




**Validation report form for post-registration changes for
CDM project activities
(Version 02.0)**

Complete this form in accordance with the instructions attached at the end of this form.

BASIC INFORMATION

Title and UNFCCC reference number of the project activity	Maesod Wastewater Treatment and Biogas Utilisation Project. 8712
Process track	<input type="checkbox"/> Prior approval <input checked="" type="checkbox"/> Issuance <input type="checkbox"/> Renewal of crediting period
Version number of the validation report on PRCs	01
Completion date of the validation report on PRCs	03/10/2018
Type(s) of PRCs	<input checked="" type="checkbox"/> Temporary deviations from the registered monitoring plan, applied methodologies or applied standardized baselines <input type="checkbox"/> Corrections <input type="checkbox"/> Changes to the start date of the crediting period <input type="checkbox"/> Inclusion of a monitoring plan <input type="checkbox"/> Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other applied standards or tools <input type="checkbox"/> Changes to the project design <input type="checkbox"/> Changes specific to afforestation and reforestation project activities
Version number of PDD to which this report applies	Version 03
Project participants	Maesod Biogas Company Limited Swiss Carbon Assets Ltd Swedish Energy Agency
Host Party	Thailand
Applied methodologies and standardized baselines	AMS-III.H version 16 - Methane recovery in wastewater treatment AMS-I.C version 19 - Thermal energy for the user with or without electricity AMS-I.D version 17 - Grid connected renewable electricity generation
Mandatory sectoral scopes linked to the applied methodology	13: Waste handling and disposal
Conditional sectoral scopes linked to the applied methodologies	1: Energy Industries (renewable / non-renewable sources)
Name and UNFCCC reference number of the DOE	RINA Services SpA (RINA – 0037)
Name, position and signature of the approver of the validation report on PRCs	Laura Severino (Authorized officer signing for the DOE) Sustainability & Food Certification Compliance Head 

SECTION A. Executive summary

Objective

RINA Services S.p.A. (RINA), commissioned by Pure Water Ltd, has performed the validation of post registration changes for the project “Maesod Wastewater Treatment and Biogas Utilisation Project”. The validation is based on the currently valid documentation of the United Nations Framework Convention on Climate Change (UNFCCC) viz. CDM VVS for Project Activities, version 01.0 of section 8.2.

Scope of Validation

The validation scope encompasses an independent and objective review to validate the proposed post-registration changes in the monitoring plan and project description of registered project activity titled “Maesod Wastewater Treatment and Biogas Utilisation Project”. The validation is based on the submitted MR, registered PDD, the applied monitoring methodology, relevant decisions, clarifications and guidance from the CMP and the EB and any other information and references relevant to the project activity's resulting emission reductions. These documents are reviewed against the requirements of the Kyoto Protocol, the CDM Modalities and Procedures and related rules and guidance.

The scope of any assessment is defined by the underlying legislation, regulation and guidance given by relevant entities or authorities. The core requirements on changes from the project activity as described in the registered project design document is referred from CDM VVS for Project Activities, version 01.0 of section 8.2.

Validation Process

The project assessment aims at being a risk based approach and is based on the requirements and guidelines provided in the latest version VVS and PS above. The validation is not meant to provide any consulting towards the client. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the project design.

Based on the requirements in the VVS, RINA has applied a rule-based approach for the validation of the project. RINA applied requirements in section 8.2 of VVS V01.0, mutatis mutandis, specific requirements on PRC, to validate the information provided by the project participant.

The information provided by the project participants is assessed by applying the means of validation specified in the “CDM Validation and Verification Standard for Project Activities” and where appropriate standard auditing techniques. In the absence of specific means of validation specified in the VVS the standard auditing techniques are applied.

Brief Description of the project

The purpose of project activity is to treat the wastewater from the starch factory to generate biogas. The project activity entails the installation of an anaerobic wastewater treatment facility, based on an “Upflow Anaerobic Sludge Blanket” (UASB) system; to complement the existing open lagoon based system. The implementation of the project activity will enable the generation and capture of biogas which will be used for electricity and thermal energy generation. The electricity generated is supplied to the national grid. The thermal energy generated is utilized in the starch drying process and the excess biogas is flared.

