Verification Report for

Project : Wastewater Treatment and Biogas Recovery Project, SDDPL, Baramati, Maharashtra, India.

UCR Project ID : 421

Name of Verifier	SQAC Certification Pvt. Ltd.
Date of Issue	April 10, 2024
Project Proponent / Owner	Schreiber Dynamix Dairies Private Ltd. (SDDPL), Baramati, Maharashtra, India.
Work carried by	Mr. Santosh Nair & Ms. Sheetal Wader
Work reviewed by	Mr. Praful Shinganapurkar

Summary:

SQAC Certification Pvt. Ltd. has conducted verification of the "Wastewater Treatment and Biogas Recovery Project" at SDDPL in Baramati, Maharashtra, India. This project aims to install anaerobic digesters for the primary treatment of wastewater, specifically focusing on Mother Liquor, and subsequently harnessing methane-rich biogas produced during the process. The biogas recovered is utilized in retrofitted boilers, thereby replacing an equivalent amount of Furnace Oil (FO). This initiative contributes to the reduction of carbon dioxide (CO_2) emissions by minimizing the necessity for FO combustion in the boilers, thus mitigating environmental impact.

The project activity meets the following UN SDG's:

Verification for the period**: 01/01/2014 to 31/12/2023** (10 Years, 00 Months)

The GHG emission reductions were calculated on the basis of UCR Protocol Standard, CDM UNFCCC Methodology, AMS III. H: Methodology for methane recovery in wastewater treatment. version 19 and AMS-I.C: Methodology for Thermal energy production with or without electricity version 22. The verification was done onsite by way of interviews, onsite document verification and submission of documents for verification.

SQAC is able to certify that the emission reductions from the project Wastewater Treatment and Biogas Recovery Project, SDDPL, Baramati, Maharashtra, India, (UCR ID – 421) for the period **01/01/2014 to 31/12/2023** amounts to **1,23,792 tCO_2 (1,23,792 CoUs)**

Detailed Verification Report:

Purpose:

Schreiber Dynamix Dairies Pvt. Ltd., (SDDPL), also called as Project Proponent (PP) a fully integrated dairy industry is located at Baramati in the state of Maharashtra, India.

The PP has full ownership of the project activity. This project is an operational activity with continuous reduction of GHGs, currently being applied under "Universal Carbon Registry" (UCR).

In June 2015, under Section 18 of the Companies Act 2013, Schreiber Dynamix Dairy Limited was changed into Schreiber Dynamix Dairy Private Limited (SDDPL).

The daily processing capacity of plant is 800,000 - 1,600,000 liters of milk/day which is sourced from surrounding districts. It produces various dairy products through superior technology and process. The products include cheese, butter, ghee, casein, skimmed milk powder, dairy whitener, lactose, whey protein concentrate, whey powder and juices (milk and fruit) in aseptic packing.

While manufacturing of above products the wastewater is generated in two streams:

- Wastewater generated through processing of milk, yogurt, and other dairy products
- Wastewater generated from production of dairy products such as cheese and casein.

Project Activity scenario:

i. Wastewater generated through processing of milk, yogurt and other dairy products will continue to be treated in the existing 4,500 m3/day Wastewater Treatment Plant (WWTP). The biogas generated from anaerobic treatment is captured and is used to fire in the retrofitted boilers with dual fuel burner.
ii. The wastewater generated from production of dairy products such as cheese and casein. A by product called 'whey' is generated during manufacturing of these products. During Lactose

recovery from whey, Mother Liquor (De-Lactose Permeate (DLP)) is generated. Mother liquor has a typical characteristic of 95.62% organic matter having organic load, COD in the range of 250,000 mg/liter to 390,000 mg/liter. This mother liquor is treated in a specially designed RCC constructed anaerobic treatment plant - Mother Liquor Treatment Plant (MLTP) with methane recovery.

iii. Post recovery of methane, additional treatment on mother liquor is needed due to its high organic load. Therefore, it is further treated in the existing 4,500 m^3/day WWTP. Outlets from MLTP get mixed with other stream of wastewater at equalization tank and treated in 4,500 m3/day WWTP.

iv. The biogas generated from four anaerobic digesters of 4,500 m^3/day WWTP, two anaerobic digesters of 45 m^3/day MLTP will be captured and fired in the existing retrofitted boiler RFB 60, SM140.1 & SM140.2 (SM140.1 and SM140.2 which are stand-by boilers for RFB 60. The generated biogas is used exclusively in RFB-60 boiler.)

The UCR project activity involves greenhouse gas emissions reduction through two methods:

1. Firstly, by directing the flow of Mother Liquor into closed anaerobic digesters, which prevents the release of methane (CH_4) into the atmosphere; and
2. Secondly, by utilizing biogas generated from a 45 m^3/day Mother Liquor Treatment Plant (MLTP) and an existing 4,500 m^3/day Wastewater Treatment Plant (WWTP) in retrofitted boilers, replacing an equivalent quantity of Furnace Oil (FO) or Low Sulphur Heavy Stock (LSHS). This substitution reduces carbon dioxide (CO_2) emissions by decreasing the amount of FO burned in the boilers, thus contributing to overall emissions reduction.

The UCR project activity qualifies under the environmental additional positive list of pre-approved project types under the UCR carbon incentive model for issuance of voluntary carbon credits.

UCR Monitoring Period Number	01
Start Date (DD/MM/YYYY)	01/01/2014
End Date (DD/MM/YYYY)	31/12/2023
Total Emission Reductions over the monitoring period (CoUs)	**1,23,792 tCO_2**

Schreiber Dynamix Dairies Ltd.

Projects/WWTP-Expn/09-10/002

Commissioning Certificate

This is to certify that,

Project Name	:	Installation of Biogas Generation Plant
Activity Name	:	Installation of Biogas Generation plant to generate biogas from De-lactose permeate (mother Liquor) and utilize it in boiler to generate steam
Section	:	WWTP
Job Code No	:	SU 09 Ana-1 : P02 Ana-2 : 12739
Start Date:	:	15th Sept 2008
Completion Date:	:	25th Sept 2009

has been commissioned.

Major Deliverables –

1) Installation of mother liquor pretreatment system – mother liquor heating and pH correction system
2) and Construction and installation of Anaerobic mother liquor treatment system – RCC digesters – 2nos, Recirculation system
3) Construction and installation of biogas collection system – Gas holder, Moisture traps and biogas flare.
4) Installation of biogas transfer system – Gas blowers, biogas transfer line.
5) Retrofitting of existing boilers – 2nos, (SM 140 B1 and SM 140 B2) for efficient burning of biogas in boilers to generate steam.
6) Interconnecting the plant with existing wastewater treatment plant for further treatment of wastewater generated from mother liquor.

Acceptance Criteria –

1) Treatment of mother liquor of quantity 36 m3/day.
2) Generation and utilization of biogas in the boiler.

User and Project Dept., agree that the Plant or above-named Section(s) (if applicable) has (have) attained the Performance Criteria specified in the Contract to be tested during Commissioning and that the Plant or Section (s) serves its (serve their) basic intended purpose as specified in the Contract.

The undersigned herewith confirm that **"Installation of Biogas Generation Plant"** Project with all accessories is installed as per requirements is accepted as fully commissioned.

Hemant Chavan	Shivaji Dhumal	Jitendra Jadhav
Manager - Utilities & Maint.	Manager - Engg & Projects	General Manager - Projects

SCHREIBER
Regd. Off: A 306/307, Dynasty Business Park, 58, Andheri Kurla Road, Andheri (E), Mumbai - 400 059, India. Tel: +91 22 6771 1900 - 01 • Fax: +91 22 6771 1910 - 11 Email: info@dynamixdairy.com
Factory: E34, MIDC, Bhigwan Road, Baramati 413 133, Dist. Pune, Maharashtra Tel: +91 2112 240821 / 22 / 23 / 24 • Fax: +91 2112 243710
Dynamix

Schreiber Dynamix Dairies Ltd.

Projects/WWTP-Expn/09-10/002

Commissioning Certificate

This is to certify that,

Project Name	:	Wastewater Treatment Plant Capacity Expansion
Activity Name	:	Expansion of Wastewater Treatment Plant by 1,000 m^3/day to treat 3,000 m^3 wastewater per day
Section	:	WWTP
Job Code No	:	SU09 Ana_1 – P01 Ana_2 – 12740
Start Date:	:	15th Sept 2008
Completion Date:	:	15th Sept 2009

has been commissioned.

