Verification Report

UCR ID: 227

Title	**Biomass based thermal energy generation project by M/S Ginni International Ltd.**
Project Proponent	**M/s Ginni International Ltd**
Project Location	**RIICO Industrial Area, Delhi Jaipur Highway NH 8 Neemrana, District-Alwar, Rajasthan-301705.** **27°58'33.6"N 76°23'35.6"E**
Verified By	**Mr. Shardul Amin,** **Lead Verifier,** **Email: audit@thenaturelink.in,** **Contact: +91- 7574804497,** **Naturelink Solutions Pvt. Ltd.**
Date	**28/04/2023**

COVER PAGE Project Verification Report Form (VR)	
BASIC INFORMATION	
Name of approved UCR Project Verifier / Reference No.	Naturelink Solutions Pvt. Ltd
Type of Accreditation	☐ CDM Accreditation ☐ ISO 14065 Accreditation ☒ UCR Approved Verifier
Approved UCR Scopes and GHG Sectoral scopes for Project Verification	Sectoral Scope: 01 Energy Industries
Validity of UCR approval of Verifier	May - 2022 onwards
Completion date of this VR	28/04/2023
Title of the project activity	Biomass based thermal energy generation project by M/S Ginni International Ltd.
Project reference no. (as provided by UCR Program)	227
Name of Entity requesting verification service	Creduce Technologies Private Limited (Aggregator)
Contact details of the representative of the Entity, requesting verification service (Focal Point assigned for all communications)	Shailendra Singh Rao Mobile: +91-9016850742 Address: 2-O-13,14 Housing Board Colony, Banswara, Rajasthan - 327001, India.
Country where project is located	India
Applied methodologies	AMS-I.C. (Title: "Thermal energy production with or without electricity", Version 22)
Project Verification Criteria:	☒ UCR Verification Standard

Mandatory requirements to be assessed	☒ Applicable Approved Methodology ☐ Applicable Legal requirements /rules of the host country ☒ Eligibility of the Project Type ☒ Start date of the Project activity ☒ Meet applicability conditions in the applied methodology ☒ Credible Baseline ☒ Do No Harm Test ☒ Emission Reduction calculations ☒ Monitoring Report ☒ No GHG Double Counting ☐ Others (please mention below)
Project Verification Criteria: Optional requirements to be assessed	☒ Environmental Safeguards Standard and do-no-harm criteria ☐ Social Safeguards Standard do-no-harm criteria
Project Verifier's Confirmation: The *UCR Project Verifier* has verified the UCR project activity and therefore confirms the following:	The UCR-approved verifier Naturelink Solution Pvt. Ltd., verifies the following with respect to the UCR Project Activity "Biomass based thermal energy generation project by M/S Ginni International Ltd." ☒ The project aggregator has correctly described the project activity in the Project Concept Note 2.0 (dated 13/04/2023) including the applicability of the approved methodology A.M.S I. D and meets the methodology applicability conditions and has achieved the estimated GHG emission reductions, complies with the monitoring methodology and has calculated emission reductions estimates correctly and conservatively. ☒ The project activity is likely to generate GHG emission reductions amounting to the estimated **1,70,207** tCO_2e, as indicated in

	the monitoring report, which are additional to the reductions that are likely to occur in absence of the Project Activity and complies with all applicable UCR rules, including ISO 14064-2 and ISO 14064-3. ☒ The project activity is not likely to cause any net-harm to the environment and/or society ☒The project activity complies with all the applicable UCR rules and therefore recommends UCR Program to register the Project activity with above mentioned labels.
Project Verification Report, reference number and date of approval	Verification Report UCR Project ID: 227 Date: 28/04/2023
Name of the authorised personnel of UCR Project Verifier and his/her signature with date	Naturelink Solutions Pvt. Ltd. Authorised Signatory Ahmedabad Mr. Shardul Amin Lead Verifier Naturelink Solution Pvt. Ltd. Date: 28/04/2023

Project Verification Report

A. Executive Summary

The verification work has been contracted by project aggregator Creduce Technologies Pvt Ltd to perform an independent verification of its UCR project titled **"Biomass based thermal energy generation project by M/S Ginni International Ltd, UCR approved project ID:227**, to establish a number of CoUs generated by the project over the crediting period from 01/01/2013 to 31/12/2021 (both days included).

Verification for the period: 01/01/2013 to 31/12/2021

The Verification team has identified M/s. Ginni International Limited as a Project Proponent for this project activity which complies with the definition of Project Proponent. The project activity intends to reduce GHG emissions by displacing the coal-fired units with biomass-fired boilers and thermic fluid heater (Thermopac) to meet the internal thermal energy requirements. The project activity comprises of biomass-fired Boiler for steam generation and a biomass-fired Thermic Fluid Heater (Thermopac) for heating applications.

In the course of the verification, five (05) Corrective Action Requests (CAR) and four (04) Clarification Requests (CR) were raised and successfully closed out. The project aggregator has revised the monitoring report as per the correction requested and revised MR version 2.0 has been submitted. The verification is based on documents submitted by the project aggregator, monitoring reports, and other supporting documents made available to the verifiers by the project proponent.

In my opinion, the total GHG emission reductions over the crediting/verification period stated in the Monitoring Report (MR), submitted to me are found to be correct and in line with the UCR guidelines. The GHG emission reductions were calculated based on the UCR guideline which draws reference from, the standard baseline AMS-I.C. (Title: "Thermal energy production with or without electricity", Version 22). As per the UCR guidelines, the verification was done through desk review and on-site verification.

I am able to certify the emission reductions from the Biomass based thermal energy generation project by M/S Ginni International Ltd. (UCR ID – 227) for the period 01/01/2013 to 31/12/2021 amounts to **1,70,207 CoUs** (**1,70,207 tCO_2e**).

Scope

The scope of the verification is the independent, objective review and ex-post determination of the monitored reductions in GHG emission by the project activity.

1. To verify the project implementation and operation with respect to the registered PCN
2. To verify the implemented monitoring plan with the registered PCN applied baseline and monitoring methodology.
3. To verify that the actual monitoring systems and procedures follow the monitoring systems and procedures described in the monitoring plan.

4. To evaluate the GHG emission reduction data and express a conclusion with a reasonable level of assurance about whether the reported GHG emission reduction data is free from material misstatement.
5. To verify that reported GHG emission data is sufficiently supported by evidence.
6. Agreement stating assurance to avoid double accounting for the project to be verified, along with required proof.

The project is assessed against the requirements of the UCR program verification guidance document, UCR Standard, UCR Program Manual, and related rules and guidelines. Due professional care has been exercised and ethical conduct has been followed by the assessment team during the verification process. The verification report is based on Monitoring Report, supporting documents made available to the verifier, and information collected through performing interviews and during the on-site assessment. The verification report is a fair presentation of the verification activity. The validation of the project is not part of the present assignment and the project is deemed validated post-registration by UCR.

Description of the Project

The project site is a textile company and it involves processes like weaving, dyeing, mercerizing, singeing, yarn conditioning, and finishing. The project activity utilizes the locally available agro-residues mainly mustard husk, rice husk, groundnut shell, and briquettes to fire the combustion chambers of boiler furnaces and thermic fluid heater.

This biomass is stored in the storage area from where it is allowed to pass through the bucket elevator and to the hopper unit. The biomass is then fed into the combustion unit through a screw feeder operated by VFD system as per the requirement of the steam. The steam requirement for continuous textile processing is at the saturated pressure range of 9 to 10.5 kg/cm^2.The logbook entry for the thermic fluid heater showed an average temperature difference between the inlet and outlet of thermic fluid is 17°C, the pump discharge pressure varies from 3.8 to 4.2 kg/cm^2 throughout the monitoring period, and the pump design discharge 110 m^3/h. Being conservative the discharge is considered as 90 m^3/h as per the manufacturer's technical specification for calculation of the thermal energy generated from the thermopack for this monitoring period.

The monitoring parameters are recorded in the daily log sheets of the unit-specific log books which are then compiled to generate monthly reports. This data then forms the basis of emission reduction calculation.

The project activity achieves GHG emission reductions by displacing the coal-fired units (baseline units) with biomass-fired boilers and thermic fluid heater to meet the internal thermal energy requirements.

The detailed specification of the boilers and thermopack is mentioned below.