SECTION B. Validation team, technical reviewer and approver

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B.1. Validation team member

No.	Role	Signature	Last name	First name	Affiliation	Involvement in
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					(e.g. name of central or other office of DOE or outsourced entity)	Desk/document review	On-site inspection	Interviews	Validation findings
1.	Team Leader	IR	Menon	Rekha	RINA India Pvt Ltd	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
2.	Technical Expert	IR	Augustus	Cyril	RINA India Pvt Ltd	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

B.2. Technical reviewer and approver of the validation report on PRCs

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)
1.	Technical reviewer	IR	Liu	Huifeng	RINA China
2.	Approver	IR	Severino	Laura	RINA Central Office

SECTION C. Means of validation

C.1. Desk/document review

>> The monitoring report, version 01 of 16/03/2018 and version 02 of 12/09/2018 /02/, the emission reduction calculations provided in the form of a spreadsheet (MBG_3rd ER calculation_v1_13032018) version 01 of 13/03/2018 and (MBG_3rd ER calculation_v.2.1_12092018) version 2 of 12/09/2018 /07/, were assessed as part of the verification. In addition, the Project Design Document (PDD) /01/ in particular the baseline estimations and the monitoring plan for the project were reviewed.

C.2. On-site inspection

Duration of on-site inspection: 30/05/2018				
No.	Activity performed on-site	Site location	Date	Team member
1.	During the on-site assessment of the project RINA assessed the implementation and operation of the proposed project activity, the waste water treatment facility, reviewed the information flows for generating, aggregating and reporting the monitoring parameters, interviewed key personnel of the plant to confirm the operational and data collection procedures, cross-checked between information provided in the monitoring report and data plant. The values used in the ER calculations were confirmed by means of checking the records provided by the client. Checked the quality control and quality assurance procedures in place to prevent or identify and correct any errors or omissions in the reported monitoring parameters. There were no hindrances or barriers that were faced by the verification team while carrying out the site visits all equipment and processes of the project activity were accessible.	At site	30/05/2018	Rekha Menon, Cyril Augustus

C.3. Interviews

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Rukwongtrakol	Suwipa	Swiss Carbon Assets Ltd (Project Manager)	30/05/2018	1. Project implementation, status , construction and actual operation. 2. Moniotring plan and moniotring parameters for this monitroing period. 3. Emission Redcution calculation. 4. QA/QC procedures 5 .Environmental Impacts	Rekha Menon, Cyril Augustus
2	Udomkityenyong	Jiravat	Factory Manager (Maesod Biogas plant)			
3	Keawluchai	Pennapa	QA/QC in-charge(Maesod Biogas plant)			
4	Choapreecha	Pakawat	Biogas plant Manager (Maesod Biogas plant)			

C.4. Sampling approach

>> N/A

C.5. Clarification requests (CLs), corrective action requests (CARs) and forward action requests (FARs) raised

Areas of validation findings	No. of CL	No. of CAR	No. of FAR
Compliance with PDD form			

Temporary deviations from the registered monitoring plan, applied methodologies or applied standardized baselines	1		
Corrections			
Changes to the start date of the crediting period			
Inclusion of a monitoring plan			
Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other applied standards or tools			
Changes to the project design			
Changes specific to afforestation and reforestation project activities			
Others (please specify)			
Total	1		

SECTION D. Validation findings

D.1. Compliance with PDD form

Means of validation	N/A
Findings	N/A
Conclusion	N/A

D.2. Temporary deviations from the registered monitoring plan, applied methodologies or applied standardized baselines