Major Deliverables –

1) Installation of wastewater pretreatment system – pH correction, flocculation and DAF unit.
2) Construction and installation of Anaerobic wastewater system – RCC digester, Tube settler, sludge sump
3) Construction and installation of secondary treatment system for wastewater – Aeration system, secondary clarifier.
4) Construction and installation of tertiary treatment system for wastewater – Ozonation system, Multi-grade filter.
5) Installation of sludge treatment system – sludge transfer system, centrifuges
6) Interconnecting the new plant with existing plant wastewater treatment plant.

Acceptance Criteria –

1) Treatment of wastewater of quantity 1,000 m3/day.
2) Treated water should meet pollution control board norms.

User and Project Dept., agree that the Plant or above-named Section(s) (if applicable) has (have) attained the Performance Criteria specified in the Contract to be tested during Commissioning and that the Plant or Section (s) serves its (serve their) basic intended purpose as specified in the Contract.

The undersigned herewith confirm that the **WWTP Expansion Project** with all accessories is installed as per requirements is accepted as fully commissioned.

Hemant Chavan	Shivaji Dhumal	Jitendra Jadhav
Manager - Utilities & Maint.	Manager - Engg & Projects	General Manager - Projects

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Regd. Off: A 306/307, Dynasty Business Park, 58, Andheri Kurla Road, Andheri (E), Mumbai - 400 059, India. Tel: +91 22 6771 1900 - 01 • Fax: +91 22 6771 1910 - 11 Email: info@dynamixdairy.com
Factory: E-94, MIDC, Bhigwan Road, Baramati 413 133, Dist. Pune, Maharashtra Tel: +91 2112 240821 / 22 / 23 / 24 • Fax: +91 2112 243710
Dynamix

DiligenT

Date: 02/01/2015

COMPLETION REPORT

Client : **M/S. SCHREIBER DYNAMIX DAIRIES LTD., BARAMATI**

Project : WWTP-1500 m3/day capacity for Sahara Project.

PO Nos : 24352 dated 05 Feb 2013 and 24384 dated 06 Feb 2013

SUPPLY, INSTALLATION AND PRE-COMMISSIONING of the Waste Water Treatment Plant (WWTP) Capacity-1500 m3/day have been completed successfully.

The following work has been completed in all respect regarding the installation, testing and commissioning of the WWTP.

1. UASB Reactor Internal Work
2. Biogas handling system comprising of Biogas Holder, Biogas Blowers, Foam trap, Sediment trap, Flame arrester & Biogas flare
3. Installation of DAF System
4. Pumps, Aerators, Agitators, Dosing Systems and Secondary Clarifier mechanism
5. PSF & ACF, Chlorine Dosing System
6. Piping, fittings and valves
7. Electrical & Instrumentation work
8. Pre commissioning
9. Seed sludge loading
10. Commissioning of all the mechanical items (Enclosed Annexure-1)
11. Biological pre-commissioning (Enclosed Annexure-2)

The WWTP Pre-commissioning work has been completed in the month of December 2014 and full load performance trial will be given when effluent as per designed quantity and parameters available at site.

For DILIGENT SOLUTIONS T. S. PVT. LTD

N. V. JOSHI
DIRECTOR

For SCHREIBER DYNAMIX DAIRIES LTD.

Madhukar S. Apte

P. P. Joshi

Diligent Solutions Technology Services Pvt. Ltd.
7, Chintamani Apts., Plot No. 16, Chintamani Society, S. No. 25/4, Karvenagar, Pune 411052
Teletax : +91-20-25454446, 25444066 E-mail: dstspune@vsnl.net

DiligenT

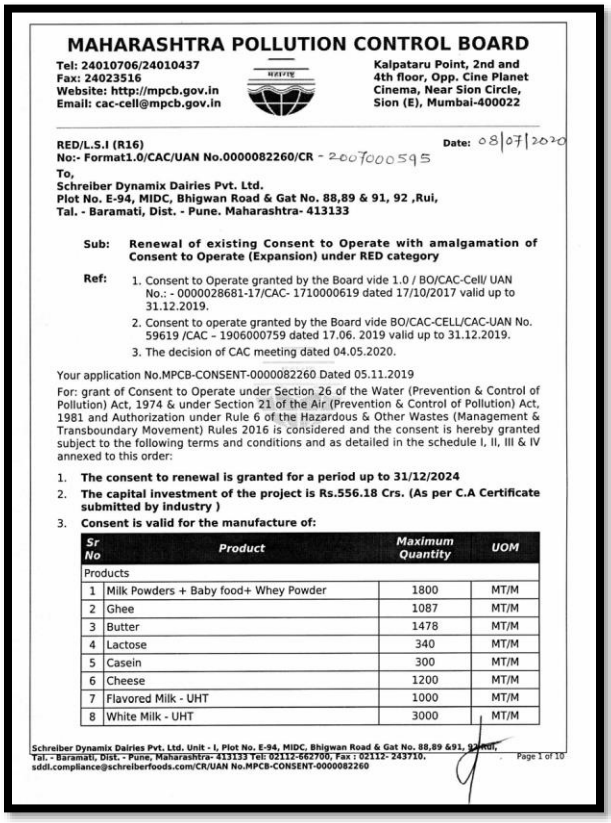
Annexure-I 7-Apr-14

Project : WWTP-1500 m3/day capacity for Sahara Project.
Following equipments & instruments has been erected & Installation done.

Sr.No.	Equipment Name	Remarks
1	UASB REACTOR FED PUMP -1 MAIN	FOUND SATISFACTORY
2	UASB REACTOR FED PUMP -2 STANDBY	FOUND SATISFACTORY
3	AERATOR IN AERATION TANK	FOUND SATISFACTORY
4	HIGH PRESSURE PUMP - 1 MAIN	FOUND SATISFACTORY
5	HIGH PRESSURE PUMP - 2 STANDBY	FOUND SATISFACTORY
6	DAF FEED PUMP - 1 MAIN	FOUND SATISFACTORY
7	DAF FEED PUMP - 2 STANDBY	FOUND SATISFACTORY
8	PSF FEED PUMP - 1 MAIN	FOUND SATISFACTORY
9	PSF FEED PUMP - 2 STANDBY	FOUND SATISFACTORY
10	PSF FEED PUMP - 3	FOUND SATISFACTORY
11	DAF SYSTEM	FOUND SATISFACTORY
12	AGITATOR FOR SLUDGE SUMP	FOUND SATISFACTORY
13	SLUDGE RECYCLE PUMP - 1 MAIN	FOUND SATISFACTORY
14	SLUDGE RECYCLE PUMP - 2 STANDBY	FOUND SATISFACTORY
15	DECAN TER FEED PUMP - 1 MAIN	FOUND SATISFACTORY
16	DECAN TER FEED PUMP - 2 STANDBY	FOUND SATISFACTORY
17	BIOGAS BLOWER 1 MAIN	FOUND SATISFACTORY
18	BIOGAS BLOWER - 2 STAND BY	FOUND SATISFACTORY
19	MIXER IN EQUALISATION TANK - 1	FOUND SATISFACTORY
20	MIXER IN EQUALISATION TANK - 2	FOUND SATISFACTORY
21	AIR COMPRESSOR	FOUND SATISFACTORY
22	SECONDARY CLARIFIER MECHANISM	FOUND SATISFACTORY
23	AGITATOR FOR ALUM DOSING TANK	FOUND SATISFACTORY
24	AGITATOR FOR POLY DOSING TANK	FOUND SATISFACTORY
25	AGITATOR FOR CAUSTIC DOSING TANK	FOUND SATISFACTORY
26	DOSING PUMP FOR ALUM DOSING - 1 MAIN	FOUND SATISFACTORY
27	DOSING PUMP FOR ALUM DOSING - 2 STANDBY	FOUND SATISFACTORY
28	DOSING PUMP FOR POLY DOSING - 1 MAIN	FOUND SATISFACTORY
29	DOSING PUMP FOR POLY DOSING - 2 STANDBY	FOUND SATISFACTORY
30	DOSING PUMP FOR ACID DOSING - 1 MAIN	FOUND SATISFACTORY
31	DOSING PUMP FOR ACID DOSING - 2 STANDBY	FOUND SATISFACTORY
32	DOSING PUMP FOR LIME DOSING - 1 MAIN	FOUND SATISFACTORY
33	DOSING PUMP FOR LIME DOSING - 2 STANDBY	FOUND SATISFACTORY
34	LEVEL SWITCH FOR DAF FEED PUMPS	FOUND SATISFACTORY
35	LEVEL SWITCH FOR REACTOR FEED PUMPS	FOUND SATISFACTORY
36	LEVEL SWITCH FOR DECANTER FEED PUMPS	FOUND SATISFACTORY
37	LEVEL SWITCH FOR PSCF ACF FEED PUMPS	FOUND SATISFACTORY
38	LIMIT SWITCH FOR GAS HOLDER	FOUND SATISFACTORY
39	LIMIT SWITCH FOR GAS HOLDER	FOUND SATISFACTORY
40	LIQUID FLOW METER ON REACTOR FEED PUMP DISCHARGE LINE	FOUND SATISFACTORY
41	LIQUID FLOW METER ON DAF FEED PUMP DISCHARGE LINE	FOUND SATISFACTORY
42	pH CONTROLLER	FOUND SATISFACTORY
43	UASB SYSTEM - BOTTOM DISTRIBUTION, THREE PHASE	FOUND SATISFACTORY
44	SEPERATOR, BIOGAS COLLECTION SYSTEM	FOUND SATISFACTORY
45	BIOGAS HANDLING SYSTEM - FOAM TRAP, SEDIMENT TRAP	FOUND SATISFACTORY
46	FLAME ARRESTERS, BIOGAS FLARE, PVRV	FOUND SATISFACTORY
47	BIOGAS HOLDER AND ACCESSORIES, MANOMETER	FOUND SATISFACTORY
48	CLORINE PUMPS WORKING NEAR ACF & PSF	FOUND SATISFACTORY
49	CLORINE PUMPS STAND BY NEAR ACF & PSF	FOUND SATISFACTORY
50	PSF & ACF	FOUND SATISFACTORY
51	MCC panel & CABLING , LPBS	FOUND SATISFACTORY
52	PIPING, FITTING AND VALVES COMPLETE	FOUND SATISFACTORY
53	BIOGAS PIPING TO EXISTING BIOGAS HOLDER	FOUND SATISFACTORY