Table 1 – Boiler technical specification

Boiler Type	Traveling grate	Fluidized bed combustion	Manual fired-water tube
Rated Capacity (TPH)	13	8	4

Make	Cheema	Cheema	IBL
Avg. Steam pressure (kg/cm^2)	9.5	9.5	9.5
Hydraulically Tested Pressure	14	13.5	13.5
Rating (m^2)	617.31	247	84
Feedstock	Mustard husk, Rice husk, Groundnut shell	Mustard husk, Rice husk, Groundnut shell	Mustard straw briquettes
Pollution Control Measure	Dust Collector, Multi Cyclone , Bag Filter,Stack	Dust Collector, Multi Cyclone , Bag Filter,Stack	Dust Collector, Multi Cyclone , Bag Filter,Stack
Commissioning date	31/03/2016	08/08/2007	14/07/2014
Boiler Tag	RJ-2297	RJ-1364	RJ-888

Table 2 – Thermic fluid technical specificatio

Thermic Fluid Heater	
Rated capacity (lacs kCal/hr)	15
Make	Thermax
Thermic fluid	Shell Heat Transfer Oil 52
Flowrate (m^3/h)	90
Thermic fluid inlet temperature (°C)	223
Thermic fluid outlet temperature (°C)	240
Feedstock	Mustard Husk and Rice Husk
Pollution Control Measure	Cyclone , Dust Collector , Stack
Commissioning date	31/03/2016

As mentioned in the monitoring report and emission reduction calculation sheet submitted for verification, the project replaces anthropogenic emissions of greenhouse gases (GHGs) estimated to be approximately **1,70,207 tCO_2e** for the said period under verification.

The project activity involves the installation of the biomass-fired boiler with a cumulative capacity of 25 TPH and a 15 lakh kCal/hr thermic fluid heater (thermopack) for steam and hot air generation respectively.

The project activity generates less than 45 $MW_{thermal}$ and it will qualify as small-scale project activity under Type-I of the Small-Scale methodology. The project status is corresponding to the methodology AMS-I.C., Version 22, and the applicability of the methodology is discussed below:

Verified total emission reductions (ERs) achieved through the project activity during the monitoring period is summarised below:

Summary of the Project Activity and ERs Generated for the Monitoring Period	
Start date of this Monitoring Period	01/01/2013
Carbon credits claimed up to	31/12/2021
Total ERs generated (tCO_2e)	**1,70,207** tCO_2e
Leakage Emission	0
Project Emission	7114.25

B. Project Verification team, technical reviewer and approver:

Sr. No.	Role	Last name	First name	Affiliation	Involvement in		
					Doc review	Off-Site inspection	Interviews
1.	Lead Verifier & Technical Expert	Amin	Shardul	Lead Verifier, Naturelink Solutions Pvt Ltd.	Yes	Yes	Yes

C. Means of Project Verification

C.1 Desk/document review

The project documents submitted to UCR-approved verifier Naturelink Solution Pvt. Ltd. was reviewed and verified by the lead verifier. The documents reviewed involves;

- Commissioning Certificates/ Boiler Handover Report
- Boiler Inspection Certificates
- Plant record as well as fuel purchase ledgers
- Biomass assessment report prepared (Surplus availability)
- Consents by the State Pollution Control Boards
- Boiler and thermopac logbooks.
- Calibration records
- Monitoring report, ER sheet, PCN and etc.
- Double accounting agreement

The PCN is made available to the verifier post approval by UCR which is considered as validated documents and the content of validated PCN is considered as record wherever required. Further, the communication agreement made between the project owner and project aggregator is a document of the UCR registry hence the project aggregator is treated as an authorized representative of the project owner. All the documents submitted by the project aggregator to the verifier are treated as documents submitted on behalf of the project owner.

The list of submitted documents is available in a subsequent section of this verification report under the section “Document reviewed or referenced”-section I.

C.2 On-Site inspection

The verification team has performed an on-site inspection dated 09 and 10/02/2023 aimed to achieve the following:

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

Date of off-site inspection: 09/02/2023 to 10/02/2023		
No.	**Activity performed Off-Site**	**Date**
1	Boiler inspection reports and verification boiler and thermopack purchase order copy	09/02/2023
2	13,8 and 4 TPH boiler logbook assessment	09/02/2023
3	Verification of the RPCB and Factory license certificate	09/02/2023
4	Thermopac logbook assessment	10/02/2023
5	Interviews of boiler operator, GM Engineer and Sr. Engineer	10/02/2023
6	Random inspection of biomass purchase invoice and weighbridge receipts for the monitoring period	10/02/2023
7	Visit of the different utility section where steam and hot air is utilized	10/02/2023
8	Verification of calibration reports of pressure gauge, thermocouple, and flowmeters	10/02/2023

C.3 Interviews: Telephonic and mail.

No.	Interview			Date	Subject
	Last name	First name	Affiliation		
1.	Khanna	Ravinder	GM (Engineer Division), GIL	09/02/2023	Roles responsibilities of boiler and thermopac operation, Overview of the project activity, Purchase of biomass & Biomass Supplier,
2.	Gupta	Suresh	Sr. Engineer, GIL	09 & 10/02/2023	Boiler testing certification, Boiler and thermopac Commissioning reports, Details of boiler parameters, running hours, pressure, temperature, and steam flow, Biomass calorific value and moisture content
3.	Ashok Singh	Ashok	Sr. Boiler Operator, GIL	10/02/2023	Boiler logbook, Operation and maintenance schedule, Safety procedure.
4	Pal	Shambhunath			
5	Sharma	Karan	Sr. Consultant, CTPL	10/02/2023 & 25/02/2023	Emission reduction calculation, monitoring plan,

					Double accounting agreement

C.4 Clarification request (CLs), corrective action request (CARs) and forward action request (FARs) raised

Areas of Project Verification findings	No. of CL	No. of CAR	No. of FAR
Green House Gas (GHG)			
Identification and Eligibility of project type	NIL	NIL	NIL
General description of project activity	NIL	NIL	NIL
Application and selection of methodologies and standardized baselines	NIL	NIL	NIL
• Application of methodologies and standardized baselines	NIL	NIL	NIL
• Deviation from methodology and/or methodological tool	NIL	NIL	NIL
• Clarification on applicability of methodology, tool and/or standardized baseline	1	1	NIL
• Project boundary, sources and GHGs	NIL	1	NIL
• Baseline scenario	NIL	NIL	NIL
• Estimation of emission reductions or net anthropogenic removals	NIL	3	NIL
• Monitoring Plan	2	NIL	NIL
Start date, crediting period and duration	1	NIL	NIL
Environmental impacts	NIL	NIL	NIL
Project Owner- Identification and communication	NIL	NIL	NIL
Others (please specify)	NIL	NIL	NIL
Total	4	5	NIL

D. Project Verification findings

D.1 Identification and eligibility of project type

Means of Project Verification	The project has taken the reference of CDM methodology AMS-I.C, version 22 and comes under the positive list of sectoral scope approved as per UCR Standard.
Findings	None
Conclusion	It is a greenfield project activity under Energy industries (renewable Sources) sectoral scope. The project activity is identified and eligible as per the General Project Eligibility Criteria and Guidance UCR Standard (Updated August 2022) Version 6.0

D.2 General description of project activity

Means of Project Verification	PCN, MR, Commissioning Certificates and RPCB Consent to Operate.
Findings	None
Conclusion	The project activity includes biomass fired boiler (13,8 and 4TPH) and 15 lacs kCal/h Thermic Fluid Heater. The different types of biomass used are mustard husk, mustard straw, rice husk and briquettes. Thermal energy is used for meeting the demand of different process streams of textile processing.

D.3 Application and selection of methodologies and standardized baselines

D.3.1 Application of methodology and standardized baselines

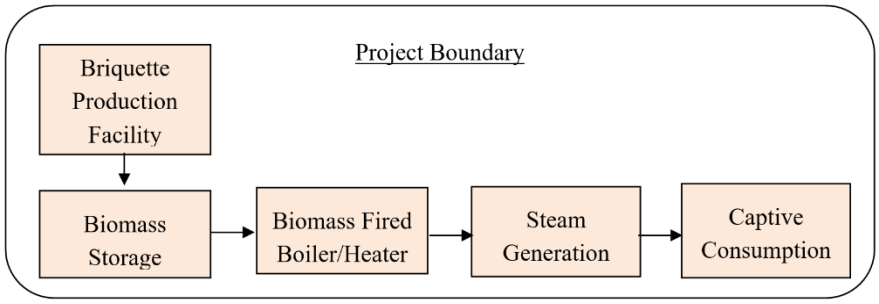
Means of Project Verification	For the applicability mentioned in the PCN and MR, the project has taken the reference of CDM methodology AMS-I.C Version 22. CDM website is referred to check the latest version of the methodology.
Findings	None.
Conclusion	The methodology applied is appropriately meeting the requirements of UCR and its standardized baseline. The methodology version is

	correct and valid. The referenced methodology is applicable to project activity. Baseline Scenario : As per paragraph 25 of the approved consolidated methodology AMS-I.C. Version 22, The baseline scenario identified is: In the absence of the project activity, the simplified baseline is the fossil fuel consumption of the technologies that would have been used in the absence of the project activity, times an emission factor for the fossil fuel displaced.