Means of validation	During the site visit it was noted that the flow meter for measurement of monitoring parameter $FC_{k,y}$ (Quantity of fossil fuel combusted in the thermal oil boiler) was not installed as stated in the previous monitoring period and the registered PDD. Further, to be on conservative side the emission from $FC_{k,y}$ is accounted in project emissions.
Findings	<p>CL 1</p> <p>It is checked that as per the previous verification report, temporary deviation was requested for the following parameters. $FC_{k,y}$ (Quantity of fossil fuel type (fuel oil)) k combusted in the thermal oil boiler) and $Q_{oil,y}$ (Quantity of the thermic fluid from boiler to the process plant). PP had confirmed to install the measuring instruments for both the parameters from 01/12/2017. However, during the site visit, it was checked that the meter for HFO consumption was not installed in the current monitoring period, which is a deviation and the same is also not transparent in the MR.</p> <p>For more information, please refer to Appendix-4 of this report</p> <p>CL1 is closed.</p> <p>For the parameter $FC_{k,y}$ (Quantity of fossil fuel type (fuel oil) k combusted in the thermal oil boiler): As per the previous verification report and the MR /42/. $FC_{k,y}$ (Quantity of fossil fuel type (fuel oil) k combusted in the thermal oil boiler) will be measured using flow meter, starting from 01/12/2017. However, during the site visit, it was checked that the fuel oil meter was only installed on 22/04/2018 as per the equipment stock record /44/ and doesn't cover the current monitoring period as confirmed in the previous MR. Thus, PP has requested temporary deviation for the period from 01/12/2017 to 30/04/2018.</p>
Conclusion	<p>For the parameter $FC_{k,y}$ (Quantity of fossil fuel type (fuel oil) k combusted in the thermal oil boiler): As per the previous verification report and the MR /42/. $FC_{k,y}$ (Quantity of fossil fuel type (fuel oil) k combusted in the thermal oil boiler) will be measured using flow meter, starting from 01/12/2017. However, during the site visit, it was checked that the fuel oil meter was only installed on 22/04/2018 as per the equipment stock record /44/ and doesn't cover the current monitoring period as confirmed in the previous MR. Thus, PP has requested temporary deviation for the period from 01/12/2017 to 30/04/2018.</p> <p>For the current monitoring period i.e. from 01/07/2016 to 31/12/2017 , $FC_{k,y}$ (Quantity of fossil fuel type (fuel oil) k combusted in the thermal oil boiler) is</p>

	<p>measured using dipstick. It was checked that the amount of fuel used in the boiler was monitored directly from the tank using dipstick, which is further measured using the tape. The volume measured in m3 is then converted into tonnes using default density value 0.95. The measured values further checked with stock register and the fuel purchase receipts. The same was found to be appropriate and acceptable.</p> <p>RINA confirms that the above mentioned deviation comply with 232 (a) CDM project standard for project activities, version 01 /07/. Thus, the above mentioned deviation doesn't require PRC approval and is suitable for approval under the issuance track as per the appendix 1 of CDM PS , version 01 /07/</p>
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D.3. Corrections

Means of validation	N/A
Findings	N/A
Conclusion	N/A

D.4. Changes to the start date of the crediting period

Means of validation	N/A
Findings	N/A
Conclusion	N/A

D.5. Inclusion of a monitoring plan

Means of validation	N/A
Findings	N/A
Conclusion	N/A

D.6. Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other applied standards or tools

Means of validation	N/A
Findings	N/A
Conclusion	N/A

D.7. Changes to the project design

Means of validation	N/A
Findings	N/A
Conclusion	N/A

D.8. Changes specific to afforestation and reforestation project activities

Means of validation	N/A
Findings	N/A
Conclusion	N/A

SECTION E. Internal quality control

>> The draft final post registration validation report before being submitted to UNFCCC for request of issuance was subjected to an independent internal technical review to confirm that all verification activities had been completed according to the pertinent RINA instructions. The technical review was performed by a technical reviewer(s) qualified in accordance with RINA's qualification scheme for CDM validation and verification.

SECTION F. Validation opinion

RINA Services Spa (RINA) has performed a validation of post registration changes for the project activity "Maesod Wastewater Treatment and Biogas Utilisation Project, CDM Registration Reference N° 8712. The validation has based on the information made available to us.

