Project Verification Report For Project Titled:

"Wastewater Methane Recovery Biogas Project at Dharikheda, Gujarat"

ISSUED TO: PROJECT AGGREGATOR**	ISSUED BY: PROJECT VERIFIER
SYNERGY TECHLOLOGIES PLOT NO-9, SONA SARITA ABRAMA, VALSAD, GUJARAT INDIA	SKV SOLUTIONS PRIVATE LIMITED PLOT NO-4/4, A-219, RAJHANS PLAZA AHINSA KHAND-I, INDIRAPURAM GHAZIABAD-201014
PROJECT PROPONENT:** SHREE NARMADA KHAND UDYOG SAHKARI MANDALI LTD (SNKUSML), IN VILLAGE DHARIKHEDA, REGION- TIMBI, TALUKA – RAJPIPLA (NANDOD), DISTRICT- NARMADA, GUJRAT **PROJECT PHYSICAL LOCATION:** VILLAGE DHARIKHEDA, REGION- TIMBI, TALUKA – RAJPIPLA (NANDOD), DISTRICT- NARMADA, GUJRAT ** Reference UCR Communication Agreement 2021 Between Project Proponent And Project Aggregator Dated 18th September 2021.	

COVER PAGE Project Verification Report Form (VR)	
Complete this form in accordance with the instructions.	
BASIC INFORMATION	
Name of approved UCR Project Verifier / Reference No.	SKV Solutions Private Limited
Type of Accreditation	☐ CDM or other GHG Accreditation ☐ ISO 14065 Accreditation UCR approved Verifier. ~~Provide details (if any) below for the boxes ticked above including the name of the entity that provided the accreditation and the date of validity (DD/MM/YYYY to DD/MM/YYYY) of the approval.~~
Approved UCR Scopes and GHG Sectoral scopes for Project Verification	Sectoral Scope: 1 and 13
Validity of UCR approval of Verifier	From 28-9-2021
Completion date of this VR	31-01-2022
Title of the project activity	Wastewater Methane Recovery Biogas Project at Dharikheda, Gujarat
Project reference no. (as provided by UCR Program)	UCR ID:004
Name of Entity requesting verification service (can be Project Owners themselves or any Entity having authorization of Project Owners, example aggregator.)	Synergy Technologies PLOT NO 9, SONA SARITA, ABRAMA, ABRAMA, Valsad, Gujarat,396001
Contact details of the representative of the Entity, requesting verification service (Focal Point assigned for all communications)	Contact Focal Point and Contact Number: Krunal G Mistry-9898446341 Contact mail id for all official communication : krunal@synergyvalsad.com
Country where project is located	India

Applied methodologies (approved methodologies by UCR Standard used)	**AMS-III.H.** Methane Recovery in Wastewater Treatment-V03 **AMS-I.C**.: Thermal Energy Production with or Without Electricity-V21 UCR Standard Protocol Emission Factors Methodologies referenced while developing PCN and MR methodology is not applied "AS IT IS".
GHG Sectoral scopes linked to the applied methodologies	SECTORAL SCOPE - 01 Energy industries (Renewable/Non Renewable Sources) 13 Waste handling and disposal
Project Verification Criteria: Mandatory requirements to be assessed	☒ UCR Standard ☒ Applicable Approved Methodology ☐ Applicable Legal requirements /rules of 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 Project Verifier SKV Solutions Private Limited, certifies the following with respect to the UCR Project Activity **Wastewater Methane Recovery Biogas Project at Dharikheda, Gujarat**. ☒ The Project Owner has correctly described the Project Activity in the Project Concept Note (dated *10-01-2022* including the applicability of the approved methodology AMS-IC-V21 and AMS-III.H-V03 and meets the methodology

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	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 **53166 tCO_2 (53166 CoUs)** as indicated in the PCN, which are additional to the reductions that are likely to occur in absence of the Project Activity and complies with all applicable UCR rules. ☒ 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[1] and therefore recommends UCR Program to register the Project activity with above mentioned labels.
Project Verification Report, reference number and date of approval	SKV/UCR/001 VERIFICATION REPORT UCR PROJECT ID: 004 03-02-2022
Name of the authorised personnel of UCR Project Verifier and his/her signature with date	Manoj Kumar Srivastava SKV SOLUTIONS PVT. LTD. Delhi 03-02-2022

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A.PROJECT VERIFICATION REPORT:

Executive Summary:

Objective:

SKV Solutions Private Ltd has been contracted by project aggregator Synergy Technologies[1] to perform an independent verification of its UCR project titled "**Wastewater Methane Recovery Biogas Project at Dharikheda, Gujarat" UCR approved project ID:004,** to establish number of CoUs generated by project over the crediting period **01/02/2020 to 30/09/2021 (both days included).**

Scope:

The scope of the verification is the independent and objective review and ex post determination of the

monitored reductions in GHG emission by the project activity. The verification is based on the validated and UCR approved Project Concept Note (PCN)[3] and the Monitoring Report (MR)[4]. The project is assessed against the requirements of the UCR Bio gas protocol, UCR programme verification Guidance

Document, UCR Standard, UCR Programme 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 a fair presentation of the verification activity.

The validation of project is not part of present assignment and projects deemed validated post registration by UCR. The scope of verification is limited to parameters identified through monitoring report and emission reduction as presented in the excel spread sheet and emission reduction calculation sheet which was reviewed.

As per UCR guideline site visit was not conducted and verification opinion is formed based on assessment of submitted document by UCR approved project aggregator on behalf of project owner[1].

The documents submitted are authentic and true as per undertaking provided to verifier by the project aggregator. Further the authenticities of submitted document were confirmed by the project proponent in written mail communication to verifier. Any misrepresentation/omission, even advertently, shall be sole responsibility of project aggregator and project owner.

Summary:

The project titled **Wastewater Methane Recovery Biogas Project at Dharikheda, Gujarat** bearing UCR project id: 004 which is approved by UCR registry which is equivalent to validation.

The project activity involves the setting up of a biogas digester for the molasses based distillery with a production capacity of 45 klpd[8,9]. This project activity entails treatment of high BOD/COD Spent-Wash anaerobically in a closed digester and capturing the Methane generated in a controlled manner. The Methane captured is combusted in a boiler for steam generation and further to generate power through a turbo-generator.

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Project location is Narmada District, Rajpilala Taluka, Village-Dharikheda in the stage of Gujarat in India.