Diligent Solutions Technology Services Pvt. Ltd.
7, Chintamani Apts., Plot No. 16, Chintamani Society, S. No. 25/4, Karvenagar, Pune 411052
Teletax : +91-20-25454446, 25444066 E-mail: dstspune@vsnl.net

Pollution Board Renewal of Existing Consent to Operate - 08/07/2020.



MAHARASHTRA POLLUTION CONTROL BOARD

Tel: 24010706/24010437
Fax: 24023516
Website: http://mpcb.gov.in
Email: cac-cell@mpcb.gov.in

Kalpataru Point, 2nd and 4th floor, Opp. Cine Planet Cinema, Near Sion Circle, Sion (E), Mumbai-400022

RED/L.S.I (R16)
No:- Format1.0/CAC/UAN No.0000082260/CR - 2007000595

Date: 08/07/2020

To,
Schreiber Dynamix Dairies Pvt. Ltd.
Plot No. E-94, MIDC, Bhigwan Road & Gat No. 88,89 & 91, 92 ,Rui,
Tal. - Baramati, Dist. - Pune. Maharashtra- 413133

Sub: **Renewal of existing Consent to Operate with amalgamation of Consent to Operate (Expansion) under RED category**

Ref:
1. Consent to Operate granted by the Board vide 1.0 / BO/CAC-Cell/ UAN No.: - 0000028681-17/CAC- 1710000619 dated 17/10/2017 valid up to 31.12.2019.
2. Consent to operate granted by the Board vide BO/CAC-CELL/CAC-UAN No. 59619 /CAC – 1906000759 dated 17.06. 2019 valid up to 31.12.2019.
3. The decision of CAC meeting dated 04.05.2020.

Your application No.MPCB-CONSENT-0000082260 Dated 05.11.2019

For: grant of Consent to Operate under Section 26 of the Water (Prevention & Control of Pollution) Act, 1974 & under Section 21 of the Air (Prevention & Control of Pollution) Act, 1981 and Authorization under Rule 6 of the Hazardous & Other Wastes (Management & Transboundary Movement) Rules 2016 is considered and the consent is hereby granted subject to the following terms and conditions and as detailed in the schedule I, II, III & IV annexed to this order:

1. **The consent to renewal is granted for a period up to 31/12/2024**
2. **The capital investment of the project is Rs.556.18 Crs. (As per C.A Certificate submitted by industry)**
3. **Consent is valid for the manufacture of:**

Sr No	Product	Maximum Quantity	UOM
Products			
1	Milk Powders + Baby food+ Whey Powder	1800	MT/M
2	Ghee	1087	MT/M
3	Butter	1478	MT/M
4	Lactose	340	MT/M
5	Casein	300	MT/M
6	Cheese	1200	MT/M
7	Flavored Milk - UHT	1000	MT/M
8	White Milk - UHT	3000	MT/M

Sr No	Product	Maximum Quantity	UOM
9	Fruit Juice - UHT	7500	MT/M
10	UHT - Liquid ORS	3850	MT/M
11	UHT - Oats Milk Dairy Products	692	MT/M
12	UHT- High Viscous Products	1750	MT/M
13	Lassi	100	MT/M
14	Dahi	350	MT/M
15	Yoghurt	600	MT/M

4. **Conditions under Water (P&CP), 1974 Act for discharge of effluent:**

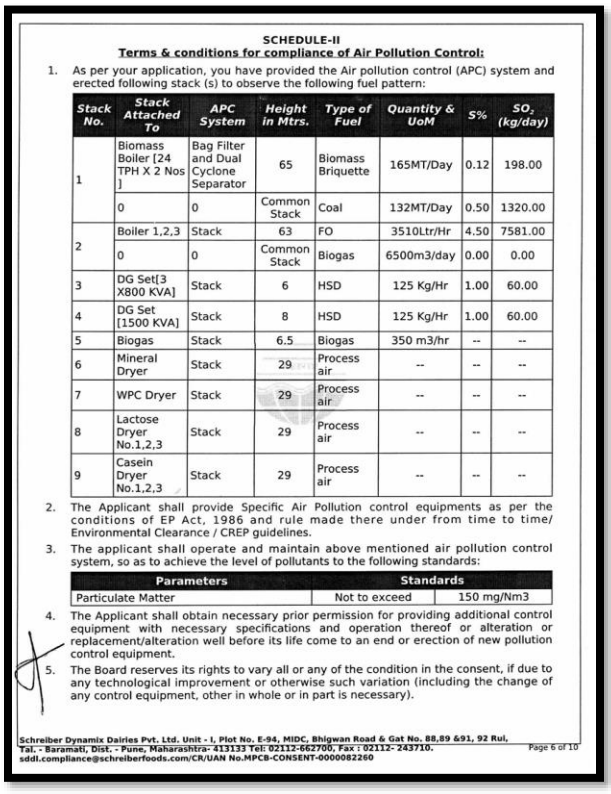
Sr No	Description	Permitted (in CMD)	Standards to	Disposal Path
1.	Trade effluent	2658	As per Schedule-I	On land for gardening / irrigation.
2.	Domestic effluent	227	As per Schedule-I	On land for gardening / irrigation.