RINA has performed this validation on the basis of the following documents:

- CDM Executive Board: CDM project cycle procedure for project activities, Version 01.0 of 03/03/2017;

- CDM Executive Board: CDM project standard for project activities, Version 01.0 of 03/03/2017;
- CDM Executive Board: CDM validation and verification standard for project activities, Version 01.0 of 03/03/2017;
- Approved baseline and monitoring methodology “AMS-III.H”, “Methane recovery in waste water treatment system”, version 16 of 26/11/2010, “AMS-I.D”, “Grid connected renewable electricity generation”, version 17 of 03/06/2011 and “AMS-I.C”, “Thermal energy production with or without electricity”, version 19 of 03/06/2011.

RINA confirms that the above mentioned deviation comply with clause 232 (a) CDM project standard for project activities, version 01 /07/. Thus, the above mentioned deviation doesn't require PRC approval and is suitable for approval under the issuance track as per the appendix 1 of CDM PS, version 01 /07/. Also please note that since this is only a temporary deviation, a revision in the PDD is not required. RINA further confirms that the deviation complies with the relevant requirements related to the temporary deviation from the registered monitoring plan and monitoring methodology.

Appendix 1. Abbreviations

Abbreviations	Full texts
BE	Baseline Emissions
BSP	Biogas Support Programme
BUS	Biogas User Survey
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CDM M&P	Modalities and Procedures CDM
CER(s)	Certified Emission Reduction(s)
CH ₄	Methane
CL	Clarification Request
CO ₂	Carbon dioxide
CO ₂ e	Carbon dioxide equivalent
CRT	Coordination and Technical Control Staff
DCI	Certification Division of RINA Services Spa
DNA	Designated National Authority
DOE	Designated Operational Entity
DONRE	Department of Natural Resource and Environment
EB	Executive Board
ER	Emission Reductions
FAR	Forward Action Request
GHG(s)	Greenhouse gas(es)
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
LoA	Letter of Approval
MoV	Means of Verification
MR	Monitoring Report
NGO	Non-governmental Organization
NR	Nepalese Rupee
NRB	Non Renewable Biomass
ODA	Official Development Assistance
PDD	Project Design Document
PE	Project Emission
PP(s)	Project Participant(s)
PPA	Power Purchase Agreement
Ref.	Document Reference
RINA	RINA Services Spa
SS(s)	Sectoral Scope(s)
TA(s)	Technical Area(s)
UNFCCC	United Nations Framework Convention on Climate Change
VVS	Validation and Verification Standard

Appendix 2. Competence of team members and technical reviewers



CERTIFICATO DI QUALIFICA QUALIFICATION CERTIFICATE

Si attesta che il sig./sig.ra:
We declare that Mr/Mrs/Ms:

Rekha MENON

è qualificato come¹:
is qualified as:

**CDM-TEC, -VAL, -VER, -TL
ITRP, REG-EXP²**

per le seguenti aree tecniche:
for the following technical areas:

1.2, 2.1, 13.1, 13.2, 14.1

AREE TECNICHE TECHNICAL AREAS	DESCRIZIONE DELL'AREA TECNICA TECHNICAL AREA DESCRIPTION	SCOPO SETTORIALE SECTORAL SCOPE
1.2	Renewables	1
2.1	Energy Demand	2
13.1	Solid Waste and wastewater	13
13.2	Manure	13
14.1	Afforestation and reforestation	14

in accordo alle istruzioni dell'unità Sostenibilità & Cambiamenti Climatici.
in accordance with the instructions of the Sustainability & Climate Change Unit.

REVISIONE REVISION	DATA DATE	MOTIVAZIONI PER LA REVISIONE REASON FOR THE REVISION
0	06-03-2008	-
11	31-03-2017	Update qualification as ITRP
12	23-07-2018	Update qualification as REG-EXP

Il Resp. CCPLS
Head of CCPLS

¹ Legend:

VAL: Validator
VER: Verifier
TEC: Technical Expert
TL: Team Leader
FIN-EXP: Financial Expert
DET: Determiner

CDM: Clean Development Mechanism
VCS: Verified Carbon Standard
GS: Gold Standard
SCS: Social Carbon Standard
JI: Joint Implementation