Verification process involves scrutiny of documents submitted by project aggregator (synergy technologies) on behalf of project owner (Shree Narmada Khand Udyog Sahakari Mandli Ltd. (SNKUSML). UCR communication agreement$_1$ between project aggregator and project owner verified which was submitted to verifier by project aggregator. Also project related documents submitted to verifier as per checklist was verified. List of such documents available in subsequent part of this report under section I.

Non conformities reported where required leading to further correction in project documents. The summary of CAR/CL is available in subsequent part of this report under section J.

Mr. Srivastava is team leader and verifier for the project activity who has worked for CDM project both as consultant as well as validator/verifier. Further Mr. Srivastava is qualified assessor for Quality Management System and Environmental Management System.

The document submitted by project aggregator is deemed submission for validated project on behalf of project owner.

Based on documents submitted SKV is able to provide its opinion that project during its claimed crediting period has achieved emission reduction of **53166 tCO_2 (53166 CoUs)** As claimed through PCN/MR and ER sheet. As conservative approach SKV applies 5% error $^{+-}$ and lower side of emission reduction is verified and certified.

B.Project Verification team, technical reviewer and approver:

The project verification team consists of following person.

Project Verification team

No.	Role	Last name	First name	Affiliation (e.g. name of central or other office of UCR Project Verifier or outsourced entity)	Involvement in		
					Doc review	On-Site inspection	Interviews
1.	Team Leader and Validator	Srivastava	Manoj	SKV	YES	NO	NO
2	Technical Expert	Srivastava	Manoj	SKV	YES	NO	NO
3	Financial/ Other Expert	Mittal	Shweta	SKV	YES	NO	NO

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Technical reviewer and approver of the Project Verification report

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of UCR Project Verifier or outsourced entity)
1.	Technical reviewer	**EI**	**Trehan**	**Ravinder**	**OE**
…	Approver	**EI**	**Trehan**	**Ravinder**	**OE**

C.Means of Project Verification:

Desk/document review

The project documents submitted to UCR approved verifier SKV solutions private limited which was reviewed at SKV office at Ghaziabad. The documents review involves verification of legal status of individual project owner$_{7}$ for consistency, project related documents like installation and commissioning$_{16}$ of equipment used in project activity. Environmental clearances from state or central pollution control board$_{8,9}$, Consent to establish and operate$_{9}$, monitoring related meters/parameters equipment measuring instruments and their calibration records$_{19,20,21,22}$, to establish running of equipments for the crediting period etc.

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

The list of submitted document is available in subsequent section of this verification report under section " Document reviewed or referenced"-section I. Also these documents are referred, where required, as subscript to facilitate linkage of verified documents to verification report.{ for example project aggregator$_{1}$ means aggregator is identified from document 1 in section I}

On-Site inspection- Not applicable.

Date of off site inspection: DD/MM/YYYY to DD/MM/YYYY	Not applicable as per UCR guideline site visit not conducted for this verification activity.

No.	Activity performed Off-Site	Site location	Date
1.			
…			

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Interviews: Not applicable **As per UCR guideline the site visit was not conducted during the course of verification and no interview conducted.**

No.	Interview			Date	Subject
	Last name	First name	Affiliation		
1.					
…					

Sampling approach:

For the verification of monitoring parameter of biogas and electricity generation sample log sheet scanned copy [27,28] was made available to verifier and the same has been verified. Data are being monitored on two hour basis resulting in generation on daily log sheet reported by plant person available in particular shift. Since physical visit of installation site was not conducted and hence physical verification of log book was not done. Based on these log sheets the client manages log book, available at plant, which contains the data for the crediting period. The client has summarized the data for biogas captured and electricity generation on weekly basis from plant log book for the crediting period. This weekly data is submitted to verifier as data for the crediting period and the same has been verified[28].

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	00	03	NIL
General description of project activity	02	Zero	NIL
Application and selection of methodologies and standardized baselines	--	--	--
- Application of methodologies and standardized baselines	zero	01	NIL
- Deviation from methodology and/or methodological tool	--	--	--
- Clarification on applicability of methodology, tool and/or standardized baseline	zero	02	NIL
- Project boundary, sources and GHGs	zero	01	NIL
- Baseline scenario	Zero	01	NIL
- Estimation of emission reductions or net anthropogenic removals	05	Zero	NIL
- Monitoring Report	08	Zero	NIL
Start date, crediting period and duration	01	Zero	NIL
Environmental impacts	Zero	zero	NIL
Project Owner- Identification and communication	03	01	NIL
Others (please specify)			NIL
Total	19	09	NIL

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D. Project Verification findings:

D.1.Identification and eligibility of project type:

Means of Project Verification	Project has taken reference of CDM methodology AMS-III.H. version 03 Methane recovery in wastewater treatment and AMS-I.C.: version 21 Thermal energy production with or without electricity. The project involves biogas (methane) capture and combustion of the same for generation of power. Methane capture is represented as per methodology AMS-III.H and power generation is represented as per methodology AMD I.C.
Findings	1. Communication agreement is signed by project owner however the same is not signed by project aggregator. 2. Methodogy is not applied as it is rather referenced the same is not reflecting in PCN. 3. The version of reference methodology not mentioned in the PCN.
Conclusion	Project activity is described through UCR approved PCN. The UCR approved format is used for description and project meets the requirement of UCR verification standard and UCR project standard. UCR project communication agreement submitted to verifier and the same has been verified. Methodology referenced and applied appropriately describing the project type. The eligibility of project aggregator is verified using UCR communication agreement, Project correctly applies the verification standard, UCR project standard and UCR regulations. The project activity is overall meeting the requirements of UCR Verification standard and UCR project standard.

D.2.General description of project activity:

Means of Project Verification	The project activity involves the setting up of a biogas digester for the molasses based distillery with a production capacity of 45 klpd that was commissioned for operation on 25/01/2020 the commissioning certificate verified. Further project involves treatment of wastewater for methane recovery and generation of power from recovered methane thus avoiding emission which would have occurred by consumption of equivalent power from grid. Purchase order of Gas turbine$_{13}$ verified. Also the related statutory clearance documents such as pollution control board, EC compliance report$_{26}$, NOC from GRAM PANCHAYAT$_{6}$, Consent to operate- expansion in capacity$_{8}$, purchase order or biogas plant$_{14}$, boiler$_{15}$ and turbine$_{13}$ etc were submitted to verifier and the same has been verified.
Findings	1. As per consent to operate dated 18-2-2019 the rectified sprit product capacity is 109.93 Lac Litre/year. Also plant capacity is 45KLPD which results in about 245 working days. In PCN the operational days is shown as 270 please clarify. 2. Turbine purchase document only signed page submitted please provide the missing pages.