5. **Conditions under Air (P& CP) Act, 1981 for air emissions:**

Sr No.	Stack No.	Description of stack / source	Number of Stack	Standards to be achieved
1	1	Bio mass Boiler [24 TPH]	1	As per Schedule -II
2	2	Boiler [24 TPH]	1	As per Schedule -II
3	3	Boilers [1,2,3]	1	As per Schedule -II
4	4	DG Set - (3 X 800 KVA)	1	As per Schedule -II
5	5	DG Set - (1 X 1500 KVA)	1	As per Schedule -II
6	6	Bio gas plant	1	As per Schedule -II
7	7	Mineral Dryer	1	As per Schedule -II
8	8	WPC Dryer	1	As per Schedule -II
9	9	Lactose No.1,2,3	1	As per Schedule -II
10	10	Casein no.1,2,3	1	As per Schedule -II

6. **Non-Hazardous Wastes:**

Sr No	Type of Waste	Quantity	UoM	Treatment	Disposal
1	ETP Sludge	9	MT/Day	Landfill	Used as manure
2	Boiler Ash	25	MT/Day	Reuse/ landfill	Land Filling or will be utilized for manufacturing of construction materials like Brick, Cement & et



SCHEDULE-II
Terms & conditions for compliance of Air Pollution Control:

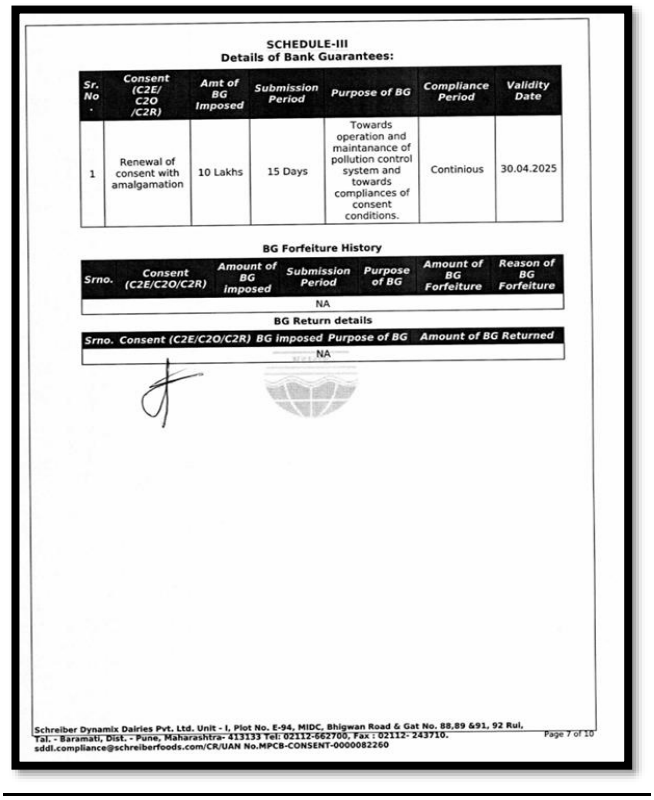
1. As per your application, you have provided the Air pollution control (APC) system and erected following stack (s) to observe the following fuel pattern:

Stack No.	Stack Attached To	APC System	Height in Mtrs.	Type of Fuel	Quantity & UoM	S%	SO_2 (kg/day)
1	Biomass Boiler [24 TPH X 2 Nos]	Bag Filter and Dual Cyclone Separator	65	Biomass Briquette	165MT/Day	0.12	198.00
	0	0	Common Stack	Coal	132MT/Day	0.50	1320.00
2	Boiler 1,2,3	Stack	63	FO	3510Ltr/Hr	4.50	7581.00
	0	0	Common Stack	Biogas	6500m3/day	0.00	0.00
3	DG Set[3 X800 KVA]	Stack	6	HSD	125 Kg/Hr	1.00	60.00
4	DG Set [1500 KVA]	Stack	8	HSD	125 Kg/Hr	1.00	60.00
5	Biogas	Stack	6.5	Biogas	350 m3/hr	--	--
6	Mineral Dryer	Stack	29	Process air	--	--	--
7	WPC Dryer	Stack	29	Process air	--	--	--
8	Lactose Dryer No.1,2,3	Stack	29	Process air	--	--	--
9	Casein Dryer No.1,2,3	Stack	29	Process air	--	--	--

2. The Applicant shall provide Specific Air Pollution control equipments as per the conditions of EP Act, 1986 and rule made there under from time to time/ Environmental Clearance / CREP guidelines.
3. The applicant shall operate and maintain above mentioned air pollution control system, so as to achieve the level of pollutants to the following standards:

Parameters	Standards	
Particulate Matter	Not to exceed	150 mg/Nm3

4. The Applicant shall obtain necessary prior permission for providing additional control equipment with necessary specifications and operation thereof or alteration or replacement/alteration well before its life come to an end or erection of new pollution control equipment.
5. The Board reserves its rights to vary all or any of the condition in the consent, if due to any technological improvement or otherwise such variation (including the change of any control equipment, other in whole or in part is necessary).



SCHEDULE-III
Details of Bank Guarantees:

Sr. No.	Consent (C2E/ C2O /C2R)	Amt of BG Imposed	Submission Period	Purpose of BG	Compliance Period	Validity Date
1	Renewal of consent with amalgamation	10 Lakhs	15 Days	Towards operation and maintanance of pollution control system and towards compliances of consent conditions.	Continious	30.04.2025

BG Forfeiture History

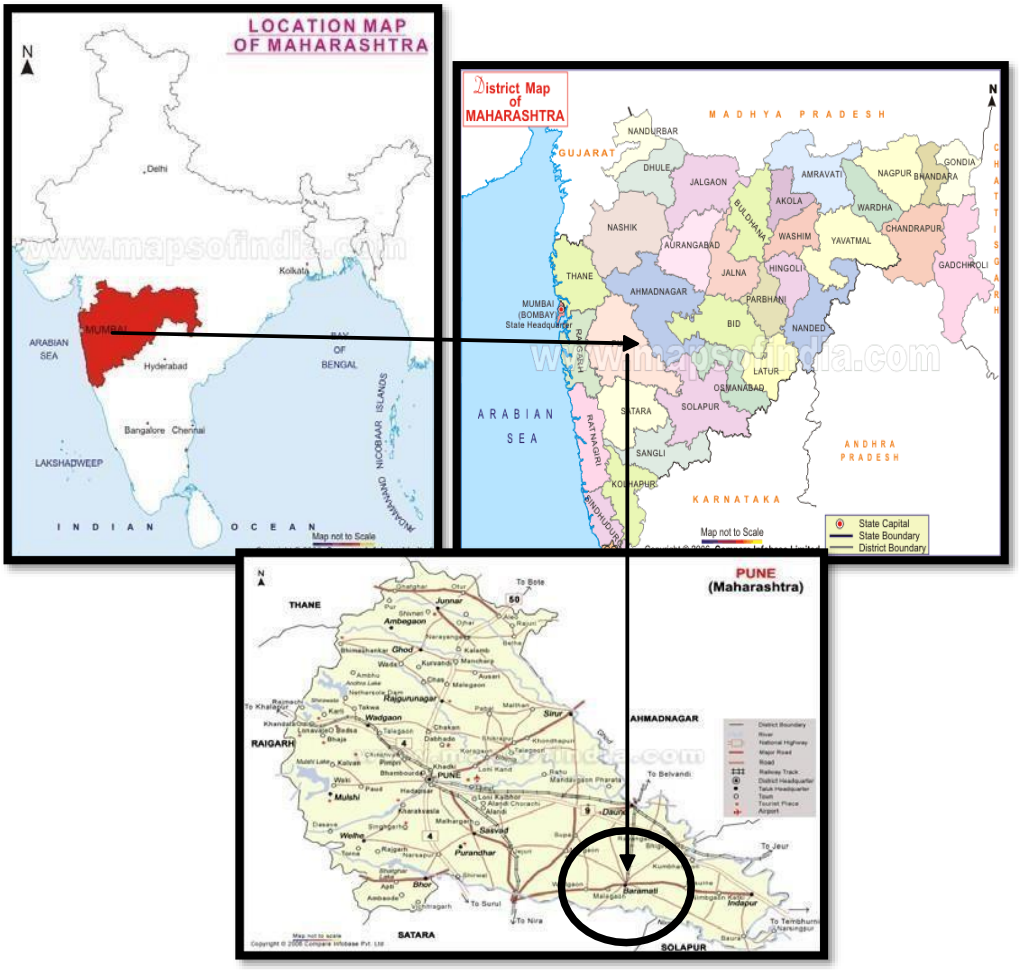
Srno.	Consent (C2E/C2O/C2R)	Amount of BG imposed	Submission Period	Purpose of BG	Amount of BG Forfeiture	Reason of BG Forfeiture
NA						

BG Return details

Srno.	Consent (C2E/C2O/C2R)	BG imposed	Purpose of BG	Amount of BG Returned
NA				

Location of project activity:

Country : India
District : Pune
Taluka : Baramati
State : Maharashtra
Pincode : 413133
Latitude : $18^0$11’24.16”N
Longitude : $74^0$37’ 06.04”E



Source: Google map

Biogas generation site

Scope:

The scope covers verification of emission reductions from the project - Wastewater Treatment and Biogas Recovery Project, SDDPL, Baramati, Maharashtra, India, (UCR ID – 421).

