



**Verified Carbon
Standard**

BIOMASS BASED COGENERATION PLANT AT GODREJ AGROVET LTD. CHINTAMPALLI



Document Prepared by Earthood Services Private Limited

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Summary:

Earthood Services Private Limited (hereafter referred to as ESPL) has been contracted by Infinite Solutions to conduct the verification of the project - "Biomass based Cogeneration Plant at Godrej Agrovet Ltd. Chintampalli", VCS ID 1315 with regard to the relevant requirements of VCS programme guidelines and standard (VCS standard version 4.2, & VCS program guide version 4.1). Relevant requirements of the UNFCCC for CDM project activities, as well as criteria for consistent project operations, monitoring and reporting have been applied for verification.

The monitoring period covered under this verification is from 01/04/2019 to 30/09/2021 (both days included).

The verification includes confirming the implementation of the monitoring plan of the registered VCS PD and MR (VCS ID 1315) and the application of the monitoring methodology as per AMS-I.C version 19: "Thermal energy production with or without electricity".

The project activity entails a total of 2.5 MW of biomass-based power generation, with roughly 60 tonnes of biomass per hour being used to generate 2.5 MW of power. Locally available biomass types such as Shredded Empty Bunch Fibre, palm fibre, and palm shell are being used for the project activity. The type of biomass used will be determined by the season. The project will reduce around 86,509 tCO₂e per year of anthropogenic greenhouse gas (GHG) emissions.

A risk-based approach has been followed to perform this verification. In the course of verification, 03 Corrective Action request (CARs), 00 Forward Action request (FARs), and 02 Clarification request (CLs) were raised and successfully closed.

The review of the project description, monitoring report and additional documents related to baseline and monitoring methodology; the subsequent background investigation, virtual interviews and

stakeholders have provided ESPL with sufficient evidence to validate the fulfillment of the stated criteria.

ESPL confirms that the project is implemented in accordance with the registered VCS PD/01/. The monitoring system is in place and the emission reductions are calculated without material misstatements. Our opinion relates to the project's GHG emissions, and the resulting GHG emission reductions reported and related to the valid and registered project baseline and monitoring and its associated documents. Based on the information seen and evaluated we confirm that the emission reductions from the project activity "Biomass based Cogeneration Plant at Godrej Agrovet Ltd. Chintampalli" in India during the period 01/04/2019 to 30/09/2021 (including both days) amount to 86,509 tons of CO₂e.

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1 INTRODUCTION

1.1 Objective

Earthood Services Private Limited (ESPL) has been contracted by Infinite Solutions, to undertake the verification of the renewable energy project titled “Biomass based Cogeneration Plant at Godrej Agrovet Ltd. Chintampalli” (VCS ID-1315). The verifiers have reviewed the GHG data collected to date for the monitoring period from 01/04/2019 to 30/09/2021 (both days included) covered in this verification. The objective of this verification is a thorough and independent assessment of registered project activities against the applicable VCS requirement by the VVB. The verification process shall determine whether the proposed project activity complies with the requirements of latest VCS guidelines, applicability conditions of the selected methodology, relevant host country regulations and guidance issued by the VCS Board.

1.2 Scope and Criteria

The scope of verification is to assess the claims and assumptions made in the VCS monitoring report (MR)/02/ against the VCS criteria, including but not limited to, VCS standard version 4.2/11/, applied methodology/07/ and other relevant rules and requirements established for VCS project activities. The Verification is not meant to provide any consulting towards the project participants. However, stated requests for clarification and/or correction actions may have provided inputs for improvement of the project design.

1.3 Level of Assurance

The level of assurance of the verification report falls under reasonable assurance engagements as selected by the VVB. Reasonable assurance is a high level of assurance regarding material misstatements, but not an absolute one.

Reasonable assurance includes the understanding that there is a remote likelihood that material misstatements will not be prevented or detected on a timely basis. To achieve reasonable assurance, the auditor needs to obtain sufficient appropriate audit evidence to reduce audit risk to an acceptably low level. This means that there is some uncertainty arising from the use of sampling, since it is possible that a material misstatement will be missed. The evidence used to achieve a reasonable level of assurance is specified in section 2.3 and 2.4 of this report.

1.4 Summary Description of the Project

The project activity involves installation and operations of a 2.5 MW greenfield renewable bio-mass based cogeneration plant in a new palm oil production plant located at Chintampalli village, West

Godavari, Andhra Pradesh, India.

The project activity involves the utilization of in-house generated renewable biomass fibre, shell and empty fruit bunches (EFB) in the palm fruit processing facility as a fuel for generating steam which will further be used for generating the electricity and catering the thermal energy requirement.

The project activity involves installation of 35 TPH Boiler & 2.5 MW Turbine Generator. The project activity is generating heat and electricity simultaneously. The commissioning date is 18/08/2012. The project activity results in reductions of greenhouse gas (GHG) emissions that are real, measurable, and verifiable and also plays beneficial role in the mitigation of climate change.

The project activity has geographical coordinates of latitude 17° 12' 36" N and longitude 80° 56' 34" E. Location of the project was verified through Google Map (<https://www.google.com/maps>) and found consistent with the data provided in the registered PD /01/. The project activity was considered fully commissioned on 18/08/2012. The same was verified against the registered VCS PD/01/ and commissioning certificates/09/.

The emission reductions from the project activity during the period 01/04/2019 to 30/09/2021 (including both days) amount to 86,509 tonnes of tCO_{2e} and the total net electricity generated is 12,934.60 MWh and 729.28 TJ energy from steam has been given to cater the in-house requirements during the current monitoring period.

The project activity is undergoing third verification and the implementation of project activity is also verified. Based on the assessment of the documents, the assessment team can confirm that the project activity is fully functional and implemented as described in the registered VCS PD/01/.

The emission reductions from the project activity during the period 01/04/2019 to 30/09/2021 (including both days) amount to 86,509 tCO_{2e} .

2 VERIFICATION PROCESS

The registered VCS project is undergoing third verification, the approach adopted to ensure the quality of emission reductions is described in the following sections.

2.1 Method and Criteria

The verification approach consists of two phases:

In the first phase, ESPL completed a strategic review and risk assessment of the project activities and processes in order to gain a full understanding of:

- Activities associated with all the sources contributing to the project emissions and emission reductions, including leakage if relevant.
- Protocols used to estimate or measure GHG emissions from these sources.
- Collection and handling of data.
- Controls on the collection and handling of data.
- Means of verifying reported data; and
- Compilation of the Monitoring Report.

At the end of this phase, ESPL produced a Verification Checklist which, based on the risk assessment of the parameters and data collection and handling processes for each of those parameters, describes the verification approach and the sampling plan.

In the second phase using the Verification checklist, ESPL verified the implementation of the monitoring plan and the data presented in the VCS MR/02/ for the period in question. This involved virtual interviews of project proponent representative's and a desk review of the Monitoring Report. This verification report describes the findings of this assessment.

2.2 Document Review

The verification is performed primarily as a document review of the documents submitted at various stages of assessments. The review is performed by assessment team using dedicated protocols. The assessment team cross checks the information provided in the documents (PDD/01/, MR/02/, validation and previous verification reports/21/) and information from sources other than those used, if available, and also conducts independent background investigations. Earthood conducted a desk review as under:

- a) A review of the data and information presented to verify their completeness.
- b) A review of the monitoring plan/01/, the monitoring methodology/07/ including applicable tool(s) and, where applicable, the applied standardized baseline, paying particular attention to the frequency of measurements, the quality of metering equipment including calibration requirements, and the quality assurance and quality control procedures.

- c) An evaluation of data management and the quality assurance and quality control system in the context of their influence on the generation and reporting of emission reductions.

2.3 Interviews

Due to the current situation with the global COVID-19 pandemic scenario, an on-site inspection has not been performed by the assessment team. However, the representatives of the PP were interviewed during the virtual audit conducted on 27/01/2022 i.e., personnel responsible for monitoring of the project activity, data collection and management, and QA/QC procedure. The details of the people interviewed are mentioned in the table below:

Interviewee	Organization	Topic covered	Team Member
Mr. Vikash Yadav	Manager- Infinite Solutions (consultant)	Project implementation, start date as per the VCS requirements. Electricity Generation Records Reliability & accuracy of readings considered for emission reduction calculations, Calibration procedure.	N. Premjit Singh Shreya Kunj
Ms. RaviKumar Kaki	Godrej Agrovet- Plant In-Charge	Consideration of monitoring period, monitoring methodology, project documentation and emission reduction calculations.	
Mr. Anshul Vyas	Analyst- Infinite Solutions (consultant)	Monitoring and measuring system, Collection of measurements Observations of established practices Data Verification of monitoring parameters. QA/QC procedures, data management, internal audits to maintain data quality & reliability, maintenance Practices.	

2.4 Site Inspections

As discussed in the above section, physical site inspection is not done for the current verification. Moreover, the VCS program does not explicitly mandate site visits as part of the validation and verification process during such unprecedented circumstances, only that VVBs must achieve a reasonable level of assurance on all validations and verifications (per section 4.1.2 of the VCS Standard, Version 4.2/11/). However, to achieve a reasonable level of assurance, the assessment team has followed the alternative means to substantiate the verification criteria as described in the below table:

Assessment Criteria	Means of verification/source Documents	Assessment opinion
Description of project activity	Commissioning certificates /9/ Technical specifications provided by EPC contractor for the project activity /15/ Previous VCS verification and validation report /21/. Virtual site visit conducted on 27/01/2022.	The information with reference to project capacity, technology, plant equipment's and commissioning dates as provided in section 1.1 of MR are found consistent with the documents.
Compliance of the project implementation with the registered project design document	Monthly Electricity generation data /17/ Logbook records for diesel consumption /06/ Logbook records for biomass consumption/06/ Geographical co-ordinates of project activity verified through Google Map/14/ Previous VCS verification and validation report /21/. Virtual site visit conducted on 27/01/2022.	Monthly Electricity generation data indicate the amount of electricity generated. Location of project is verified through Google Map and found consistent with registered VCS PD/01/. All the information's regarding the project implementation as discuss above are further verified through VCS PD/01/ and found consistent.
Compliance of the registered monitoring plan with applied methodologies and standardized baselines	Virtual site visit conducted on 27/01/2022. Monthly Electricity generation data/17/. Logbook records for diesel consumption/06/ Logbook records for biomass consumption/06/, Previous VCS verification and validation report /21/.	The organizational structure, responsibilities and competencies of the personnel confirmed through virtual interview. Frequency of monitoring of parameters listed under approved monitoring plan is verified through electricity generation data. The methods used for measuring, recording, storing, aggregating, and reporting the data on monitored parameters are verified though validation report and conversations with site personnel.
Compliance with the calibration frequency requirements for measuring instruments	Calibration certificates of instruments used for monitoring/04/	Calibration frequency and energy meter specifications (Sr. No, make accuracy class) is verified through calibration

		certificates.
Assessment of data and calculation of emission reductions or net removals	INFORMATION ON EMISSION FACTORS (For CDM projects in India) Electricity Grid/07/ Monthly Electricity generation data /17/. Logbook records for diesel consumption/06/ Logbook records for biomass consumption/06/ Previous VCS verification and validation report /21/. 2006 IPCC Guidelines for National Greenhouse Gas Inventories/22/	Monthly values of monitoring parameter used in ER calculation are verified through electricity generation data and cross verified with the meter records. Methods, formulae and emission factor for calculating baseline emissions have been followed are in accordance with the applied methodology and as described in the approved VCS validation report /21/.