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Conclusion	The project would have consumed equivalent power from grid which would have resulted in emission of carbon dioxide as the coal is major source of thermal energy for generation of grid power. Also the bio-gas captured and consumed for power generation would have resulted in equivalent emission. There is over all emission reduction in GHG and there is no significant negative impact on environment hence project qualifies for no net harm to environment principle. The project activity overall meets the requirement of UCR verification standard and UCR project standard and related requirements.

D.3.Application and selection of methodologies and standardized baselines:

D.3-1.Application of methodology and standardized baselines:

Means of Project Verification	Project has taken reference of CDM methodology AMS-III.H-version03. Methane recovery in wastewater treatment and AMS-I.C.version 21: Thermal energy production with or without electricity**.** The methodology is correctly identified as the project activity is related to methodology. Project description verified through purchase order of Bio Gasifier$_{14}$, Turbine$_{13}$ and Boier$_{15}$, and related document and commissioning certificate$_{16}$. Applicability of methodology clearly explained in section B.2 of registered PCN.
Findings	1. The version of reference methodology is not mentioned in the PCN also PCN and MR version is not updated.
Conclusion	Methology application is appropriate meeting the requirements of UCR and its standardized baseline. The methodology version is correct and valid. Referenced methodology is applicable to project activity.

D.3-2.Clarification on applicability of methodology, tool and/or standardized baseline:

Means of Project Verification	Methodology has not been applied “as it is” rather it is referenced. The applicability of baseline is clearly established in section B.2 of the registered PCN. Biomass used by the project plant is limited to biomass residues from sugarcane and biogas from spent wash. Aggregate emissions reductions is less than 60 kt CO2 equivalent annually from all Type III components of the project activity. The recovered methane is used for captive power generation, hence the project uses correctly the corresponding methodology under Type I project activities, i.e. I.C. The total installed electrical energy generation capacity of the project equipment does not exceed 15 MW thus meeting the requirement of small scale project. Project related documents like purchase order of boiler, turbine and gasifier plant were submitted and verified.
Findings	1. Version of PCN is not mentioned in the document. 2. Version of MR is not mentioned in MR.
Conclusion	The methodology is applied correctly along with associated tools and standardized baseline used correctly.

D.3-3.Project boundary, sources and GHGs:

Means of Project Verification	Project boundary is appropriately defined in PCN version 03 which is physical and geographical site of wastewater and sludge treatment, plant generating electricity located at project site and physical location of anerobic digester. The project boundary description is considered true based on EC compliance report[26], for reference environment clearance letter **J-11011/384/2017-IA-II (I), DATED: 17th May, 2019[26]. The source of GHG is correctly reported as per reference methodology.** GHG considered in the baseline scenario is CO_2 and CH_4, N_2O not considered for simplification which is conservative. Activity is installation of new Greenfield project (as expansion project) hence leakage is not considered. IPCC default value is used for MCF which is acceptable as per methodology.
Findings	1. Please provide unique location of project site using suitable longitude and latitude.
Conclusion	Project boundary is correctly defined in revised PCN version 03. GHG source correctly identified and reported. The project meets the requirements of UCR project standard, Verification standard and methodology requirements for boundary, GHG source.

D.3-4.Baseline scenario:

Means of Project Verification	In project baseline scenario the methane would be emitted in the atmosphere. Also the power would be brought from grid to meet the industrial energy requirement. This is described suitably in PCN taking reference to methodology **AMS-III.H.version03** Methane recovery in wastewater treatment and **AMS-I.C**.version21. Thermal energy production with or without electricity. Baseline scenario is appropriately defined in revised PCN/MR version -03 under section B5.
Findings	1. In project scenario the source is identified as biomass fuel (though excluded) however project activity is confined to capture of methane and its combustion for generation of power. Please clarify.
Conclusion	Baseline scenario is appropriately described. The conservative or default value for emission considered. The baseline scenario is in accordance with UCR project verification standard and UCR project standard.

D.3-5.Estimation of emission reductions or net anthropogenic removal:

Means of Project Verification	Monitoring plan as defined in section B8 of monitoring report version 3 identifies the parameters which were being monitored during the crediting period. The parameter includes biogas temperature[28,29], Bio gas pressure [28,29], COD of treated water from digester [28,29],COD of untreated waste water [28,29], flow of waste water[28,29] which are monitored at plant. The monitoring parameter also includes $GWP_{CH4,}$ % $CH_{4,}$ Grid emission factor, MCF, Methane content in treated water, for which

	default value of IPCC or other publicly available source is used. For monitored data the sample plant log sheets submitted and the same has been verified. Based on data extraction from log book the project proponent has provided weekly $data_{28}$ for measured parameters which has been verified. These monitored data and default values used for the estimation of emission reduction which is correct. Further the monitored data is reported in excel spread sheet to calculate the emission reduction which correctly utilized the data to arrive at estimation of emission reduction during the crediting period.
Findings	1. Biogas temperature is 45^0 in monitoring plan however the plant log book does not report this for each hour also the reported temperature is around 35^0 where recorded. 2. Pressure of biogas is reported in weekly data sheet however in plant log book the parameter pressure is not recorded. 3. $COD_{treated}$ is not reported consistently in the log sheet. Also the data unit used in monitoring report is not consistent with data unit reported in plant log sheet. In weekly data sheet it is reported correctly- please clarify. 4. As per monitoring report the $COD_{treated}$ lab test report is not submitted. 5. There is option to report % reduction in BOD/COD however the same is not reported in plant log sheet please clarify.
Conclusion	Emission reductions are correctly calculated. The data used are either monitored at plant or default values applied. For the measured data the reported values provided in weekly data sheet summary for the crediting period. The instruments are calibrated and hence the emission reduction are reported correctly and meets the requirements of UCR verification standard and UCR project standard.