Criteria:

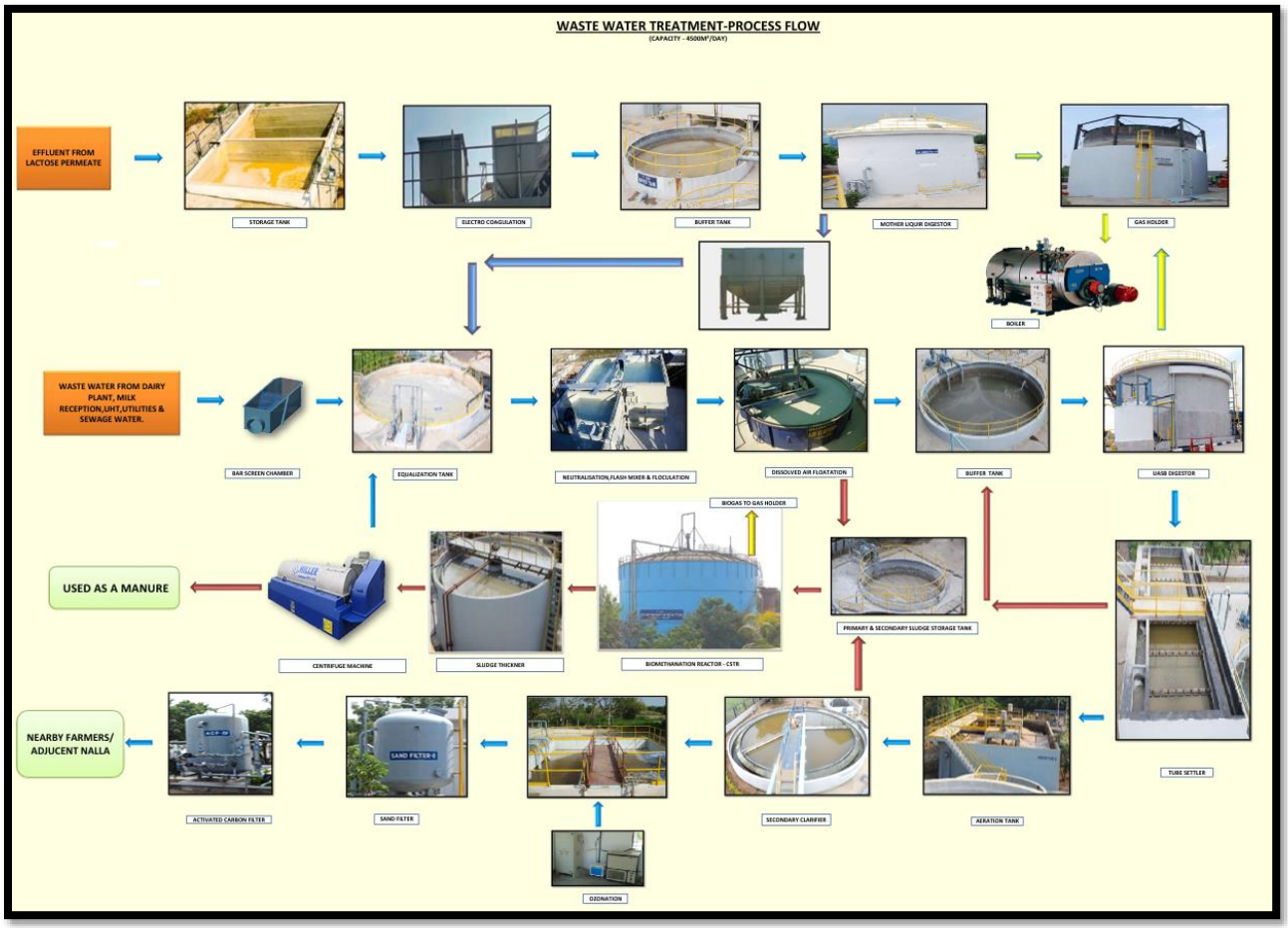
Verification criteria is as per the requirements of UCR Standard.

Description of project:

The UCR project activity involves treatment of mother liquor through following major stages:

1. Mother Liquor Treatment with anaerobic digesters.
2. Biogas Generation, Capture and Transfer to Boilers.
3. Utilization of biogas in boilers as a fuel for partial displacement of furnace oil.
4. Treatment on wastewater generated from mother liquor treatment plant

The project activity is generating steam for captive purposes using biogas from MLTP and WWTP
Each of the above stages of the project activity is briefly explained below in the diagram:



United Nations Sustainable Development Goals:

The project activity is for primary treatment of wastewater (namely Mother Liquor) and subsequently recovering methane rich biogas generated during the process at Schreiber Dynamix Dairies Pvt. Ltd. And the recovered biogas will be used in retrofitted boilers replacing equivalent quantity of FO (Furnace Oil).

Thus, the renewable energy generation from project activity will result in reduction of the greenhouse gas emissions. Positive contribution of the project to the following Sustainable Development Goals:

- SDG 7: Affordable and Clean Energy
- SDG 9: Industry, Innovation, and Infrastructure
- SDG12: Responsible Consumption and Production
- SDG13: Climate Action
- SDG15: Life on Land

Technical details of the project activity

The waste water treatment system consists of the following equipment: Characteristics of the equipment installed:

Design basis for 45m^3/day mother liquor:
The design basis considered to size the various units for Mother Liquor treatment is as follows:

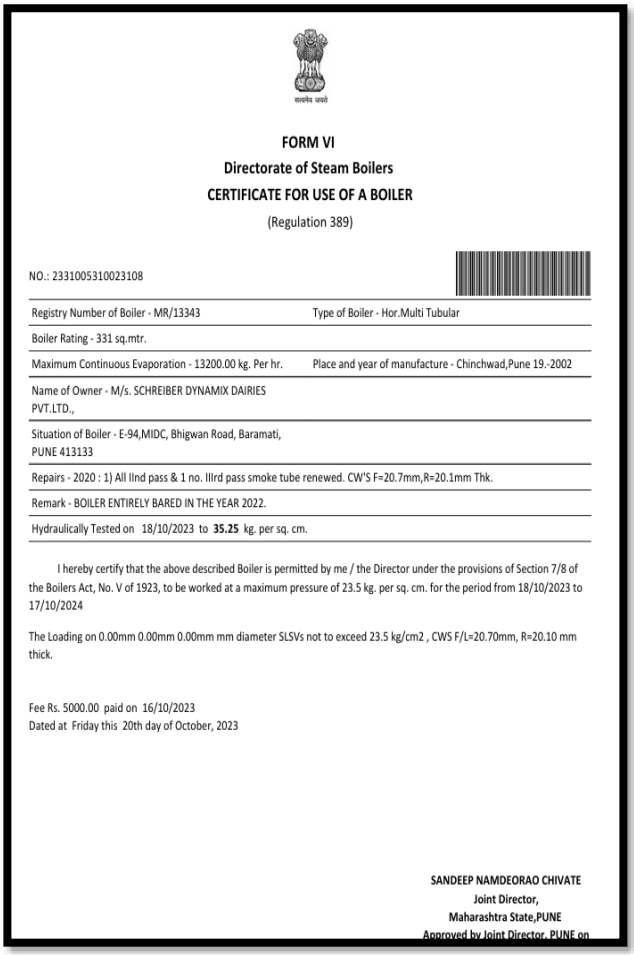
Characteristics	**Mother Liquor**
Total flow	45 m^3/day
COD	390,000 mg/liter
BOD	220,000 mg/liter
TSS	5 % (w/v)
pH	3 – 5.5

Technical specification of Stand-by boilers: (MR13343, MR13450)