It is noteworthy that no sampling plan for verification is applied as 100% data is verified for the current monitoring period. Most of the reference document referred by the assessment team (above table) are either issued by an external government agency or publicly available official data, hence is deemed authentic.

Based on the above assessment it can be concluded that the assessment team has verified sufficient appropriate audit evidence, to reduce audit risk to an acceptably low level as requisite to achieve reasonable level of assurance for the current verification.

2.5 Resolution of Findings

The objective of this step is to identify, discuss and conclude on the issues related to the monitoring, implementation and operations of the registered project activity that could impair the capacity of the registered project activity to achieve emission reductions or influence the monitoring and reporting of emission reductions. This is done based on the desk review and interaction with site personnel over phone. The verification team prepares and/or updates a verification protocol (internal document) that records the conformities and non-conformities, which may be of following types:

- CAR (Corrective Action Request) is raised if one of the following occurs:
 - Non-compliance with the monitoring plan, the methodology or the standardized baseline are found in monitoring and reporting and has not been sufficiently documented by the project participants, or if the evidence provided to prove conformity is insufficient.
 - Modifications to the implementation, operation and monitoring of the registered project activity has not been sufficiently documented by the project participant.
 - Mistakes have been made in applying assumptions, data or calculations of emission reductions that will impact the quantity of emission reductions.
- Issues identified in a FAR during validation to be verified during verification or previous verification(s) have not been resolved by the project participants. Clarification request (CL) is raised if information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met. All CARs and CLs raised by the ESPL during verification shall be resolved prior to submitting a request for issuance.
- FAR (Forward Action Request) is raised during verification if the monitoring and reporting require attention and/or adjustment for the next verification period. All the findings that are raised and communicated to project participant during the verification are included under Appendix 2. The section also includes the response, if provided, by the project participants and an assessment by the verification team if it was closed out or otherwise.

A total of 2 CLs and 3 CARs were raised and successfully closed for this verification.

2.5.1 Forward Action Requests

The project activity is undergoing third verification; there were no FARs raised during the previous verification.

2.6 Eligibility for Validation Activities

As project is already validated and this is third verification of the project and ESPL already holds accreditation for validation & verification of VCS project under applicable scope. Hence, this section not applicable.

3 VALIDATION FINDINGS

As project is already validated and this is the third verification of the project. Hence, this section is not applicable.

3.1 Participation under Other GHG Programs

The project activity is registered under VCS program only (VCS ID-1315).

The PP has submitted the declaration/13/ which states that the net GHG emission reductions generated by the project activity will not be used for compliance with any other emissions trading program or to meet binding limits on GHG emissions for the same monitoring period.

VVB raised CLO1 related to this which was closed successfully during verification. Hence, VVB confirms that PP is not participating in any other GHG mechanism during current monitoring period. Furthermore, VVB has checked the web site of other programs like UNFCCC, VERRA & REC Registry of India and confirms that the project is not listed under any other registry.

3.2 Methodology Deviations

There is no methodology deviation identified during the current monitoring period.

3.3 Project Description Deviations

No project description deviation identified during the current monitoring period.

3.4 Grouped Project

Not applicable. The project activity is not a grouped project.

4 VERIFICATION FINDINGS

4.1 Project Implementation Status

The project activity involves implementation of a total of 2.5 MW of biomass-based power generation. The project is a cogeneration unit and had commissioned one 35 TPH biomass-based boiler and a 2.5 MW turbine generator (TG). The generated steam and electricity are used to meet the captive demand of a greenfield palm oil production unit. Locally available biomass types such as shredded empty bunch fibre, palm fibre, and palm shell are being used for the project activity.

During the verification remote audit, it was concluded that the project is implemented as per the requirement of the registered PD/01/. During the current monitoring period, it was observed that no unforeseen incident/event evolved which can impact the operation of the project activity. The project undergone continuous operation and only scheduled maintenance is observed as per the manufactures specification which is acceptable to the assessment team/08/.

Project location is confirmed by the assessment team during the remote audit. Assessment team also checked with the GPS coordinates, the latitude and longitude of the project site with validation report and confirm that the details as mentioned in the MR are inline with registered PD/01/. The details are as below:

District	State	Latitude	Longitude
West Godavari	Andhra Pradesh	17° 12' 36" N	80° 56' 34" E

Assessment team also checked the technical details of the biomass-based cogeneration plant installed during remote audit and PD/01/ previous verification and validation report/21/.

The technical specifications of boiler and TG are given below:

Table 1: Specification of 35 TPH boiler

Sr. No.	Specification	Value	Unit
1	Type-Pulsating grate bi-drum air cooled boiler	-	-
2	Design steam generation capacity at MCR	35	TPH
3	Steam pressure at MCR	35	Kg/cm ² (g)
4	Steam temperature	350±10	°C
5	Make and Model - Thermax Ltd. BDPG-350	-	-
6	Fuel requirement: Fuel 1: 75% Palm Fiber + 25% palm shell Fuel 2: 70% palm fibre+ 30% empty bunches	250	TPD mixed Biomass
7	Efficiency of boiler (for fuel 1 and fuel 2)	73	%
8	Feed water temperature to economiser	105	°C

Table 2: Specification of 2.5 MW Turbine Generator

Sr. No.	Specification	Value	Unit
1	Type- multistage, impulse, nozzle governed back pressure	-	-
2	Design capacity	2.5	MW
3	Inlet steam pressure	33	kg/cm ²
4	Inlet steam temperature	350±10	°C
5	Specific steam consumption	13.9	kg/kWh
6	Make and Model - Triveni Turbine Limited	-	-
7	Outlet steam pressure at TG	4.5	kg/cm ²
8	"Electrical output at AC generator terminal	2500 kW (415 V, 50 Hz)	-
9	Load Factor	80	%

Since its commissioning, the project activity has been running constantly (with forced and planned shut down time). There was plant shutdown during the current monitoring period from December 2019 to January 2020 and from November 2020 to February 2021 for maintenance of the plant. The shutdowns do not affect the project implementation and applicability of the methodology. The verifier receives data of monthly operating hours of the boilers and turbines involved in the project activity. During the present monitoring period i.e., 01/04/2019 to 30/09/2021 (Both days included), the project is in normal operation status; there have been no emergencies happened to the monitoring system. During the monitoring period, no events, or situations occurred that could affect the methodology's applicability.

Assessment team checked the commissioning certificate and confirmed that Project Activity was commissioned on 18/08/2012 is correct/09/.

The assessment team confirmed that there is no proposed or actual change to the project design during this monitoring period. The project design as mentioned in the registered PD/01/ is implemented and thus the same is acceptable to the assessment team. All required monitoring equipment's and procedures as mentioned in the registered VCS PD/01/ are available and implemented in an appropriate manner/6/, /8/.

The organisational role and responsibility as mentioned in the registered PD/01/ is followed onsite. All the monitoring equipment was calibrated as per the specified interval in the registered PD. All the emergency preparedness as mentioned in the registered PD is followed onsite and no discrepancies were found regarding the same/8/.

The assessment team observed that the project is in line with the registered PD/01/, Validation report and previous verification report/21/ and approved methodology/07/ and thus no clarification/deviation is sought/. 03 CARs were raised and were successfully closed during the verification process. Please refer Appendix 2 for the same.

Assessment team confirms following during the verification site visit conducted on 27/01/2022.1. Start date of the project is 18/08/2012 which is the date of commissioning of the Project/09/.

2. Assessment team confirms that project has not received or sought any other form of environmental credit”. An undertaking letter has been submitted by PP for double counting with any other GHG program. PP also has given a written declaration that project has not claimed other form of GHG credit for the concerned monitoring/13/.

Further, assessment team confirms that project activity provided contribution in sustainable development to the host country/08/.

3. Assessment team confirms that this is the first crediting period under VCS and covers the activity from 18/08/2012 to 17/08/2022 (inclusive of both dates). Thus, VCS crediting period should be maximum of 10 years. After 10 years, the crediting period will be renewed twice considering project life of 25 years.

The GHG credits from 01/04/2019 TO 30/09/2021 will be claimed under VCS only. At any point of time during the crediting period, the project proponent will abide by the “Double Counting”/13/.

4. Assessment team checked and found that the Project proponent of the project activity is same as per the registered PD/01/. There is no change in details of the PP and the same is mentioned below:

Organization Name	Godrej Agrovet Limited
Contact person	Mr. MSMS Kumar
Title	Dy. General Manager – Production & Projects
Address	Ch. Pothepalli, Dwaraka, Tirumala Mandal, Andhra Pradesh
Telephone	+91-8829211128
Email	msms.kumar@godrejagrovet.com

The quantified emission reduction calculation for the monitoring period is correct and conservative/02/. Assessment team also compared actual VER with the estimated VER and found that the actual VER (86,509 tCO₂e) is 50.87% lower than the estimated emission reduction 176,074 tCO₂e for 914 operational days due to low PLF attained by the co-generation plant due to less requirement of process steam/08/.

The project activity contributes to the sustainable development by generating employments, direct & indirect business opportunities, covering essential health services, proportioning of schools with access to various facilities, and reducing the fossil fuel consumption & thus reducing GHG emissions/08/, /25/.