D.3-6.Monitoring Report:

Means of Project Verification	Monitoring report submitted to verifier where in monitoring plan was made available. The monitoring data reported through MR were either measured or default values were used as per reference methodology. The list of major data measured or default value applied are as under. 1. Biogas volume 2. Methane content in biogas. 3. Flow of waste water 4. Average COD 5. Capture and flare efficiency of the methane recovery and combustion equipment in the wastewater treatment- default value of methodology considered. 6. Methane conversion factor- default value of IPCC considered. 7. Grid emission factor- UCR standard value considered. 8. Dissolved Methane content in the treated waste water 9. Chemical Oxygen Demand of treated water from digester 10. Pressure of biogas 11. Temperature of Biogas While assessing the parameters the clarifications were sought and project aggregator provided the clarification.
Findings	1. Please provide biogas measurement record as per monitoring report description. 2. Please provide record of measurement as per monitoring report description. 3.Please provide record of measurement for COD as per description in monitoring report. 4. For dissolved methane content in treated waste water please clearly indicate which value is used in monitoring report. Please mention source of this value in MR. 5. For COD of treated water from digester please provide the record as per description in monitoring report. 6. Please provide the record of pressure maintained for biogas as per monitoring report description. 7. Please provide the record for temperature of biogas as per description in monitoring report. 8. Please provide meter reading details for gross power generation during the monitoring period (DGVCL meter reading record)
Conclusion	Monitoring parameter as reported through MR adequately represents the parameters relevant to emission reduction calculation. The calibration report ensures the accuracy of data reported. The number of CoUs generation is calculated based on this accurately reported data. The calculation was done using excel sheet where all the parameters reported. The emission factor for electricity is as per UCR standard for electricity component. Based on monitoring and emission reduction calculations are correctly calculated and reported. The monitoring report meets the requirements of UCR project verification requirements.

D.4.Start date, crediting period and duration:

Means of Project Verification	Biogas plant commissioning certificate dated 25-1-2020 made available to establish the start date of project for the biogas plant. Also the purchase order of boiler and turbine was made available to establish the start date of power generation. The crediting period is from 01-02-2020 until 30-09-2021. The project life is well beyond current crediting period also the project is running as verified through major legal documents submitted as part of EC compliance report. Further the statutory document like state pollution control board consent to establish and operate verified where the major parameter under consent are listed.
Findings	1. Please provide all the pages of purchase order of turbine.
Conclusion	The start date, crediting period and project duration reported correctly and this meets the requirements of UCR verification standard and UCR project standard.

D.5.Positive Environmental impacts:

Means of Project Verification	Validated PCN, EC compliance report, statutory and legal clearances, verified. The project activity involves avoidance of methane which would have gone to environment leading to Global warming. Also project activity replaces grid power by feeding methane to generate power. Since grid power comes mostly from fossil fuel it saves equivalent amount of fossil fuel. Both consumption of fossil fuel and emission of methane would contribute to net emission to environment thus contributing to Global warming. Because of project activity the methane emission is avoided and net equivalent fossil fuel saved hence project has overall positive impact on environment.
Findings	--
Conclusion	The positive environmental impact meets the requirement of UCR verification standard and UCR project standard.

D.6.Project Owner- Identification and communication:

Means of Project Verification	SNKUSML is project owner which is registered co-operative society$_{6,7}$. The document of registration of SNKUSML dated 16-11-1989 was verified$_{7}$. Purchase agreement for installation of biogas plant between SNKUSML and Ecoboard industries limited$_{14}$ verified. The purchase agreement dated 19th July 2018 verified. The purchase of 2000KW back pressure turbine dated 25th September 2018 verified$_{13}$. Commissioning of biogas plant was done on 25-1-2020 record of commissioning of plant$_{16}$ was made available to verified and the same has been verified.
Findings	1. Please refer to CL in section D-4. 2. Please provide details of alternator/generator 3. Please provide details of auxiliary power consumption. 4. Communication agreement is signed by project owner however the same is not signed by project aggregator.

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Conclusion	Project owner identified through communication agreement signed between PP and PA. Equipment purchase order and commission verified. Also legal document like pollution control board document, NOC clearly establishes the project owner. The identification and communication correctly meets the requirement of project verification and UCR project standard.

D.7.Positive Social Impact:

Means of Project Verification	Project has provided temporary employment to local people during its installation and commissioning. Also post commissioning some of people have employed permanently and local people were engaged leading to social financial benefit to surrounding. Overall social impact of project implementation is positive on the surrounding area.
Findings	---
Conclusion	Project has overall positive social impact.

D.8.Sustainable development aspects (if any)-N/A

Means of Project Verification	
Findings	
Conclusion	

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 aggregator or project owner directly of indirectly.
-Verification team consists of experience personnel.
-Technical review is performed by experienced and independent person.

F.Project Verification opinion:

The "SKV Solutions Private Limited" has performed a verification of the emission reductions reported for the project titled "**Wastewater Methane Recovery Biogas Project at Dharikheda, Gujarat** " UCR ID:004 located at Shree Narmada Khand Udyog Sahakari Mandli Ltd. (SNKUSML), in Village Dharikheda, Region Timbi, Taluka - Rajpipla (Nandod), District Narmada, Gujarat.
Limited for the period: 01/02/2020 to 30/09/2021.
In our opinion, the GHG emissions reductions reported for the project in the monitoring report submitted to SKV are fairly stated.
The GHG emission reductions were calculated correctly on the basis of the approved baseline and monitoring methodology AMS-I.C-V21. and AMS III H V3 and the monitoring plan and formulae provided in the PCN/MR/ER spread sheet. During the course of verification, SKV identified the corrective action request/Corrections/Clarifications, which have been closed by SKV following appropriate clarifications by project aggregator.
SKV Solutions Private Limited is able to certify that the emission reductions from the " Waste water methane recovery Biogas project at Dharikheda,Gujrat" for the period 1st February 2020 to 30th September 2021 amount to 53166 tCO_2 equivalent.

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G.Abbreviations:

Abbreviations	Full texts
UCR	Universal Carbon Registry
SKV	SKV solutions private limitetd
SNKUSML	Shree Narmada Khand Udyog Sahakari Mandli Ltd
COD	Chemical Oxygen Demand
BOD	Biological Oxygen Demand
MR	Monitoring report
MCF	Methane Conversion Factor
GWP	Global Warming Potential
GWP_{CH4}	Global Warming Potential Methane.
PCN	Project Concept Note
ER	Emission Reduction
CoUs	Carbon offset Units.
PA	Project Aggregator
PP/PO	Project Proponent/Project Owner- used interchangeably in report.
EI	External Individual
OE	Outsourced External
CDM	Clean Development Mechanism
CAR	Corrective Action Request
CL	Clarification Request
FAR	Forward Action Request
KLPD	Kilo L/day.