D.3.2 Clarification on applicability of methodology, tool, and/or standardized baseline

Means of Project Verification	AMS-I.C: "Thermal energy production with or without electricity", Version 22, General Project Eligibility Criteria and Guidance UCR Standard (Updated August 2022) Version 6.0.
Findings	CL 01 : The project activity uses biomass briquettes and it is requested to provide the briquettes composition and whether any binder or additives are used. CAR 01 : In monitoring, the briquettes project and leakage emission were not included. The PP needed to revise the monitoring report and emission reduction sheet to include the emission associated with the production of the briquettes
Conclusion	CL 01 closed: Briquettes are made of mustard straw only and no other materials were added and verified through the supplier material test report. CAR 01 closed: The monitoring and emission reduction sheets were revised and resubmitted for verification including the emission associated with briquettes production. This methodology comprises renewable energy technologies that supply users with thermal energy that displaces fossil fuel use. The generated thermal energy is used for onsite captive consumption. The total installed/rated thermal energy generation capacity of the project equipment is equal to or less than 45 $MW_{thermal}$ meeting the requirement of small-scale projects. The project activity uses solid biomass fuel (e.g. briquette is used), it was demonstrated that it has been produced using solely renewable biomass and all project or leakage emissions associated with its production were taken into account in the emissions reduction calculation.

D.3.3 Project boundary, sources, and GHGs

Means of Project Verification	The spatial extent of the project boundary encompasses; • The project activity generates thermal energy located at the project site fired with biomass. • The processing plant of biomass residues, for project activities using solid biomass fuel (e.g. briquette).
Findings	CAR 02 is raised. In MR and PCN, PP has been requested to include the briquettes production facility in the project boundary and the emission sources associated.
Conclusion	CAR 02 : Closed : Revised PCN and MR including the briquette production facility in the project boundary is included. The project boundary is correctly defined in the PCN. GHG source correctly identified and reported. The project meets the requirements of the UCR project standard, Verification standard, and methodology requirements for a boundary, GHG source. 

D.3.4 Baseline scenario

Means of Project Verification	MR Section C.5 and General Project Eligibility Criteria and Guidance, UCR Standard, AMS-I.C Version 22.
Findings	None
Conclusion	The baseline scenario is appropriately described. As per paragraph 25 of the approved consolidated methodology AMS-I.C. Version 22; In the absence of the project activity, the simplified baseline is the fossil fuel consumption of the technologies that would have been used in the absence of the project activity, times an emission factor for the fossil fuel displaced.

D.3.5 Estimation of emission reductions or net anthropogenic removal

Means of Project Verification	MR, emission reduction sheet, boiler and thermic fluid heater logbook, calibration records of the pressure gauge, steam flowmeters and thermocouple.
Findings	CAR 03 : The PP was requested to round down the emission reduction vintage year-wise. CAR 04: Emission reduction associated with the thermic fluid heater did not have the flowmeter and the flowrate considered for the thermal energy generation was design discharge (110 m^3/h) of the pump while thermopack technical specification has provided the rated flowrate of 90 m^3/h. The PP shall include conservative values and revise the emission reduction sheet. CAR 05 : The pressure gauge, thermocouple, and streamflow meters are not calibrated or the calibration report is missing for this monitoring period which directly influences the emission reduction sheet. The PP has been advised to carry out the calibration of the measuring instruments and monitoring devices.
Conclusion	CAR 03 and CAR 04 are closed as the emission reduction calculation is rounded down and the verification team confirms that the calculations are done conservatively. CAR 05 is closed as the errors of the instruments are incorporated to trim the emission reduction generated as per the CDM, EB52 report, annex-60, page -1; clause 4 for delayed calibration the emission reduction should be trimmed by the maximum permissible error of the instrument. However, the verification team has confirmed that the inclusion of an error in ER sheet has no significant changes in the calculations of enthalpy values. Energy Generation Calculations; $HG_{Thermopac}$ = (mass flowrate x thermic fluid specific heat x temperature difference between inlet and outlet temperature) / Thermopac efficiency. The parameters for the calculation of thermopack energy generations are calculated based on the thermic fluid properties. $\eta_{thermopack} = 92\ \%$ as per manufacturer's specification $\eta_{Boiler} = 85\ \%$ (default value for new boiler as per appendix page 38 AMS-I.C Version 22) HG boiler (TJ) for steam is calculated based on measurements of net quantity of saturated steam supplied (steam mass flow meter) by

	the boiler, steam pressure, and mass-based enthalpy value (supported by steam table) at corresponding saturated steam condition/pressure. $HG_{Boiler} = \left(\frac{Boiler\ thermal\ energy\ output}{\eta_{Boiler}}\right)$ The emission reduction sheet is attached with the report in Annexure III.

D.3.6 Monitoring Plan

Means of Project Verification	PCN 2.0 section B.8, MR 2.0 section C.10, AMS-I.C. Version 22, Calibration records.
Findings	CL 2 : Justification is requested for a change in ex-ante feed water temperature from 89 °C to 52 °C. CL 3 : It is requested to provide evidence of surplus availability of biomass in the region.
Conclusion	CL 2 is closed as 89 °C temperature was measured at the outlet of the water preheater while the inlet temperature is 52 °C. The condensate return line is fed to the feed water tank and hence the feed water temperature is elevated above atmospheric temperature. The verification team checked the feedwater temperature at the time of the site visit and it was around 55 °C. Hence 52 °C is conservative. The daily log book is maintained and data is manually recorded in the Excel sheet to calculate the monthly average temperature and pressure. The average parameters were considered for the calculation of the thermal energy generation. Measuring devices/gauges and instruments are calibrated by the third-party NABL-accredited laboratory and the verification team has confirmed the valid sr.no of these thermocouples, RTD sensors, pressure gauges, weighing scale, and steam flowmeters (photos are attached in Annexure II). The amount of briquettes used is cross-checked with the purchase invoice. The biomass supplier as per the purchase receipts were found to be within a 200 km radius of the project activity hence the emission associated with transportation are not considered. CL 3 is closed as the literature survey carried out by CTPL and GIL shows that Alwar is the leading mustard producer in the Rajasthan state and the neighbouring states (Punjab and Haryana) have surplus availability of rice husk.

D.4 Start date, crediting period, and duration

Means of Project Verification	PCN and MR, Purchase order copies, RPCB Consent to operate, Factory license
Findings	CL 4 is raised as the boiler commissioning date has a mismatch with the boiler and thermopack supplier documents of commissioning.
Conclusion	CL 4 is closed. The PP has considered the date from which the boilers and thermopack were taken for the operation as the commissioning date. The commissioning dates are provided in table 1 and 2 and it was verified with the operation logbook records. The start date of crediting period : 01/01/2013 Project Duration: 01/01/2013 to 31/12/2021.

D.5 Positive Environmental impacts

Means of Project Verification	PCN
Findings	None.
Conclusion	The project is a renewable energy project and reduces the environmental burden by reducing the dependence on fossil fuel-based power plants. The project activity has avoided 1,70,207 tCO_2e emissions.

D.6 Project Owner- Identification and communication

Means of Project Verification	Factory license, RPCB consent to operate and Communication agreement.
Findings	The declared information is correct and verified.
Conclusion	The documents provided by the PP establish the M/s Ginni International Ltd as the project owner and details are mentioned below; M/s Ginni International Ltd. Address: RIICO Industrial Area, Delhi Jaipur Highway NH 8 Neemrana, District-Alwar, Rajasthan-301705.

	Location : 27°58'33.6"N 76°23'35.6"E.

D.7 Positive Social Impact

Means of Project Verification	PCN 2.0 and MR 2.0
Findings	--
Conclusion	The project has created jobs within and outside the project boundary. The use of biomass help raises the farmer's income

D.8 Sustainable development aspects (if any)

Means of Project Verification	Not Applicable
Findings	--
Conclusion	The Project has the capability to address SDG 7 Affordable and Clean Energy and SDG 13 Climate Action

E. Internal quality control:

- Due professional care has been taken while reviewing the submitted document.
- There is no conflict of interest as the verifier has no other engagement with either the aggregator or project owner directly or indirectly.
- Verification team consists of experienced personnel.
- Technical review is performed by an independent person.

F. Project Verification opinion:

Naturelink Solutions Pvt. Ltd has conducted the verification based on the CDM monitoring methodology AMS-I.C. (Title: "Thermal energy production with or without electricity", Version 22), the monitoring plan included in the PCN (version 2.0. dated 13/04/2023) of the project, and the monitoring report (version 2.0) dated of 14/04/2023. The verification included i) checking whether the provisions of the monitoring methodology AMS-I.C (version 22) and the monitoring plan in the PCN were consistently and appropriately applied and ii) the collection of evidence supporting the reported data. The verification approach draws an understanding of the risks associated with reporting GHG emission data and the controls in place to mitigate these. Naturelink Solutions Pvt. Ltd. planned and performed the verification by obtaining evidence and other information to give a reasonable level of assurance that reported GHG emission reductions are fairly stated.