4.2 Safeguards

4.2.1 No Net Harm

VVB interviewed the PP during remote audit and PP confirmed that plant is operating as per the environmental stipulated norms/08/. The project activity promotes environmental and socio-economic well-being as it results in zero GHG emissions due to installation and operation of clean, renewable energy technology for electricity generation/01/, /02/.

Further the report on “Developmental Impacts and Sustainable Governance Aspects of Renewable Energy Projects” prepared by MNRE dated September 2013. This report clearly mentioned that biomass power project activity operations do not result in direct air pollution, noise pollution.

Thus, there are no significant impacts due to implementation of project activity on air, water, soil quality and ambience are envisaged due to the project activity/08/.

4.2.2 Local Stakeholder Consultation

The local stakeholder meeting was carried out for the project activity and the details of the same can be referred from the registered VCS PD/01/.

Ref. web link - <https://registry.verra.org/app/projectDetail/VCS/1315>

The stakeholders identified for the project were the usual occupants of villages around and the local communities, NGOs, governmental agencies, employees, contractors. Local population is considered to be a major stakeholder with respect to the project activity.

The PP also placed a grievance register onsite in order to ensure ongoing communication with relevant stakeholders where they can put down his/her complain and the same if found genuine will be addressed immediately. During the current monitoring period, no negative comments are received from the local stakeholders. Thus, no mitigation measures have been applied/18/.

4.3 AFOLU-Specific Safeguards

This is a non AFOLU project, hence this section not applicable.

4.4 Accuracy of GHG Emission Reduction and Removal Calculations

The calculation of the emission reductions is found to be correct. The details of the reported and the verified values for all parameters are listed in section 4.5 of this report.

The PP has provided the complete set of data for all the monitored parameters in the ER spreadsheet/03/. This data has been verified as described in section 4.5 below. The formulae & method used to calculate the baseline emissions, project emissions and leakage are appropriate and in line with the approved methodology AMS-I.C version 19.0.

The following parameters are monitored ex-ante:

Parameter	Parameter	Value	Assessment team remark
1.	$\eta_{BL,cogen/trigen}$	85%	Default value as per SSC methodology guidance is used here.

2.	EF _{grid,OM,y}	0.9677	CEA “CO2 baseline database for the Indian Power Sector, Version 09, May 2014 Tool to calculate the emission factor for an electricity system
3.	EF _{grid,BM,y}	0.9509	CEA “CO2 baseline database for the Indian Power Sector, Version 09, May 2014
4.	EF _{grid,CM,y}	0.9593	CEA “CO ₂ baseline database for the Indian Power Sector, Version 09, May 2014

The PP has calculated the grid emission factor as per the combined margin approach described in the ‘Tool to calculate the emission factor for an electricity system’, version 06.0. The grid emission factor has been calculated as the weighted average of OM & BM; and has been fixed ex-ante for the entire crediting period.

The OM and BM have been obtained from a publicly available source i.e., “CO2 Baseline Database for Indian Power sector”, version 09/23/ published by Central Electricity Authority, Ministry of Power, and Government of India. The OM has been determined as the average of the previous 3 years values obtained from the CEA database/23/. The value of BM has been identified directly from the CEA database. The combined margin emission factor was arrived at by applying weights of 50% for OM and 50% for BM, as specified in the tool. The OM and BM have been calculated to be 0.9677 tCO₂/MWh and 0.9509 tCO₂/MWh respectively. Applying the weights, the grid emission factor has been calculated to be 0.9593 t CO₂/MWh.

As per CER excel spreadsheet/03/ submitted by the PP, the net emission reductions for the current monitoring period were verified as 86,509 tCO₂e for the current monitoring period.

The assessment team able to confirm that the GHG emission reductions and removals have been quantified correctly in accordance with the project description/01/ and applied methodology/07/.

Emission reductions calculations:

Baseline emission:

The PP has calculated the baseline emissions by using the formula

$$BE_{\text{cogen/trigen,CO}_2,y} = \left[\frac{EG_{PJ,\text{thermal},y} + EG_{PJ,\text{electrical},y} \times 3.6}{\eta_{BL,\text{cogen/trigen}}} \right] \times EF_{FF,\text{CO}_2}$$

Where,

BE _{cogen/trigen,CO₂,y}	Baseline emissions from electricity and thermal energy displaced by the project activity during the year y (tCO ₂ e)
EG _{PJ,electrical,y}	Amount of electricity supplied by the project activity during the year y; (GWh)
3.6	Conversion factor (TJ/GWh)
EG _{PJ,thermal,y}	Net quantity of thermal energy supplied by the project activity during the year y (TJ)
EF _{FF,CO₂}	CO ₂ emission factor of the fossil fuel that would have been used in the baseline cogeneration plant obtained from reliable local or national data if available, alternatively, IPCC default emission factors can be used (t CO ₂ /TJ)

$\eta_{BL,cogen/trigen}$	Total annual average efficiency of the cogeneration or trigeneration plant using fossil fuel
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Now,

$$\eta_{BL,Cogen} = 85\% \text{ (Default efficiency of new coal fired boiler)}$$

$EF_{FF,CO_2} = EF_{CO_2,i,y} = 95.8 \text{ tCO}_2/\text{TJ}$ (CO₂ emission factor of the fossil fuel (Coal) - as per Central Electricity Authority (CEA) CO₂ Baseline Database for the Indian Power Sector; Ver. 15)

$$\text{Thus, } BE_{cogen,CO_2,y} = 87,441 \text{ tCO}_2 \text{ (Rounded Down Value)}$$

Project Emission:

During project operation, there are three sources (Coal, Diesel and Electricity from grid) of project emission.

Since, there is no coal consumption during the current monitoring period, thus $PE_{fossil\ fuel,y}$ due to coal is zero. The project is generating steam by using DG and importing electricity from the grid

Thus, project emission due to diesel consumption is given by:

$$\begin{aligned} PE_{diesel,y} &= \text{Quantity of diesel consumed (Lit)} \times \text{Density of diesel} \times \text{NCV of diesel} \times \text{EF of diesel} \\ &= 120,902 \text{ (L)} \times 0.83 \text{ (kg/L)} \times 9975 \text{ (kJ/kg)} \times 72.6 \text{ (tCO}_2/\text{TJ)} / 10^9 \\ &= 72.7 \text{ tCO}_2\text{e (Rounded Up Value)} \end{aligned}$$

Project emission due to grid electricity consumption is given by:

$$\begin{aligned} PE_{grid,import,y} &= (EC_{PJ,j,y}) \text{ Total Electricity Import (MWh)} \times (1+\text{TDL}) \times \text{GEF (tCO}_2/\text{MWh)} \\ &= 745.898 \times (1+20\%) \times 0.9593 \\ &= 859 \text{ tCO}_2\text{e (Rounded Up Value)} \end{aligned}$$

Hence, Total Project Emission:

$$\begin{aligned} PE_y &= PE_{fossil\ fuel,y} + PE_{diesel,y} + PE_{grid,import,y} \\ &= 0 + 72.67 + 858.65 \\ &= 931.32 \text{ tCO}_2\text{e (Rounded up Value)} \end{aligned}$$

Leakage Emission:

Since the biomass is sourced from the plant itself, thus leakage is zero

The total Emission Reduction is given as:

$$\begin{aligned} ER_y &= BE_y - PE_y - LE_y \\ ER_y &= 87,442 - 931.32 - 0 \end{aligned}$$

= 86,509 tCO_{2e}

As per ER calculation excel spreadsheet/06/ submitted by the PP, the net emission reductions for the current monitoring period were verified as 86,509 tCO_{2e} for the current monitoring period.

The assessment team was able to confirm that the GHG emission reductions and removals have been quantified correctly in accordance with the project description and applied methodology.

4.5 Quality of Evidence to Determine GHG Emission Reductions and Removals

The monitoring of the project activity is found to be in accordance with the monitoring methodology described in AMS-I.C, Version 19/07/. The monitoring mechanism is effective and reliable. During the remote audit, personnel involved at various levels of the operation of the project activity have been interviewed to confirm that the plant personnel are conscious of the importance of the monitoring activities. The verification of the plant records and latest photographs are also substantiating consistency in recording and reporting of monitored data.

The meters comply with appropriate quality standards applicable for the used technology. The accuracy class of the meters installed for the project activity was verified through the registered VCS PD/01/, MR /02/, and calibration certificates/04/ are found to be consistent.

The supporting records of biomass and diesel consumption /06/ and generation data for the entire monitoring period were checked and found to be sufficient to enable verification of emission reductions.

The following parameter has been verified for current monitoring period:

Parameter 1: CO₂ emission factor of fossil fuels: coal and diesel (EF_{CO₂,i,y})

Means of verification	Criteria/Requirements	Assessment/Observation
	Measuring /Reading /Recording frequency	The database is an official publication of the Government of India for the purpose of CDM baselines. Thus, the value is taken as country specific emission factor of coal and diesel.
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The reporting frequency is in line with the monitoring plan as outlined in the registered PD/01/ and monitoring methodology/07/.
	Monitoring equipment	The data is taken from Indian National Communication to UNFCCC and is available from authentic source.

	Is accuracy of the monitoring equipment as stated in the monitoring plan? If the monitoring plan does not specify the accuracy of the monitoring equipment, does the accuracy of the monitoring equipment comply with local/national standards, or as per the manufacturer's specification?	Not Applicable
	Calibration frequency /interval:	Not Applicable
	Is the calibration interval in line with the monitoring plan and/or methodology? If the monitoring plan does not specify the frequency of calibration, is the selected frequency in accordance with the local/national standards, pending until the findings are closed or as per the manufacturer's specifications?	Not Applicable
	Is the calibration of measuring equipment carried out by an accredited person or institution?	Not Applicable
	Is(are) calibration(s) valid for the whole reporting period?	Not Applicable

	How were the values in the monitoring report verified?	Coal = 95.80 Diesel: 72.6 The value of the parameter is sourced from CEA database version 16/24/published by the Government of India for the purpose of CDM baselines. Thus, the value is taken as country specific emission factor of coal and diesel.
	If applicable, has the reported data been cross-checked with other available data?	The database is an official publication of the Government of India for the purpose of CDM baselines. Thus, the value is taken as country specific emission factor of coal and diesel.
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Not Applicable
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	Not Applicable
Findings	No findings	
Conclusion	The parameter has been monitored appropriately in accordance with the registered monitoring plan/01/ and applied methodology/07/. The monitored data was recorded consistently as per the approved frequency in monitoring plan/01/. Since 100% data has been monitored and verified, the verification team can ascertain that the values used for calculation of emission reduction are free from material errors. Implementation of the project is as per the registered monitoring plan/01/.	