H.Competence of team members and technical reviewers:

No.	Role	Last name	First name	Competence Description
1.	Team Leader and validator	Srivastava	Manoj	Mr. Srivastava is post graduate engineer having more than 10 years of experience in the field of Carbon mitigation projects. He is also qualified Validator/Verified and lead auditor for CDM. Also Mr. Srivastava is certified energy manager and lead auditor for quality management system and environmental management system.
..	Technical Expert	Trehan	Ravinder	Mr. Ravinder Trehan is engineer by qualification and has work experience of more than 35 in various position working for BIS (Bureau of Indian

				Standards). Mr. Ravinder has wide experience in the field of inspection and certification working as regulator implementing various standards requirements across industries. Mr. Ravinder is qualified lead auditor.
..	Financial/ Other Expert	Mittal	Shweta	Ms. Shweta Agarwal is Commerce graduate having experience of about 5 years.

I.Document reviewed or referenced:

No.	Author	Title	References to the document	Provider
1.	UCR	Universal carbon registry communication agreement		Other (PA)
2.	SKV	Initial questionnaire for Verification		SKV/PA
3.	Synergy Global	PCN with its revision		PA/PP
4.	Synergy Global	Monitoring report with its revision		PA/ PP
5.	Synergy Global	Emission Calculation sheet with its revision.		PA/ PP
6.	NOC Gram Panchayat	NOC for SNKUSML issued by Gram Panchayat for establishment of molasses based distilleary		PA/ PP
7.	Sugar Director Gujarat State	Registration certificate SNKUSML		PA/ PP
8.	Gujrat Pollution Control Board	Consent to establish dated 18-2-2019 issued by state pollution control board.		PA/ PP
9.	Gujarat Pollution control Board	CONSENT AND AUTHORIZATION (CC & A) CCA NOr AWH- 104914 dated 22-11-2019		PA/ PP
10.	Balance sheet SNKUSML-2018-19	Balance sheet for the record of entity running status during monitoring period		PA/ PP
11.	Balance sheet SNKUSML-2019-20	Balance sheet for the record of entity running status during monitoring period		PA/ PP
12.	Balance sheet SNKUSML-2020-21	Balance sheet for the record of entity running status during monitoring period		PA/ PP
13.	Triveni Turbines Limited	Purchase order for purchase of 2MW back pressure turbine dated 25-09-2021		PA/ PP

14.	Ecoboard Industries Limited and SNKUSML	Agreement for supply of bio-gas plant and equipment for for 600 m^3/day, dated 19-07-2018		PA/ PP
15.	Bajaj Power Equipment private limited	Award of purchase of 20 TPH boiler dated 01-10-2018		PA/ PP
16.	Ecoboard Industries Ltd.	Commissioning certificate for bio-gas plant dated 25-01-2020		PA/ PP
17.	Social welfare	Summary of expenditure on social welfare during the period 20-06-2019 to 31-06-2020.		PA/ PP
18.	Director of boilers	Boiler registry number for boiler GT-10812 dated 23-03-2020		PA/ PP
19.	SNKUSML	Calibration certificate -Flow meter bearing serial number on digester 19403278		PA/ PP
20.	SNKUSML	Calibration certificate -Flow meter (two feed) bearing serial number on digester 19403277		PA/ PP
21.	SNKUSML	Calibration certificate -Bio gas flow meter bearing identification number 192000000003818		PA/ PP
22.	SNKUSML	Calibration certificate-pressure gauge bearing identification number J177DMU-18-01		PA/ PP
23.	Daxin Gujrat Vij Company Limitted	Power meter test certificate		PA/ PP
24.	SNKUSML	Organization chart		PA/ PP
25.	Ecoboard Industries	Commissioning procedure of Bio gas plant		PA/ PP
26.	Ministry of Environment and Forest	MOEF clearance letter **J-11011/384/2017-IA-II (I), dated: 17th May, 2019**		PA/ PP
27.	Turbine log sheet for monitored data	Log book sheet SNKUSML for 2 MW turbine		PA/ PP
28.	Bio gas generation lot sheet	Log book sheet SNKUSML for Digester 1 and Digeter 2		PA/ PP
29.	Bio gas and power generation weekly summary	Signed summary sheet by SNKUSML		PA/ PP

	sheet for crediting period			
30.	Calibration schedule of measuring instruments	Summary sheet of calibration schedule for measuring instruments.		PA/ PP
31.	Social Welfare work summary	Description of social and amount by SNKUSML		PA/ PP
32.	Flow of spent wash in digester	SNKUSML		PA/ PP
33.	Biogas plant digester log sheet for digester 1 and 2.	SNKUSML		PA/ PP
34.	Daily bio gas generation sample log book	SNKUSML		PA/ PP
35.	Power generation data turbo alternator log sheet	SNKUSML		PA/ PP
36.	Biogas analysis report- In house test report	SNKUSML		PA/ PP

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

Table 1. CLs from this Project Verification

CL ID	xx	**Section no.**	D.1	**Date:** 05/12/2021
Description of CL				
1. Methodogy is not applied as it is rather referenced the same is not reflecting in PCN. 2. The version of reference methodology not mentioned in the PCN.				
Project Owner's response				**Date:** 10/01/2022
2.PCN revised with the comments that Methodologies are referenced and not applied. Also methodology tools, monitoring parameters, etc are applied. Since major part of methodology was applied except additionality criteria which is not applied hence we used in document that methodology is applied. 3.PCN revised with the Versions of the methodologies updated in revised PCN.				
Documentation provided by Project Owner				
Signed communication agreement submitted. Revised PCN version 03 submitted.				
UCR Project Verifier assessment				**Date:** D31/01/2022
The signed and scanned document between project aggregator and project proponent$_1$ submitted. The document is signed by aggregator on 18th September 2021 and by project proponent on 18th September 2021. Also the project execution date is 18th September 2021 which is correct. Also revised PCN Version 03 submitted with correction as in response above. Clarification is accepted.				

CL ID	xx	Section no.	D.2	Date: 05/12/2021
Description of CL				
1. As per consent to operate dated 18-2-2019 the rectified sprit product capacity is 109.93 Lac L/year. Also plant capacity is 45KLPD which results in about 245 working days. In PCN the operational days is shown as 270 please clarify. 2. Turbine purchase document only signed page submitted please provide the missing pages.				
Project Owner's response				**Date:** 10/01/2022
1. Rectified spirit in CTO is 115.43 Lakhs plus Impure spirit is 6.08 lakhs liter equals to 121.51 lakhs which is equals to 12151 KL divided by 45KLPD, which comes to 270 days 2. Complete document for turbine purchase submitted.				
Documentation provided by Project Owner				
1. Consent to operate and consent to establish by Gujarat pollution control board. 2. Turbine purchase order submitted				
UCR Project Verifier assessment				**Date:** 31/01/2022
The consent to operate (8,9) submitted which was verified. The consent letter dated 18-02-2019 on page 2 does mention about impure spirit as 6.08 lac Lit/Annum. Further there was clarification call with project proponent plant person and the same was clarified. For 45 KLPD plant the working days stands justified. For the present crediting period the actual running of plant is lower than 270. The purchase order of turbine (13) submitted to verifier and the same has been verified. Purchase order is dated 4-10-2018 bearing reference no- NS/Distillery/PT/2018-19/ 1358. Clarification is accepted.				

