to 2015-01-13 was carried out. On the basis of this site visit and the reviewed project documentation it can be confirmed that w.r.t. the realized technology, the project equipment, as well as the monitoring and metering equipment, the project has been implemented and operated as described in the registered PDD version 04.

The specification for the main biogas generation equipment installed at project activity is listed in Table 2-1 above.

The monitoring dates for this monitoring period are from 2014-01-01 to 2014-10-31 (including both days)

All necessary monitoring instruments are installed and operating procedures for the same have been implemented in an appropriate manner as described in the registered PDD.

The measuring instruments for the biogas and wastewater are individual labelled for measuring the quantity of methane captured, quantity of methane sent to flare and boiler, the amount of wastewater entering and leaving the anaerobic digester and the methane concentration. During this monitoring period, there is a change for the influent flow meter FT01 and gas analyser. /WO1/WO2/

Calibration reports for all measuring instruments covering the reported monitoring period was verified for their frequency and traceability to industry standards and

manufacturer's requirements. Calibration records for all installed measuring and test instruments listed in the individual parameters table were checked and found satisfactory. /C1-C7/

The calibration frequency for the wastewater flow meters of 2 years and biogas flow meters of 3 years are based on manufacturer's confirmation. /O3/O4/ Therefore, in accordance with manufacturer's requirements.

During the monitoring period, there were no changes/replacements of the key equipment except some non-operational hours due to no wastewater available from the host factory, Chao Kun Agro Products. /PO2/ The verification team has inspected the biogas generation equipment onsite to confirm that there are no changes or replacement during this monitoring period.

Refer CAR B1 raised and closed out

5.3. Project history

During the validation the validating DOE might have raised issues that could not be closed or resolved during the validation stage. For this purpose FARs might have been raised.

During verification for monitoring period 2013-01-01 to 2013-12-31, FAR C3 was raised and the verification team has checked the server and could confirm the previous monitoring reports, ER spreadsheet and monitoring data are archived. This was verified during the onsite inspection on 2015-01-13 and the FAR is closed out.

5.4. Post registration changes

No post registration changes applicable for this monitoring period have been observed during the monitoring period.

During the 1st monitoring period, a deviation was submitted and approved by UNFCCC EB on 2013-08-23. Refer to table 2-4 for information of the deviation.

5.5. Compliance with the monitoring plan

The monitoring system and all applied procedures are completely in compliance to the registered monitoring plan.

This was verified by the verification team during the on-site visit by checking the records and instruments information.

5.6. Compliance with the monitoring methodology

The monitoring system is in compliance with the applied monitoring methodology, AM0022: "Avoided Wastewater and On-site Energy Use Emissions in the Industrial Sector" version 4.0

5.7. Monitoring parameters

During the verification all relevant monitoring parameters (as listed in chapter B.7.1 of the PDD) have been verified with regard to the appropriateness of the applied measurement / determination method, the correctness of the values applied for ER calculation, the accuracy, and applied QA/QC measures. The results as well as the verification procedure are described parameter-wise in the project specific verification checklist.

In section D.2, Monitoring Parameters of table A-2, periodic verification checklist described how each of the monitored parameters were reviewed, verified and cross checked with data and information during the on-site assessment.

All monitoring values provided in the monitoring plan were cross-checked against the monitored data. All relevant evidences were checked during the onsite assessment. All evidences are clearly identifiable and verified to be correct.

The figures as per the monitoring plan were cross-checked by the verification team against basic monitored data and the calculations were found to be correct.

The meter readings are carried out daily and consolidated monthly by the plant operators. The records and consolidated data are the basis for the calculation of the emissions reduction. All relevant evidences were fully checked by the verification team during and after the site-visit. All evidences are clearly identifiable and verified to be correct. /DML1 – DML3/

All necessary monitoring instruments are installed. The measuring devices were in good conditions and found to be accurate and reliable with the exception of the reporting in MR Section B.1. All required instruments are installed and operating procedures for the same have been implemented in an appropriate manner.

Calibration procedures and test reports for all measuring instruments covering the reported monitoring period were verified for their frequency and traceability to industry standards and manufacturer's recommendations. /C1-C7/O3/O4/ Calibration records of all installed instruments were checked and found satisfactory. All monitoring equipment calibrations were valid for this monitoring period. The calibration details are stated in section C and the respective parameter in Section D.2 of the monitoring report.

The data are recorded continuously on-line by the SCADA system. The data are aggregated hourly, print out daily and applied in the monthly ER calculation. /DML1-DML3/

The verification team has checked the excel spreadsheets to confirm that the calculation is correct.

All records needed for monitoring are archived in line with the requirements of the monitoring plan of the registered PDD. No significant lack of evidence and missing data were detected during the on-site verification.

It could be evidenced that the monitoring system ensures for continuous operation.

Further the calibrations of all monitoring instruments installed have been verified as listed in table given in Annex 2 of this report.

After appropriate corrections were carried out by the project participant it can be confirmed that all monitoring parameters have been measured / determined without material misstatements and in line with all applicable standards and relevant requirements.

Refer to CAR D1, CAR D2, CAR D3, CAR D4, CL D5, CAR D6, CAR D7, CAR D8 and CAR D9 raised and closed out

5.8. Monitoring report

A draft monitoring report was submitted to the verification team by the project participants. The team has made this report publicly available prior to the start of the verification activities. No comments were received.

During the verification, mistakes and needs for clarification were identified. The PP has carried out the requested corrections so that it can be confirmed that the Monitoring report is complete and transparent and in accordance with the registered PDD and other relevant requirements.

Refer CAR A1 raised and closed out.

5.9. Sampling

5.9.1. Implementation of the sampling plan

No sampling was required to determine the monitored parameters. The tests conducted for the relevant parameters are in accordance to registered PDD section B.7.1, applied methodology and relevant tools.

5.9.2. Sampling approaches during verification

No sampling approaches were taken during the verification. The verification team has conducted 100% checked of the data and records during and after onsite visits.

5.10. ER Calculation

During the verification mistakes in the ER calculation were identified. Corresponding CARs were raised. A revised ER calculation was prepared by the PP and presented to the verification team. All raised issues were addressed appropriately so that all corresponding CARs could be closed out. Thus it is confirmed that the ER calculation is overall correct.

Ex-ante Values:

The ex-ante values listed in section D.1 of MR are in accordance with Section B.6.2 of registered PDD.

Formulae Applied:

The formulae applied in the calculations are in accordance with the applied methodology AM0022 version 4.0 and registered PDD. All formulae are clearly visible in the MR and ER calculation spreadsheet.

Baseline Emissions:

The baseline emissions are the wastewater treatment and displacement of fossil fuel from the boiler.

Wastewater:

The verification team had reviewed and cross-checked the input data for the calculations and deemed correct. /DML1-DML3/

In accordance with the applied methodology, AM0022, it has to be verified that the ERs calculation delivers a conservative estimate of emission reductions i.e. that the emissions of CH_4 from the lagoons in the baseline situation are not higher than the total emissions of biogas from the digester and the lagoons in the project situation.

The comparison in MR section E.1 and ER spreadsheet have been cross-checked that show a positive value for the monitoring period therefore deduction is required to determine baseline emissions for wastewater.

Thus, the baseline emission for wastewater for this monitoring period is 53,257 tCO_2e. (53,659 – 402).

Heat Generation:

The amount of biogas displaced the amount of fossil combusted in the thermal boiler in the baseline scenario. The amount of biogas sent to the boiler is cross-checked with the daily raw data and confirmed the amount applied is correct in the ER spreadsheet. /DML1/

The baseline emission for displacement of fossil fuel for this monitoring period is 6,813 tCO_2e.

The verification team has reviewed the calculations presented and can be concluded as correct.

Therefore, the baseline emissions (E_{BL}) during the monitoring period are 60,070 tCO_2e.

Project Emission:

Project emissions are contributed from:

- Fugitive methane emission from lagoons;

- Fugitive methane emission from new anaerobic wastewater treatment facility and pipeline of the biogas system;
- Fugitive methane emissions from inefficient combustion from flare, and boiler;

The verification team had reviewed the calculations presented and can be concluded as correct.

Thus, the project emissions ($E_{project}$) for this monitoring period are 5,133 tCO_2e.

Leakage:

No leakage needed to be considered in this methodology.

Emission Reduction:

The emission reduction is calculated:

ER = $E_{BL} – E_{project}$

= 60,070 – 5,133

= 54,937 tCO_2e

To be conservative, the total baseline emissions are rounded down to the integer and project emissions are rounded-up to the next integer.

To conclude, it is confirmed that the ER calculations are overall correctly determined.

Refer CAR E1, CAR E2, CAR E3, CAR E4, CL E5, CAR E6 and CAR E7 raised and closed out.

5.11. Quality Management

Quality Management procedures for measurements, collection, compilation of data, data storage and archiving, calibration, maintenance and training of personnel in the framework of this CDM project activity have been defined. /QA1/WI/T1/PO1-PO3/ The procedures defined can be assessed as appropriate for the purpose. No significant deviations thereof have been observed during the verification.

It could be evidenced that the monitoring system ensures tracking of methane extraction, flared and combusted in the boiler on a continuous basis for this monitoring period (with the except for some breakdowns or outage).

The methane extraction, flared and combustion data are recorded by the SCADA system installed on-site. The data are transferred weekly to the project owner head office CDM monitoring team for review and archiving.

The project owner is adhered to calibrating the meters annually and conduct tests in accordance with the registered MP. /C1-C7/TC1-TC3/DML2-DML3/ Calibration and tests reports for the monitoring period have been submitted and verified and found to be in order. /TC1-TC3/DML2-DML3/

From the site visit and interviews conducted, it was clear that the roles and responsibilities of the team tasked in the monitoring of emission reductions are well defined. /IM01/ The shift-in-charge records the data manually on a daily basis besides the automatic recording by the SCADA system. The in-charge also keeps track and records monthly methane extraction and down-time details. From the interviews, it is also clear that the personnel involved in project activity have been trained and are competent to carry out their respective duties.

The verification team checked and found that the daily reports are verified by the Site Manager. The Site Manager is responsible for achieving optimum extraction of methane, daily operation of the project activity, maintenance, calibration of all measuring instruments and submission of monthly records to appointed CDM consultant to prepare the monthly consolidated reports.

The appointed CDM coordinator who is responsible for calculating monthly emission reductions, conduct internal audits, external data, legislation and submitting periodical reports to the CDM Manager, who is overall in charge of the entire operations.

All monitored data are archived in physical and electronic form as found during the on-site visit. The data will be kept for the whole crediting period and additional 2 years as stated in the registered PDD.

5.12. Actual emission reductions during the first commitment period and the period from 1 January 2013 onwards

The MR includes actual ER values achieved up to 31 December 2012 and actual values achieved from 1 January 2013 onwards as follows:

Table 5-2: Emission reductions before and after the end of 2012

	until 2012-12-31 [1)]	from 2013-01-01 [1)]	Sum
Emission reductions [tCO_2e]	NA	122,841	122,841

[1)] Both days included

5.13. Comparison with ex-ante estimated emission reductions

The MR section E.5 includes a comparison of the calculated actual emission reductions with the ex-ante calculated values in the registered PDD.