Parameter 2: Net quantity of thermal energy supplied by project (EG_{PJ,thermal,y})

Means of verification	Criteria/Requirements	Assessment/Observation				
	Measuring /Reading /Recording frequency	Monitoring Frequency: Continuous measurement for steam flow and pressure Recording Frequency: Monthly calculation for enthalpy				
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The reporting frequency is in line with the monitoring plan as outlined in the registered PD/01/ and monitoring methodology/07/.				
	Monitoring equipment	Steam flow transmitter and pressure gauges are the equipment used to monitor the parameter. The calibration frequency for the equipment's is once in three years. Details are given below. Steam flow meter/Transmitter: ± 0.5 of range <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="2" style="background-color: #d3d3d3;">Boiler main steam flow transmitter</th> </tr> </thead> <tbody> <tr> <td>Serial No</td> <td style="text-align: center;">3K721703064136</td> </tr> </tbody> </table> Pressure gauges/Transmitter: ± 0.1 of range	Boiler main steam flow transmitter		Serial No	3K721703064136
	Boiler main steam flow transmitter					
Serial No	3K721703064136					
Is accuracy of the monitoring equipment as stated in the monitoring plan? If the monitoring plan does not specify the accuracy of the monitoring equipment, does the accuracy of the monitoring equipment comply with local/national	The accuracy of the monitoring equipment used to measure the input values are: Steam flow meter: $\pm 0.5\%$ Pressure gauges: $\pm 1\%$					

	standards, or as per the manufacturer's specification?																																																					
	Calibration frequency /interval:	Calibration frequency of the steam temperature and steam mass flow meters is once in three years.																																																				
	Is the calibration interval in line with the monitoring plan and/or methodology? If the monitoring plan does not specify the frequency of calibration, is the selected frequency in accordance with the local/national standards, Pending until the findings are closed or as per the manufacturer's specifications?	Yes. Calibration details: <table border="1" data-bbox="649 714 1429 1669"> <thead> <tr> <th colspan="6" data-bbox="649 714 1429 777">Steam Flow Meter</th> </tr> <tr> <th data-bbox="649 777 779 903">Equipm ent Name</th> <th colspan="5" data-bbox="779 777 1429 903">Flow Transmitter</th> </tr> </thead> <tbody> <tr> <td data-bbox="649 903 779 1039">Serial No</td> <td data-bbox="779 903 909 1039">91M21 8339</td> <td data-bbox="909 903 1039 1039">3K7217 030641 36</td> <td data-bbox="1039 903 1169 1039">3K7217 030641 36</td> <td data-bbox="1169 903 1299 1039">3K7217 030641 36</td> <td data-bbox="1299 903 1429 1039">3K7217 030641 36</td> </tr> <tr> <td data-bbox="649 1039 779 1134">Make</td> <td data-bbox="779 1039 909 1134">Yokoga wa</td> <td data-bbox="909 1039 1039 1134">ABB</td> <td data-bbox="1039 1039 1169 1134">ABB</td> <td data-bbox="1169 1039 1299 1134">ABB</td> <td data-bbox="1299 1039 1429 1134">ABB</td> </tr> <tr> <td data-bbox="649 1134 779 1270">Accurac y</td> <td data-bbox="779 1134 909 1270">+/- 0.1 of Range</td> <td data-bbox="909 1134 1039 1270">+/- 0.1 of Range</td> <td data-bbox="1039 1134 1169 1270">+/- 0.1 of Range</td> <td data-bbox="1169 1134 1299 1270">+/- 0.1 of Range</td> <td data-bbox="1299 1134 1429 1270">+/- 0.1 of Range</td> </tr> <tr> <td data-bbox="649 1270 779 1438">Type</td> <td data-bbox="779 1270 909 1438">Smart with HART Protocol</td> <td data-bbox="909 1270 1039 1438">Smart with HART Protocol</td> <td data-bbox="1039 1270 1169 1438">Smart with HART Protocol</td> <td data-bbox="1169 1270 1299 1438">Smart with HART Protocol</td> <td data-bbox="1299 1270 1429 1438">Smart with HART Protocol</td> </tr> <tr> <td data-bbox="649 1438 779 1564">Date of Calibrati on</td> <td data-bbox="779 1438 909 1564">10/03/ 2017</td> <td data-bbox="909 1438 1039 1564">26/01/ 2018</td> <td data-bbox="1039 1438 1169 1564">14/02/ 2019</td> <td data-bbox="1169 1438 1299 1564">11/12/ 2019</td> <td data-bbox="1299 1438 1429 1564">12/12/ 2020</td> </tr> <tr> <td data-bbox="649 1564 779 1669">Due Date</td> <td data-bbox="779 1564 909 1669">9/03/2 018</td> <td data-bbox="909 1564 1039 1669">25/01/ 2019</td> <td data-bbox="1039 1564 1169 1669">13/02/ 2020</td> <td data-bbox="1169 1564 1299 1669">10/12/ 2020</td> <td data-bbox="1299 1564 1429 1669">11/12/ 2021</td> </tr> </tbody> </table>					Steam Flow Meter						Equipm ent Name	Flow Transmitter					Serial No	91M21 8339	3K7217 030641 36	3K7217 030641 36	3K7217 030641 36	3K7217 030641 36	Make	Yokoga wa	ABB	ABB	ABB	ABB	Accurac y	+/- 0.1 of Range	+/- 0.1 of Range	+/- 0.1 of Range	+/- 0.1 of Range	+/- 0.1 of Range	Type	Smart with HART Protocol	Smart with HART Protocol	Smart with HART Protocol	Smart with HART Protocol	Smart with HART Protocol	Date of Calibrati on	10/03/ 2017	26/01/ 2018	14/02/ 2019	11/12/ 2019	12/12/ 2020	Due Date	9/03/2 018	25/01/ 2019	13/02/ 2020	10/12/ 2020	11/12/ 2021
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	Is the calibration of measuring equipment carried out by an	Yes, the calibration is conducted by state utility which is NABL Accredited entity.																																																				

	accredited person or institution?	
Is(are) calibration(s) valid for the whole reporting period?	Yes, the calibration is valid for entire monitoring period.	
How were the values in the monitoring report verified?	Monthly values of $EG_{PJ,thermal,y}$ for entire monitoring period is reported in the monitoring report/02/, and in the ER calculation sheet/03/. The monthly values were verified from the credit notes issued by state utility and found to be consistent. Value of this parameter for the current monitoring period was verified as 729.28 TJ	
If applicable, has the reported data been cross-checked with other available data?	The monthly reported values of $EG_{PJ,thermal,y}$ were further cross checked with the monthly invoices raised by the PP /17/ to state utility and found to be consistent.	
Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data ensure correct transfer of data and reporting of emission reductions management. QA/QC processes are in place.	
In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by	Not Applicable	

	Appendix 1 to the CDM Project Standard?	
Findings	No findings.	
Conclusion	The parameter has been monitored appropriately in accordance with the registered monitoring plan/01/ and applied methodology/07/. The monitored data was recorded consistently as per the approved frequency in monitoring plan/01/. Since 100% data has been monitored and verified, the verification team can ascertain that the values used for calculation of emission reduction are free from material errors. Implementation of the project is as per the registered monitoring plan/01/.	

Parameter 3: Net electricity supplied by the project activity (EG_{PJ,electrical,y})

Means of verification	Criteria/Requirements	Assessment/Observation				
	Measuring /Reading /Recording frequency	Continuous monitoring with monthly recording Monitoring: Electricity meter in control room will measure the net quantity of electricity supplied by the project activity Cogen plant. Responsibility: Turbine operator would be responsible for monitoring and checks for regular calibration of electricity meter and Shift In-charge will be responsible for calibration of the electricity meters.				
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The reporting frequency is in line with the monitoring plan as outlined in the registered PD/01/ and monitoring methodology/07/.				
	Monitoring equipment	Electric meter Accuracy class: 0.2s <table border="1" data-bbox="649 1711 1429 1837"> <thead> <tr> <th>Equipment Name</th> <th>Gross Gen Meter</th> </tr> </thead> <tbody> <tr> <td>S. No.</td> <td>ME-120/1802</td> </tr> </tbody> </table>		Equipment Name	Gross Gen Meter	S. No.
Equipment Name	Gross Gen Meter					
S. No.	ME-120/1802					

	<p>Is accuracy of the monitoring equipment as stated in the monitoring plan? If the monitoring plan does not specify the accuracy of the monitoring equipment, does the accuracy of the monitoring equipment comply with local/national standards, or as per the manufacturer's specification?</p>	<p>The accuracy class of the meter is 0.2s.</p>																					
	<p>Calibration frequency /interval:</p>	<p>The calibration frequency for the electric meter is once in 3 years.</p>																					
	<p>Is the calibration interval in line with the monitoring plan and/or methodology? If the monitoring plan does not specify the frequency of calibration, is the selected frequency in accordance with the local/national standards, Pending until the findings are closed or as per the</p>	<p>Yes. Calibration Details</p> <table border="1" data-bbox="649 1182 1432 1688"> <thead> <tr> <th colspan="3" data-bbox="649 1182 1432 1234">(Generation) kWh Meter</th> </tr> <tr> <th data-bbox="649 1234 875 1323">Equipment Name</th> <th data-bbox="875 1234 1050 1323">Import Meter</th> <th data-bbox="1050 1234 1432 1323">kWh Meter</th> </tr> </thead> <tbody> <tr> <td data-bbox="649 1323 875 1375">S.No</td> <td data-bbox="875 1323 1050 1375">17266672</td> <td data-bbox="1050 1323 1432 1375">ME-120/1802</td> </tr> <tr> <td data-bbox="649 1375 875 1428">Make</td> <td data-bbox="875 1375 1050 1428">L&T</td> <td data-bbox="1050 1375 1432 1428">SLICONICXS</td> </tr> <tr> <td data-bbox="649 1428 875 1480">Accuracy Class</td> <td data-bbox="875 1428 1050 1480">0.2s</td> <td data-bbox="1050 1428 1432 1480">0.2s</td> </tr> <tr> <td data-bbox="649 1480 875 1602">Date of Calibration/Date of Installation</td> <td data-bbox="875 1480 1050 1602">27/12/2020</td> <td data-bbox="1050 1480 1432 1602">27/12/2020</td> </tr> <tr> <td data-bbox="649 1602 875 1688">Due Date</td> <td data-bbox="875 1602 1050 1688">26/12/2023</td> <td data-bbox="1050 1602 1432 1688">26/12/2023</td> </tr> </tbody> </table>	(Generation) kWh Meter			Equipment Name	Import Meter	kWh Meter	S.No	17266672	ME-120/1802	Make	L&T	SLICONICXS	Accuracy Class	0.2s	0.2s	Date of Calibration/Date of Installation	27/12/2020	27/12/2020	Due Date	26/12/2023	26/12/2023
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Date of Calibration/Date of Installation	27/12/2020	27/12/2020																					
Due Date	26/12/2023	26/12/2023																					