Appliance	: Steam boiler
Type	: 3 pass, conventional, smoke tube type
Make	: Thermax Ltd.
Model	: SM 140 B
Sr. No.	: MR13343, MR13450
Steam generation capacity	: 13200 kg/hr (F&A 100^{0}C)
Designed pressure	: 23.5 kg/cm^{2}g
Design temperature	: 250.0^{0}C
Combustion air temperature	: Ambient
Present thermal efficiency considered	: 89% [6]@ NCV with economizer

Technical specification of boilers: (MR12342)

Appliance	: Steam boiler
Type	: 1 pass, conventional, smoke tube type
Make	: Thermax Ltd.
Model	: RFB60
Sr. No.	: MR 12342
Steam generation capacity	: 6000 kg/hr (F&A 100^0C)
Designed pressure	: 17.5 kg/cm^2g
Design temperature	: 207.0^0C
Combustion air temperature	: Ambient
Present thermal efficiency considered	: 89% [6]@ NCV with economizer



सत्यमेव जयते

FORM VI

Directorate of Steam Boilers

CERTIFICATE FOR USE OF A BOILER

(Regulation 389)

NO.: 2331005310023108

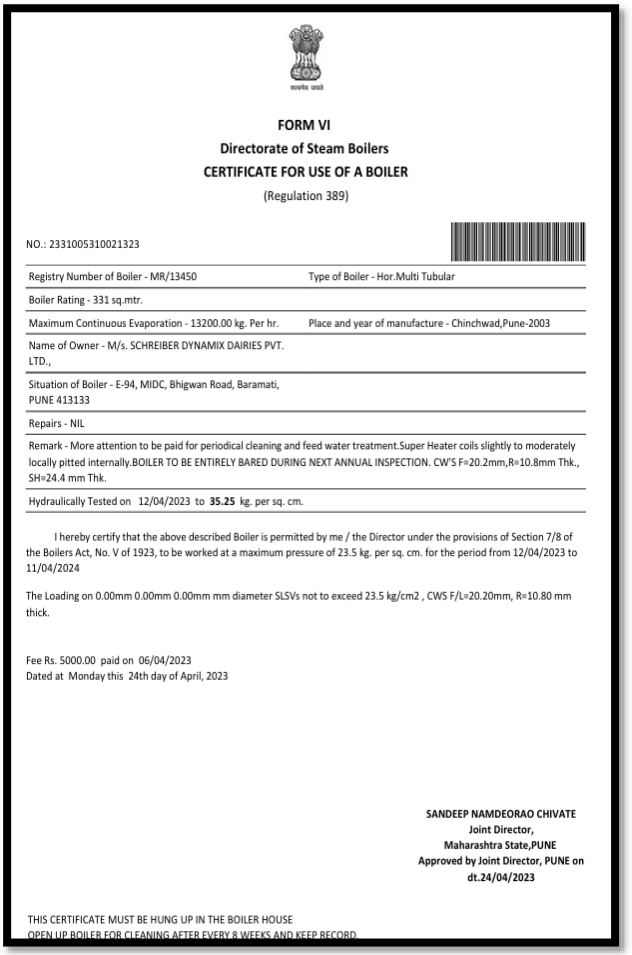
Registry Number of Boiler - MR/13343	Type of Boiler - Hor.Multi Tubular
Boiler Rating - 331 sq.mtr.	
Maximum Continuous Evaporation - 13200.00 kg. Per hr.	Place and year of manufacture - Chinchwad,Pune 19.-2002
Name of Owner - M/s. SCHREIBER DYNAMIX DAIRIES PVT.LTD.,	
Situation of Boiler - E-94,MIDC, Bhigwan Road, Baramati, PUNE 413133	
Repairs - 2020 : 1) All IInd pass & 1 no. IIIrd pass smoke tube renewed. CW'S F=20.7mm,R=20.1mm Thk.	
Remark - BOILER ENTIRELY BARED IN THE YEAR 2022.	
Hydraulically Tested on 18/10/2023 to **35.25** kg. per sq. cm.	

I hereby certify that the above described Boiler is permitted by me / the Director under the provisions of Section 7/8 of the Boilers Act, No. V of 1923, to be worked at a maximum pressure of 23.5 kg. per sq. cm. for the period from 18/10/2023 to 17/10/2024

The Loading on 0.00mm 0.00mm 0.00mm mm diameter SLSVs not to exceed 23.5 kg/cm2 , CWS F/L=20.70mm, R=20.10 mm thick.

Fee Rs. 5000.00 paid on 16/10/2023
Dated at Friday this 20th day of October, 2023

SANDEEP NAMDEORAO CHIVATE
Joint Director,
Maharashtra State,PUNE
Approved by Joint Director, PUNE on



सत्यमेव जयते

FORM VI

Directorate of Steam Boilers

CERTIFICATE FOR USE OF A BOILER

(Regulation 389)

NO.: 2331005310021323

Registry Number of Boiler - MR/13450	Type of Boiler - Hor.Multi Tubular
Boiler Rating - 331 sq.mtr.	
Maximum Continuous Evaporation - 13200.00 kg. Per hr.	Place and year of manufacture - Chinchwad,Pune-2003
Name of Owner - M/s. SCHREIBER DYNAMIX DAIRIES PVT. LTD.,	
Situation of Boiler - E-94, MIDC, Bhigwan Road, Baramati, PUNE 413133	
Repairs - NIL	
Remark - More attention to be paid for periodical cleaning and feed water treatment.Super Heater coils slightly to moderately locally pitted internally.BOILER TO BE ENTIRELY BARED DURING NEXT ANNUAL INSPECTION. CW'S F=20.2mm,R=10.8mm Thk., SH=24.4 mm Thk.	
Hydraulically Tested on 12/04/2023 to **35.25** kg. per sq. cm.	

I hereby certify that the above described Boiler is permitted by me / the Director under the provisions of Section 7/8 of the Boilers Act, No. V of 1923, to be worked at a maximum pressure of 23.5 kg. per sq. cm. for the period from 12/04/2023 to 11/04/2024

The Loading on 0.00mm 0.00mm 0.00mm mm diameter SLSVs not to exceed 23.5 kg/cm2 , CWS F/L=20.20mm, R=10.80 mm thick.

Fee Rs. 5000.00 paid on 06/04/2023
Dated at Monday this 24th day of April, 2023

SANDEEP NAMDEORAO CHIVATE
Joint Director,
Maharashtra State,PUNE
Approved by Joint Director, PUNE on
dt.24/04/2023

THIS CERTIFICATE MUST BE HUNG UP IN THE BOILER HOUSE
OPEN UP BOILER FOR CLEANING AFTER EVERY 8 WEEKS AND KEEP RECORD

FORM VI
Directorate of Steam Boilers
CERTIFICATE FOR USE OF A BOILER
(Regulation 389)

NO.: 2431005310024187

Registry Number of Boiler - MR/12342	Type of Boiler - Flue Tube Shell Type
Boiler Rating - 100 sq.mtr.	
Maximum Continuous Evaporation - 6000.00 kg. Per hr.	Place and year of manufacture - Pune-1994
Name of Owner - M/s. SCHREIBER DYNAMIX DAIRIES PVT. LTD.,	
Situation of Boiler - E-94,MIDC, Bhigwan Road,Baramati, PUNE 413133	
Repairs - 1997: One tube renewed.2002: Connection for level transmitter and 2 nos. surface blow down with dummy provided.33 nos. of tubes renewed.2008: 3 nos. tubes renewed.2015 : One smoke tube renewed.	
Remark - More attention to be paid for periodical cleaning and feed water treatment. CW'S F=18.68mm,R=17.8mm Thk.	
Hydraulically Tested on 03/01/2024 to **26.50** kg. per sq. cm.	