Ex-ante ERs: 40,117tCO_2e for 304 days (48,167tCO_2e/a)

Ex-post ERs: 54,937tCO_2e

Difference: +14,820tCO_2e

The ex-ante calculated value was found to be proportionally lower than the ex-post value. The higher ERs were due to:

1. For the ex-ante project emissions calculation, the COD of 26,099 mg COD/l for the treated water from the reactor to the open lagoon was used. (Refer registered PDD, page 47). This value was similar to the COD_{input} value used for the baseline emission (http://cdm.unfccc.int/Projects/DB/DNV-CUK1218616482.16/view). The amount of COD degraded by the efficiency of the new anaerobic reactor had to be deducted before calculating the project emission. Therefore the project emissions were overestimated in the ex-ante ER calculation.
2. The actual COD_{out} from the new anaerobic reactor to the open lagoon was 5,210 mg COD/l, which results in significantly lower project emission than calculated in registered PDD.
3. The GWP for methane has been change from 21 to 25 for this monitoring period and in accordance to EB69 Annex 3 as from 2013-01-01.

Thus, contributes to the increased ERs by 16.33% for the monitoring period. The explanation given in the MR can be assessed as appropriate.

5.14. Overall Aspects of the Verification

All necessary and requested documentation was provided by the project participants so that a complete verification of all relevant issues could be carried out.

Access was granted to all installations of the plant which are relevant for the project performance and the monitoring activities.

No issues have been identified indicating that the implementation of the project activity and the steps to claim emission reductions are not compliant with the UNFCCC criteria and relevant guidance provided by the COP/CMP and the CDM EB (clarifications and/or guidance).

5.15. Hints for next periodic Verification

During this monitoring period there is no FAR raised for consideration in the next verification.

6. VERIFICATION AND CERTIFICATION STATEMENT

Thai Biogas Energy Company Limited has commissioned the TÜV NORD JI/CDM Certification Program to carry out the 4th periodic verification of the project: "Chao Khun Agro Biogas Energy Project", with regard to the relevant requirements for CDM project activities. The project reduces GHG emissions due to methane captured and utilised to displace fossil fuel oil usage. This verification covers the period from 2014-01-01 to 2014-10-31 (including both days).

In the course of the verification 15 Corrective Action Requests (CAR) and 2 Clarification Requests (CL) were raised and successfully closed. No FARs are raised for future consideration. The verification is based on the draft monitoring report, revised monitoring report, the monitoring plan as set out in the registered PDD, the validation report, emission reduction calculation spreadsheet and supporting documents made available to the TÜV NORD JI/CDM CP by the project participant.

As a result of this verification, the verifier confirms that:

- all operations of the project are implemented and installed as planned and described in the validated project design document.
- the monitoring plan is in accordance with the applied approved CDM methodology, i.e., AM0022 ver. 04
- the installed equipment essential for measuring parameters required for calculating emission reductions are calibrated appropriately.
- the monitoring system is in place and functional. The project has generated GHG emission reductions.

As the result of the 4th periodic verification, the verifier confirms that the GHG emission reductions are calculated without material misstatements in a conservative and appropriate manner. TÜV NORD JI/CDM CP herewith confirms that the project has achieved emission reductions in the above mentioned reporting period as follows:

Emission reductions: **54,937** t CO_2e

Subang Jaya, 2015-06-04

Cheong, Chun Yuen (Robert)

TÜV NORD JI/CDM Certification Program

Verification Team Leader

Essen, 2015-06-04

Winter, Stefan

TÜV NORD JI/CDM Certification Program

Final Approval

7. REFERENCES

Table 7-1: Documents provided by the project participant(s)

Reference	Document
Monitoring Report	
/MR/	Monitoring Report version 01 dated 2014-11-27 Monitoring Report version 02 dated 2015-02-22 Monitoring Report version 03 dated 2015-03-13 Monitoring Report version 04 dated 2015-04-30 Monitoring Report version 05 dated 2015-06-03
ER Spreadsheets	
/ER/	ER spreadsheet version 01 dated 2014-11-27 ER spreadsheet version 02 dated 2015-02-22 ER spreadsheet version 03 dated 2015-03-13 ER spreadsheet version 04 dated 2015-04-30 ER spreadsheet version 05 dated 2015-06-04
Calibration Certificates	
/C1/	Calibration for Wastewater Flow Meter FT01 (WW_{input}) S/N. S/N: 000469020 / X002 by MIT on 2012-08-16 Calibration for Wastewater Flow Meter FT01 (WW_{input}) S/N. S/N: 3K672012180487 by MIT on 2014-07-17
/C2/	Calibration for Wastewater Flow Meter FT05 (WW_{output}) S/N. 3K672012180486 by ABB on 2012-05-14 and by MIT on 2014-05-07
/C3/	Calibration for Wastewater Flow Meter FT06 ($WW_{bypassing}$) S/N. 3K672011450101 by Miracle International Technology on 2013-11-14
/C4/	Calibration for Biogas Flow Meter FT02 (V_{heat}) S/N. 241163131 X001 by ABB on 2011-11-25 and by MIT on 2014-11-17
/C5/	Calibration for Biogas Flow Meter FT04 (V_{flare} also $FV_{FG,h}$) S/N. 241151957 X001 / 241151957 Y001 by ABB on 2011-12-15 and by MIT on 2014-12-12
/C6/	Calibration for Gas Analyser S/N. LFB-028 by Entech on 2014-04-17 Calibration for Gas Analyser S/N. 35184 by JE on 2013-04-18 Methane Span Gas used by Entech from Thai Industrial Gas expiry on 2016-02-20
/C7/	Calibration for Spectrophotometer S/N. 1156884 by SPC on 2013-09-18 and 2014-

Reference	Document
	09-17 Calibration for COD Reactor S/N. 10110C0201 by SPC on 2013-09-19 and 2014-09-17
Tests Certificates	
/TC1/	Boiler Combustion Efficiency Test conducted by Thai burner on 2014-05-20
/TC2/	Biogas NCV test conducted by PTT Chemical Public Company Limited on 2013-08-29 and 2014-12-15
/TC3/	Biogas loss test in pipe conducted by Siwa Testing Inspection & Consulting on 2014-08-08
Equipment Specification	
/ES1/	ABB Electromagnetic Flowmeter Specification (Wastewater) – FT01, FT05 & FT06
/ES2/	ABB Thermal Mass Sensyflow Specification (Biogas) – FT02 & FT04
/ES3/	Boiler Loos boiler and burner Weishaupt WKGMS 70/2-A nameplate
/ES4/	Hach DR2800 Spectrophotometer Instrument Manual September 2005 Hach DRB200 Reactor Instrument Manual and specification dated 2006-06-15
/ES5/	Wastewater system layout drawing by Waste Solutions Ltd
/ES6/	Flare Technical Specifications by Organics
/ES7/	Gas Analyser : ANRI Instrument & Controls Pty., Ltd. Guardian Plus from Edinburgh Instrument
Monitoring Data and Log Record	
/DML1/	Daily SCADA records for wastewater flow, biogas generation, flare and burner operation 2014-01-01 to 2014-10-31
/DML2/	Weekly COD test report issued by ECO Plant Services Company Limited January to October 2014
/DML3/	Daily Internal COD Laboratory Test Result 2014-01-01 to 2014-10-31
Project Operational	

Reference	Document
/PO1/	Maintenance and Service Plan for year 2014
/PO2/	Monthly Maintenance and Downtime records Jan to October 2014
/PO3/	Gas Analyser Equipment record
Training	
/T1/	TBEC Internal Training Plan for year 2014
Regulations and Approval	
/RA1/	Plant Operating License for Thai Biogas Energy Company Limited at Saraburi Province dated 2005-12-28
QA/QC Manual	
/QA1/	Quality Management System Procedures: • CDM Monitoring Plan Procedure • Plant Operation Procedure • Quality Testing Procedure • Equipment Calibration Procedure • Document Control Procedure • Corrective & Preventive Action Procedure
/WI/	Work Instruction in case of data corruption and data loss dated 2013-01-01
Work Order	
/WO1/	Change of Gas Analyser dated 2014-04-17
/WO2/	Change of Flow meter FT01 dated 2014-08-17
Others	
/O1/	Technical Engineering Book “Transport Process and Unit Operations“, 3rd editions
/O2/	ISO 9001:2008 and ISO 14001:2004 Certificates
/O3/	Supplier (ABB) confirmation on 2 years calibration period for magnetic flowmeter
/O4/	Supplier (ABB) confirmation on 3 years calibration period for thermal mass flowmeter
/O5/	Supplier JomWiss Automation confirmation for PLC SCADA reporting system for flare data every 20 minutes dated 2012-12-12

Table 7-2: Background investigation and assessment documents

Reference	Document
/AM22/	AM0022 ver. 04, "Avoided Wastewater and On-site Energy Use Emissions in the Industrial Sector"
/CPM/	TÜV NORD JI / CDM CP Manual (incl. CP procedures and forms)
/GLMP/	Guidelines: Completing the monitoring report form (EB 75, Annex 7)
/IPCC/	1. 1996 IPCC Guidelines for National Greenhouse Gas Inventories: work book 2. 2006 IPCC Guidelines for National Greenhouse Gas Inventories: work book
/KP/	Kyoto Protocol (1997)
/MA/	Decision 3/CMP. 1 (Marrakesh – Accords)
/MRT/	Monitoring Report Form (F-CDM-MR), Version 03.1
/PDD1/	Project Design Document for CDM project: "Chao Khun Agro Biogas Energy Project" version 4 dated 2009-02-19
/PS/	CDM Project Standard (Version 7.0)
/TF/	Tool to determine project emissions from flaring gases containing methane version 1 (EB28 Annex 13)
/VR/	Validation Report for CDM project "Chao Khun Agro Biogas Energy Project" version 2 dated 2009-02-20
/VER/	Documents of previous verifications (Monitoring report, verification report, ER calculation sheet)
/VVS/	CDM Validation and Verification Standard (Version 07.0)

Table 7-3: Websites used

Reference	Link	Organisation
/dna-HP/	http://www.tgo.or.th/	Thailand Greenhouse Gas Management Organization (Public Organization), DNA of Thailand
/dna-SP1/	http://www.energimyndigheten.se/dna-dfp	Swedish Energy Agency, DNA of Sweden

Reference	Link	Organisation
/unfccc/	http://cdm.unfccc.int	UNFCCC
/ipcc/	www.ipcc-nggip.iges.or.jp	IPCC publications

Table 7-4: List of interviewed persons

Reference	MoI[1]		Name	Organisation / Function
/IM01/	V	☒ Mr. ☐ Ms	Naruchit Laojaraphit	Thai Biogas / CKA Plant Manager
		☒ Mr. ☐ Ms	Pasu Sirisareenwan	Thai Biogas / CDM Officer
		☒ Mr. ☐ Ms	Manop Thmornpon	Thai Biogas / CKA Maintenance Technician
		☒ Mr. ☐ Ms	Krisorn Pangsayta	Thai Biogas / CKA IE Technician
		☐ Mr. ☒ Ms	Pornthip Pornsuwan	Thai Biogas / CKA Lab Technician
		☐ Mr. ☒ Ms	Aumpa Padbueng	Thai Biogas / CKA Administrator

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

ANNEX

A1: Verification Protocol

A2: Calibration Dates and Validity of Installed Monitoring Equipment

A3: Statements of Competence of involved Personnel

ANNEX 1: VERIFICATION PROTOCOL

Table A-1: GHG calculation procedures and management control testing / detailed audit testing of residual risk areas and random testing