	manufacturer's specifications?	
Is the calibration of measuring equipment carried out by an accredited person or institution?	Yes, the calibration is conducted by state utility which is NABL Accredited entity.	
Is(are) calibration(s) valid for the whole reporting period?	Yes, the calibration is valid for entire monitoring period.	
How were the values in the monitoring report verified?	Monthly values of $EG_{PJ,electrical,y}$ for entire monitoring period is reported in the monitoring report/02/, and in the ER calculation sheet/03/. The monthly values were verified from the credit notes issued by state utility and found to be consistent. Value of this parameter for the current monitoring period was verified as 12,930 MWh	
If applicable, has the reported data been cross-checked with other available data?	The monthly reported values of $EG_{PJ,electrical,y}$ were further cross checked with the monthly invoices raised by the PP /17/ to state utility and found to be consistent.	
Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data ensure correct transfer of data and reporting of emission reductions management. QA/QC processes are in place.	
In case project participants have temporarily not monitored the parameter, has either i) a deviation been	Not Applicable	

	approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	
Findings	No findings.	
Conclusion	The parameter has been monitored appropriately in accordance with the registered monitoring plan/01/ and applied methodology/07/. The monitored data was recorded consistently as per the approved frequency in monitoring plan/01/. Since 100% data has been monitored and verified, the verification team can ascertain that the values used for calculation of emission reduction are free from material errors. Implementation of the project is as per the registered monitoring plan/01/.	

Parameter 4: Quantity of biomass residues of type k consumed in the boiler in year y ($Q_{k, \text{biomass}}$)

Means of verification	Criteria/Requirements	Assessment/Observation
	Measuring /Reading /Recording frequency	Monitoring: Net Quantity of biomass type k consumed in the boiler in year y, will be measured using weigh bridge. Responsibility: Stores in-charge will be responsible for maintaining the records of the palm fiber consumed in project. Stock in charge will maintain a palm fiber inventory recording the opening and closing balance.
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The measuring and reporting frequency is in line with the monitoring plan as outlined in the registered PD/01/ and monitoring methodology/07/.
	Monitoring equipment	Weighbridge Accuracy class: $\pm 1\%$
	Is accuracy of the monitoring equipment as stated in the monitoring plan? If the monitoring plan does not specify the accuracy of the	Yes. The accuracy class of the weighbridge is: $\pm 1\%$

	monitoring equipment, does the accuracy of the monitoring equipment comply with local/national standards, or as per the manufacturer's specification?																								
Calibration frequency /interval:	The weighbridge is calibrated annually /04/.																								
Is the calibration interval in line with the monitoring plan and/or methodology? If the monitoring plan does not specify the frequency of calibration, is the selected frequency in accordance with the local/national standards, pending until the findings are closed or as per the manufacturer's specifications?	Yes. Calibration Details: <table border="1" data-bbox="678 705 1414 1209"> <thead> <tr> <th colspan="4">Weighbridge</th> </tr> <tr> <th>Equipment Name</th> <th>2019</th> <th>2020</th> <th>2021</th> </tr> </thead> <tbody> <tr> <td>Make</td> <td>METLER</td> <td>METLER</td> <td>METLER</td> </tr> <tr> <td>Accuracy Class</td> <td>5 kg</td> <td>5 kg</td> <td>5 kg</td> </tr> <tr> <td>Date of Calibration</td> <td>08/11/2019</td> <td>03/11/2020</td> <td>26/06/2021</td> </tr> <tr> <td>Due Date</td> <td>07/11/2020</td> <td>02/11/2021</td> <td>25/06/2022</td> </tr> </tbody> </table>	Weighbridge				Equipment Name	2019	2020	2021	Make	METLER	METLER	METLER	Accuracy Class	5 kg	5 kg	5 kg	Date of Calibration	08/11/2019	03/11/2020	26/06/2021	Due Date	07/11/2020	02/11/2021	25/06/2022
Weighbridge																									
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Make	METLER	METLER	METLER																						
Accuracy Class	5 kg	5 kg	5 kg																						
Date of Calibration	08/11/2019	03/11/2020	26/06/2021																						
Due Date	07/11/2020	02/11/2021	25/06/2022																						
Is the calibration of measuring equipment carried out by an accredited person or institution?	Yes																								
Is(are) calibration(s) valid for the whole reporting period?	Yes.																								
How were the values in the monitoring report verified?	The verified value of total biomass consumption are: April-2019 to Dec-2019: 23,691.86 tonnes Jan-2020 to Dec-2020: 22,814.78 tonnes Jan-2021 to Sept-2021: 20,704.69 tonnes Total - 67,211.34 tonnes																								

		The measurement of each biomass truck is recorded in the daily logbooks. The logbook entries /06/ were checked to verify the figure and found acceptable.
	If applicable, has the reported data been cross-checked with other available data?	Cross checked the measurements using mass/energy balance.
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data ensure correct transfer of data and reporting of emission reductions management. QA/QC processes are in place.
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	Not Applicable
Findings	No findings.	
Conclusion	The parameter has been monitored appropriately in accordance with the registered monitoring plan/01/ and applied methodology/07/. The monitored data was recorded consistently as per the approved frequency in monitoring plan/01/. Since 100% data has been monitored and verified, the verification team can ascertain that the values used for calculation of emission reduction are free from material errors. Implementation of the project is as per the registered monitoring plan/01/.	

Parameter 5: Net Calorific Value of biomass type k ($NCV_{k,biomass}$)

Means of verification	Criteria/Requirements	Assessment/Observation
	Measuring /Reading /Recording frequency	<p>Monitoring: The NCV of palm fibre will be measured once in the first year of the crediting period (3 samples in each quarter) by third party laboratory/ inhouse as per national/ international standard.</p> <p>Recording frequency: once in the first year of the crediting period</p> <p>Responsibility: Chief Chemist will be responsible for getting the lab analysis for the NCV.</p>
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The reporting frequency is in line with the monitoring plan as outlined in the registered PD/01/ and monitoring methodology/07/.
	Monitoring equipment	Calorimetry - third party lab analysis
	Is accuracy of the monitoring equipment as stated in the monitoring plan? If the monitoring plan does not specify the accuracy of the monitoring equipment, does the accuracy of the monitoring equipment comply with local/national standards, or as per the manufacturer's specification?	No Calibration Required.
	Calibration frequency /interval:	No Calibration Required.
	Is the calibration interval in line with the monitoring plan and/or methodology? If the monitoring plan does not specify the frequency of calibration, is the selected frequency in accordance with the local/national standards, pending until	No Calibration Required.

	the findings are closed or as per the manufacturer's specifications?		
	Is the calibration of measuring equipment carried out by an accredited person or institution?	Not Applicable	
	Is(are) calibration(s) valid for the whole reporting period?	Not Applicable	
	How were the values in the monitoring report verified?	The third party NCV reports /16/ were reviewed to verify the reported values and were found to be consistent $NCV_{k,biomass} = 2,809 \text{ kCal/Kg}$	
	If applicable, has the reported data been cross-checked with other available data?	Average value obtained using third party analysis using three samples for each measurement every quarter in the first year of operation and will be compared with any public literature if available and IPCC default values. If the measurement results differ significantly from previous measurements or other relevant data sources, additional measurements will be conducted.	
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes	
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	Not Applicable	

Findings	No findings
Conclusion	The parameter has been monitored appropriately in accordance with the registered monitoring plan/01/ and applied methodology/07/. The monitored data was recorded consistently as per the approved frequency in monitoring plan/01/. Since 100% data has been monitored and verified, the verification team can ascertain that the values used for calculation of emission reduction are free from material errors. Implementation of the project is as per the registered monitoring plan/01/.

Parameter 6: Extracted steam Enthalpy = 2783.09 KJ/Kg

Means of verification	Criteria/Requirements	Assessment/Observation			
	Measuring /Reading /Recording frequency	<p>Calculation Procedure: Enthalpy of steam from turbine is calculated from steam tables based on the corresponding values of quantity of steam and pressure.</p> <p>Recording Frequency: Daily</p> <p>Monitoring Frequency: Continuous monitoring with monthly recording</p> <p>Responsibility: Boiler operator would be responsible for monitoring and checks for regular calibration of temperature meter and pressure gauge. The Shift In-charge will be responsible for calibration of the temperature meter and pressure gauge.</p>			
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The reporting frequency is in line with the monitoring plan as outlined in the registered PD/01/ and monitoring methodology/07/.			
Monitoring equipment	<p>Pressure of steam will be measured by pressure gauge and temperature by temperature transducer</p> <p>Turbine extraction Steam Pressure transmitter</p> <table border="1" data-bbox="581 1541 899 1598"> <tr> <td>Serial No</td> <td>91M149324</td> </tr> </table> <p>Turbine extraction steam temperature transmitter</p> <table border="1" data-bbox="581 1675 878 1732"> <tr> <td>Serial No</td> <td>08143614</td> </tr> </table>	Serial No	91M149324	Serial No	08143614
Serial No	91M149324				
Serial No	08143614				