Considering the documents submitted during the verification including the data, Purchase invoice copies, Calibration Report, Commissioning Certificate, Project Concept Note (PCN), and Monitoring Report (MR), It is certified that the emission reductions from the project - Biomass based thermal energy generation project by M/S Ginni International Ltd. (UCR ID – 227) for the period 01/01/2013 to 31/12/2021 amounts to **1,70,207** CoUs (**1,70,207** tCO_2e).

G. Abbreviations

Abbreviations	Full texts
UCR	Universal Carbon Registry
RPCB	Rajasthan Pollution Control Board
TJ	Tera Joule
IPCC	Intergovernmental Panel on Climate Change
MR	Monitoring report
PCN	Project Concept Note
VR	Verification Report
VS	Verification Statement
DAA	Avoidance of Double Accounting Agreement
COD	Commercial Operation Date
PP/PO	Project Proponent / Project Owner
PA	Project Aggregator
PPA	Power Purchase Agreement
ER	Emission Reduction
CoUs	Carbon offset Units.
tCO_2e	Tons of Carbon Dioxide Equivalent
kWh	Kilo-Watt Hour
MWh	Mega-Watt Hour
kW	Kilo-Watt
MW	Mega-Watt
CDM	Clean Development Mechanism
SDG	Sustainable Development Goal
CAR	Corrective Action Request
CL	Clarification Request
FAR	Forward Action Request
GHG	Green House Gas
NCV	Net Calorific Value

MC	Moisture Content
ATCL	Advance Test And Calibration Laboratory

H. Competence of team members and technical reviewers

No.	Last name	First name	Affiliation	Technical Competence
1.	Amin	Shardul	Lead Verifier	Mr. Shardul Amin is a post-graduate having M.Tech in Thermal System Design. He has more than 6 years of experience in the field of waste-to-energy, thermochemical conversion technologies, and emission study.

I. Document reviewed or referenced

No.	Author	Title	Provider
1	UCR	UCR CoU Standard Aug 2022 (Updated Ver.6)	-
2	UCR	UCR Program Manual Ver 5 August 2022	-
3	UCR	Verification Standard Ver 2.0 Aug 2022	-
4	UCR	Communication agreement	PA
5	Creduce	Project Concept Note 1.0 and 2.0	PA
6	Creduce	Monitoring report 1.0 and 2.0	PA
7	Creduce	Avoidance of double accounting	PA
8	Creduce	Emission reduction excel	PA
9	GIL	Boiler and Thermopac Purchase Invoice	PA
10	GIL	Biomass purchase invoice	PA
11	GIL	Biomass suppliers contact and address	PA
12	ATCL	Steam flowmeter, thermocouple, pressure gauge calibration report	PA
13	GIL	Boiler inspection certificate (2013 – 2021)	PA
14	GIL	RPCB Consent to operate	-
15	GIL	Boiler and thermopack logbook (2013 – 2021)	PA
16	GIL	Biomass survey report	PA

17	GIL	Energy audit report (2017)	PA
18	GIL	Factory License (2013 -2021)	PA
19	CDM	AMS-I.C Thermal energy production with or without electricity	-
20	Cheema Boilers	Boiler Technical Specification Sheet	PA
21	Thermax	Thermic Fluid Heater Brochure	PA
22	R.S.Khurmi	Steam Table	-
23	CDM	Tool 16 : Project and leakage emissions from biomass	-

J. Clarification request, corrective action request and forward action request

Table 1. CLs from this Project Verification

CL ID	01	**Section no.: D.3.2**	*Clarification on the applicability of methodology, tool, and/or standardized baseline*	**Date:** 09/02/2023
Description of CL				
One of the biomass is in the form of briquettes. The PP has been requested to provide briquettes composition.				
Project Owner's response				**Date:** 10/02/2023
The briquettes consist of only mustard husk and no other additives were added.				
Documentation provided by Project Owner				
Contact details supplier and briquettes fuel test reports				
UCR Project Verifier assessment				**Date:** 28/04/2023
CL 01 is closed as it was confirmed that no other materials were added to form briquettes.				

CL ID	02	**Section no.: D.3.5**	Monitoring Plan	**Date:** 01/04/2023
Description of CL				
Why there is a change in feed-water temperature from the ex-ante value for the calculation of thermal energy generation from the boiler?				
Project Owner's response				**Date:** 15/04/2023
The feedwater temperature in the log book is recorded after the water preheater while the temperature of the feed water tank is around 52 °C.				
Documentation provided by Project Owner				
MR 2.0				
UCR Project Verifier assessment				**Date:** 28/04/2023
During the site visit it was confirmed that the feedwater temperature is around 55 *°C from the thermocouple reading seen in SCADA system.* 52 *°C is conservative value and hence CL 02 is closed.*				

CL ID	03	**Section no.: D.3.6**	Monitoring Plan	**Date:** 07/04/2023

Description of CL	
It is required to prove the biomass availability in the region.	
Project Owner's response	**Date:** 10/04/2023
They will provide the survey report.	
Documentation provided by Project Owner	
Survey on biomass availability in Rajasthan and neighbouring states.	
UCR Project Verifier assessment	**Date:** 28/04/2023
The survey carried out by GIL and CTPL proved that there were surplus biomass available in the region and in the vicinity.	

CL ID	04	**Section no.: D.4**	Start date, crediting period, and duration	**Date:** 09/02/2023
Description of CL				
The mismatch was observed in the commissioning date mentioned in PCN 1.0 and boiler commission reports.				
Project Owner's response				**Date:** 10/02/2023
Here, the date from which the boiler and themopac were successfully operated and utilized for regular operation is considered as the boiler and thermopac commissioning date				
Documentation provided by Project Owner				
Logbook records of boiler and thermopac.				
UCR Project Verifier assessment				**Date:** 28/04/2023
From the logbook records, the start date of the boiler and thermopac operations is confirmed and CL 04 is closed.				

Table 2. CARs from this Project Verification

CAR ID	01	**Section no.: D.3.2**	Clarification on the applicability of *methodology*, tool, and/or standardized baseline	**Date:** 09/02/2023
Description of CAR				
The PP has not included the project emission from briquette production.				

Project Owner's response	**Date:** 29/03/2023
The PP has considered the emission from the briquette production as requested and included in revised PCN and MR.	
Documentation provided by Project Owner	
Briquette production data and consumption electricity for 1 ton of briquette production.	
UCR Project Verifier assessment	**Date:** 28/04/2023
CAR 01 is closed.	

CAR ID	02	**Section no. D.3.3**	Project boundary, sources, and GHGs	**Date:** 31/03/2023
Description of CAR				
Briquette production facility shall be included in the project boundary.				
Project Owner's response				**Date:** 15/04/2023
The project owner has considered the briquette manufacturing unit in the project boundary and submitted a revised project boundary				
Documentation provided by Project Owner				
PCN 2.0 and MR 2.0				
UCR Project Verifier assessment				**Date:** 28/04/2023
CAR 02 is closed.				

CAR ID	03	**Section no.** D.3.5	*Estimation of emission reductions or net anthropogenic removal*	**Date: 01/04/2023**
Description of CAR				
Emission reduction calculation shall be rounded down for each vintage year				
Project Owner's response				**Date:** 15/04/2023
The emission reduction sheet was corrected and rounded down.				
Documentation provided by Project Owner				

ER sheet and MR 2.0	
UCR Project Verifier assessment	**Date:** 28/04/2023
The ER calculation is conservative and CAR 03 is closed.	

CAR ID	**04**	**Section no.** D.3.5	*Estimation of emission reductions or net anthropogenic removal*	**Date:** 01/04/2023
Description of CAR				
Thermal energy generation from thermic fluid heater does not have a flowmeter and the calculation of emission reduction from thermopac has overestimation.				
Project Owner's response				**Date:** 15/04/2023
The calculation of the thermic fluid flow was corrected from 110 m^3/h to 90 m^3/h.				
The documentation provided by Project Owner				
Thermic fluid property sheet and thermopac technical specification.				
UCR Project Verifier assessment				**Date:** 28/04/2023
CAR 04 closed. It is confirmed that the calculation of thermic fluid flow rate is done appropriately and hence emission associated with the thermopac.				