² India, Indonesia, Malaysia, Myanmar, Vietnam, Cambodia, Laos, Sri Lanka, Nepal, China, Philippines, Thailand, Africa, Latin America and Iran

RINA Services S.p.A. è accreditato da UNFCCC, quale Entità Operativa Designata (DOE), per condurre la Validazione e la Verifica di Progetti CDM, da VCSA per condurre la Validazione e la Verifica di Progetti VCS, da GS Foundation, per condurre la Validazione e la Verifica di Progetti GS, da Ecologica Institute per condurre la Validazione e la Verifica di rapporti SCS

RINA Services S.p.A. is accredited by the UNFCCC, as Designated Operational Entity (DOE), to carry out Validation and Verification of CDM Projects, by the VCSA, to carry out Validation and Verification of VCS Projects, by the GS Foundation, to carry out Validation and Verification of GS Projects and by the Ecologica Institute, to carry out Validation and Verification of SCS Reports



CERTIFICATO DI QUALIFICA
QUALIFICATION CERTIFICATE

Si attesta che il sig./sig.ra:

Amalorpavanathan Cyril AUGUSTUS AROKIASAMY

We declare that Mr/Mrs/Ms:

è qualificato come¹:
is qualified as:

**CDM-TEC, CDM-VAL, CDM-VER, CDM-TL,
ITRP, REG-EXP²**

per le seguenti aree tecniche:
for the following technical areas:

1.1, 1.2, 3.1, 5.1, 13.1

AREE TECNICHE TECHNICAL AREAS	DESCRIZIONE DELL'AREA TECNICA TECHNICAL AREA DESCRIPTION	SCOPO SETTORIALE SECTORAL SCOPE
1.1	Thermal energy generation	1
1.2	Renewables	1
3.1	Energy Demand	3
5.1	Chemical industry	5
13.1	Solid Waste and wastewater	13

in accordo alle istruzioni della Divisione Certificazione.

in accordance with the instructions of the Certification Division.

REVISIONE REVISION	DATA DATE	MOTIVAZIONI PER LA REVISIONE REASON FOR THE REVISION
0	30/06/2010	-
13	31/03/2017	Updated qualification as ITRP
14	20/09/2018	Update qualification as REG-EXP

Il Resp. CCPLS
Head of CCPLS

¹ Legend:

VAL: Validator
VER: Verifier
TEC: Technical Expert
TL: Team Leader
FIN-EXP: Financial Expert
DET: Determiner

CDM: Clean Development Mechanism
VCS: Verified Carbon Standard
GS: Gold Standard
SCS: Social Carbon Standard
JI: Joint Implementation

² Africa, Azerbaijan, India and Asia Pacific Countries, Japan, Middle East Countries, South America.

RINA Services S.p.A. è accreditato da UNFCCC, quale Entità Operativa Designata (DOE), per condurre la Validazione e la Verifica di Progetti CDM, da VCSA, per condurre la Validazione e la Verifica di Progetti VCS, da GS Foundation, per condurre la Validazione e la Verifica di Progetti GS, da Ecologica Institute per condurre la Validazione e la Verifica di rapporti SCS.

RINA Services S.p.A. is accredited by the UNFCCC, as Designated Operational Entity (DOE), to carry out Validation and Verification of CDM Projects, by the VCSA, to carry out Validation and Verification of VCS Projects, by the GS Foundation, to carry out Validation and Verification of GS Projects and by the Ecologica Institute, to carry out Validation and Verification of SCS Reports.

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CERTIFICATO DI QUALIFICA
QUALIFICATION CERTIFICATE

Si attesta che il sig./sig.ra:

Hui Feng LIU

We declare that Mr/Mrs/Ms:

è qualificato come¹:
is qualified as:

CDM -TEC, -VAL, -VER, -TL
ITRP, REG-EXP²

per le seguenti aree tecniche:
for the following technical areas:

1.1, 1.2, 8.1, 9.2, 13.1

AREE TECNICHE TECHNICAL AREAS	DESCRIZIONE DELL'AREA TECNICA TECHNICAL AREA DESCRIPTION	SCOPO SETTORIALE SECTORAL SCOPE
1.1	Thermal energy generation	1
1.2	Renewables	1
8.1	Mining and mineral processes	8
9.2	Iron, steel and ferro-alloy production	9
13.1	Solid waste and wastewater	13

in accordo alle istruzioni dell'unità Sostenibilità & Cambiamenti Climatici.
in accordance with the instructions of the Sustainability & Climate Change Unit.