	Is accuracy of the monitoring equipment as stated in the monitoring plan? If the monitoring plan does not specify the accuracy of the monitoring equipment, does the accuracy of the monitoring equipment comply with local/national standards, or as per the manufacturer's specification?	The calibration frequency is once annually.																																																						
	Calibration frequency /interval:	<table border="1"> <thead> <tr> <th colspan="7" data-bbox="565 1024 980 1073">Calibration details</th> </tr> <tr> <th colspan="7" data-bbox="565 1073 980 1121">Exhaust Steam Pressure</th> </tr> <tr> <th data-bbox="565 1121 699 1251">Equipment Name</th> <th colspan="6" data-bbox="699 1121 1427 1251">Pressure Transmitter</th> </tr> </thead> <tbody> <tr> <th data-bbox="565 1251 699 1362">S. No</th> <td data-bbox="699 1251 841 1362">91M149324</td> <td data-bbox="841 1251 980 1362">91M149324</td> <td data-bbox="980 1251 1122 1362">91M149324</td> <td data-bbox="1122 1251 1263 1362">91M149324</td> <td data-bbox="1263 1251 1404 1362">91M149324</td> <td data-bbox="1404 1251 1427 1362">91M149324</td> </tr> <tr> <th data-bbox="565 1362 699 1453">Make</th> <td data-bbox="699 1362 841 1453">Yokogawa</td> <td data-bbox="841 1362 980 1453">Yokogawa</td> <td data-bbox="980 1362 1122 1453">Yokogawa</td> <td data-bbox="1122 1362 1263 1453">Yokogawa</td> <td data-bbox="1263 1362 1404 1453">Yokogawa</td> <td data-bbox="1404 1362 1427 1453">Yokogawa</td> </tr> <tr> <th data-bbox="565 1453 699 1564">Accuracy</th> <td data-bbox="699 1453 841 1564">+/- 0.1 of Range</td> <td data-bbox="841 1453 980 1564">+/- 0.1 of Range</td> <td data-bbox="980 1453 1122 1564">+/- 0.1 of Range</td> <td data-bbox="1122 1453 1263 1564">+/- 0.1 of Range</td> <td data-bbox="1263 1453 1404 1564">+/- 0.1 of Range</td> <td data-bbox="1404 1453 1427 1564">+/- 0.1 of Range</td> </tr> <tr> <th data-bbox="565 1564 699 1736">Type</th> <td data-bbox="699 1564 841 1736">Smart with HART Protocol</td> <td data-bbox="841 1564 980 1736">Smart with HART Protocol</td> <td data-bbox="980 1564 1122 1736">Smart with HART Protocol</td> <td data-bbox="1122 1564 1263 1736">Smart with HART Protocol</td> <td data-bbox="1263 1564 1404 1736">Smart with HART Protocol</td> <td data-bbox="1404 1564 1427 1736">Smart with HART Protocol</td> </tr> </tbody> </table>						Calibration details							Exhaust Steam Pressure							Equipment Name	Pressure Transmitter						S. No	91M149324	91M149324	91M149324	91M149324	91M149324	91M149324	Make	Yokogawa	Yokogawa	Yokogawa	Yokogawa	Yokogawa	Yokogawa	Accuracy	+/- 0.1 of Range	+/- 0.1 of Range	+/- 0.1 of Range	+/- 0.1 of Range	+/- 0.1 of Range	+/- 0.1 of Range	Type	Smart with HART Protocol	Smart with HART Protocol	Smart with HART Protocol	Smart with HART Protocol	Smart with HART Protocol	Smart with HART Protocol
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Type	Smart with HART Protocol	Smart with HART Protocol	Smart with HART Protocol	Smart with HART Protocol	Smart with HART Protocol	Smart with HART Protocol																																																		

		Date of Calibration	14/02/2017	27/01/2018	13/02/2019	11/12/2019	16/12/2020
		Due Date	13/02/2018	26/01/2019	12/02/2020	10/12/2020	15/12/2021
		Steam Temperature					
		Equipment Name	Temperature Transmitter				
		S. No	08143614	08143614	08143614	08143614	08143614
		Make	Rosemount	Rosemount	Rosemount	Rosemount	Rosemount
		Accuracy	+/- 0.1 of Range	+/- 0.1 of Range	+/- 0.1 of Range	+/- 0.1 of Range	+/- 0.1 of Range
		Type	Smart with HART Protocol	Smart with HART Protocol	Smart with HART Protocol	Smart with HART Protocol	Smart with HART Protocol
		Date of Calibration	14/02/2017	24/01/2018	14/02/2019	11/12/2019	11/12/2020
		Due Date	13/02/2018	23/01/2019	13/02/2020	10/12/2020	10/12/2021
	Is the calibration interval in line with the monitoring plan and/or methodology? If the monitoring plan does not specify the frequency of	Yes					

	calibration, is the selected frequency in accordance with the local/national standards, pending until the findings are closed or as per the manufacturer's specifications?	
	Is the calibration of measuring equipment carried out by an accredited person or institution?	Yes, the calibration is conducted by state utility which is NABL Accredited entity.
	Is(are) calibration(s) valid for the whole reporting period?	Yes
	How were the values in the monitoring report verified?	Extracted steam Enthalpy = 2,783.09 KJ/Kg
	If applicable, has the reported data been cross-checked with other available data?	Yes
	Does the data management ensure correct transfer of data and reporting of emission reductions and	Yes

	are necessary QA/QC processes in place?	
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	Not Applicable
Findings	No findings	
Conclusion	The parameter has been monitored appropriately in accordance with the registered monitoring plan/01/ and applied methodology/07/. The monitored data was recorded consistently as per the approved frequency in monitoring plan/01/. Since 100% data has been monitored and verified, the verification team can ascertain that the values used for calculation of emission reduction are free from material errors. Implementation of the project is as per the registered monitoring plan/01/.	

Parameter 7: Pressure of the steam at the turbine outlet = 2.83 kg/cm²

Means of verification	Criteria/Requirements	Assessment/Observation
	Measuring /Reading /Recording frequency	Monitoring: Pressure gauge will measure the pressure of the steam at the turbine outlet Recording Frequency: Hourly Responsibility: Turbine operator would be responsible for monitoring and checks for regular calibration of pressure gauge and Shift In-charge will be responsible for calibration of the pressure gauge.

	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The reporting frequency is in line with the monitoring plan as outlined in the registered PD/01/ and monitoring methodology/07/.				
	Monitoring equipment	Turbine extraction Steam Pressure transmitter <table border="1" data-bbox="581 638 948 688"> <tr> <td data-bbox="581 638 727 688">Serial No</td> <td data-bbox="727 638 948 688">91M149324</td> </tr> </table>	Serial No	91M149324		
Serial No	91M149324					
	Is accuracy of the monitoring equipment as stated in the monitoring plan? If the monitoring plan does not specify the accuracy of the monitoring equipment, does the accuracy of the monitoring equipment comply with local/national standards, or as per the manufacturer's specification?	The value of the parameter is measured using pressure gauge of accuracy class +/-1%				
	Calibration frequency /interval:	The calibration of the equipment will be carried out annually. For the current monitoring period it is calibrated as per the monitoring plan in the VCS PD/01/.				
	Is the calibration interval in line with the monitoring plan and/or	Calibration details <table border="1" data-bbox="581 1717 1403 1894"> <tr> <td colspan="2" data-bbox="581 1717 984 1768">Exhaust Steam Pressure</td> </tr> <tr> <td data-bbox="581 1768 701 1894">Equipment Name</td> <td data-bbox="701 1768 1403 1894">Pressure Transmitter</td> </tr> </table>	Exhaust Steam Pressure		Equipment Name	Pressure Transmitter
Exhaust Steam Pressure						
Equipment Name	Pressure Transmitter					

	methodology? If the monitoring plan does not specify the frequency of calibration, is the selected frequency in accordance with the local/national standards, pending until the findings are closed or as per the manufacturer's specifications?	S. No	91M149324	91M149324	91M149324	91M149324	91M149324
		Make	Yokogawa	Yokogawa	Yokogawa	Yokogawa	Yokogawa
		Accuracy	+/- 0.1 of Range	+/- 0.1 of Range	+/- 0.1 of Range	+/- 0.1 of Range	+/- 0.1 of Range
		Type	Smart with HART Protocol	Smart with HART Protocol	Smart with HART Protocol	Smart with HART Protocol	Smart with HART Protocol
		Date of Calibration	14/02/2017	27/01/2018	13/02/2019	11/12/2019	16/12/2020
		Due Date	13/02/2018	26/01/2019	12/02/2020	10/12/2020	15/12/2021
	Is the calibration of measuring equipment carried out by an accredited person or institution?	Yes, the calibration is conducted by state utility which is NABL Accredited entity.					
	Is(are) calibration(s) valid for the whole reporting period?	Yes					
	How were the values in the monitoring report verified?	Pressure gauge will measure the pressure of the steam at the turbine outlet					
	If applicable, has the reported data been cross-checked with	The reported data has been cross-checked with the invoices issued to the PP/17/.					

	other available data?	
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Not Applicable.
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	Not Applicable
Findings	No findings	
Conclusion	The parameter has been monitored appropriately in accordance with the registered monitoring plan/01/ and applied methodology/07/. The monitored data was recorded consistently as per the approved frequency in monitoring plan/01/. Since 100% data has been monitored and verified, the verification team can ascertain that the values used for calculation of emission reduction are free from material errors. Implementation of the project is as per the registered monitoring plan/01/.	

Parameter 8: Quantity of fossil fuel combusted in the project in year y ($FC_{i,j,y}$)

Means of verification	Criteria/Requirements	Assessment/Observation
	Measuring /Reading /Recording frequency	<p>Monitoring: Type and quantity of fossil fuel combusted in the project activity will be measured using electronic weigh bridge (or recorded in challans provided by the supplier and handed over to the plant people by the truck driver).</p> <p>Monitoring Frequency: Continuous measurement with monthly recording/compilation</p> <p>Responsibility: plant head with Officer (stores) would be responsible for monitoring and checks for regular calibration of weigh bridge</p>
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The reporting frequency is in line with the monitoring plan as outlined in the registered PD/01/ and monitoring methodology/07/.
	Monitoring equipment	Measured using weigh bridge for coal and level gauge for diesel
	Is accuracy of the monitoring equipment as stated in the monitoring plan? If the monitoring plan does not specify the accuracy of the monitoring equipment, does the accuracy of the monitoring equipment comply with local/national standards, or as per the manufacturer's specification?	Weigh bridge for coal and level gauge for diesel Accuracy class: $\pm 1\%$
	Calibration frequency /interval:	The calibration frequency is once in a year.
	Is the calibration interval in line with the monitoring plan and/or methodology? If the monitoring plan does	Yes

	not specify the frequency of calibration, is the selected frequency in accordance with the local/national standards, pending until the findings are closed or as per the manufacturer's specifications?		
	Is the calibration of measuring equipment carried out by an accredited person or institution?	Yes, the calibration is conducted by state utility which is NABL Accredited entity.	
	Is(are) calibration(s) valid for the whole reporting period?	Yes	
	How were the values in the monitoring report verified?	The consistency of metered fuel consumption quantities will be crosschecked by an annual energy balance that is based on purchased quantities and stock changes.	
	If applicable, has the reported data been cross-checked with other available data?	The consistency of metered fuel consumption quantities will be cross-checked by an annual energy balance that is based on purchased quantities and stock changes. Coal = 0, Diesel = 120,902 Lit	
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Not applicable	
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been	Not Applicable	

	approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	
Findings	No findings	
Conclusion	The parameter has been monitored appropriately in accordance with the registered monitoring plan/01/ and applied methodology/07/. The monitored data was recorded consistently as per the approved frequency in monitoring plan/01/. Since 100% data has been monitored and verified, the verification team can ascertain that the values used for calculation of emission reduction are free from material errors. Implementation of the project is as per the registered monitoring plan/01/.	