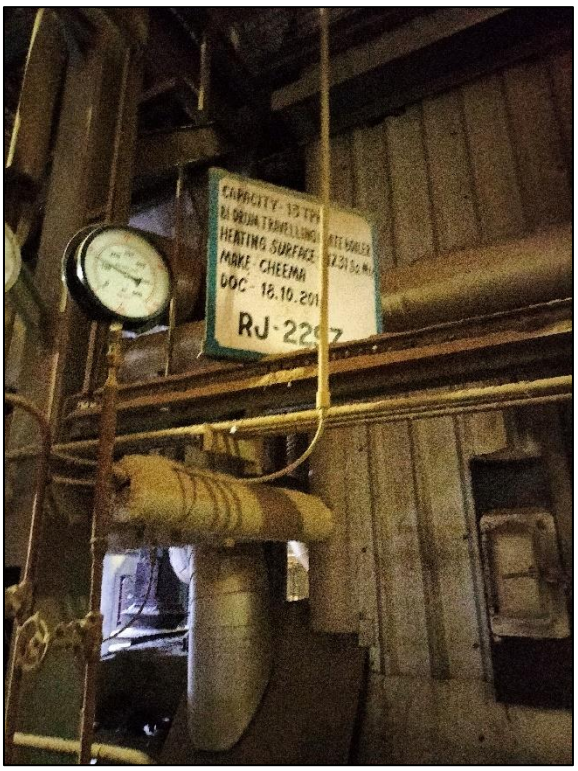
CAR ID	05	**Section no.** D.3.5	*Estimation of emission reductions or net anthropogenic removal*	**Date: 01/04/2023**
Description of CAR				
Calibration of monitoring devices and instruments is missing for the initial period of monitoring.				
Project Owner's response				**Date:** 15/04/2023
The measuring instruments were not calibrated initially and they would carry out calibration and submit the latest calibration				
Documentation provided by Project Owner				
Calibration reports.				

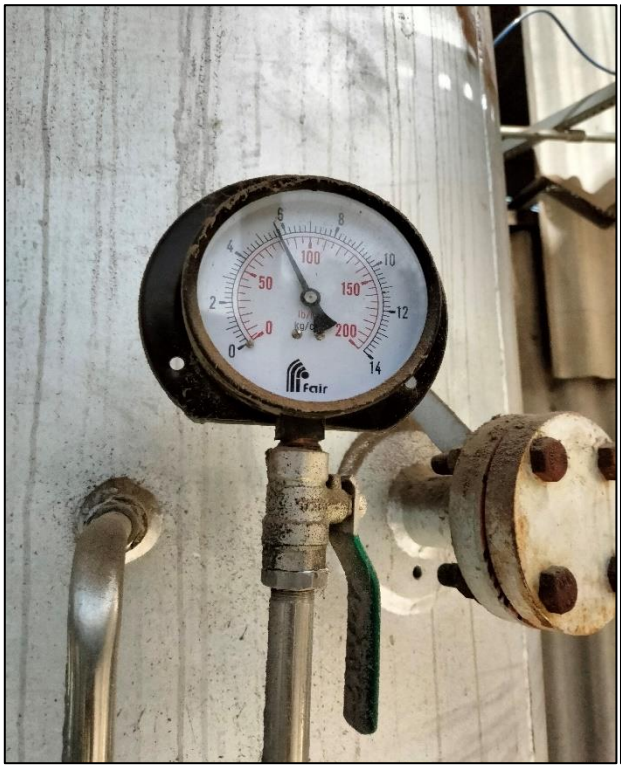
UCR Project Verifier assessment	Date: 28/04/2023
The enthalpy associated with the pressure and temperature is trimmed as per the maximum errors of these instruments. However, the change in enthalpy is insignificant and not much change is observed in the emission reduction. CAR 05 is closed.	

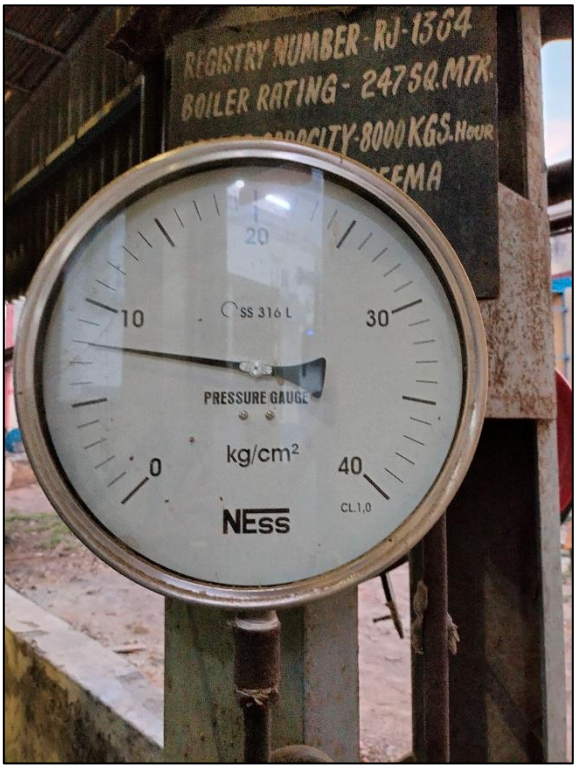
Table 3. FARs from this Project Verification

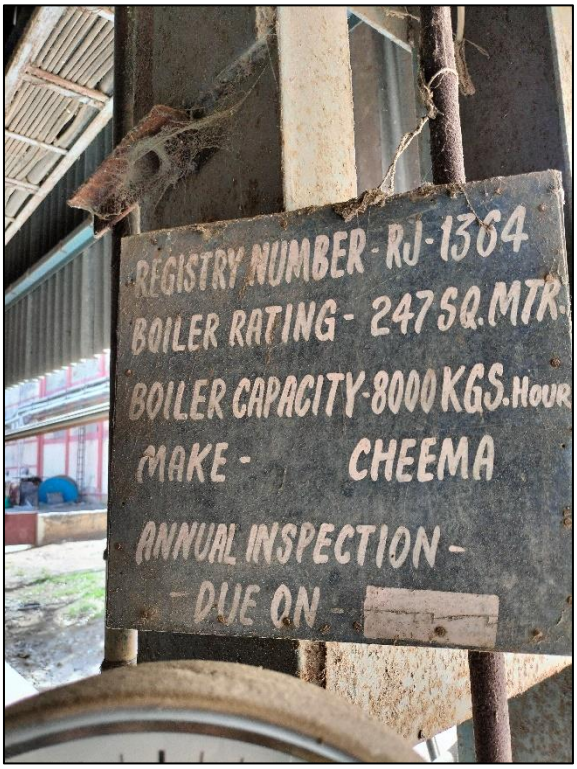
FAR ID		Section no.		Date:
Description of FAR				
Project Owner's response				Date:
Documentation provided by Project Owner				

Annexure I - Photos of the project activity

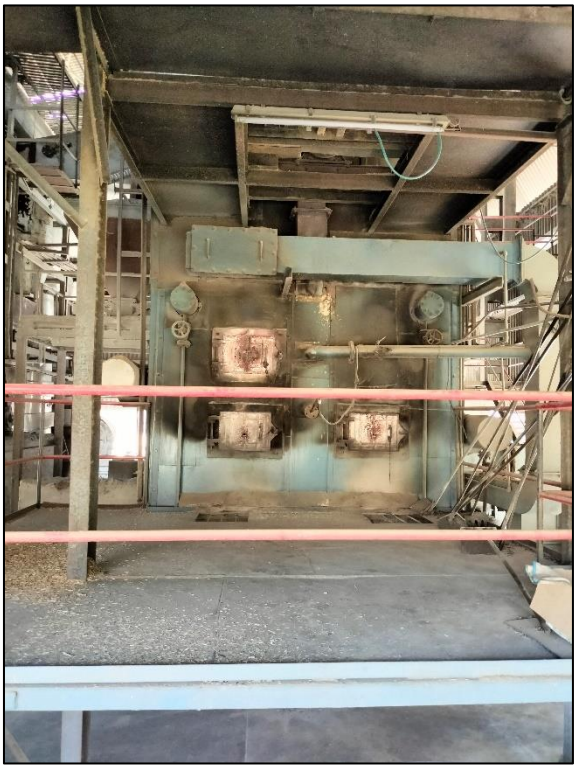





REGISTRY NUMBER - RJ-1364
BOILER RATING - 247 SQ.MTR.
PRESSURE GAUGE
kg/cm²
NEss

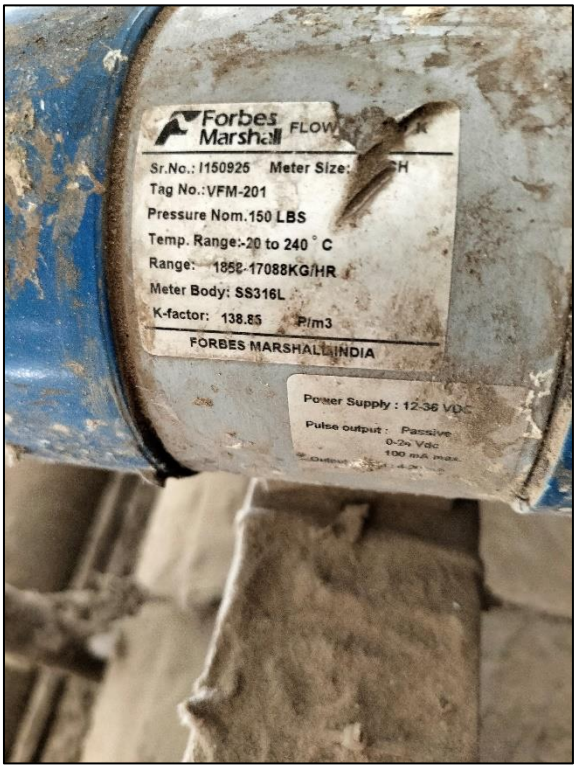

REGISTRY NUMBER - RJ-1364
BOILER RATING - 247 SQ.MTR.
BOILER CAPACITY-8000 KGS.HOUR
MAKE - CHEEMA
ANNUAL INSPECTION -
DUE ON -