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks	Additional verification testing	Conclusions and Areas Requiring Improvement (including *Forward Action Requests*)
Raw data generation				
• Installation of measuring equipment • Dysfunction of installed equipment • Maloperation by operational personnel • Downtimes of equipment • Exchange of equipment • Change of measurement equipment characteristic • Insufficient accuracy • Change of technology	• Installation of modern and state of the art equipment • Process control automation • Internal data review • Regular visual inspect-ions of installed equip-ment • Only skilled and trained personnel operates the relevant equipment • Daily raw data checks • Immediate exchange of dysfunctional equipment • Stand-by duty is	• Inadequate installation / operation of the monitoring equipment • Inadequate exchange of equipment • Change of personnel • Undetected measurement errors • Inappropriateness of Management system procedures w.r.t. monitoring plan requirements (e.g. substitute value strategies) • Non-application of management system procedures • Insufficient accuracy • Inappropriate QA/QC	• Site – visit • Check of equipment • Check of technical data sheets • Check of suppliers information / guarantees • Check of calibration records, if applicable • Check of maintenance records • Counter-check of raw data and commercial data • Check of CDM management system • Check of CDM related procedures	• **See Table A-2**

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks	Additional verification testing	Conclusions and Areas Requiring Improvement (including *Forward Action Requests*)
• Accuracy of values supplied by Third Parties	organized • Training • Internal audit procedures • Internal check of QA/QC measures of involved Third Parties	measures of Third Parties	• Application of CDM management system procedures • Check of trainings • Check of responsibilities • Check of QA/QC documentation / evidences of involved Third Parties	
Raw data collection and data aggregation				
• Wrong data transfer from raw data to daily and monthly aggregated reporting forms • IT Systems • Spread sheet programming • Manual data transmission • Data protection • Responsibilities	• Cross-check of data • Plausibility checks of various parameters. • Appropriate archiving system • Clear allocation of responsibilities • Application of CDM Management system procedures • Usage of standard software solutions	• Unintended usage of old data that has been revised • Incomplete documentation • Ex-post corrections of records • Ambiguous sources of information • Non-application of management system procedures • Manual data transfer mistakes	• Check of data aggregation steps • Counter-calculation • Data integrity checks by means of graphical data analysis and calculation of specific performance figures • Check of management system certification • Check of data archiving system	• **See Table A-2**

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks	Additional verification testing	Conclusions and Areas Requiring Improvement (including *Forward Action Requests*)
	(Spreadsheets) • Limited access to IT systems • Data protection procedures	• Unintended change of spread sheet programming or data base entries • Problems caused by updating/upgrading or change of applied software	• Check of application of Management system procedures	
Other calculation parameters				
• Emission factors, oxidation factors, coefficients	• The values and data sources applied are defined in the PDD and monitoring plan	• Unintended or intended Modification of calculation parameters • Wrong application of values • Misinterpretations of the applied methodology and/ or the PDD • Missing update of applicable regulatory framework (e.g. IPCC values)	• Update-check of regulatory framework • Countercheck of the applied MP in the MR against the methodology and the PDD	• **See Table A-2**
Calculation Methods				

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks	Additional verification testing	Conclusions and Areas Requiring Improvement (including *Forward Action Requests*)
• Applied formulae • Miscalculation • Mistakes in spread-sheet calculation	• Advanced calculation and reporting tools • A CDM coordinator is in charge of the CDM related calculations • Usage of tested / counterchecked Excel spreadsheets • Involvement of external consultants	• The danger of miscal-culation can only be minimized.	• Countercheck on the basis of own calculation. • Spread sheet walk-trough. • Plausibility checks • Check of plots	• **See Table A-2**
Monitoring reporting				
• Data transfer to the author of the monitoring report • Data transfer to the monitoring report • Unintended use of outdated versions	• An experienced CDM consultant is responsible for monitoring reporting. • CDM QMS procedures are defined	• The danger of data transfer mistakes can only be minimized • Inappropriate application of QMS procedures	• Counter check with evidences provided. • Audit of procedure application	• **See Table A-2**

Table A-2: (Project specific) Periodic Verification Checklist

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
A. Description of the project activity				
A.1. Purpose and general description of the project activity ***(F-CDM-FORM, Attachment, A.1)*** *Check if section A.1 of the MR includes the following:* - *Purpose of the PA and the measures taken to reduce GHG emissions* - *Brief description of the installed technology and equipment* - *Relevant dates for the project activity (e.g. construction, commissioning, continued operation periods etc.)* - *Total emission reductions achieved in this monitoring period*	/MR/	The verification team has checked section A.1 of the MR and confirms that the information provided is complete and correct with regards to the following: ☒ Purpose of the PA and the measures taken to reduce GHG emissions ☒ Brief description of the installed technology and equipments ☒ Relevant dates for the project activity (e.g. construction, commissioning, continued operation periods etc ☐ Total emission reductions achieved in this monitoring period In this context the following findings have been identified: Refer CAR A1 raised	~~CAR A1~~	OK
A.2. Location of project activity ***(F-CDM-FORM, Attachment, A.2)*** *Check if section A.2 of the MR reflects correctly the following:* - *Host Party(ies)* - *Region / State / Province etc.* - *City / Town / Community etc.*	/MR/ /PDD1/ /IM/	The verification team has checked section A.2 of the MR and confirms by means of comparison with the information given in the PDD and information gathered during the site visit that the information provided is complete and correct with regards to the following: ☒ Host Party(ies) ☒ Region / State / Province ☒ City / Town / Community	OK	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
- *Physical / geographical location (e.g. Latitude and Longitude)*		☒ Physical / Geographical location In this context no findings have been identified:		
A.3. Parties and Project Participants ***(F-CDM-FORM, Attachment, A.3)*** *Check if section A.3 of the MR includes the following:* - *All PPs as displayed on the UNFCCC website* - *A correctly filled table as per the MR template*	/MR/ /unfccc/	The verification team has checked section A.3 of the MR as well as the UNFCCC website and confirms that: ☒ all PPs as displayed on the project related UNFCCC website are correctly listed ☒ the table as per the template MR has been correctly filled In this context no findings have been identified:	OK	OK
A.4. Reference of applied methodology ***(F-CDM-FORM, Attachment, A.4)*** *Check if section A.4 of the MR correctly describes / includes the following:* - *Reference to the applicable version of the methodology* - *Reference to the applicable version(s) of relevant methodological tools* - *Relevant EB decisions, if applicable*	/MR/ /PDD1/ /unfccc/	The verification team has checked section A.4 of the MR and confirms by means of comparison with the information given in the PDD and displayed on the UNFCCC website that the information provided is complete and correct with regards to the following: ☒ Number, title and version of the applicable CDM Methodology ☒ Name and version of applicable CDM methodological tools ☒ Relevant EB decisions In this context no findings have been identified:	OK	OK
A.5. Crediting period of project activity ***(F-CDM-FORM, Attachment, A.5)*** *Check if section A.5 of the MR correctly includes the following:*	/MR/ /unfccc/	The verification team has checked section A.5 of the MR and confirms by means of comparison with the information displayed on the UNFCCC website that the information provided is complete and correct with regards to the following: ☒ Start date of the crediting period.	OK	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
- *Start date of the crediting period. In this context please check, if applicable, whether post registration changes to the start date have been accepted by the EB.* - *Length and type of the crediting period*		☒ Type and length of the crediting period In this context no findings have been identified:		
A.6. Publication of the Monitoring Report ***(VVS, § 243)*** *Check if the monitoring report has been made publicly available on the UNFCCC website before the verification commenced.* *Check if comments have been received and if yes, how they have been addressed.*	/MR/ /unfccc/	The verification team has ensured and confirms by means of checking the respective project information on the UNFCCC website that: ☒ The draft monitoring report, as received from the project participants, has been made publicly available prior to the start of the verification activities. ☒ No comments have been received. In this context no findings have been identified:	OK	OK
A.7. Compliance with standardized format of the Monitoring Report ***(VVS, § 247 e)*** *Check (only) if the latest applicable MR template has been used. For compliance assessment with the MR guideline pl. refer to the respective MR sections.*	/MR/ /MRT/	The verification team has checked all sections of the MR and confirms by means of comparison with the MR template that: ☒ the standardized MR template has been used In this context no findings have been identified:	OK	OK
B. Implementation of project activity				
B.1. Description of implemented registered project activity ***(F-CDM-FORM, Attachment, B.1)*** *Check if section B.1 of the MR correctly describes /*	/MR/ /PDD1/ /PS/	The verification team has checked section B.1 of the MR and confirms by means of comparison with the information given in the PDD, the project standard and information gathered during the site visit that:	OK	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
includes the following: - *Implementation status of the PA* - *Detailed description of installed technology(ies) / technical processes and equipment applied* - *Diagrams (where appropriate)*	/onsite/	☒ the description of the implementation status of the PA is in line with the applicable provisions of the project standard ☒ an appropriate description of the installed technology(ies), technical process and equipment incl. diagrams, where applicable, has been included In this context no findings have been identified:		
B.1.1. Initial project implementation ***(VVS; §§ 260 a, 261)*** *Assess whether the project has been implemented and operated as per the registered PDD and are all physical features of the project in place?* *Further focus on the potential phase wise implementation and check the reporting on the corresponding status and starting dates accordingly.* *Check if the project is still in compliance with the applicability conditions of the methodology.* *Also, discuss – if applicable – the necessity of PRC notifications / approvals.*	/MR/ /PDD1/ /onsite/	*Description:* The PA is implemented in accordance to the registered PDD *Verifier´s action:* The verification team has inspected the PA equipment installed for capturing of biogas, flare system and the usage of the biogas at the starch factory boiler. *Conclusion:* By means of onsite inspection and document reviewed, the project is implemented as described in the registered PDD.	OK	OK
B.1.2. Technical equipment changes ***(VVS; §§ 260 a, 261)*** *Check if relevant technical equipment of the project activity has been exchanged or modified during the monitoring period. Further ensure that consistent notations of key equipment (meters etc.) in PDD, MR*	/MR/ /PDD1/ /ES1 – ES7/ /IM01/	*Description:* There are no changes or modified for any equipment and meters during this monitoring period. All equipment, meters and instruments are installed and consistent with the registered PDD *Verifier´s action:* During the on-site visit, the following were conducted:	~~CAR B1~~	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
and calculation spreadsheet are applied *Consider e.g. interviews with operational personnel, QMS records, maintenance records, instrument specifications.* *In case of changes, check whether the project is still in line with the registered PDD and assure that these changes have been considered in the monitoring report and the emission reduction calculation.* *In case of post registration changes pl. refer to chapter B.2.*		1 Interview of project operational personnel. 2 Check installed equipment and technical documentation. 3 Check instrument specification and records. 4 Review and check registered PDD. *Conclusion:* By means of document review, onsite inspection and interviews there is change of influent flow meter and gas analyzer during this monitoring period. Refer CAR B1 raised		
B.1.3. Operation of the project activity ***(VVS; §§ 260 a, 261)*** *Check if relevant operation modes of the project activity have been exchanged or modified during the monitoring period.* *Consider e.g. interviews with operational personnel, operation log sheets, data management system records.* *In case of changes, check whether the project is still in line with the registered PDD and assure that these changes have been considered in the monitoring report and the emission reduction calculation.* *In case of post registration changes pl. refer to chapter B.2.*	/MR/ /PDD1/ /DML1/ /onsite/	*Description:* The mode of operation for the project activity have not been changed or modified during this monitoring period *Verifier´s action:* During the on-site visit, the verification team has interviewed the operation personnel, reviewed log sheets and data management records to confirm that there are no changes or modification undertaken during this monitoring period. *Conclusion:* By means of document review and onsite inspection it can be confirmed the mode of operation for the project activity have not been changed or modified during this monitoring period.	OK	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
B.1.4. Incidents ***(VVS; §§ 260 a, 261)*** *Identify if there have been any significant incidents, deviant operation modes and / or downtimes of the equipment?* *Consider e.g. interviews with operational personnel, operational log sheets, analysis of performance data.*	/MR/ /PO1 – PO3/ /IM01/	*Description:* Section B.1 of MR states the total downtime of PA during this monitoring period. *Verifier´s action:* The operation records were reviewed for maintenance and downtime / shutdown and operational personnel were interviewed *Conclusion:* It can be concluded there downtime incurred for the PA during the monitoring period.	OK	OK
B.1.5. Legislation Find out – esp. in the context of methodological requirements - whether relevant legislation with effect on the project activity in the host country has been changed. Assess, in case of changes, whether consequences for the PA with regard to relevant CDM requirements have been accounted for. In case of changes data sources shall be referenced.	/MR/ /RA1/ /dna-HP/	*Description:* There are no relevant legislations from host country affecting the operations of the project activity since the implementation. *Verifier´s action:* The project operational license and relevant legislation related to the project activity was reviewed during onsite visit. *Conclusion:* There were no relevant legislations from the host country affecting the project activity. No changes to relevant policies and regulatory requirement capture biogas from wastewater for flaring and utilisation in the host country, Thailand.	OK	OK
B.1.6. Open issues from validation ***(VVS; § 248)***	/VAL/	☒ There were no open issues addressed in the validation report	OK	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
Check (esp. in case of 1st periodic verification) whether there are any open issues indicated in the validation report (e.g. FAR)?		☐ All open issues from the validation have been appropriately addressed. ☐ The following issues related to the validation have not yet been appropriately addressed:		
B.1.7. Open issues from previous verification ***(VVS; §§ 248, 319 h)*** *Check in case of further periodic verifications whether there are any open issues indicated in previous verification reports (FAR) and take into consideration the guidance as specified in VVS.*	/VER/	☐ There were no open issues addressed in the previous verification report ☒ All open issues from the previous verification have been appropriately addressed. ☐ The following issues related to the previous verification have not yet been appropriately addressed:	OK	OK
B.2. Post registration changes				
B.2.1. Are post registration changes applicable to the proposed project activity?	/MR/ /PDD1/	☒ No, by means of site visit, document check and interview it could be verified that the project is implemented and operated in line with the registered PDD and the applied methodology. (Please proceed with section C) ☐ Yes, post registration changes have been identified and are assessed in detail in the subsequent steps. (Please proceed with B.2.2.)	OK	OK
B.2.2. Temporary deviations from the registered monitoring plan or applied methodology (TDfrMP; TDfMM) ***(F-CDM-FORM, Attachment, B.2.1; VVS §§ 286 -***	/MR/ /PS/ /unfccc/	☐ No TDfrMP or TDfMM.have been submitted to the UNFCCC prior to the current monitoring period ☐ The following TDfrMP or TDfMM have been approved	OK	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
291) *Indicate whether any temporary deviations have been applied during this monitoring period.* *In cases where approval has been sought from the EB please provide reference.* *If applied, provide a description of the deviation(s).* *This should include the reasons for the deviation(s), how it deviates from the monitoring plan and/or applied methodology(ies), the duration for which the deviation(s) is(are) applicable and justification on the conservativeness of the approach. Indicate if the deviation will lead to a reduction in the accuracy and if so, which conservative assumptions and discount factors have been applied.* *For deviation(s) that require prior approval by the Board, include the date of approval and reference number.*		or are under approval by the UNFCCC 1 Title Status ☐ under approval; ☐ approved Appr.date Ref. No. 2 Title Status ☐ under approval; ☐ approved Appr.date Ref.No. ☒ During the verification of the current MP no need for a TDfrMP or TDfMM has been identified. The monitoring plan is in accordance with the approved methodology applied by the PA ☐ An approval of the following TDfrMP or TDfMM is to be requested from the EB for the current MP as appendix 1 of the project standard does not apply. 1 Issue: 2 Issue: ☒ The following TDfrMP or TDfMM for which appendix 1 of the PS is applicable have been applied: 1 Issue: Refer PRC-2138-001 in table 2-4 above approved by EB on 2013-08-23		