Parameter 9: Net Calorific Value of fossil fuels (NCV_{fossil fuels})

Since no fossil fuel was used thus the value for the parameter is considered zero.

Means of verification	Criteria/Requirements	Assessment/Observation
	Measuring /Reading /Recording frequency	Monitoring: The NCV of fossil fuel will be measured once in the first year of the crediting period (3 samples in each quarter) by third party laboratory/ inhouse as per national/ international standard. Recording frequency: once in the first year of the crediting period Responsibility: Chief Chemist will be responsible for getting the lab analysis for the NCV.
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The reporting frequency is in line with the monitoring plan as outlined in the registered PD/01/ and monitoring methodology/07/.
	Monitoring equipment	Calorimetry - third party lab analysis
	Is accuracy of the monitoring equipment as stated in the monitoring plan? If the monitoring plan does not specify the accuracy of the	No Calibration Required.

	monitoring equipment, does the accuracy of the monitoring equipment comply with local/national standards, or as per the manufacturer's specification?		
	Calibration frequency /interval:	No Calibration Required.	
	Is the calibration interval in line with the monitoring plan and/or methodology? If the monitoring plan does not specify the frequency of calibration, is the selected frequency in accordance with the local/national standards, pending until the findings are closed or as per the manufacturer's specifications?	No Calibration Required.	
	Is the calibration of measuring equipment carried out by an accredited person or institution?	Not Applicable	
	Is(are) calibration(s) valid for the whole reporting period?	Not Applicable	
	How were the values in the monitoring report verified?	The third party NCV reports /16/ were reviewed to verify the reported values and were found to be consistent $NCV_{k,biomass} = 0 \text{ kCal/Kg}$	
	If applicable, has the reported data been cross-checked with other available data?	Not Applicable	
	Does the data management ensure correct transfer of data and reporting of emission reductions and are	Yes	

	necessary QA/QC processes in place?		
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	Not Applicable	
Findings	No findings		
Conclusion	The parameter has been monitored appropriately in accordance with the registered monitoring plan/01/ and applied methodology/07/. The monitored data was recorded consistently as per the approved frequency in monitoring plan/01/. Since 100% data has been monitored and verified, the verification team can ascertain that the values used for calculation of emission reduction are free from material errors. Implementation of the project is as per the registered monitoring plan/01/.		

Parameter 10: Electricity taken from grid for the cogeneration plant startup/ emergency operations. (EC_{Pj,j,y})

Means of verification	Criteria/Requirements	Assessment/Observation
	Measuring /Reading /Recording frequency	Monitoring: Electricity meter in control room Monitoring frequency: Continuous monitoring with monthly recording Responsibility: Turbine operator would be responsible for monitoring and checks for regular calibration of electricity meter and Shift In-charge will be responsible for calibration of the electricity meters.
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring	Yes. The reporting frequency is in line with the monitoring plan as outlined in the registered PD/01/ and monitoring methodology/07/.

	methodology? (Yes / No)															
	Monitoring equipment	Electric meter Accuracy class: 0.2s														
	Is accuracy of the monitoring equipment as stated in the monitoring plan? If the monitoring plan does not specify the accuracy of the monitoring equipment, does the accuracy of the monitoring equipment comply with local/national standards, or as per the manufacturer's specification?	The accuracy class of the meter is 0.2s.														
	Calibration frequency /interval:	The calibration frequency for the electric meter is once in 3 years. <table border="1" data-bbox="649 1260 1429 1606"> <thead> <tr> <th colspan="2">Import Meter Details</th> </tr> <tr> <th>Equipment Name</th> <th>Import Meter</th> </tr> </thead> <tbody> <tr> <td>Serial No</td> <td>17266672</td> </tr> <tr> <td>Make</td> <td>L&T</td> </tr> <tr> <td>Accuracy Class</td> <td>0.2s</td> </tr> <tr> <td>Date of Calibration</td> <td>27-Dec-20</td> </tr> <tr> <td>Due Date</td> <td>26-Dec-23</td> </tr> </tbody> </table>	Import Meter Details		Equipment Name	Import Meter	Serial No	17266672	Make	L&T	Accuracy Class	0.2s	Date of Calibration	27-Dec-20	Due Date	26-Dec-23
	Import Meter Details															
Equipment Name	Import Meter															
Serial No	17266672															
Make	L&T															
Accuracy Class	0.2s															
Date of Calibration	27-Dec-20															
Due Date	26-Dec-23															
Is the calibration interval in line with the monitoring plan and/or methodology? If the monitoring	Not applicable															

	<p>plan does not specify the frequency of calibration, is the selected frequency in accordance with the local/national standards, Pending until the findings are closed or as per the manufacturer's specifications?</p>		
	<p>Is the calibration of measuring equipment carried out by an accredited person or institution?</p>	<p>The Electric meters are under the control of state utility and PP has no control over it.</p>	
	<p>Is(are) calibration(s) valid for the whole reporting period?</p>	<p>Yes, the calibration is valid for entire monitoring period.</p>	
	<p>How were the values in the monitoring report verified?</p>	<p>Monthly values of $EC_{PJ,j,y}$ for entire monitoring period is reported in the monitoring report/02/, and in the ER calculation sheet/03/. The monthly values were verified from the credit notes issued by state utility and found to be consistent.</p> <p>Value of this parameter for the current monitoring period was verified as 745.898 MWh</p>	
	<p>If applicable, has the reported data been cross-checked with other available data?</p>	<p>The monthly reported values of $EC_{PJ,j,y}$ were further cross checked with the monthly invoices raised by the PP /07/ to state utility and found to be consistent.</p>	
	<p>Does the data management ensure correct transfer of data</p>	<p>Yes, the data ensure correct transfer of data and reporting of emission reductions management. QA/QC processes are in place.</p>	

	and reporting of emission reductions and are necessary QA/QC processes in place?		
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	Not Applicable	
Findings	No findings.		
Conclusion	The parameter has been monitored appropriately in accordance with the registered monitoring plan/01/ and applied methodology/07/. The monitored data was recorded consistently as per the approved frequency in monitoring plan/01/. Since 100% data has been monitored and verified, the verification team can ascertain that the values used for calculation of emission reduction are free from material errors. Implementation of the project is as per the registered monitoring plan/01/.		

4.6 Non-Permanence Risk Analysis

Not Applicable for the project activity

5 VERIFICATION CONCLUSION

Earthood Services Private Limited (ESPL), contracted by Infinite Solutions, to perform the independent verification of the emission reductions for the VCS project activity reference number 1315 “Biomass based Cogeneration Plant at Godrej Agrovet Ltd. Chintampalli” in India for the monitoring period 01/04/2019 to 30/09/2021 (inclusive both days) reported in the Monitoring Report Version 04/02/ dated 17/06/2022.

It is our responsibility to express an independent verification statement on the reported GHG emission reductions from the project activity.

ESPL commenced the verification on the basis of the baseline and monitoring methodology “AMS-I.C, Version 19.0”, the monitoring plan contained in the registered VCS PD/01/ and VCS guidelines version 4.1/12/, Monitoring Report Version 04/02/ dated 17/06/2022 as per the process described under Section 2 of this report.

Earthood’s verification approach is based on the understanding of the risks associated with reporting of GHG emission data and the controls in place to mitigate these. Earthood planned and performed the verification by obtaining evidence and other information and explanations that Earthood considered necessary to give reasonable assurance that reported GHG emission reductions are fairly stated.

It is to be noted here that as per the estimated emission reduction from the project activity for the current monitoring period is 176,074 tCO₂e, whereas actual emission reductions achieved are 86,509 tCO₂e, which is approximately – 50.87% lower than the estimated emission reduction 176,074 tCO₂e for 914 operational days due to low PLF attained by the co-generation plant due to less requirement of process steam/8/. The co-generation plant operation depends upon various factors, one of them is process requirement and solely operates on process plant need basis. Also, during the current monitoring period global pandemic COVID-19 came out as a major hurdle for stopping the operation. Hence during the current monitoring period requirement of process steam was less.

In our opinion the GHG emissions reductions reported for the project activity for the period 01/04/2019 to 30/09/2021 are fairly stated in the Monitoring Report Version 03/02/ dated 04/04/2022. The GHG emission reductions were calculated correctly on the basis of the approved baseline and monitoring methodology “AMS-I.C, Version 19.0” and the VCS standard version 4.2/11/.

Verification period: 01/04/2019 to 30/09/2021 (inclusive of both days).