CL ID	xx	Section no.	D.3-5	Date: 05/12/2021
Description of CL				
1. Biogas temperature is 450 in monitoring plan however the plant log book does not report this for each hour also the reported temperature is around 35^0. 2. Pressure of biogas is reported in weekly data sheet however in plant log book the parameter pressure is not recorded. 3. COD treated is not reported consistently in the log sheet. Also the data unit used in monitoring report is not consistent with data unit reported in plant log sheet. In weekly data sheet it is reported correctly- please clarify. 4. As per monitoring report the COD treated lab test report is not submitted. 5. There is option to report % reduction in BOD/COD however the same is not reported in plant log book please clarify.				
Project Owner's response				**Date:** 10/01/2022

1. The reported temperature in log sheet is digester temperature. The biogas temperature sent to the boiler remains constant at 45 degree. Since this remains constant this was not reported in the hourly section of log book consistently. Also the temperature variation as recorded at some places in log sheet does not impact the quantum of biogas fed in burner because there is facility to capture moister, as may be reported due to variation in temperature, The weekly data sheet submitted captures the weekly average temperature. 2. The pressure of biogas fed to boiler is measured on continues basis which is recorded on daily based however this remains constant throughout hence missed in log sheet further any variation in pressure may cause increase or decrease of moisture which is captured through moister capture devices hence the quality of biogas remains constant. 3. Inlet and Outlet COD is measured once in a day and recorded in the Shift Colum of the Bio gas plant log sheet, which is submitted 4. In house Lab test report submitted 5. Though there is provision in log sheet for hourly reporting of BOD/COD however this is being reported shift wise not on hourly basis. The BOD/COD is being reported in the log sheet for each shift and the weekly data is average of this shift data.
Documentation provided by Project Owner
1. Weekly data for biogas plant. 2. Log book and weekly data
UCR Project Verifier assessment **Date:** 31/01/2022
The temperature of digester is reported in weekly data submitted for the crediting period (29). This is document issued by project proponent dully signed by Distilleary incharge, works manager and Managing director. Further weekly data sheet is extracted from daily log sheet. For the variation of temperature reported the telephonic communication was arranged by project aggregator and plant person clarified the issue. Further this is not causing significant change in emission reduction and conservative approach has been applied while certifying the emission reduction. The non reporting of pressure was clarified further in telephonic conversation and weekly data is extraction from the log sheet. The emission reduction is not significantly affected and hence the clarification is accepted. Inlet and outlet COD is reported once in shift which mentioned in the log booksheet. Sample log book were submitted and the same has been verified. For treated COD the in-house test report was provided by PP. the MR does not specifically mention about provision of third party test report and hence the clarification was accepted. PP may consider test report from third part lab for future verification as third party lab tested report provides more confidence. Clarification is accepted.

CL ID	xx	Section no.	D.3-6	Date: 05/12/2021
Description of CL				
1. Please provide biogas measurement record as per monitoring report description. 2. Please provide record of measurement as per monitoring report description. 3. Please provide record of measurement for COD as per description in monitoring report. 4. For COD of treated water from digester please provide the record as per description in monitoring report. 5. Please provide the record of pressure maintained for biogas as per monitoring report description. 6. Please provide the record for temperature of biogas as per description in monitoring report. 7. Please provide meter reading details for gross power generation during the monitoring period (DGVCL meter reading record)				
Project Owner's response				**Date:** 10/01/2022
1. Biogas daily report submitted 2. Log sheet submitted 3. Log sheet submitted 4. Biogas log sheet submitted 5. The pressure of biogas fed to boiler is measured on continues basis which is recorded on daily based however this remains constant throughout hence missed in log sheet further any variation in pressure may cause increase or decrease of moisture which is captured through moister capture devices hence the quality of biogas remains unaffected. 6. The reported temperature in log sheet is digester temperature. The biogas temperature sent to the boiler remains constant at 45 degree 7. Turbine meter log sheet submitted as Gross generation power log sheet also the meter sealing and test certificate submitted.				
Documentation provided by Project Owner				
Weekly data bio-gas plant for the crediting period. Power generation log sheet.				
UCR Project Verifier assessment				**Date:** 31/01/2022
Weekly data for the crediting period submitted which is dully signed by Distilleary incharge, works manager and Managing Director[29]. The sheet captures data as listed in clarification. Further the meter is installed with installation and sealing date 24-12-2019[23]. Meter is secure make baring identification number X0978286. The sealing report is signed by project proponent representative and Deputy engineer (TEC-I) DGVCL. Further the test certificate, proforma:X, by DGVCL issued on 13-11-2019 for secure make mete number X0978286. Test certificate is signed by Dy Engineer (test lab) DGVCL (Rural). Clarification is accepted.				

CL ID	xx	Section no.	D.4	Date: 05/12/2021
Description of CL				
1. Please provide all the pages of purchase order of turbine.				
Project Owner's response				**Date:** 10/01/2022
1. Complete purchase order submitted				
Documentation provided by Project Owner				
Turbine purchase order				
UCR Project Verifier assessment				**Date:** 31/01/2022
The complete turbine purchase order was submitted which consists of 32 number of pages. The purchase order issued to Triveni turbines limited. Purchase order verified. Clarification accepted.				

CL ID	xx	Section no.	D.6	Date: 05/12/2021
Description of CL				
1. Please provide all pages of turbine purchase order. 2. Please provide details of alternator/generator 3. Please provide details of auxiliary power consumption.				
Project Owner's response				**Date:** 10/01/2021
1. Complete purchase order submitted for turbine which is 32 page document having details about technical specification, performance parameters reported. The details includes auxiliaries and alternator/generator details. 2. Alternator / generator details submitted 3. Auxiliary power consumption submitted				
Documentation provided by Project Owner				
Purchase order turbine Turbo alternator log sheet Weekly data sheet for gasifier plant				
UCR Project Verifier assessment				**Date:** 31/01/2022
Purchase order of turbine was submitted and verified. The detailed purchase order containing 32 pages has details about turbine, auxiliaries and alternator. Turbo alternator sample log book submitted and the same is verified. Also dully signed weekly data for the project crediting period submitted and the same has been verified. Further to account for emission because of auxiliary consumption a conservative approach is used in verification report. Clarification accepted.				