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
		☐ 2 Issue: ☐ In this context no findings have been identified:		
B.2.3. Corrections ***(F-CDM-FORM, Attachment, B.2.2; VVS; §§ 292 - 294)*** *Indicate whether any corrections to project information or parameters fixed at validation have been approved during this monitoring period or submitted with this monitoring report.* *In cases where the correction(s) and the revised PDD are approved prior to the submission of this monitoring report for request for issuance, provide the approval date and reference number. Otherwise, provide the version number and the completion date of the revised PDD.* *Please check and report that the corrected information is an accurate reflection of the actual project information and that the corrected parameters are in accordance with the applied methodology and the monitoring plan.*	/MR/ /PDD1/	☒ During the verification of the current MP no need for corrections has been identified. ☐ The following corrections have been applied: 1 Issue: 2 Issue: In this context no findings have been identified:	OK	OK
B.2.4. Permanent changes from the registered monitoring plan or applied methodology (PCfrMP; PCfMM) ***(F-CDM-FORM, Attachment, B.2.3; VVS; §§ 295 - 303)***	/MR/ /PDD1/	☒ No PCfrMP or PCfMM.have been submitted to the UNFCCC prior to the current monitoring period ☐ The following PCfrMP or PCfMM have been approved or are under approval by the UNFCCC	OK	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
Indicate whether any permanent changes from the registered monitoring plan or applied methodologies have been approved during this monitoring period or submitted with this monitoring report. *In cases where the change(s) and the revised PDD are approved prior to the submission of this monitoring report for request for issuance, provide the approval date and reference number. Otherwise, provide the version number and the completion date of the revised PDD.*		1 Title Status ☐ under approval; ☐ approved Appr.date Ref. No. 2 Title Status ☐ under approval; ☐ approved Appr.date Ref.No. ☒ During the verification of the current MP no need for a PCfrMP or PCfMM has been identified. The monitoring plan is in accordance with the approved methodology applied by the PA ☐ An approval of the following PCfrMP or PCfMM is to be requested from the EB for the current MP as appendix 1 of the project standard does not apply. 1 Issue: 2 Issue: ☐ The following PCfrMP or PCfMM for which appendix 1 of the PS is applicable have been applied: 1 Issue: 2 Issue:		

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
		In this context no findings have been identified:		
B.2.5. Changes to the project design of the registered project activity (CoPD) ***(F-CDM-FORM, Attachment, B.2.4; VVS; §§ 304 - 317)*** *Indicate whether any changes to the project design of the project activity have been approved during this monitoring period or submitted with this monitoring report.* *In cases where the change(s) and the revised PDD are approved prior to the submission of this monitoring report for request for issuance, provide the approval date and reference number. Otherwise, provide the version number and the completion date of the revised PDD.*	/MR/ /PDD1/	☒ No CoPD has been submitted to the UNFCCC prior to the current monitoring period ☐ The following CoPD has been approved or are under approval by the UNFCCC 1 Title Status ☐ under approval; ☐ approved Appr.date Ref. No. 2 Title Status ☐ under approval; ☐ approved Appr.date Ref.No. ☒ During the verification of the current MP no need for a CoPD has been identified. The monitoring plan is in accordance with the approved methodology applied by the PA ☐ An approval of the following CoPD.is to be requested from the EB for the current MP as appendix 1 of the project standard does not apply. 1 Issue:	OK	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
		☐ 2 Issue: ☐ The following CoPD for which appendix 1 of the PS is applicable have been applied: 1 Issue: 2 Issue: In this context no findings have been identified:		
C. Description of monitoring system				
C.1. Monitoring Plan – PDD Compliance ***(VVS, §§ 268-271)*** *Check if the monitoring plan is in accordance with the monitoring plan contained in the registered PDD (or any accepted revised MP).* *Please check esp. if* - *all parameters stated in the MP of the registered PDD have been monitored and updated as applicable* - *the monitoring equipment has been controlled and calibrated as per the MP* - *the monitoring results are consistently recorded as per the approved frequency* - *QA/QC procedures have been applied in accordance with the MP*	/MR/ /PDD1/	By means of comparison of the MR with the registered PDD (or any revisions thereof) the verification team has checked whether the MP is in compliance with the registered PDD. The outcome is as follows: ☒ The MP is completely in accordance with the last registered/approved version of the PDD / MP. In this context no findings have been identified:	OK	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
C.2. Monitoring Plan – Meth Compliance ***(VVS, §§ 264-267)*** *Check if the monitoring plan is in accordance with the applied methodology.* *In case the methodology references applicable tools it has to be ensured that the MP is also compliant with those tools.* *Also please specify if monitoring aspects have been identified that are not specified in the methodology but may enhance the level of accuracy and completeness of the monitoring plan – this esp. applies for SSC PAs.*	/MR/ /PDD1/ /AM22/ /TF/	By means of comparison of the MR with the applied CDM methodology and related tools the verification team has checked whether the MP is in compliance with the MP related requirements of the applied methodology. The outcome is as follows: ☒ The MP is completely in accordance with the approved methodology applied by the CDM project (last registered/approved version of the PDD) ☒ The MP is completely in accordance with the applied tools which the methodology references. A breakdown of the referenced tools is as follows: 1 – Title (of the tool): Tool to determine project emissions from flaring gases containing methane (EB28 Annex 13) 1 – Version: 1 1 – MP compliance: ☒ full compliance ☐ findings have been raised ☐ N/A (for MP) 2 – Title (of the tool): 2 – Version: 2 – MP compliance: ☐ full compliance ☐ findings have been raised ☐ N/A (for MP)	OK	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
		3 | Title (of the tool) | Version | MP compliance | ☐ full compliance ☐ findings have been raised ☐ N/A (for MP) In this context no findings have been identified.		
C.3. Management System ***(VVS, § 252 (a) (iii))*** *Check if the GHG data monitoring system can be assessed as appropriate.* *In case reference is made to a (certified) company quality management system, check if all CDM related monitoring procedures have been fully integrated in the project participant's quality management system.* *In case of a stand-alone system, check how the GHG management system has been implemented and effectiveness is ensured.*	/MR/ /IM01/ /QA1/ /WI/	*Description:* A CDM Monitoring Manual has been developed and implemented for the monitoring of the project activity *Verifier´s action:* The CDM monitoring manual has been reviewed and a copy obtained. The operational personnel were interviewed to confirm the manual is implemented *Conclusion:* By means of document review and interview it can be confirmed that a system has been implemented	OK	OK
C.4. Metering diagram ***(F-CDM-FORM, Attachment, C; PS §242)*** *Check first if the MR includes a metering diagram showing all relevant monitoring points.* *Check further if this diagram reflects the actual*	/MR/ /PDD1/ /onsite/ /PS/	*Description:* Section C of MR includes the monitoring diagram. *Verifier´s action:* The diagram in MR was reviewed and compared with the onsite inspection.	OK	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
situation and is in line with the registered PDD and with the requirements of the applied methodology.		*Conclusion:* By means of document review and onsite inspection, the metering diagram is correct.		
C.5. Roles and Responsibilities ***(F-CDM-FORM, Attachment, C; PS §242)*** *Check if all roles and positions of each person in the GHG data management process are clearly defined and implemented as stated in the monitoring plan. Please consider the complete data trail from raw data generation to submission of the final data.* *Identify, if relevant personnel w.r.t. monitoring has been exchanged?* *If so, have appropriate training measures been carried out.* *In case of changes, assure that the implemented monitoring procedures have not been affected.*	/MR/ /QA1/ /T1/ /PS/ /IM01/	*Description:* The organization chart defines the roles and responsibility of the respective personnel. *Verifier´s action:* The organisation chart was reviewed and operation personnel were interviewed during onsite. Monitoring plan procedures and training record has been reviewed. *Conclusion:* The roles and positions are defined and monitoring procedures are implemented to operate the project activity.	OK	OK
C.6. Emergency procedures for the monitoring system ***(F-CDM-FORM, Attachment, C; PS §242)*** *Check, as appropriate, whether relevant emergency procedures for the monitoring system have been included in the MR and assess whether these procedures have been implemented, when required*	/MR/ /QA1/ /WI/ /IM01/ /PS/	*Description:* Section C of MR has included emergency procedure in handling data during emergency. *Verifier´s action:* The MR and Monitoring Plan Procedure is reviewed to check on handling of data during emergency. The operational personnel were interviewed during onsite visit.	OK	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
		Conclusion: Emergency procedure for the monitoring system has not been addressed in MR and monitoring plan procedure.		
C.7. Data archive and data protection ***(PS §56 b)*** Check whether all records of monitoring parameters are archived according to the monitoring plan. Assess further whether appropriate measures have been taken in order to avoid unintended or intended manipulation or loss of the measured data.	/MR/ /IM01/	*Description:* Section B.7.2 monitoring plan of the registered PDD mentions data archiving and protection. *Verifier´s action:* During the on-site visit, the verification team had conducted interviews and reviewed the records archiving method and procedures for the monitored parameters as stated in the monitoring plan of the registered PDD. The data from continuous monitoring (data logger) was primarily stored in the computer located in the project control room. Besides, they have the backup system as following: a) Manual backup using a portable hard disk, b) Data server in plant and head office, c) Hard copies of documents. The data stored in the computer is password protected and only authorised personnel can access. The verification team has checked the server and could confirm the previous monitoring reports, ER spreadsheet and monitoring data are archived. Therefore FAR C3 raised in the last monitoring period is closed. *Conclusion:*	OK	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
		In conclusion, the archiving of data is in accordance with the registered MP.		
D. Data and parameters				
D.1. Data and Parameters fixed ex ante				
a) Compliance with registered PDD ***(F-CDM-FORM, Attachment; D1, VVS § 246 (d))*** *Check whether the value applied is in compliance with the registered PDD.*	/MR/ /PDD1/	*Description:* The ex-ante data were included in section D.1 of the MR. *Verifier´s action:* The values of the ex-ante data were checked with the registered PDD for confirmation. *Conclusion:* The fixed ex ante values are in compliance with the registered PDD	OK	OK
b) Compliance with the applied methodology ***(F-CDM-FORM, Attachment; D1)*** *Check whether the value applied is in compliance with the applied methodology or any other tool.*	/MR/ /AM22/ /TF/	*Description:* The value applied are included in the ex-ante parameter table at section D.1 of MR *Verifier´s action:* The values applied were cross-checked with applied methodology and relevant tools to confirm there are in compliance. *Conclusion:* The values are in compliance to the applied methodology and relevant tools	OK	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
D.2. Data and Parameters monitored				
D.2.1. WW_{input}		**Description: Daily wastewater flows entering system boundary**		
a) Measurement / Determination method ***(VVS, §§ 268, 271)*** *Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)).* *Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.* *Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.*	/MR/ /PDD1/ /DML1/ /AM22/ /ER/	*Description:* The parameter is monitored by flow meter FT01 continuously. The data is captured continuously in the SCADA with a daily printout record. *Verifier´s action:* During the onsite visit, the printout data is cross-checked with the SCADA to confirm the value applied in the ER spreadsheet is correct. *Conclusion:* The parameter is monitored in accordance with the registered PDD and applied methodology.	OK	OK
b) Accuracy and QA/QC Procedure ***(VVS, §§ 272-278)*** *In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most*	/MR/ /C1/ /QA1/ /IM01/ /PDD1/	*Description:* The parameter is continuously monitored with a calibrated flow meter. Therefore inaccuracy is low. *Verifier´s action:* The most recent calibration report was not reported. However, during the flow meter was exchange during this	~~CAR D1~~	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
conservative assumptions theoretically possible have been made for calculating ERs. *Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.*	/ES1/ /O3/	monitoring period and was not reported. The calibration frequency of 2 years was based on manufacturer's confirmation. The meter accuracy of 0.5% was cross-checked with the specification and is correct. QA procedure is implemented and operation personnel interviewed. *Conclusion:* The parameter is monitored according to the registered PDD. Refer CAR D1 raised		
c) Correctness ***(VVS, §§ 268, 271)*** *Determine whether the value given in the monitoring report is correct or determined in a conservative manner.* *In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.* *In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.*	/MR/ /ER/ /DML1/ /PDD1/	☒ Correct ☐ Not correct (initial assessment) *Description:* The data is monitored continuously by a calibrated flow meter and thus inaccuracy is low. *Verifier´s action:* The data in the spreadsheet was cross-checked with the daily data records from the SCADA for correctness. *Conclusion:* The parameter monitoring is in accordance with the registered PDD.	OK	OK
D.2.2. WW_{output}		**Description: Daily wastewater flows leaving project treatment system**		