Verified GHG emission reductions and removals in the above verification period:

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
2019	29,443	120	0	29,324
2020	29,822	485	0	29,338
2021	28,176	327	0	27,849
Total	87,442	932	0	86,509

Approved by



Dr. Kaviraj Singh

Managing Director

Earthood Services Privated Limited

Date: 06-October -2022

Place: Gurugram, Haryana

APPENDIX 1: DOCUMENT REFERENCE

S.No	Title of Document	Version	Date
1	Registered PD	04	23/09/2014
2	VCS Monitoring Report	04	17/06/2022
3	ER spreadsheet (corresponding to the final monitoring report)	03	04/04/2022
4	Certificates of calibration for energy meters and weighbridges (01/04/2019 to 30/09/2021)	-	-
5	Biomass Purchase Records	-	-
6	Plant Records/Logbooks/DCS record for the duration of monitoring period (01/04/2019 to 30/09/2021)	-	-
7	AMS I.C.: Thermal energy production with or without electricity	19	-
8	Remote Audit through Skype video call/Telephonic discussions	-	27/01/2022
9	Commissioning certificate	-	18/08/2012
10	VCS webpage for the project, https://registry.verra.org/app/projectDetail/VCS/1315	-	Last accessed on 25/04/2022
11	VCS Standard	4.2	-
12	VCS Program Guide	4.1	-
13	Letter of declaration dated from PP regarding not having created or sought any other form of environmental credit for the same period and double counting	-	29/01/2022
14	Google Earth desktop/Mobile application	-	Last accessed on 25/04/2022
15	Technical specifications by technology supplier		
16	NCV Reports (01/04/2019 to 30/09/2021)	-	
17	JMR & Invoices (01/04/2019 to 30/09/2021)	-	
18	Copies of the grievance registers maintained at sites	-	
19	ERPA signed for sale of credits from the project activity		
20	Fuel Analysis reports (01/04/2019 to 30/09/2021)	-	-
21	Validation Report	03	23/09/2014
	Previous Verification Report	02	13/04/2020
22	2006 IPCC Guidelines for National Greenhouse Gas Inventories	-	-
23	CO2 Baseline Database for Indian Power sector	09	
24	CEA Database	16	-
25	Project SDG Contributions Report	-	12/03/2021

APPENDIX 2: FINDINGS OVERVIEW

Table 1. Remaining FAR from validation and/or previous verification

FAR ID	NA	Section no.	NA	Date :DD/MM/YYYY
Description of FAR				
No FAR from validation or verification				
Project participant response				Date :DD/MM/YYYY
NA				
Documentation provided by project participant				
NA				
DOE assessment				Date: DD/MM/YYYY
NA				

Table 2. CL from this verification

CL ID	01	Section no.	-	Date : 27/12/2021
Description of CL				
PP is requested to submit the following documents: <ol style="list-style-type: none"> 1. PP's declaration for not involvement under other GHG Programs/Credits. 2. Calibration certificates of all the measuring equipment used. 3. Invoices for net electricity supplied by the project activity. 4. Plant logbook data for the monitoring period. 5. Invoice for diesel consumption during the MP. 6. Scanned copy of grievance register 				
Project participant response				Date : 28/02/2022
PP is hereby submitting the below mentioned documents along with this submission: - <ol style="list-style-type: none"> 1. Undertaking no double accounting declaration 2. Calibration certificates of all the measuring equipment used energy meters. 3. Invoices for net electricity supplied by the project activity. 4. Plant logbook (Boiler, Turbine, Diesel, Electrical) data for the monitoring period. 5. Invoices for diesel consumption by the project activity during the MP. 6. Grievance Register for stakeholder consultation 7. Supporting documents to substantiate the value of monitored parameters. 				
Documentation provided by project participant				
<ol style="list-style-type: none"> 1. Undertaking no double accounting declaration 2. Calibration certificates of all the measuring equipment used energy meters. 3. Invoices for net electricity supplied by the project activity. 4. Plant logbook (Boiler, Turbine, Diesel, Electrical) data for the monitoring period. 5. Invoices for diesel consumption by the project activity during the MP. 6. Grievance Register for stakeholder consultation 7. Supporting documents to substantiate the value of monitored parameters. 				
DOE assessment				Date: 03/03/2022
PP has submitted all the evidence as requested. Also, in addition they have provided the supporting documents to cross verify the monitored parameters. Therefore, from the documents submitted it is evident and confirm that the values mentioned in the monitoring report v3.0 and the ER sheet v3.0 are found to be appropriate and correct. Also, submitted grievance register and the supporting documents for the monitored parameters are checked and found OK. Thus, CL01 is closed.				

CL ID	02	Section no.	4.4 of MR	Date : 27/12/2021
Description of CL				
As per ER sheet v1, in sheet “Electricity” and “Energy” the values are zero for few months during the MP. PP is requested to clarify why the values are zero.				
Project participant response				Date : 28/02/2022
Due to the shortage of biomass, the plant has to be closed for 2 to 4 months in a year, under which O&M work is completed in the plant. During this period, generation is reported to be 0. The same was described by client during the remote site visit.				
Documentation provided by project participant				
MR v2.0 ER v2.0				
DOE assessment				Date: 03/03/2022
The clarification provided by the PP for the zero value of electricity and energy consumption for few months during the monitoring period is cross verified with the evidence provided by the PP and found to be acceptable in VVB’s opinion. Thus, CL02 is closed.				

Table 1. CAR from this verification

CAR ID	01	Section no.	4.5	Date : 27/12/2021
Description of CAR				
Under section 4.2 “Data and Parameters Monitored” of the MR v1, The monitored value is not mentioned for the parameter $NCV_{fossil\ fuels}$. PP is requested update the same.				
Project participant response				Date : 28/02/2022
PP has revised the section 4.2 “Data and Parameters to be monitored” of the revised MR and made consistent in line with ER sheet. Hence, Revised MR version 2.0.				
Documentation provided by project participant				
MR v2.0 ER v2.0				
DOE assessment				Date: 03/03/2022
Under section 4.2 of the latest monitoring report v2.0, the PP has updated the monitored value of the parameter $NCV_{fossil\ fuels}$ and the value is found consistent with the ER sheet v2.0 and the evidence shared by the PP. Thus, CAR01 is closed.				

CAR ID	02	Section no.	4.4	Date : 27/12/2021
Description of CAR				
Under section 5.2 of the monitoring report v1, the value of $PE_{grid\ import,y}$ and the total Project Emission PE_y is inconsistent with the ER sheet provided. Correction is requested.				
Project participant response				Date : 28/02/2022

PP has corrected the typing error under section 5.2 of the monitoring report and now the value of $PE_{grid\ import,y}$ and the total Project Emission PE_y is made consistent with the ER sheet provided.	
Documentation provided by project participant	
MR v2.0 ER v2.0	
DOE assessment	Date: 03/03/2022
Under section 5.2 of the latest monitoring report v2.0, the PP has updated the value of $PE_{grid\ import,y}$ and the total Project Emission PE_y . The updated values are consistent with the ER sheet v2.0 provided by the PP. Thus, CAR02 is closed.	

CAR ID	03	Section no.	4.4	Date : 27/12/2021
Description of CAR				
As per the ER Sheet v1, in sheet "Project Emission", the value of project emission (C) and the total project emission is inconsistent with the MR v01. Correction is requested.				
Project participant response				Date : 28/02/2022
PP has corrected the typing error and made consistent the value of project emission (C) and the total project emission as per the ER Sheet v2.				
Documentation provided by project participant				
MR v2.0 ER v2.0				
DOE assessment				Date: 03/03/2022
As per the ER sheet v2.0, the value of Project Emission (C) and the total project emission is now consistent with the project emission mentioned under section 5.2 of the latest MR version2.0. Thus, CAR03 is closed.				

Table 2. FAR from this verification

FAR ID	NA	Section No.	NA	Date : DD/MM/YYYY
Description of FAR				
No FAR was raised during the current verification.				
Project participant response				Date : DD/MM/YYYY
NA				
Documentation provided by project participant				
NA				
DOE assessment				Date: DD/MM/YYYY
NA				

APPENDIX 3: ABBREVIATIONS

Abbreviations	Full texts
BM	Build Margin
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reduction(s)
CEA	Central Electricity Authority
CL	Clarification request
CM	Combined Margin
CMS	Central Monitoring system
CO ₂	Carbon dioxide
CO ₂ e	Carbon dioxide equivalent
DNA	Designated National Authority
DOE	Designated Operational Entity
DR	Document Review
EF	Emission Factor
EIA	Environmental Impact Assessment
ER	Emission Reductions
FAR	Forward Action Request
GHG	Greenhouse gas(es)
GWP	Global Warming potential
PP	Project Participant

APPENDIX 4: COMPETENCE STATEMENT

Competence Statement			
Name	N Premjit Singh		
Education	B.Tech in Mechanical Engineering M.Tech in Energy Technology		
Experience	9+ Years		
Field	Climate Change, Energy		
Approved Roles			
Team Leader	YES		
Validator	YES		
Verifier	YES		
Methodology Expert	AMS I.D		
Local expert	YES		
Financial Expert	NO		
Technical Reviewer	NO		
TA Expert (X.X)	YES (TA 1.2)		
Reviewed by	Deepika Mahala (Quality Manager)	Date	19/08/2021
Approved by	Ashok Gautam (Technical Manager)	Date	25/08/2021

Competence Statement			
Name	Shifali Guleria		
Country	India		
Education	M.Sc. (Climate Science & Policy), TERI University		
Experience	6 Years +		
Field	Climate Change		
Approved Roles			
Team Leader	YES		
Validator	YES		
Verifier	YES		
Methodology Expert	AMS.I.A., AMS.I.C., AMS.I.D., AMS.I.F., AMS.II.D., AMS.II.G., AMS.II.J., AMS.III. AV., ACM0002, ACM0012		
Local expert	YES (India)		
Financial Expert	NO		
Technical Reviewer	YES		
TA Expert	YES (TA 1.2, TA 3.1)		
Reviewed by	Abhishek Mahawar	Abhishek Mahawar	Abhishek Mahawar
Approved by	Ashok Gautam	Ashok Gautam	Ashok Gautam

Competence Statement			
Name	Shreya Kunj		
Education	M. Tech (Energy Management) B. Tech (Electrical Engineering)		
Experience	02/2021-Present		
Field	Climate Change & Environment		
Approved Roles			
Team Leader	NO		
Validator	NO		
Verifier	NO		
Methodology Expert	NO		
Local expert	NO		
Financial Expert	NO		
Technical Reviewer	NO		
TA Expert (X.X)	NO		
Trainee	YES		
Reviewed by	Deepika Mahala (Quality Manager)	Date	19/08/2021
Approved by	Ashok Kumar Gautam (Technical Manager)	Date	25/08/2021

Competence Statement			
Name	Mihika Saxena		
Education	B. Tech Civil Engineering		
Experience	NA		
Field	Environmental Engineering		
Approved Roles			
Team Leader	NO		
Validator	NO		
Verifier	NO		
Methodology Expert	NO		
Local expert	NO		
Financial Expert	NO		
Technical Reviewer	NO		
TA Expert (X.X)	NO		
Trainee	YES		
Reviewed by	Deepika Mahala	Date	09/03/2022
Approved by	Ashok Gautam	Date	09/03/2022