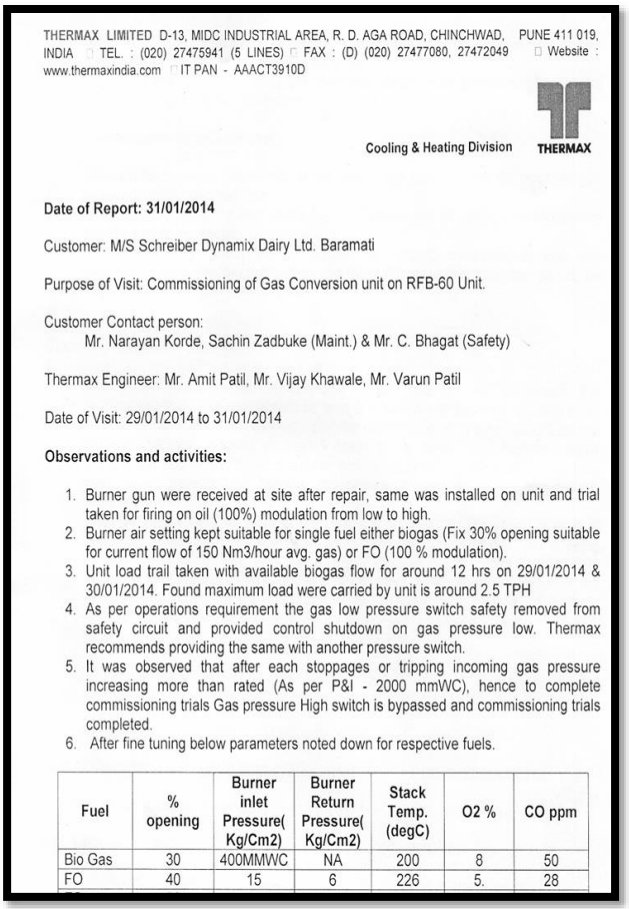
I hereby certify that the above described Boiler is permitted by me / the Director under the provisions of Section 7/8 of the Boilers Act, No. V of 1923, to be worked at a maximum pressure of 17.5 kg. per sq. cm. for the period from 03/01/2024 to 02/01/2025

The Loading on 0.00mm 0.00mm 0.00mm mm diameter SLSVs not to exceed 17.5 kg/cm2 , CWS F/L=18.68mm, R=17.80 mm thick.

Fee Rs. 4000.00 paid on 01/01/2024
Dated at Tuesday this 9th day of January, 2024

SANDEEP NAMDEORAO CHIVATE
Joint Director,
Maharashtra State,PUNE
Approved by Joint Director, PUNE on dt.09/01/2024

THIS CERTIFICATE MUST BE HUNG UP IN THE BOILER HOUSE
OPEN UP BOILER FOR CLEANING AFTER EVERY 8 WEEKS AND KEEP RECORD.



THERMAX LIMITED D-13, MIDC INDUSTRIAL AREA, R. D. AGA ROAD, CHINCHWAD, PUNE 411 019, INDIA TEL. : (020) 27475941 (5 LINES) FAX : (D) (020) 27477080, 27472049 Website : www.thermaxindia.com IT PAN - AAACT3910D

Cooling & Heating Division THERMAX

Date of Report: 31/01/2014

Customer: M/S Schreiber Dynamix Dairy Ltd. Baramati

Purpose of Visit: Commissioning of Gas Conversion unit on RFB-60 Unit.

Customer Contact person:
Mr. Narayan Korde, Sachin Zadbuke (Maint.) & Mr. C. Bhagat (Safety)

Thermax Engineer: Mr. Amit Patil, Mr. Vijay Khawale, Mr. Varun Patil

Date of Visit: 29/01/2014 to 31/01/2014

Observations and activities:

1. Burner gun were received at site after repair, same was installed on unit and trial taken for firing on oil (100%) modulation from low to high.
2. Burner air setting kept suitable for single fuel either biogas (Fix 30% opening suitable for current flow of 150 Nm3/hour avg. gas) or FO (100 % modulation).
3. Unit load trail taken with available biogas flow for around 12 hrs on 29/01/2014 & 30/01/2014. Found maximum load were carried by unit is around 2.5 TPH
4. As per operations requirement the gas low pressure switch safety removed from safety circuit and provided control shutdown on gas pressure low. Thermax recommends providing the same with another pressure switch.
5. It was observed that after each stoppages or tripping incoming gas pressure increasing more than rated (As per P&I - 2000 mmWC), hence to complete commissioning trials Gas pressure High switch is bypassed and commissioning trials completed.
6. After fine tuning below parameters noted down for respective fuels.

Fuel	% opening	Burner inlet Pressure(Kg/Cm2)	Burner Return Pressure(Kg/Cm2)	Stack Temp. (degC)	O2 %	CO ppm
Bio Gas	30	400MMWC	NA	200	8	50
FO	40	15	6	226	5.	28

Level of Assurance:

The verification report is based on onsite audit, information collected through interviews, supporting documents provided during the verification, Project Concept Note (PCN), Monitoring Report (MR) submitted to SQAC. The verification opinion is assured provided the credibility of all the above.

Review of the following documentation was done by SQAC Verifier, Mr. Santosh Nair and Ms. Sheetal Wader, who is experienced in such projects.

Documentation Verified:

- Project Concept Note (PCN)
- Monitoring Report (MR)
- Month wise Quantity of
    - Biogas combusted in the project plant.
    - Steam generation

    - Electricity consumption
    - Furnace oil consumption
- Environmental Clearance
- Commissioning Certificate
- Boiler Certificates
- Shift log books
- Calibration Certificates
- COD Reports
- Waste water generation
- Mother liquor generation
- Data provided upon request of all the documents of the related project.
- JMR's
- Invoices

Sampling:

Not applicable

Person interviewed:

Sr. No.	Auditee Name	Designation	Company
1	Mr. Jitendra Jadhav	Operations Director	Schreiber Dynamix Dairies Pvt. Ltd., India.
2	Mr. Hanumant Jagtap	Plant Manager	Schreiber Dynamix Dairies Pvt. Ltd., India.
3	Mr. Hemant Chavan	Team Leader - Utilities and Maintenance	Schreiber Dynamix Dairies Pvt. Ltd., India
4	Mr. Shivaji Dhumal	Team Leader - Engineering Projects	Schreiber Dynamix Dairies Pvt. Ltd., India.
5	Mr. Ankush Darekar	Team Leader – Elec., Instr. & control	Schreiber Dynamix Dairies Pvt. Ltd., India.
6	Mr. Mansing Mande	Team Advisor - Water, WWTP & Environment	Schreiber Dynamix Dairies Pvt. Ltd., India.
7	Mr. Satish Bhosale	Senior Associate - Boiler	Schreiber Dynamix Dairies Pvt. Ltd., India
8	Mr. Balasaheb Kokare	Senior Associate - Utility Maintenance	Schreiber Dynamix Dairies Pvt. Ltd., India.
9	Mr. Ajay Bandal	Senior Associate - Utility Maintenance	Schreiber Dynamix Dairies Pvt. Ltd., India
10	Mr. Prathamesh Godase	Project Manager - Carbon Credits	Climekare Sustainability Pvt. Ltd.

RAJ CONTROLS

CALIBRATION SALES AND SERVICES

Off. : Gajara Appt., Block No. 1, Ashoknagar, Baramati, Dist : Pune. 413 102
M : 9370475047 / 8975689560
Rajcontrol2011@rediffmail.com / Rajcontrol2011@gmail.com

Baramati, Pune, Satara

CALIBRATION CERTIFICATE

1. REQUESTED BY (NAME & ADDRESS):		CERTIFICATE NO.	RC/SDPV/06
SCHREIBER DYNAMIX PVT. LTD E-94/E-250, MIDC, BHIGWAN ROAD, BARAMATI-413133		JOB NO.	RC/06
		CONDITION OF ITEM AT RECEIPT	OK
		CALIBRATED DATE	14/07/2023
CALIBRATION LOCATION: ON SITE		CALIBRATION DUE DATE	13/07/2025

2. DESCRIPTION OF ITEM:

NAME	FLOW METER	RANGE	0 to 150 NM³/h
MAKE	ENDRESS HAUSER	L.C	0.1 NM³/h
TAG NO	FIQ - 56UASB04	SR.NO	DA0SE202000
MODEL	65F40	LOCATION	BIO GAS GENERATION FROM DIGESTER-4

3. CALIBRATION STANDARDS USED:

NO.	NAME	ID. NO.	CAL BY	REPORT NO.	CAL VALIDITY
1	UNIVERSAL CALIBRATOR	RC-06	SBQ	2246432	28/03/2024
2	DIGITAL MULTIMETER	RC-04	SBQ	2246417	28/03/2024

4. CALIBRATION PROCEDURE NO. : CP-T/02

HUMIDITY: < 70 % RH — AMBIENT TEMP.: 25±4°C

5. CALIBRATION RESULTS:

SR. NO.	% FLOW	ACTUAL CURRENT (MA)	OBSERVED CURRENT (MA)	ACTUAL FLOW RATE NM³/h	OBSERVED FLOW RATE NM³/h	ERROR NM³/h
1	0	4.0	4.0	0.0	0.0	0.0
2	25	8.0	8.1	37.07	37.5	0.2
3	50	12.0	12.1	75.5	75.6	0.1
4	75	16.0	15.7	112.6	112.5	0.1
5	100	20.0	20.0	150.4	150.2	0.2

6. REMARKS:
1. A sticker indicating "CALIBRATION STATUS" has been affixed on the UUC.
2. The standards used for calibration were calibrated by using reference standard traceable to National/International standard.
3. Expanded Uncertainty is calculated at 95.45 % of confidence level where coverage factor k = 2.