REVISIONE REVISION	DATA DATE	MOTIVAZIONI PER LA REVISIONE REASON FOR THE REVISION
0	10/09/2010	-
11	31/03/2017	Updating qualification as ITRP
12	30/07/2018	Updating qualification as REG-EXP

Il Resp. CCPLS
Head of CCPLS

¹ Legend:

VAL: Validator
VER: Verifier
TEC: Technical Expert
TL: Team Leader
FIN-EXP: Financial Expert
DET: Determiner

CDM: Clean Development Mechanism
VCS: Verified Carbon Standard
GS: Gold Standard
SCS: Social/Carbon Standard
JI: Joint Implementation

² Asia / Central Asia and Pacific region

RINA Services S.p.A. è accreditato da UNFCCC, quale Entità Operativa Designata (DOE), per condurre la Validazione e la Verifica di Progetti CDM, da VCSA per condurre la Validazione e la Verifica di Progetti VCS, da GS Foundation, per condurre la Validazione e la Verifica di Progetti GS, da Ecologica Institute per condurre la Validazione e la Verifica di rapporti SCS

RINA Services S.p.A. is accredited by the UNFCCC, as Designated Operational Entity (DOE), to carry out Validation and Verification of CDM Projects, by the VCSA, to carry out Validation and Verification of VCS Projects, by the GS Foundation, to carry out Validation and Verification of GS Projects and by the Ecologica Institute, to carry out Validation and Verification of SCS Reports

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Appendix 3. Documents reviewed or referenced

No.	Author	Title	References to the document	Provider
1	Swiss Carbon Assets Ltd	CDM-PDD for project activity “Maesod Wastewater Treatment and Biogas Utilisation Project” in Thailand.	Version 03 of 20/03/2013	PP
2	Swiss Carbon Assets Ltd	Monitoring report for project activity “Maesod Wastewater Treatment and Biogas Utilisation Project” in Thailand.	Version 01 of 16/03/2018 and Version 02 of 12/09/2018	PP
3	Swiss Carbon Assets Ltd	Emission reduction calculations provided in the form of a spreadsheet, (MBG_3rd ER calculation_v1_13032018) and (MBG_3rd ER calculation_v.2.1_12092018.xlsx)	Version 01 submitted on 13/03/2018 and version 2.1 of 12/09/2018	PP
4	RINA	Validation report No.12-IQ-MD-56	Rev no 02 of 22/03/2013	Others
5	Epic Sustainability	Verification report No. ESSPL/CDM/019/2014	Version 01 of 17/02/2015	Others
6	CDM Executive Board	CDM project cycle procedure for project activities	Version 01.0 of 03/03/2017	Others
7	CDM Executive Board	CDM project standard for project activities	Version 01.0 of 03/03/2017	Others
8	CDM Executive Board	CDM validation and verification standard for project activities	Version 01.0 of 03/03/2017	Others
9	CDM Executive Board	CDM Executive Board: “AMS-III.H”, “Methane recovery in waste water treatment”. CDM Executive Board: “AMS-I.C”, “Thermal energy production with or without electricity”. CDM Executive Board: “AMS-I.D”, “Grid connected renewable electricity generation”.	version 16 of 26/11/2010 version 19 of 03/06/2011 version 17 of 03/06/2011	Others
10	RINA Services SpA:	Stakeholders/Endusers Interview sheet	dated 30/05/2018	RINA
11	Maesod Biogas Company Limited	COD in and out log sheets	From 01/07/2016 to 31/12/2017	PP
12	Maesod Biogas Company Limited	Fossil fuel consumption	For the year 2016 and 2017	PP
13	Maesod Biogas Company Limited	Starch production data	From 01/07/2016 to 31/12/2017	PP
14	CDM Executive Board	CDM Executive Board: F-CDM-MR	version 06.0 of 07/06/2017	-