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
a) Measurement / Determination method ***(VVS, §§ 268, 271)*** *Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)).* *Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.* *Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.*	/MR/ /DML1/ /ER/ /PDD1/ /AM22/	*Description:* The parameter is monitored by flow meter FT05 continuously. The data is captured continuously in the SCADA with a daily printout record. *Verifier´s action:* During the onsite, the printout data is cross-checked with the SCADA to confirm the value applied in the ER spreadsheet is correct. *Conclusion:* The parameter is monitored in accordance with the registered PDD and applied methodology.	OK	OK
b) Accuracy and QA/QC Procedure ***(VVS, §§ 272-278)*** *In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.* *Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the*	/MR/ /C2/ /QA1/ /IM01/ /PDD1/ /ES1/ /O3/	*Description:* The parameter is continuously monitored with a calibrated flow meter. Therefore inaccuracy is low. *Verifier´s action:* The most recent calibration report was not reported. The calibration frequency of 2 years is based on manufacturer's confirmation. The meter accuracy of 0.5% was cross-checked with the specification and is correct.	~~CAR D2~~	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
monitoring equipment has been carried out in line with the latest EB guidance.		QA procedure is implemented and operation personnel interviewed. *Conclusion:* The parameter is monitored according to the registered PDD. Refer CAR D2 raised		
c) Correctness ***(VVS, §§ 268, 271)*** *Determine whether the value given in the monitoring report is correct or determined in a conservative manner.* *In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.* *In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.*	/MR/ /DML1/ /ER/ /PDD1/	☒ Correct ☐ Not correct (initial assessment) *Description:* The data is monitored continuously by a calibrated flow meter and thus inaccuracy is low. *Verifier´s action:* The data in the spreadsheet was cross-checked with the daily data records from the SCADA for correctness. *Conclusion:* The parameter is monitored according to the registered PDD.	OK	OK
D.2.3. COD_{input}		**Description: Wastewater organic material concentration entering the project boundary**		
a) Measurement / Determination method ***(VVS, §§ 268, 271)*** *Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied*	/MR/ /ER/ /DML2/ /DML3/	*Description:* The parameter is tested daily internally and weekly externally in an accredited laboratory. At the end of each month, the results are compared with those of the internal test. The difference between the external and	~~CAR E6~~	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
data aggregation trails (from ODL to data aggregation level zero (DAL0)). *Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.* *Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.*	/PDD1/ /AM22/	internal lab results with the difference is applied to the daily results. The adjusted value is then applied in the ER calculation. *Verifier´s action:* The external and internal tests results were reviewed and cross-checked with the ER calculation. However, the comparison of the internal and external results with the lower of the compared adjusted value was not applied for conservativeness where applicable External and internal tests result reports were provided. *Conclusion:* The parameter is monitored in accordance with the registered PDD and applied methodology. Refer CAR E6 raised		
b) Accuracy and QA/QC Procedure ***(VVS, §§ 272-278)*** *In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.* *Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line*	/MR/ /DML2/ /DML3/ /C7/ /QA1/ /IM01/	*Description:* The external results are tested by an accredited lab weekly and the internal tests are tested daily using calibrated instruments. The inaccuracies to the results are low. *Verifier´s action:* The external test reports, were issued by an accredited lab. The most recent calibration report for the internal test equipment was not reported. The COD reactor information is not stated in MR. QA/QC procedures are implemented and operation personnel interviewed.	~~CAR D3~~	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
with the latest EB guidance.		*Conclusion:* There are no inaccuracies for the measurement of this parameter. Refer CAR D3 raised		
c) Correctness ***(VVS, §§ 268, 271)*** *Determine whether the value given in the monitoring report is correct or determined in a conservative manner.* *In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.* *In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.*	/MR/ /DML2/ /DML3/ /ER/ /PDD1/	☐ Correct ☒ Not correct (initial assessment) *Description:* The data reported in the MR and ER calculation is according to the tests reports. The external and internal results were not compared for the difference of percentage to be applied to the internal test results to obtain a lower value and applied in the ER calculation. . *Verifier´s action:* The external and internal tests results were reviewed and tests reports obtained. However, the compared adjusted value was not applied for conservativeness where applicable *Conclusion:* The parameter is monitored according to the registered PDD. Refer CAR E6 raised.	~~CAR E6~~	OK
D.2.4. COD_{output}		**Description: Wastewater organic material concentration leaving the treatment facility**		
a) Measurement / Determination method ***(VVS, §§ 268, 271)***	/MR/ /ER/	*Description:* The parameter is tested daily internally and weekly externally in an accredited laboratory.	~~CAR E6~~	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)). *Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.* *Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.*	/DML2/ /DML3/ /PDD1/ /AM22/	At the end of each month, the results are compared with those of the internal test. The difference between the external and internal lab results with the difference is applied to the daily results. The adjusted value is then applied in the ER calculation. *Verifier´s action:* The external and internal tests results were reviewed and cross-checked with the ER calculation. However, the comparison of the internal and external results with the higher of the compared adjusted value was not applied for conservativeness where applicable External and internal tests result reports were provided. *Conclusion:* The parameter is monitored in accordance with the registered PDD and applied methodology. Refer CAR E6 raised.		
b) Accuracy and QA/QC Procedure ***(VVS, §§ 272-278)*** *In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.* *Describe whether all applicable QA/QC procedures*	/MR/ /DML2/ /DML3/ /C7/ /QA1/ /IM01/	*Description:* The external results are tested by an accredited lab weekly and the internal tests are tested daily using calibrated instruments. The inaccuracies to the results are low. *Verifier´s action:* The external test reports were issued by an accredited lab. The most recent calibration report for the internal test equipment was not reported.	~~CAR D3~~	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.		The COD reactor information is not stated in MR. QA/QC procedures are implemented and operation personnel interviewed. *Conclusion:* There are no inaccuracies for the measurement of this parameter. Refer CAR D3 raised		
c) Correctness ***(VVS, §§ 268, 271)*** *Determine whether the value given in the monitoring report is correct or determined in a conservative manner.* *In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.* *In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.*	/MR/ /DML2/ /DML3/ /ER/ /PDD1/	☐ Correct ☒ Not correct (initial assessment) *Description:* The data reported in the MR and ER calculation is according to the tests reports. The external and internal results were not compared for the difference of percentage to be applied to the internal test results to obtain a higher value and applied in the ER calculation. *Verifier´s action:* The external and internal tests results were reviewed and tests reports obtained. However, the compared adjusted value was not applied for conservativeness where applicable *Conclusion:* The parameter is monitored according to the registered PDD. Refer CAR E6 raised.	~~CAR E6~~	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
D.2.5. V_{heat}		**Description: Volume of biogas sent to facility heaters**		
a) Measurement / Determination method ***(VVS, §§ 268, 271)*** *Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)).* *Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.* *Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.*	/MR/ /DML1/ /ER/ /PDD1/ /AM22/	*Description:* The parameter is monitored continuously by a flow meter and data captured in the SCADA system. *Verifier´s action:* During the onsite visit, the data applied in the ER spreadsheet is cross checked with the printout data from the SCADA. *Conclusion:* The parameter is monitored in accordance with the registered PDD and applied methodology.	OK	OK
b) Accuracy and QA/QC Procedure ***(VVS, §§ 272-278)*** *In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.*	/MR/ /ER/ /IM01/ /QA1/ /C4/ /ES2/ /PDD1/	*Description:* The parameter is monitored with a calibrated flow meter, therefore inaccuracy is low. *Verifier´s action:* QA procedure is implemented and operational personnel interviewed. The calibration report was reviewed and copy obtained. The instrument accuracy of 0.5% was cross-checked with the	OK	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.	/O4/	specification and is correct. The calibration frequency of 3 years is based on manufacturer's confirmation. *Conclusion:* The parameter is monitored according to the registered PDD.		
c) Correctness ***(VVS, §§ 268, 271)*** *Determine whether the value given in the monitoring report is correct or determined in a conservative manner.* *In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.* *In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.*	/MR/ /ER/ /DML1/	☒ Correct ☐ Not correct (initial assessment) *Description:* The data is monitored continuously by a calibrated flow meter and thus inaccuracy is low. *Verifier´s action:* The value has been reviewed by checking the daily data records with the ER spreadsheet for correctness. *Conclusion:* The parameter is monitored in accordance with the registered M.	OK	OK
D.2.6. V_{flare} (also $FV_{FG,h}$)		**Description: Biogas sent to flare**		
a) Measurement / Determination method ***(VVS, §§ 268, 271)*** *Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation*	/MR/ /DML1/ /ER/ /PDD1/ /AM22/	*Description:* The parameter is monitored continuously by a flow meter and data captured in the SCADA system. *Verifier´s action:* During the onsite visit, the data applied in the ER spreadsheet is cross checked with the printout data from the SCADA.	OK	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
level zero (DAL0)). *Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.* *Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.*		*Conclusion:* The parameter is monitored in accordance with the registered PDD and applied methodology.		
b) Accuracy and QA/QC Procedure ***(VVS, §§ 272-278)*** *In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.* *Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.*	/MR/ /ER/ /IM01/ /QA1/ /C5/ /ES2/ /PDD1/ /O4/	*Description:* The parameter is monitored with a calibrated flow meter, therefore inaccuracy is low. *Verifier´s action:* QA procedure is implemented and operational personnel interviewed The calibration report was reviewed and copy obtained. The instrument accuracy of 0.5% was cross- checked with the specification and is correct. The calibration frequency of 3 years is based on manufacturer's confirmation. *Conclusion:* The parameter is monitored according to the registered PDD.	OK	OK
c) Correctness	/MR/	☒ Correct ☐ Not correct (initial assessment)	OK	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
(VVS, §§ 268, 271) *Determine whether the value given in the monitoring report is correct or determined in a conservative manner.* *In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.* *In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.*	/ER/ /DML1/	*Description:* The data is monitored continuously by a calibrated flow meter and thus inaccuracy is low. *Verifier´s action:* The value has been reviewed by checking the daily data records with the ER spreadsheet for correctness. *Conclusion:* The parameter is monitored in accordance with the registered MP.		
D.2.7. f_{heat}		**Description: Heating system combustion efficiency**		
a) Measurement / Determination method ***(VVS, §§ 268, 271)*** *Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)).* *Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.* *Assess whether the measurement / determination method is in line with the registered monitoring plan*	/MR/ /TC1/ /ER/ /PDD1/ /AM22/	*Description:* The parameter is tested annually by an external party. *Verifier´s action:* The data applied in ER spreadsheet was cross checked with the test report for consistency. *Conclusion:* The parameter is monitored in accordance with the registered PDD and applied methodology. Refer CAR D8 raised	~~CAR D8~~	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
of the PDD and the applied methodology.				
b) Accuracy and QA/QC Procedure ***(VVS, §§ 272-278)*** *In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.* *Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.*	/MR/ /TC1/ /ER/ /QA1/ /PDD1/	*Description:* The test is conducted by external accredited laboratory, therefore inaccuracy is low. *Verifier´s action:* The test report was reviewed with the data applied in the ER spreadsheet. QA/QC procedures are implemented to monitor the project activity. The test is conducted by external laboratory according to international standard. *Conclusion:* The parameter is monitored according to registered PDD. Refer CAR D8 raised	~~CAR D8~~	OK
c) Correctness ***(VVS, §§ 268, 271)*** *Determine whether the value given in the monitoring report is correct or determined in a conservative manner.* *In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.* *In case of mistakes / deviations pl. provide details*	/MR/ /TC1/ /ER/	☐ Correct ☒ Not correct *Description:* The parameter is tested by external laboratory therefore value is considered correct. *Verifier´s action::* The value in the ER spreadsheet is reviewed by cross checking with the test results. *Conclusion:* By means of document review, the data is considered incorrect	~~CAR D8~~	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