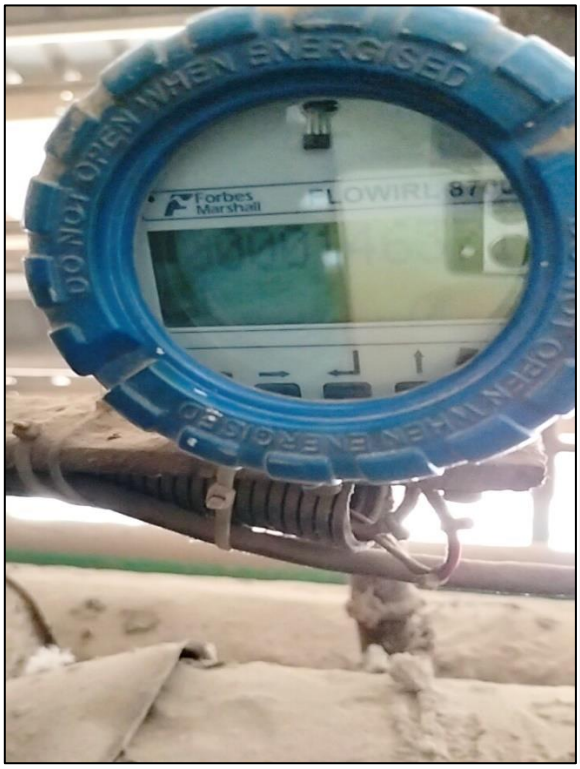

REGISTRY NUMBER - RJ-1364
BOILER RATING - 247 SQ.MTR.
PRESSURE GAUGE
kg/cm²
NEss

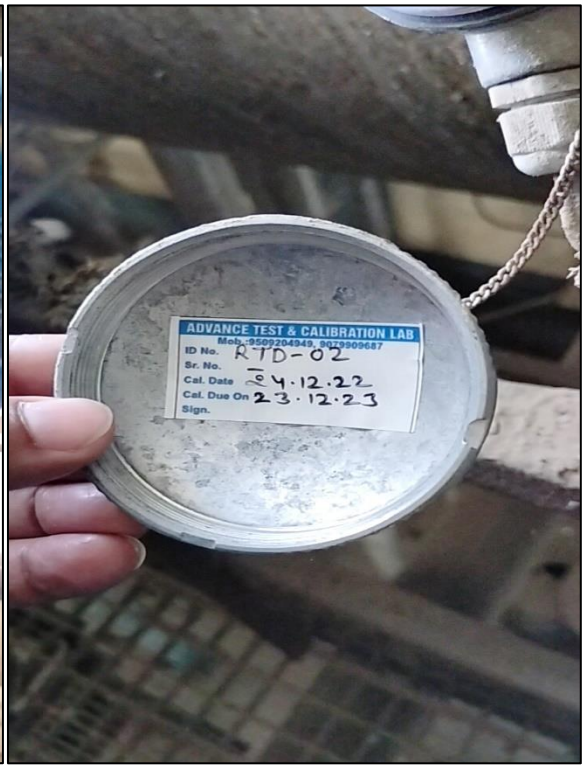



INDUSTRIAL
BOILERS LTD

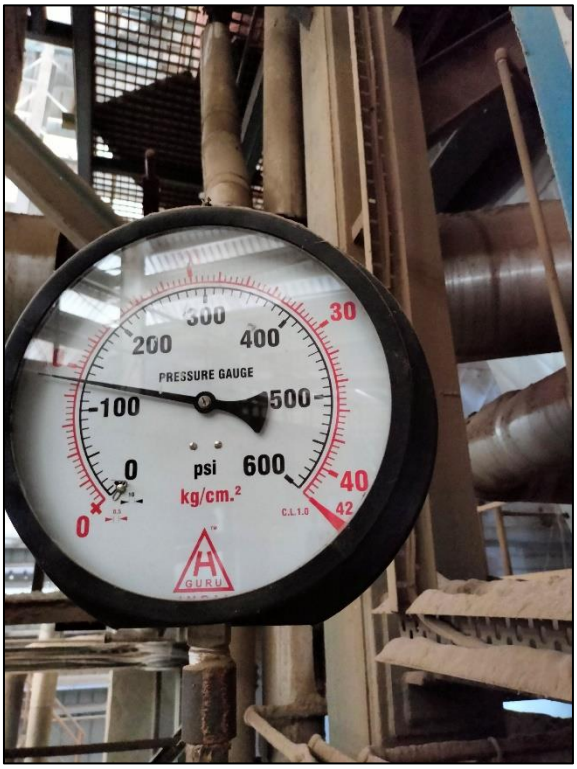

REGISTRY NUMBER - RJ-886
BOILER RATING-84SQ.MTR.
BOILER CAPACITY-4000Kgs/hour
MAKE - IBL
ANNUAL INSPECTION DUE ON

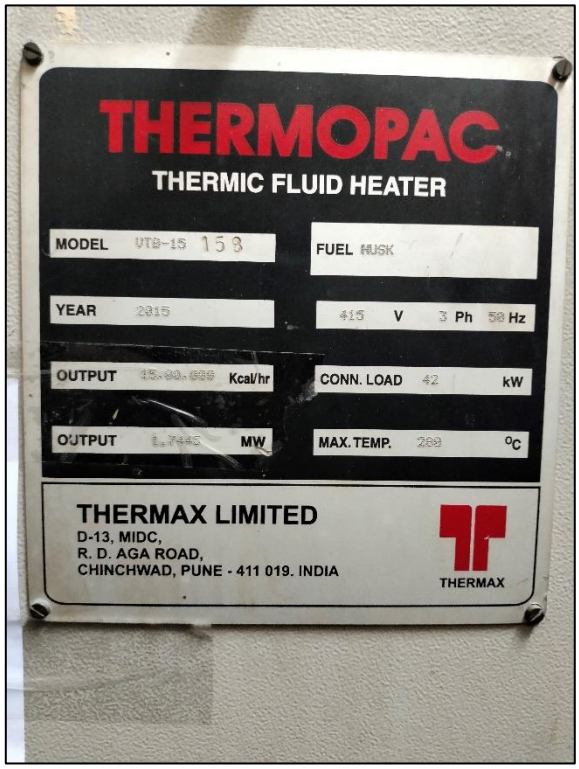

Forbes Marshall
Sr.No.: I150925 Meter Size:
Tag No.:VFM-201
Pressure Nom.150 LBS
Temp. Range:-20 to 240 ° C
Range: 1852-17088KG/HR
Meter Body: SS316L
K-factor: 138.85 P/m3
FORBES MARSHALL INDIA
Power Supply : 12-36 VDC
Pulse output : Passive
0-24 Vdc
100 mA max


DO NOT OPEN WHEN ENERGISED
Forbes Marshall


ADVANCE TEST & CALIBRATION LAB
ID No. RTD-02
Sr. No.
Cal. Date 24.12.22
Cal. Due On 23.12.23
Sign.