CL ID	xx	Section no.	D.7	Date: DD/MM/YYYY
Description of CL				
2. Expenditure on social welfare is unsigned on plane paper- please provide authenticated document for the expenditure on social welfare.				
Project Owner's response				**Date:** 10/01/2022
1. Authenticated document for Expenditure on social welfare submitted.				
Documentation provided by Project Owner				
Signed document for expenditure on social welfare				
UCR Project Verifier assessment				**Date:** 31/01/2022
For expenditure incurred on social welfare the signed document by account manager and managing director was submitted. The same is verified. Clarification accepted.				

Table 2. CARs from this Project Verification

CAR ID	xx	Section no.	D.1	Date: 05/12/2021
Description of CAR				
1. Communication agreement is signed by project owner however the same is not signed by project aggregator.				
Project Owner's response				**Date:** 10/01/2022
Signed communication agreement between project proponent and project aggregator dully signed with seal is being provided here by.				
Documentation provided by Project Owner				

Signed communication agreement.
UCR Project Verifier assessment **Date:** 31/01/2022
Signed communication agreement between project proponent and project aggregator was submitted dully signed by both project owner and project aggregator. The same has been verified. Corrective action accepted.

CAR ID	xx	**Section no.**	D.3-1	**Date:** 05/12/2021
Description of CAR				
1. The version of reference methodology is not mentioned in the PCN also PCN and MR version is not updated.				
Project Owner's response				**Date:** 10/01/2022
PCN and MR revised with version with updating the version of methodology				
Documentation provided by Project Owner				
Revised PCN/MR version 03.				
UCR Project Verifier assessment				**Date:** 31/01/2022
Revised PCN and monitoring report version 03 was submitted with correct mention of version of applicable methodology. Also other minor corrections were done to PCN. These corrections further clarifies the document without affecting the emission reduction claim hence the Clarification is accepted.				

CAR ID	xx	**Section no.**	D.3-3	**Date:** 05/12/2021
Description of CAR				
1. Please provide unique location of project site using suitable longitude and latitude.				
Project Owner's response				**Date:** 10/01/2022
1. Project site Longitude and Latitude submitted				
Documentation provided by Project Owner				
Revised PCN and MR				
UCR Project Verifier assessment				**Date:** 31/01/2022
Revised PCN and MR has latitude and longitude of project location Rajpipla/Coordinates 21.8715° N, 73.5031° E. Clarification was accepted.				

CL ID	xx	**Section no.**	D.3-4	**Date:** 05/12/2021
Description of CAR				
1. In project scenario the source is identified as biomass fuel (though excluded) however project activity is confined to capture of methane and its combustion for generation of power.				
Project Owner's response				**Date:** 10/01/2022
The project involves capture of methane and combustion of the same to generate power. There is no combustion of biomass fuel the PCN and MR has been revised accordingly and the same is corrected in version 03 of document.				
Documentation provided by Project Owner				
Revised PCN/MR version 03.				
UCR Project Verifier assessment				**Date:** 31/01/2022
The project activity involves capturing methane (biogas) and combusting the same to generate power. Though biomass (bagasse) is being generated from the sugar factory however the combustion of the same is not part of present project activity and any emission reduction from combustion of biomass is not considered under present verification report. Clarification is accepted.				

Table 3. FARs from this Project Verification-NIL

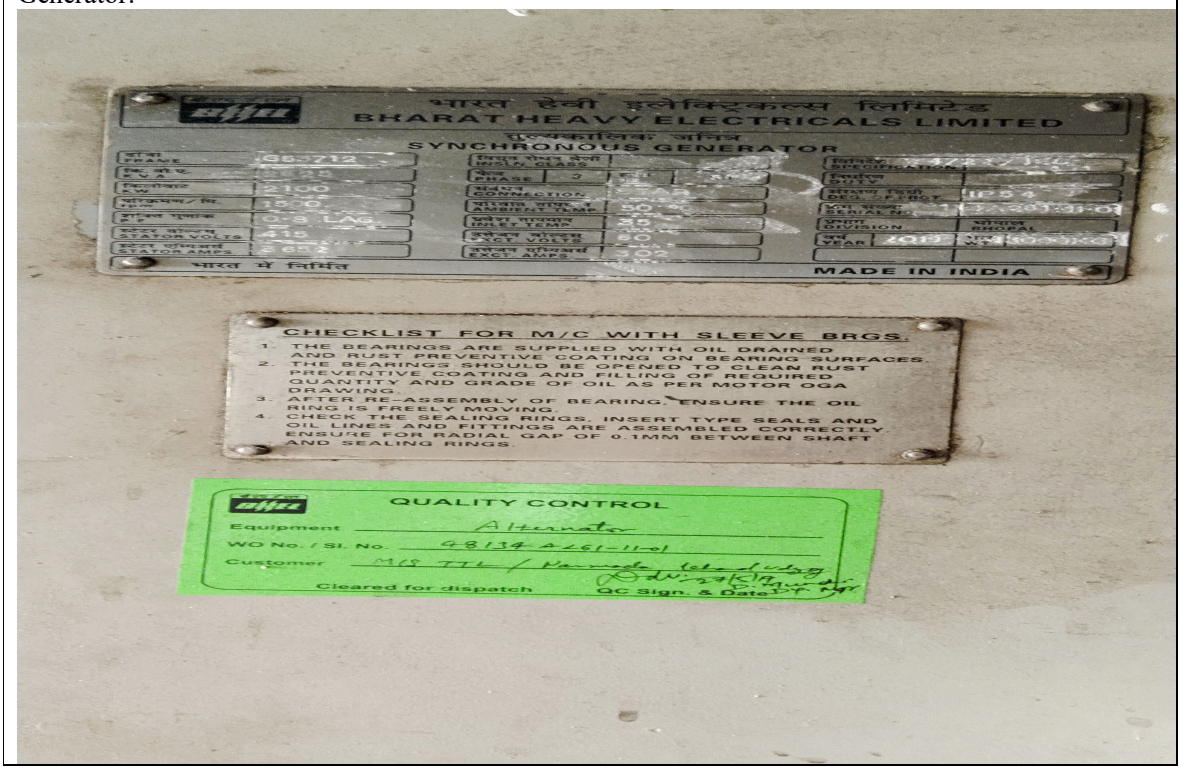
FAR ID	xx	**Section no.**	D.5	**Date:** DD/MM/YYYY
Description of FAR				
Project Owner's response				**Date:** DD/MM/YYYY
Documentation provided by Project Owner				
UCR Project Verifier assessment				**Date:** DD/MM/YYYY