and descriptions of the CARs raised.		Refer CAR D8 raised.		
D.2.8. $C_{SO4}^{2-}{}_{in}$		**Description: Amount of chemical oxidizing agents entering system boundary**		
a) Measurement / Determination method ***(VVS, §§ 268, 271)*** *Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)).* *Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.* *Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.*	/MR/ /ER/ /DML3/ /PDD1/ /AM22/	*Description:* The parameter is measured daily and recorded in the SCADA system. *Verifier´s action:* The data in the ER spreadsheet is cross checked with the daily internal test results and found consistent. *Conclusion:* The parameter is monitored in accordance with the registered PDD monitoring plan and applied methodology.	OK	OK
b) Accuracy and QA/QC Procedure ***(VVS, §§ 272-278)*** *In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most*	/MR/ /DML3/ /ER/ /PDD1/ /QA1/ /C7/	*Description:* The parameter is tested by calibrated equipment and inaccuracy is low. *Verifier´s action:* The most recent calibration report for the internal test equipment was not reported.	~~CAR D3~~	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
conservative assumptions theoretically possible have been made for calculating ERs. *Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.*	/IM01/	The COD reactor information is not stated in MR. QA procedure implemented and operation personnel interviewed. *Conclusion:* The parameter is monitored according to the registered PDD. Refer CAR D3 raised.		
c) Correctness ***(VVS, §§ 268, 271)*** *Determine whether the value given in the monitoring report is correct or determined in a conservative manner.* *In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.* *In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.*	/MR/ /DML3/ /ER/ /PDD1/	☒ Correct ☐ Not correct (initial assessment) *Description:* The parameter is measured by calibrated equipment. *Verifier´s action:* The value has been reviewed during the on-site visit by checking the lab records and crosscheck with the ER spreadsheet for correctness. *Conclusion:* The parameter is monitored according to the registered PDD.	OK	OK
D.2.9. $C_{SO4}^{2-}{}_{out}$		**Description: Amount of chemical oxidizing agents out of the digester**		
a) Measurement / Determination method ***(VVS, §§ 268, 271)*** *Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation*	/MR/ /ER/ /DML3/ /PDD1/ /AM22/	*Description:* The parameter is measured daily and recorded in the SCADA system. *Verifier´s action:* The data in the ER spreadsheet is cross checked with the daily	OK	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
level zero (DAL0)). *Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.* *Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.*		internal test results and found consistent. *Conclusion:* The parameter is monitored in accordance with the registered PDD monitoring plan and applied methodology.		
b) Accuracy and QA/QC Procedure ***(VVS, §§ 272-278)*** *In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.* *Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.*	/MR/ /DML3/ /ER/ /PDD1/ /QA1/ /C7/ /IM01/	*Description:* The parameter is tested by calibrated equipment and inaccuracy is low. *Verifier´s action:* The most recent calibration report for the internal test equipment was not reported. The COD reactor information is not stated in MR. QA procedure implemented and operation personnel interviewed. *Conclusion:* The parameter is monitored according to the registered PDD. Refer CAR D3 raised.	~~CAR D3~~	OK
c) Correctness ***(VVS, §§ 268, 271)***	/MR/ /DML3/	☒ Correct ☐ Not correct (initial assessment) *Description:*	OK	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
Determine whether the value given in the monitoring report is correct or determined in a conservative manner. *In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.* *In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.*	/ER// /PDD1/	The data is monitored continuously by a calibrated flow meter and thus inaccuracy is low. *Verifier´s action:* The data in the spreadsheet was cross-checked with the daily data records from the SCADA for correctness. *Conclusion:* The parameter monitoring is in accordance with the registered PDD.		
D.2.10. $WW_{bypassing}$		**Description: Flow of wastewater directly to the current water treatment system, and bypassing the new wastewater treatment facility**		
a) Measurement / Determination method ***(VVS, §§ 268, 271)*** *Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)).* *Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.* *Assess whether the measurement / determination method is in line with the registered monitoring plan*	/MR/ /ER/ /DML1/ /PDD1/ /AM22/	*Description:* The parameter is monitored continuously by flow meter FT06. The data is recorded by the SCADA system with a daily record printout. *Verifier´s action:* The data in the spreadsheet were cross-checked against the daily record sheet for consistency. *Conclusion:* The parameter is monitored in accordance with the registered PDD and applied methodology.	OK	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
of the PDD and the applied methodology.				
b) Accuracy and QA/QC Procedure ***(VVS, §§ 272-278)*** *In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.* *Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.*	/MR/ /DML1/ /C3/ /PDD1/ /QA1/ /IM01/ /ES1/ /O3/	*Description:* The parameter is measured by a calibrated flowmeter therefore inaccuracy is low. *Verifier´s action:* The calibration report was reviewed to confirm the validity. Copy of report obtained. The meter accuracy of 0.40% was cross-checked with the specification and is correct. The calibration conducted once in 2 years is based on manufacturer's recommendation. QA procedure implemented and operational personnel interviewed. . *Conclusion:* The parameter is monitored according to the registered PDD.	OK	OK
c) Correctness ***(VVS, §§ 268, 271)*** *Determine whether the value given in the monitoring report is correct or determined in a conservative manner.* *In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should*	/MR/ /DML1/ /ER/ /PDD1/	☒ Correct ☐ Not correct (initial assessment) *Description:* The data is monitored continuously by a calibrated flow meter and thus inaccuracy is low. *Verifier´s action:* The data in the spreadsheet was cross-checked with the daily data records from the SCADA for correctness.	OK	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
be given. *In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.*		*Conclusion:* The parameter is monitored according to the registered PDD.		
D.2.11. Biogas loss from pipe line		**Description: Loss of biogas from pipeline**		
a) Measurement / Determination method ***(VVS, §§ 268, 271)*** *Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)).* *Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.* *Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.*	/MR/ /TC3/ /ER/ /PDD1/ /AM22/	*Description:* The parameter is measured by external party annually. However, the test conducted on 2012-08-17 does not reflect the monitoring period. *Verifier´s action:* The data in the spreadsheet was cross-checked with the test report for consistency. *Conclusion:* The parameter is monitored in accordance with the registered PDD monitoring plan and applied methodology. Refer CAR D4 raised.	~~CAR D4~~	OK
b) Accuracy and QA/QC Procedure ***(VVS, §§ 272-278)*** *In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance*	/MR/ /TC3/ /QA1/ /IM01/	*Description:* The parameter is tested annually by external party. Therefore inaccuracy is low. *Verifier´s action:* The test reports were reviewed to confirm the validity and copy	~~CAR D4~~	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs. *Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.*		obtained. QA procedure implemented and operational personnel interviewed. *Conclusion:* Refer CAR D4 raised		
c) Correctness ***(VVS, §§ 268, 271)*** *Determine whether the value given in the monitoring report is correct or determined in a conservative manner.* *In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.* *In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.*	/MR/ /ER/ /TC3/	☐ Correct ☒ Not correct (initial assessment) *Description:* The data is measured annually by external party. *Verifier´s action:* The data in ER spreadsheet was cross-checked with the test report for correctness. *Conclusion:* In this context the following finding identified. Refer CAR D4 raised.	~~CAR D4~~	OK
D.2.12. NCV_{biogas}		**Description: Biogas Calorific Value**		
a) Measurement / Determination method ***(VVS, §§ 268, 271)*** *Describe how the monitoring parameter was measured / determined. Focus primarily on the*	/MR/ /PDD1/ /AM22/ /TC2/	*Description:* The parameter is tested by external laboratory annually. *Verifier´s action:* The data in the ER spreadsheet was checked against the data	~~CL D5~~	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)). *Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.* *Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.*		from test report for consistency. *Conclusion:* The parameter is monitored in accordance with the registered PDD and applied methodology. Refer CL B5 raised		
b) Accuracy and QA/QC Procedure ***(VVS, §§ 272-278)*** *In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.* *Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.*	/MR/ /TC2/ /ER/ /PDD1/	*Description:* The parameter is tested by an external accredited laboratory and therefore inaccuracy is low. *Verifier´s action:* The data in the ER spreadsheet was cross-checked with the rest reports. QA procedure implemented and operational personnel interviewed. *Conclusion:* The parameter is monitored according to the registered PDD. However refer to CL D5 raised.	~~CL D5~~	OK
c) Correctness	/MR/ /ER/	☐ Correct ☒ Not correct (initial assessment) *Description:*	~~CL D5~~	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
(VVS, §§ 268, 271) *Determine whether the value given in the monitoring report is correct or determined in a conservative manner.* *In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.* *In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.*	/TC2/ /PDD1/	The value of the parameter is tested by an external laboratory. *Verifier´s action:* The value in ER spreadsheet is reviewed by cross-checking the test results for correctness. *Conclusion:* In this context the following finding identified. Refer CL D5 raised		
D.2.13. PE_{flare}		**Description: Project emissions from flaring of the residual gas stream**		
a) Measurement / Determination method ***(VVS, §§ 268, 271)*** *Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)).* *Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.* *Assess whether the measurement / determination method is in line with the registered monitoring plan*	/MR/ /PDD1/ /AM22/ /ER/ /TF/ /DML1/	*Description:* This parameter is calculated based on the amount of incomplete biogas methane combusted in the open flare system. A flow meter is used to measure the amount of biogas sent to the flaring system for combustion. *Verifier´s action:* The flow meter data and flare operating data were reviewed to cross-check the combustion. The flare combustion temperature of above 500^0C and flare operation is above 20mins the captured data will be applied in ER calculation. The data in the spreadsheet is cross-checked with the daily records to confirm the correctness *Conclusion:*	OK	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
of the PDD and the applied methodology.		The parameter is monitored in accordance with the registered PDD, applied methodology and the flaring tool.		
b) Accuracy and QA/QC Procedure ***(VVS, §§ 272-278)*** *In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.* *Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.*	/MR/ /ER/ /IM01/ /DML1/ /C5/ /C6/ /IM01/	*Description:* The biogas flow and methane data is measured by calibrated instruments. The data is applied to determine the flare efficiency. Therefore, inaccuracy is low. *Verifier´s action:* The measured data was reviewed. The flow meter and methane analyser calibration records were reviewed and copies are obtained. QA procedure implemented and operational personnel interviewed. *Conclusion:* The data is determined using monitored data from the calibrated instruments. However, refer CAR D7 and CAR D8 raised	~~CAR D7~~ ~~CAR D8~~	OK OK
c) Correctness ***(VVS, §§ 268, 271)*** *Determine whether the value given in the monitoring report is correct or determined in a conservative manner.* *In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should*	/MR/ /ER/ /PDD1/ /DML1/	☒ Correct ☐ Not correct (initial assessment) *Description:* The data is determined using monitored data from calibrated flow meter and analyser. *Verifier´s action:* The data applied in the ER calculation is cross-checked for correctness.	OK	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
be given. *In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.*		*Conclusion:* No inaccuracy in the data and monitored in accordance with the registered PDD.		
D.2.14. F		**Description: Fossil fuel volume equivalent to generate the same amount of heat generated from the biogas collected in the anaerobic treatment facility**		
a) Measurement / Determination method ***(VVS, §§ 268, 271)*** *Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)).* *Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.* *Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.*	/MR/ /DML1/ /TC2/ /PDD1/ /AM22/ /ER/ /IPCC/	*Description:* This parameter is calculated based on the amount of heat generated from combusting of biogas in the boiler for the equivalent of fossil fuel combusted. *Verifier´s action:* The monitored parameters data applied are: 1. V_{heat}: Amount of biogas sent to the boiler. 2. NCV_{biogas}: Biogas NCV for each vintage year. 3. $NCV_{fuel\ oill}$: This is ex-ante data from the registered PDD. . The values were cross checked against the data recorded and found incorrect since year 2014 test result was not considered in the calculation. The data was applied for the baseline emission calculations was cross-checked and found incorrect. The amount of fossil fuel is based on the average specific fuel consumption for the output of the facility, estimated using 3 years historical data according to the registered PDD. Since	~~CAR D6~~	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