CAPACITY - 13 TPH
BI-DRUM TRAVELLING GRATE BOILER
HEATING SURFACE - 617.31 Sq.Mtr
MAKE - CHEEMA
DOC - 18.10.2015
RJ-2297

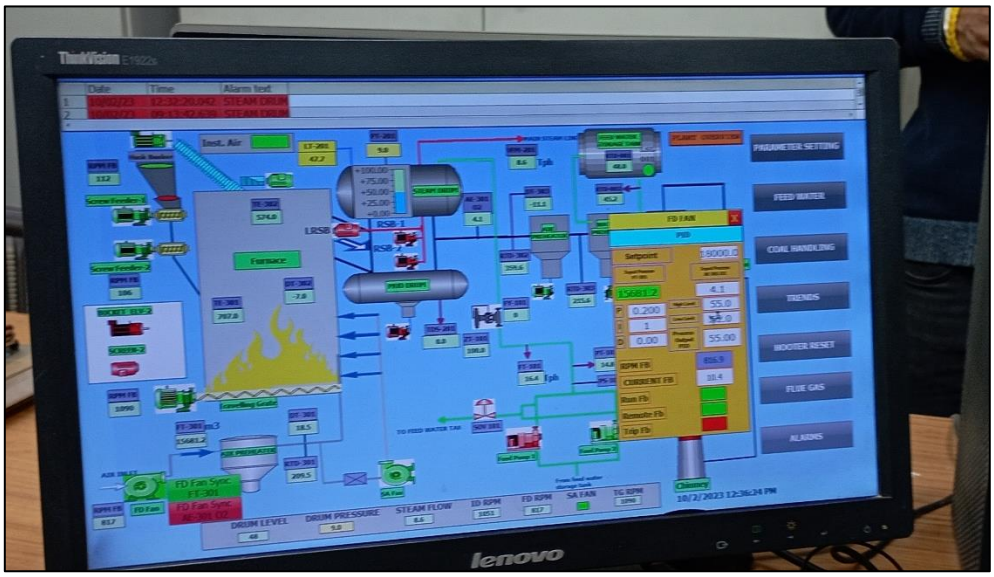

PRESSURE GAUGE
psi
kg/cm.²
GURU


THERMOPAC
THERMIC FLUID HEATER
MODEL
FUEL HUSK
YEAR
415 V 3 Ph 50 Hz
OUTPUT Kcal/hr
CONN. LOAD 42 kW
OUTPUT MW
MAX. TEMP. °C
THERMAX LIMITED
D-13, MIDC,
R. D. AGA ROAD,
CHINCHWAD, PUNE - 411 019. INDIA
THERMAX


FORBES

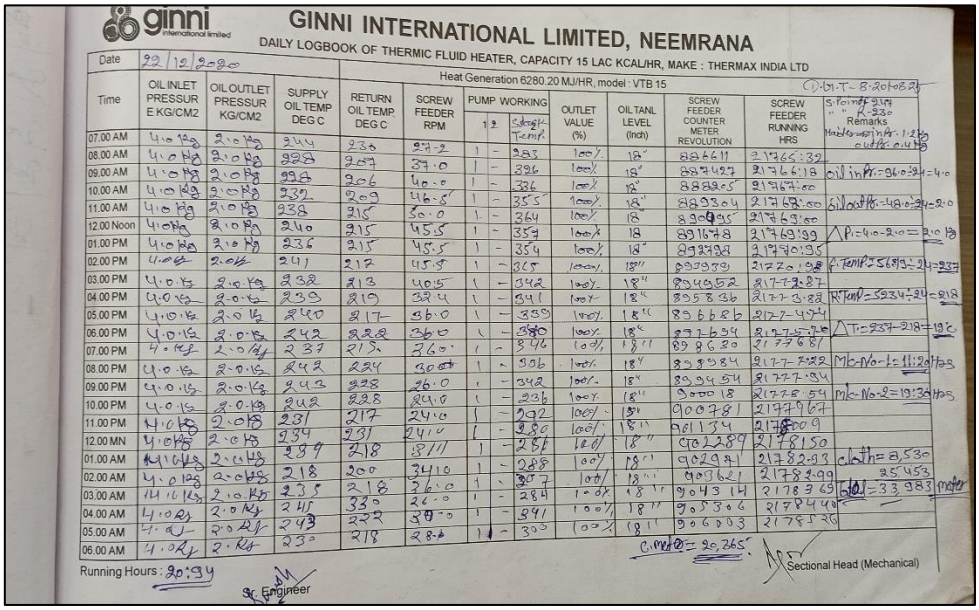

ginni
international limited
4 TPH BOILER
HOUSE


Forbes Marshall
Type VFM 7700 K
4.INCH
300 LBS
-20 TO 240 C
TITANIUM
INCONEL


ThinkVision
PARAMETER SETTING
FEED WATER
COAL HANDLING
TRENDS
BOOTER RESET
FLUE GAS
ALARMS
lenovo

NATURELINK SOLUTIONS PRIVATE LIMITED

REG.OFFICE: H. NO. 6/121/1A, PLOT NO. G-1, VAIRAGI NI WADI, NEAR DELHI GATE SURAT – 395007
Email: audit@thenaturelink.in



ginni international limited

GINNI INTERNATIONAL LIMITED, NEEMRANA

DAILY LOGBOOK OF THERMIC FLUID HEATER, CAPACITY 15 LAC KCAL/HR, MAKE : THERMAX INDIA LTD

Heat Generation 6280.20 MJ/HR, model : VTB 15

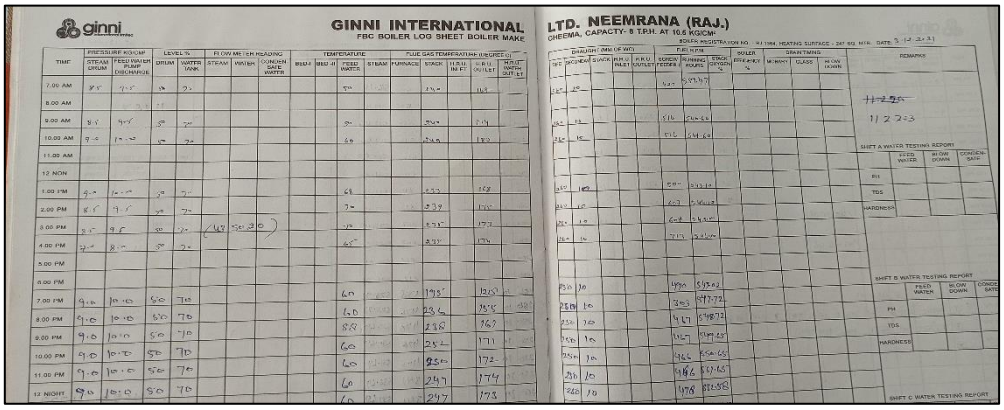
Date 22/12/2020

Time	OIL INLET PRESSURE KG/CM2	OIL OUTLET PRESSURE KG/CM2	SUPPLY OIL TEMP DEG C	RETURN OIL TEMP. DEG C	SCREW FEEDER RPM	PUMP WORKING 1	PUMP WORKING 2	OUTLET VALUE (%)	OIL TANL LEVEL (inch)	SCREW FEEDER COUNTER METER REVOLUTION	SCREW FEEDER RUNNING HRS
07.00 AM	4.0 kg	2.0 kg	244	230	27.2	1	-	333	100%	88 6611	21765.32
08.00 AM	4.0 kg	2.0 kg	238	207	37.0	1	-	336	100%	88 7427	21767.18
09.00 AM	4.0 kg	2.0 kg	238	206	40.0	1	-	336	100%	88 8205	21768.00
10.00 AM	4.0 kg	2.0 kg	232	209	46.5	1	-	355	100%	88 9304	21768.50
11.00 AM	4.0 kg	2.0 kg	238	215	50.0	1	-	364	100%	89 0195	21769.00
12.00 Noon	4.0 kg	2.0 kg	240	215	45.5	1	-	354	100%	89 1678	21769.99
01.00 PM	4.0 kg	2.0 kg	236	215	45.5	1	-	354	100%	89 2928	21790.95
02.00 PM	4.0 kg	2.0 kg	241	212	45.5	1	-	365	100%	89 3989	21792.08
03.00 PM	4.0 kg	2.0 kg	232	213	40.5	1	-	342	100%	89 4552	21792.87
04.00 PM	4.0 kg	2.0 kg	239	219	32.4	1	-	341	100%	89 5836	21793.88
05.00 PM	4.0 kg	2.0 kg	240	217	36.0	1	-	339	100%	89 6686	21794.44
06.00 PM	4.0 kg	2.0 kg	242	222	36.0	1	-	380	100%	89 7634	21795.70
07.00 PM	4.0 kg	2.0 kg	237	215	36.0	1	-	396	100%	89 8630	21796.81
08.00 PM	4.0 kg	2.0 kg	242	224	30.0	1	-	336	100%	89 9584	21797.82
09.00 PM	4.0 kg	2.0 kg	243	228	26.0	1	-	342	100%	90 0454	21798.54
10.00 PM	4.0 kg	2.0 kg	242	228	24.0	1	-	336	100%	90 0018	21799.54
11.00 PM	4.0 kg	2.0 kg	231	217	24.0	1	-	292	100%	90 0781	21799.67
12.00 MN	4.0 kg	2.0 kg	234	231	24.0	1	-	280	100%	90 1154	21800.09
01.00 AM	4.0 kg	2.0 kg	234	218	31.0	1	-	287	100%	90 2289	21801.50
02.00 AM	4.0 kg	2.0 kg	218	200	34.0	1	-	288	100%	90 2971	21802.93
03.00 AM	4.0 kg	2.0 kg	235	218	36.0	1	-	307	100%	90 3621	21804.99
04.00 AM	4.0 kg	2.0 kg	245	330	26.0	1	-	284	100%	90 4314	21806.65
05.00 AM	4.0 kg	2.0 kg	243	222	30.0	1	-	341	100%	90 5306	21808.40
06.00 AM	4.0 kg	2.0 kg	230	218	28.0	1	-	333	100%	90 6203	21809.26

Remarks

Sectional Head (Mechanical)

Sc. Engineer



ginni

GINNI INTERNATIONAL LTD. NEEMRANA (RAJ.)