15	CDM Executive Board	Guideline – Attachment “Instructions for filling out the monitoring report form”.	Version 06.0 of 07/06/2017	-
16	HACH	Portable data logging colorimeter instrument manual	-	PP
17	Endress Hauser +	Technical specifications of Thermal mass flow measuring system	-	PP
18	Gas Data GFM406	Technical specifications of portable gas analyser	-	PP
19	Proline promag	Technical specifications of electromagnetic flow measuring system	-	PP
20	Alia Group Inc	GM3: Thermal Mass flow meter (T815T08H801)	29/07/2015	PP
21	Endress Hauser &	GM1: Thermal Mass flow meter (D6090202000)	24/09/2015	PP
22	Endress Hauser &	GM2: Thermal Mass flow meter (A90A5702000)	24/09/2015	PP
23	Advance, Power tech center	FM1: Magnetic flow meter (D6016C20000)	16/10/2015	PP
24	PEA	Power meter (206501524)	14/10/2015 09/02/2017 09/12/2017	PP
25	Enviscience Company Ltd	Colorimeter (091290C275916)	31/10/2014 25/10/2017	PP
26	Central Bureau of weights and measures	E23308-0017	04/06/2014 04/07/2016	PP
27	Gas Data Ltd UT Precision Co Ltd	Portable methane analyser (11701)	03/09/2015 20/09/2016 06/04/2017	PP
28	Maesod Biogas Company Limited	Volume of waste water flow, biogas sent to boiler, biogas sent to engine and flare	For the period 01/07/2016 to 31/12/2017	PP
29	Provisional Electrical Authority	Joint meter reading	For the period from 07/2016 to 12/2017	PP
30	Maesod Biogas Company Limited	Invoices to PEA	For the period from 07/2016 to 12/2017	PP
31	PEA	Invoices from PEA	For the period from 07/2016 to 12/2017	PP
32	PEA	Calculation detail for VSPP revenue	For the period from 07/2016 to 12/2017	PP
33	Maesod Biogas Company Limited	Log books of fuel oil consumption	For the period from 07/2016 to 12/2017	PP
34	The Bangkok Petroleum Public company Ltd	Fuel purchase receipts	For the period from 07/2016 to 12/2017	PP

35	IPCC	Guidelines for National Greenhouse Gas Inventories, 2006		Others
36	DEDE	Ministry of Energy: Electric power in Thailand for the year 2011	2011	PP
37	Central Bureau of Weights and Measures	http://www.cbwmthai.org/Default.aspx	Last retrieved on 15/05/2017	PP
	Gas Data	http://www.gasdata.co.uk/the-company/accreditation/	Last retrieved on 15/05/2017	
	Endress + Hauser	https://www.th.endress.com/en/Endress-Hauser-group/endresshauser-at-a-glance/Thailand	Last retrieved on 15/05/2017	
	EnviScience Co.,Ltd. Under SPC group	http://spcc.spcgroup.co.th/index.php/en/	Last retrieved on 15/05/2017	
	Alia	http://www.alia-inc.com/en/index.asp	Last retrieved on 16/05/2017	
	Advantage Center Co Ltd	http://www.accl-calibration.com/images/downloaddoc/Laboratory-Capability-Pdf.pdf	Last retrieved on 12/09/2018	
38	Advance Power-Tech Center Co., Ltd.	Accreditation no. calibration 0254	Submitted on 15/05/2017	PP
39	Advantage Center Co Ltd	Over gear flow meter for HFO consumption, se.no 171050 and Resistance Thermometer for 0130570801109030002 (ID NO. AX26671) and 0130570801109030002 (ID NO. AX26670)	Dated 07/06/2018	PP
40	Endress and Huaser	Vortex flow meter - M9000920000	Dated 16/09/2017	PP
41	Apinun part Ltd	Purchase of Over gear meter	Dated 14/11/2017	PP
42	RINA Services SPA	Verification report 2.2 Aa	of 20/09/2017	Others
43	Maesod Biogas Company Limited	Temperature in, out and Oil records	For the period from 01/12/2017 to 31/12/2017	PP
44	Maesod Biogas Company Limited	Equipment stock record of fuel oil meter	For the period 2018	PP
45	Napat service (2004) Co Ltd	Payment receipt for installation of vortex flow meter	20/11/2017	PP
46	CDM Executive Board	CDM-PRCV-FORM	Version 02.0 of 31/10/2017	Others