		there is no specific local NCV values available, IPCC data was applied and is accordance to the applied methodology, pg. 11. *Conclusion:* The parameter is monitored in accordance with the registered PDD and applied methodology. Refer CAR D6 raised.		
b) Accuracy and QA/QC Procedure ***(VVS, §§ 272-278)*** *In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.* *Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.*	/MR/ /ER/ /AM22/ /PDD1/ /TC2/ /IPCC/ /DML1/ /QA1/	*Description:* Fossil fuel volume equivalent to generate the same amount of heat from the biogas combusted at the burner and calculated from the monitored and test data. *Verifier´s action:* The system data was reviewed and cross checked with the test result and measured data recorded. The tests reports were reviewed and copies obtained.QA procedure implemented and operation personnel interviewed. *Conclusion:* The parameter is monitored in accordance with the registered PDD and applied methodology.	OK	OK
c) Correctness ***(VVS, §§ 268, 271)*** *Determine whether the value given in the monitoring report is correct or determined in a conservative manner.*	/MR/ /ER/ /AM22/ /PDD1/ /TC2/	☐ Correct ☒ Not correct (initial assessment) *Description:* Fossil fuel volume equivalent to generate the same amount of heat generated from the biogas collected in the anaerobic treatment facility is calculated from the monitored parameter that has been measured.	~~CAR D6~~	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given. *In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.*	/IPCC/ /DML1/ /QA1/	*Verifier´s action:* The system data was reviewed and cross checked with the measured data recorded. QA procedure implemented and operation personnel interviewed. *Conclusion:* The parameter is monitored in accordance with the registered PDD and applied methodology. Refer CAR D6 raised.		
D.2.15. C_{CH4} (also $FV_{CH4,y}$)		**Description: Biogas methane concentration**		
a) Measurement / Determination method ***(VVS, §§ 268, 271)*** *Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)).* *Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.* *Assess whether the measurement / determination method is in line with the registered monitoring plan*	/MR/ /ER/ /DML1/ /PDD1/ /AM22/ /TF/	*Description:* The parameter is monitored continuously by a gas analyser and data captured in the SCADA system. *Verifier´s action:* The data in the ER spreadsheet was reviewed and cross-checked with the daily records of the continuous analyser for consistency. *Conclusion:* The parameter is monitored according to registered PDD, applied methodology and flaring tool	OK	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
of the PDD and the applied methodology.				
b) Accuracy and QA/QC Procedure ***(VVS, §§ 272-278)*** *In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.* *Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.*	/MR/ /QA1/ /IM01/ /C5/ /C6/ /PDD1/ /DML1/ /ES7/	*Description:* The data is measured by calibrated analyser and inaccuracy will be low. *Verifier´s action:* The data in the ER spreadsheet is cross-checked with the measured data to confirm that the value applied is consistent. The analyser calibration reports were reviewed and copies obtained. The exchange of analyser was not reported. QA procedure implemented and operational interviewed. *Conclusion:* Refer CAR D7 raised	~~CAR D7~~	OK
c) Correctness ***(VVS, §§ 268, 271)*** *Determine whether the value given in the monitoring report is correct or determined in a conservative manner.* *In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.* *In case of mistakes / deviations pl. provide details*	/MR/ /ER/ /DML1/	☒ Correct ☐ Not correct (initial assessment) *Description:* The value of the parameter is measured by a calibrated instrument. *Verifier´s action:* The values determined were reviewed and crosscheck with ER spreadsheet for correctness. *Conclusion:* In this context no findings were identified.	OK	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
and descriptions of the CARs raised.				
D.2.16. $M_{Removed}$		**Description: Organic material removed from wastewater facility**		
a) Measurement / Determination method ***(VVS, §§ 268, 271)*** *Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)).* *Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.* *Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.*	/MR/ /DML2/ /DML3/ /IM01/ /PDD1/ /ER/	*Description:* The parameter is calculated based on monitored parameters $COD_{input,}$ $COD_{output,}$ WW_{input} and WW_{output} The data for parameters COD_{input} and COD_{output} are tested daily internally and weekly externally. The data for parameters WW_{input} and WW_{output} are measured continuously by flow meters. *Verifier´s action::* The internal and external COD test data and wastewater flow quantity was reviewed. The data in ER spreadsheet is crossed-checked with the measured and test data. *Conclusion:* The parameter is monitored according to the registered PDD. However refer CAR D9 and CAR E6 raised.	~~CAR D9~~ ~~CAR E6~~	OK OK
b) Accuracy and QA/QC Procedure ***(VVS, §§ 272-278)*** *In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance*	/MR/ /DML2/ /DML3/ /C1/	*Description:* The parameter is calculated based on monitored parameters $COD_{input,}$ $COD_{output,}$ WW_{input} and $WW_{output.}$ The data for parameters COD_{input} and COD_{output} are tested daily internally and weekly externally. The internal COD tests were	~~CAR D9~~ ~~CAR E6~~	OK OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs. *Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.*	/C2/ /C7/ /IM01/ /PDD1/ /ER/	conducted using calibrated instruments The data for parameters WW_{input} and WW_{output} are measured continuously by calibrated flow meters. Therefore inaccuracy is low. *Verifier´s action:* The data in ER spreadsheet is crossed-checked with the measured and tests data. The calibration for the instruments that measured data were checked and copies obtained. QA procedure implemented and operational interviewed. *Conclusion:* The parameter is monitored according to the registered PDD. However refer CAR D9 and CAR E6 raised.		
c) Correctness ***(VVS, §§ 268, 271)*** *Determine whether the value given in the monitoring report is correct or determined in a conservative manner.* *In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.* *In case of mistakes / deviations pl. provide details*	/MR/ /DML2/ /DML3/ /ER/ /PDD1/	☐ Correct ☒ Not correct (initial assessment) *Description:* The value of the parameter is calculated using measured data. *Verifier´s action:* The value applied in ER spreadsheet is cross-checked with the COD and flow measured data records. *Conclusion:* The parameter is monitored according to registered PDD. Refer CAR D9 and CAR E6 raised.	~~CAR D9~~ ~~CAR E6~~	OK OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
and descriptions of the CARs raised.				
D.3. Sampling				
a) Implementation of sampling plan ***(F-CDM-FORM, Attachment; D3)*** *Check whether the PP has applied a sampling approach to determine the monitored values (as per section D.2 above).* *If this is the case, please provide an assessment whether the PPs have correctly and sufficiently described the implemented sampling plan including* *a) Description of the implemented sampling design* *b) Collected data* *c) Analysis of collected data* *d) Demonstration on whether the required confidence/precision has been met.*		☒ No sampling approach has been used by the PP to determine the monitored parameters **OR**. ☐ A sampling approach has been taken for the following monitored parameter: ***Parameter:*** *Description:* *Verifier´s action:* *Conclusion:*	OK	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
b) Sampling during verification *In case the VT has applied a sampling approach in the course of the verification the approach shall be described for each parameter.*		☒ No sampling approach has been used by the VT to verify the monitored parameters **OR**. ☐ A sampling approach has been applied by the VT for the following monitored parameter: ***Parameter:*** *Description:* *Conclusion:*	OK	OK
E. Calculation of Emission reductions				
E.1. Traceability ***(VVS, §§ 247, 249)*** *Assess if the calculation is fully traceable. In case of complex calculations an Excel calculation spread-sheet shall be used. All applied formulae must be visible.*	/MR/ /ER/ /PDD1/ /AM22/	*Description:* The source for the data applied in the ER spreadsheets is not traceable. *Verifier´s action:* The data applied in the ER spreadsheet was reviewed. The formulae applied were cross-checked and consistent with registered PDD and applied methodology. *Conclusion:* The source of data is not traceable. Refer to CAR E1, CAR E4, CAR E6 and CAR E7 raised	~~CAR E1~~ ~~CAR E4~~ ~~CAR E6~~ ~~CAR E7~~	OK OK OK OK
E.2. Parameter consistency	/MR/	*Description:*	OK	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
(VVS, § 249) *Assess whether all internal and external parameters and data used for calculation are applied consistently in the monitoring report and the calculation spreadsheet?* *Consider only the correct data exchange between the monitoring report and the calculation spreadsheet (if any). Further ensure the consistency of notations for all parameters in the PDD, MR and calculation spreadsheet.*	/ER/ /PDD1/ /AM22/ /DML1-DML3/ /TC1-TC3/	All monitored parameters and data applied for the calculations are consistent in the MR and ER spreadsheet except chemical oxidizing agent. *Verifier´s action:* The verification team had reviewed the ER spreadsheet, MR, methodology, registered PDD, raw data sheets and daily manual log sheets. *Conclusion:* The monitored parameters are in accordance with the registered PDD.		
E.3. Correctness of calculation ***(VVS, §§ 279-280)*** *Check if the applied formulae and methods for calculating baseline emissions, project emissions and leakage are in accordance with the monitoring plan and / or the approved methodology.* *Assess whether the provided calculations are complete and reflect all requirements of the monitoring plan.* *Check especially that no standard or old values have been used for calculation where calculations based on up-to-date data is required.*	/MR/ /ER/ /PDD1/ /AM22/ /TF/	*Description:* All equations indicated in MR and ER spreadsheet are in accordance with the applied methodology, registered PDD and relevant tools applicable to the methodology. The emission reduction calculation is complete and reflects all requirements of the registered monitoring plan. *Verifier´s action:* The applied equations in MR and ER spreadsheet were reviewed with registered PDD and applied methodology. The input values applied in the calculations are checked and reviewed that there are current monitoring period data. *Conclusion:* Applied equations are consistent with registered PDD and applied methodology.	~~CAR E1~~ ~~CAR E2~~ ~~CAR D6~~	OK OK OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
		Refer CAR E1, CAR E2 and CAR D6 raised.		
E.4. Emission reductions table ***(F-CDM-FORM, Attachment, E.4)*** *Check if the MR includes a summary table of the emission reductions calculation specifiying separately* - *Total baseline emissions* - *Total project emissions:* - *Total leakage* - *Total emission reductions.* *Assess whether the values are correct or need to be revised as a consequence of issues identified above.*	/MR/ /ER/	☒ The MR includes in section E.4 a summary table of the emission reductions calculation. ☒ The summary table specified the total baseline, project and leakage emissions as well as the total emission reductions separately. ☐ The values as specified in the ER summary table are correct; no issues have been identified during the verification which require changes in the ER calculation. ☒ During the verification issues with impact on the ER calculation have been identified. Thus subject to the closure of above listed findings the summary table in E.4 needs to be revised. In this context the following findings have been identified: Refer CAR E1, CAR E2 and CAR E6 raised	~~CAR E1~~ ~~CER E2~~ ~~CAR E6~~	OK OK OK
E.5. Comparison with ex-ante determined emission reductions ***(F-CDM-FORM, Attachment, E.5; E.6)*** *Check if the MR includes a comparison of actual values of the monitoring period with the estimations in the registered PDD.* *Check further whether in case of an increase an appropriate explanation is included in the MR.* *Assess in case of a significant increase whether this is due to technical or organisational changes within or*	/MR/ /ER/ /PDD1/	*Description:* The monitoring report has demonstrated a comparison of the estimated and actual ER. *Verifier´s action:* The difference explained in the MR was reviewed *Conclusion:* The comparison of ex-ante determined emission reduction and actual ER is stated in the MR.	~~CAR E3~~ ~~CL E5~~	OK OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
outside the control of the PP and – if this is case – whether the PRC have been considered appropriately.		Refer CAR E3 and CL E5 raised.		
E.6. ER during the 1st commitment period and the period from 1 January 2013 onwards ***(F-CDM-FORM, Attachment, E.7)*** *Check if the MR includes in chapter E.7 a breakdown of the actual ER into* *a) ER up to 2012-12-31 and* *b) ER from 2013-01-01 onwards* *The ERs for each period should be determined as per the actual generation. In cases where this is not possible or a cap has been applied a proportional (time related) approach should be chosen.*	/MR/	☒ The MR in section E.7 includes a summary table of the ER breakdown *a) ER up to 2012-12-31 and* *b) ER from 2013-01-01 onwards* ☒ The breakdown of the ERs during the first commitment period and from 2013-01-01 onwards is as follows: ☐ The ER have completely been generated during the first commitment period ☒ The ERs have completely been generated from 2013-01-01 onwards, ☐ The ERs have partly been generated during the first commitment period and partly from 2013-01-01 onwards. ☐ The breakdown of the ERs is correct, considering the applicable guidance. In this context the following additional finding has been identified: Refer CAR A1 raised.	~~CAR A1~~	OK