2 MW Energy Meter Bearing Identification Number X0978286:

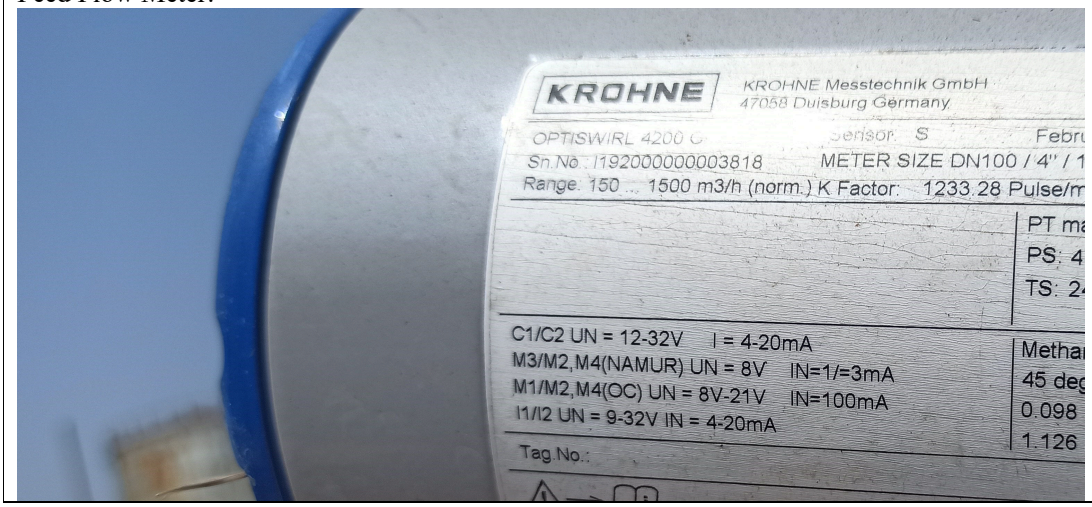
Turbine Name Plate:

Turbine:

Generator:

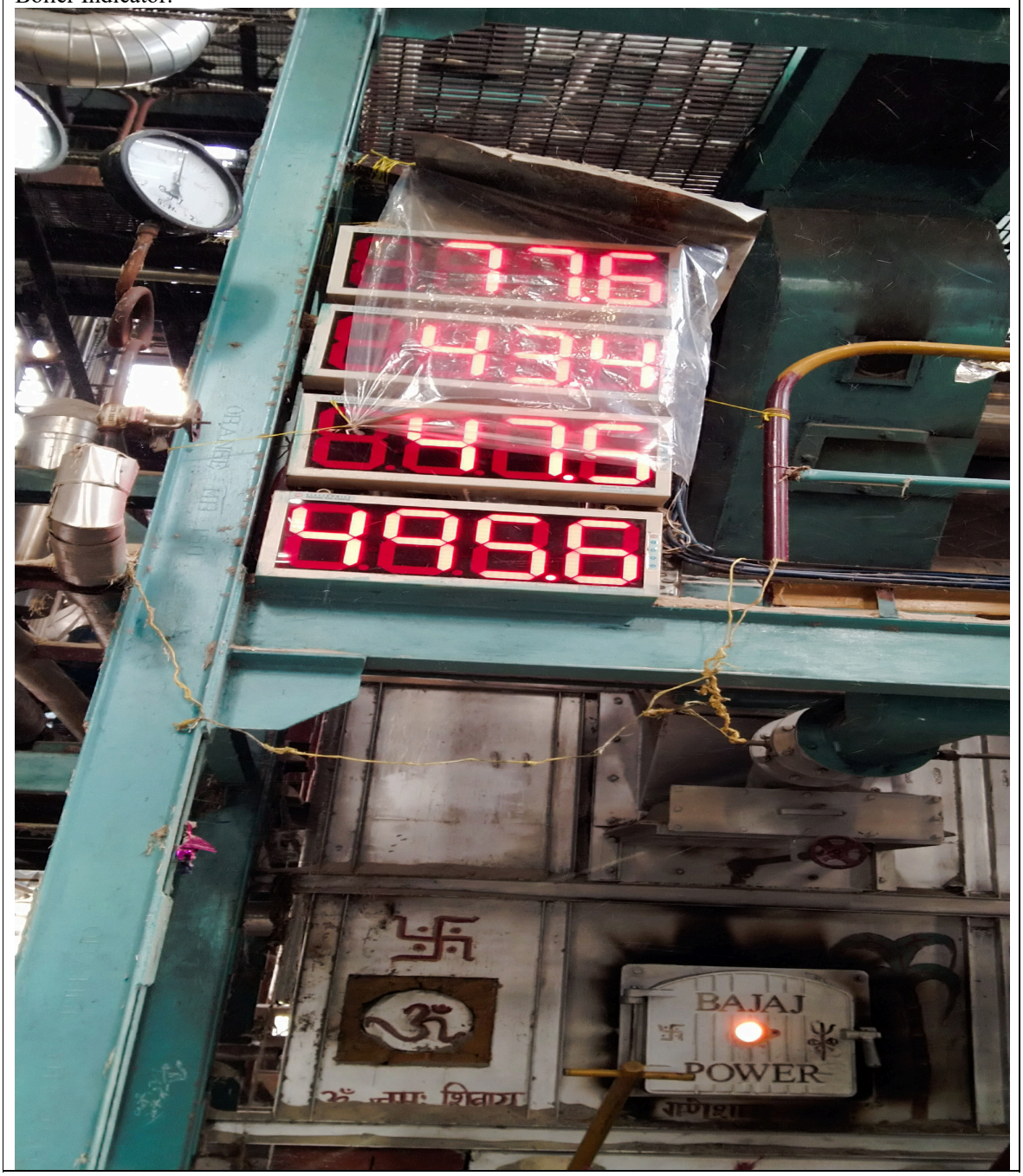


Feed Flow Meter:



Boiler Identification Number:

Boiler Indicator:



Boiler:

Biogas Holder Blower Pipeline to Boiler:

Pipeline to Boiler:

Biogas Pipeline Near Boiler

Biogas Burner At Boiler