FBC BOILER LOG SHEET BOILER MAKE

CINEMA, CAPACITY- 8 T.P.H. AT 10.5 KG/CM²

BOILER REGISTRATION NO. - 01/1984, HEATING SURFACE - 247 SQ. MTR. DATE: 3-12-21

TIME	PRESSURE KG/CMP STEAM DRUM	PRESSURE KG/CMP FEED WATER PUMP DISCHARGE	LEVEL % DRUM	LEVEL % WATER TANK	FLOW METER READING STEAM	FLOW METER READING WATER	FLOW METER READING CONDENSATE WATER	TEMPERATURE BRIX	TEMPERATURE BRIX AT	TEMPERATURE FEED WATER	FLUE GAS TEMPERATURE (DEGREE C) STEAM	FLUE GAS TEMPERATURE (DEGREE C) FURNACE	FLUE GAS TEMPERATURE (DEGREE C) STACK	FLUE GAS TEMPERATURE (DEGREE C) H.R.U. INLET	FLUE GAS TEMPERATURE (DEGREE C) H.R.U. OUTLET	FLUE GAS TEMPERATURE (DEGREE C) ECONOMIZER OUTLET
7.00 AM	8.5	9.5	50	70						50			240		105	
8.00 AM																
9.00 AM	8.5	9.5	50	70						50			244		124	
10.00 AM	9.0	10.0	50	70						60			249		130	
11.00 AM																
12 NON																
1.00 PM	9.0	10.0	50	70						61			255		138	
2.00 PM	8.5	9.5	50	70						70			239		135	
3.00 PM	8.5	9.5	50	70	(48	50.20)				70			238		173	
4.00 PM	9.0	10.0	50	70						65			239		176	
5.00 PM																
6.00 PM																
7.00 PM	9.0	10.0	50	70						60			193		125	
8.00 PM	9.0	10.0	50	70						60			236		158	
9.00 PM	9.0	10.0	50	70						58			238		167	
10.00 PM	9.0	10.0	50	70						60			242		171	
11.00 PM	9.0	10.0	50	70						60			250		172	
12 NIGHT	9.0	10.0	50	70						60			247		174	
										60			247		173	

REMARKS

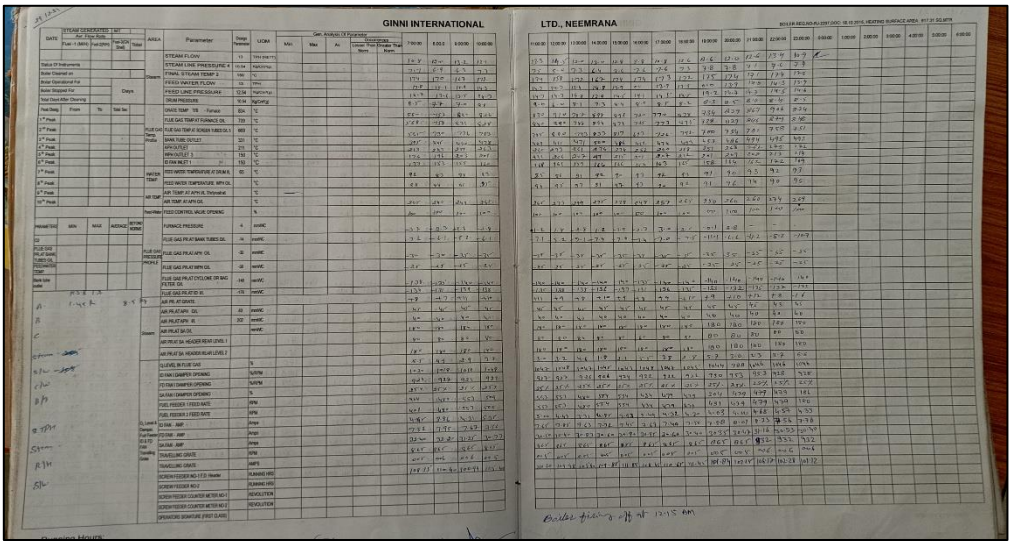
SHIFT A WATER TESTING REPORT

	FEED WATER	BLOW DOWN	CONDEN-SATE
PH			
TDS			
HARDNESS			

SHIFT B WATER TESTING REPORT

	FEED WATER	BLOW DOWN	CONDE-SATE
PH			
TDS			
HARDNESS			

SHIFT C WATER TESTING REPORT



GINNI INTERNATIONAL LTD., NEEMRANA

STEAM GENERATED (MT)

Gen. Analysis Of Parameter

Operating Hours

Boiler filling at 12:15 AM

Annexure II - Calibration Records

Instrument	Make	ID	Type	Calibration Date	Location	Sr. No. of device
Weighing scale-1	ESSAE	115	DS-415	01-01-2022	Ginni International Ltd.	SAS/DHU/GT2/038
Weighing scale-2	ESSAE	94	DS-415	01-01-2022	Ginni International Ltd.	SAS/DHU/GT2/019
Weighing scale-3	ESSAE	492	DS-415	01-01-2022	Ginni International Ltd.	SAS/DHU/GT2/027
Temperature guage	Waree	TG-01	Digital	24-12-2022	feed water (8TPH Boiler)	———
RTD Sensor	Nutech	RTD 04	PT-100	24-12-2022	Thermopack return temperature	———
RTD Sensor	Nutech	RTD 02	PT-100	24-12-2022	feed water (13TPH Boiler)	———
RTD Sensor	Nutech	RTD 03	PT-100	24-12-2022	Thermopack forward temperature	———
Pressure guage	Baumer	PG-10	Dial	24-12-2022	Thermopack (TFH) inlet	———
Pressure guage	Baumer	PG-09	Dial	24-12-2022	Thermpack (TFH) oulet	———
Thermocouple	Nutech	TC-01	K Type	24-12-2022	Furnace 08 TPH boiler	———
Pressure guage	H.Guru	PG-06	Dial	24-12-2022	steam pressure inline (13 TPH boiler)	———
Pressure guage	Akbalo	PG-08	dial	24-12-2022	Steam drum (13 TPH boiler)	———
Pressure guage	H.Guru	PG-04	Dial	24-12-2022	Steam drum (04 TPH boiler)	———

Instrument	Make	ID	Type	Calibration Date	Location	Sr. No. of device
Pressure guage	Baumer	PG-07	Dial	24-1Z-2022	Feedpump (13 TPH boiler)	———
Pressure guage	Baumer	PG-02	Dial	24-12-2022	Steam drum (08 TPH boiler)	———
Pressure guage	NESS	PG-01	dial	24-12-2022	Feedwater (08 TPH boiler)	22070447024
Pressure guage	NESS	PG-03	dial	24-12-2022	Steam header line (08 TPH boiler)	22070447028
Steam flow meter	Forbes marshall	FM-02	Digital	24-12-2022	08 TPH boiler	60883
Steam flow meter	Forbes marshall	FM-03	Digital	24-12-2022	04 TPH boiler	I135110
Steam flow meter	Forbes marshall	FM-01	Digital	24-12-2022	13 TPH Boiler	I150925

Annexure III - ER Calculation

Year	BE (tCO_2e)				PE (tCO_2e)	LE (tCO_2e)	Net Emission Reduction
	4TPH	8TPH	13TPH	Thermopack			
2013	0.00	15102.79	0.00	0.00	503.12	0	14599
2014	2396.12	15582.32	0.00	0.00	839.10	0	17139
2015	3289.36	14513.08	0.00	0.00	807.70	0	16994
2016	333.56	4312.91	14485.17	922.35	744.38	0	19309
2017	476.32	976.51	21546.46	1298.38	944.50	0	23353
2018	423.76	996.51	20940.94	1855.38	990.40	0	23226
2019	534.78	6398.43	14783.03	2200.90	942.37	0	22974
2020	138.60	2469.84	9530.39	1257.16	517.76	0	12878
2021	231.60	1392.44	17183.29	1752.65	824.93	0	19735
Total Emission Reductions (tCO_2e) (CoUs)							**170207**