ANNEX 2: CALIBRATION DATES AND VALIDITY OF INSTALLED MONITORING EQUIPMENT

Monitoring equipment	Related monitoring parameter as per applicable registered monitoring plan	Serial number	Type	Accuracy or accuracy class	Previous calibration date	Current Calibration date(s)	Calibration valid till	Calibration Frequency	Delay in calibration: yes/no	Period of delayed calibration
Flow Meter (FT01)	WW_{input}	00046902020	ABB	±0.5%	2012-08-16		2014-08-15	2 years	☒ No ☐ Yes	
		3K672012180467				2014-07-17	2016-07-16	2 years	☒ No ☐ Yes	
Flow Meter (FT05)	WW_{output}	3K672012180486	ABB	±0.4%	2012-05-14	2014-05-07	2016-05-06	2 years	☒ No ☐ Yes	
Spectrophotometer	COD_{input}	1156884	Hach	±1.5nm	2013-09-18	2014-09-17	2015-09-16	Annually	☒ No ☐ Yes	
COD Reactor	COD_{input}	1011C0201	Hach	±2 ºC	2013-09-19	2014-09-17	2015-09-16	Annually	☒ No ☐ Yes	
Spectrophotometer	COD_{output}	1156884	Hach	±1.5nm	2013-09-18	2014-09-17	2015-09-16	Annually	☒ No ☐ Yes	
COD Reactor	COD_{output}	1011C0201	Hach	±2 ºC	2013-09-19	2014-09-17	2015-09-16	Annually	☒ No ☐ Yes	
Flow Meter (FT02)	V_{heat}	000000124	ABB	±0.5%	2011-11-25	2014-11-17	2017-11-17	3 years	☒ No ☐ Yes	
Flow Meter (FT04)	V_{flare} (also $FV_{FG,h}$)	000000294	ABB	±0.5%	2011-12-15	2014-12-12	2017-12-11	3 years	☒ No ☐ Yes	

Monitoring equipment	Related monitoring parameter as per applicable registered monitoring plan	Serial number	Type	Accuracy or accuracy class	Previous calibration date	Current Calibration date(s)	Calibration valid till	Calibration Frequency	Delay in calibration: yes/no	Period of delayed calibration
Flow Meter (FT06)	$WW_{bypassing}$	3K672011450101	ABB	±0.4%	2013-11-14		2015-11-13	2 years	☒ No ☐ Yes	
Spectrophotometer	$C_{SO4^{2-}in}$	1156884	Hach	±1.5nm	2013-09-18	2014-09-17	2015-09-16	Annually	☒ No ☐ Yes	
COD Reactor	$C_{SO4^{2-}in}$	1011C0201	Hach	±2 ºC	2013-09-19	2014-09-17	2015-09-16	Annually	☒ No ☐ Yes	
Spectrophotometer	$C_{SO4^{2-}out}$	1156884	Hach	±1.5nm	2013-09-18	2014-09-17	2015-09-16	Annually	☒ No ☐ Yes	
COD Reactor	$C_{SO4^{2-}out}$	1011C0201	Hach	±2 ºC	2013-09-19	2014-09-17	2015-09-16	Annually	☒ No ☐ Yes	
Gas Analyser	C_{CH4} (also $FV_{CH4,y}$)	35184	Guardian	±1.0%	2013-04-18		2014-04-17	Annually	☒ No ☐ Yes	
		LFB-028	Anri			2014-04-17	2015-04-16	Annually	☒ No ☐ Yes	

ANNEX 3: STATEMENTS OF COMPETENCE OF INVOLVED PERSONNEL

TÜV NORD Certification

Statement of Competence

Appointment and authorization according to the procedures of the TÜV NORD JI/CDM Certification Program

Mr. Stefan Winter

SCHEME	STATUS	VALID UNTIL
CDM	Senior Assessor (Validation, Verification) Technical Reviewer	2017-07-27
VCS	Senior Assessor (Validation, Verification) Technical Reviewer	2017-07-27

Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA	TR SUBCATEGORIES
1.1	Thermal energy generation	
1.2	Renewable Energy	1.2.1 Hydro 1.2.2 Wind 1.2.3 Goethermal 1.2.4 Solar 1.2.5 Tidal
2.2	Heat distribution	
3.1	Energy demand	
13.1	Waste handling and disposal	13.1.1 Waste management 13.1.2 Waste water management
13.2	Animal waste management	
15.2	Animal waste management	

163 – Rev. 3, Date: 2014-07-28

163_S01-F003_2014-07-28_rev3.doc S01-F003 rev1 / 2011-08-02

TÜV NORD Certification

Statement of Competence

Appointment and authorization according to the procedures of the TÜV NORD JI/CDM Certification Program

Mr. Robert Cheong

SCHEME	STATUS	VALID UNTIL
CDM	Senior Assessor (Validation, Verification)	2015-09-30
VCS	Senior Assessor	2015-09-30

Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA
1.2	Renewable Energies
13.1	Waste Handling and Disposal

128 – Rev. 4, Date: 2015-06-05

128_S01-VAD60-F20_2015-06-05_rev4.doc S01-VAD60-F20 rev3 / 2012-10-25