Appendix 4. Clarification requests, corrective action requests and forward action requests

Table 1. CLs from this validation

CL ID	01	Section no.	D.2	Date:	14/06/2018
Description of CL					
It is checked that as per the previous verification report, temporary deviation was requested for the following parameters. $FC_{k,y}$ (Quantity of fossil fuel type (fuel oil)) k combusted in the thermal oil boiler) and $Q_{oil,y}$ (Quantity of the thermic fluid from boiler to the process plant). PP had confirmed to install the measuring instruments for both the parameters from 01/12/2017. However, during the site visit, it was checked that the meter for HFO consumption was not installed in the current monitoring period, which is a deviation and the same is also not transparent in the MR.					
Project participant response					Date: 12/09/2018
the meter for measuring the parameter $FC_{k,y}$ was not installed during the period mentioned for the temporary deviation since the meter was delivered to the starch plant after the shutdown period and PP could not stop the production process for installing causing the delay in installation.					
Therefore, the PP has applied for the temporary deviation for the parameter $FC_{k,y}$ during the period from 01/12/2017 – 30/04/2018. Regarding the measurement for this monitoring period, the fuel oil consumption was monitored directly from the tank using the dipstick for level measurement and tank's geometrics. For conservativeness, the data is used for calculation of the project emission from the thermal generation component for AMS-I.C.					
Documentation provided by project participant					
The calibration certificate by the manufacturer dated 16/09/2017					
DOE assessment					Date: 18/09/2018
For the parameter $FC_{k,y}$ (Quantity of fossil fuel type (fuel oil)) k combusted in the thermal oil boiler): As per the previous verification report and the MR /42/. $FC_{k,y}$ (Quantity of fossil fuel type (fuel oil)) k combusted in the thermal oil boiler) will be measured using flow meter, starting from 01/12/2017. However, during the site visit, it was checked that the fuel oil meter was only installed on 22/04/2018 as per the equipment stock record /44/ and doesn't cover the current monitoring period as confirmed in the previous MR. Thus, PP has requested temporary deviation for the period from 01/12/2017 to 30/04/2018.					
For the current monitoring period i.e. from 01/07/2016 to 31/12/2017 , $FC_{k,y}$ (Quantity of fossil fuel type (fuel oil)) k combusted in the thermal oil boiler) is measured using dipstick. It was checked that the amount of fuel used in the boiler was monitored directly from the tank using dipstick, which is further measured using the tape. The volume measured in m3 is then converted into tonnes using default density value 0.95. The measured values further checked with stock register and the fuel purchase receipts. The same was found to be appropriate and acceptable.					
RINA confirms that the above mentioned deviation comply with 232 (a) CDM project standard for project activities, version 01 /07/. Thus, the above mentioned deviation doesn't require PRC approval and is suitable for approval under the issuance track as per the appendix 1 of CDM PS , version 01 /07/					

Table 2. CARs from this validation

CAR ID	N/A	Section no.		Date:	DD/MM/YYYY
Description of CAR					
Project participant response					Date: DD/MM/YYYY
Documentation provided by project participant					

DOE assessment	Date: DD/MM/YYYY

Table 3. FARs from this validation

FAR ID	N/A	Section no.	Date: DD/MM/YYYY
Description of FAR			
Project participant response			Date: DD/MM/YYYY
Documentation provided by project participant			
DOE assessment			Date: DD/MM/YYYY

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Document information

Version	Date	Description
02.0	31 October 2017	Revision to align with the requirements in the “CDM validation and verification standard for project activities” (version 01.0).
01.0	23 March 2015	Initial publication.
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