CALIBRATED BY NILESH JAGTAP — APPROVED BY VINAYAK KAKADE.

RAJ CONTROLS BARAMATI

RAJ CONTROLS

CALIBRATION SALES AND SERVICES

Off. : Gajara Appt., Block No. 1, Ashoknagar, Baramati, Dist : Pune. 413 102
M : 9370475047 / 8975689560
Rajcontrol2011@rediffmail.com / Rajcontrol2011@gmail.com

Baramati, Pune, Satara

CALIBRATION CERTIFICATE

1. REQUESTED BY (NAME & ADDRESS):		CERTIFICATE NO.	RC/SDPV/11
SCHREIBER DYNAMIX PVT. LTD E-94/E-250, MIDC, BHIGWAN ROAD, BARAMATI-413133		JOB NO.	RC/06
		CONDITION OF ITEM AT RECEIPT	OK
		CALIBRATED DATE	14/07/2023
CALIBRATION LOCATION: ON SITE		CALIBRATION DUE DATE	13/07/2025

2. DESCRIPTION OF ITEM:

NAME	FLOW METER	RANGE	0 to 150 m3/hr
MAKE	ENDRESS HAUSER	L.C	0.1 M³/h
TAG NO	FIQ - 56T501.2	SR.NO	SB003802000
MODEL	PROSONIC -200	LOCATION	BIO GAS GENERATION FROM T501

3. CALIBRATION STANDARDS USED:

NO.	NAME	ID. NO.	CAL BY	REPORT NO.	CAL VALIDITY
1	UNIVERSAL CALIBRATOR	RC-06	SBQ	2246432	28/03/2024
2	DIGITAL MULTIMETER	RC-04	SBQ	2246417	28/03/2024

4. CALIBRATION PROCEDURE NO. : CP-T/02

HUMIDITY: < 70 % RH — AMBIENT TEMP.: 25±4°C

5. CALIBRATION RESULTS:

SR. NO.	% FLOW	ACTUAL CUURNT (MA)	OBSERVED CURRENT (MA)	ACTTULA FLOW RATE M3/HR	OBSERVED FLOW RATE m³/hr	ERROR m³/hr
1	0	4.0	4.0	0.0	0.0	0.0
2	25	8.0	8.1	37.08	37.6	0.2
3	50	12.0	12.1	75.7	75.6	0.1
4	75	16.0	15.7	112.7	112.5	0.2
5	100	20.0	20.0	150.8	150.6	0.2

6. REMARKS:
1. A sticker indicating "CALIBRATION STATUS" has been affixed on the UUC.
2. The standards used for calibration were calibrated by using reference standard traceable to National/International standard.
3. Expanded Uncertainty is calculated at 95.45 % of confidence level where coverage factor k = 2.

CALIBRATED BY NILESH JAGTAP — APPROVED BY VINAYAK KAKADE.

RAJ CONTROLS BARAMATI

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CALIBRATION SALES AND SERVICES

Off. : Gajara Appt., Block No. 1, Ashoknagar, Baramati, Dist : Pune. 413 102
M : 9370475047 / 8975689560
Rajcontrol2011@rediffmail.com / Rajcontrol2011@gmail.com

Baramati, Pune, Satara

CALIBRATION CERTIFICATE

1. REQUESTED BY (NAME & ADDRESS):		CERTIFICATE NO.	RC/SDPV/12
SCHREIBER DYNAMIX PVT. LTD E-94/E-250, MIDC, BHIGWAN ROAD, BARAMATI-413133		JOB NO.	RC/06
		CONDITION OF ITEM AT RECEIPT	OK
		CALIBRATED DATE	14/07/2023
CALIBRATION LOCATION: ON SITE		CALIBRATION DUE DATE	13/07/2025

2. DESCRIPTION OF ITEM:

NAME	FLOW METER	RANGE	0 to 150 m3/hr
MAKE	ENDRESS HAUSER	L.C	0.1 Nm3/hr
TAG NO	FIQ - 56T403	SR.NO	J405B302000
MODEL	65F40	LOCATION	BIO GAS GENERATION FROM UASB TO GAS HOLDER

3. CALIBRATION STANDARDS USED:

NO.	NAME	ID. NO.	CAL BY	REPORT NO.	CAL VALIDITY
1	UNIVERSAL CALIBRATOR	RC-06	SBQ	2246432	28/03/2024
2	DIGITAL MULTIMETER	RC-04	SBQ	2246417	28/03/2024

4. CALIBRATION PROCEDURE NO. : CP-T/02

HUMIDITY: < 70 % RH — AMBIENT TEMP.: 25±4°C

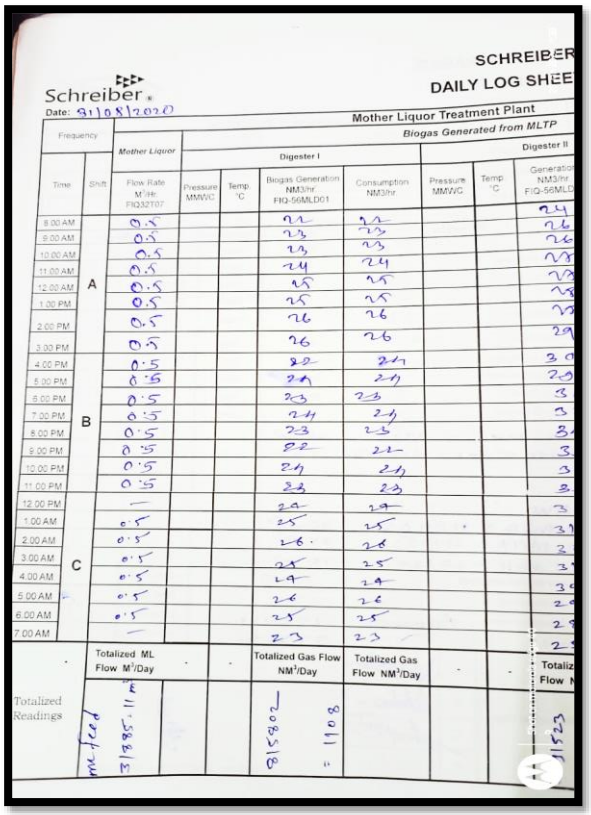
5. CALIBRATION RESULTS:

SR. NO.	% FLOW	ACTUL CURRNT (MA)	OBSERVED CURRNT (MA)	ACTUAL FLOW RATE Nm3/hr	BOSERVED FLOW RATE Nm3/hr	ERROR Nm3/hr
1	0	4.0	4.0	0.0	0.0	0.0
2	25	8.0	8.1	37.05	37.3	0.2
3	50	12.0	12.1	75.5	75.6	-0.1
4	75	16.0	15.7	112.7	112.6	0.1
5	100	20.0	20.0	150.8	150.6	0.2

6. REMARKS:
1. A sticker indicating "CALIBRATION STATUS" has been affixed on the UUC.
2. The standards used for calibration were calibrated by using reference standard traceable to National/International standard.
3. Expanded Uncertainty is calculated at 95.45 % of confidence level where coverage factor k = 2.

CALIBRATED BY NILESH JAGTAP — APPROVED BY VINAYAK KAKADE.

RAJ CONTROLS BARAMATI



SCHREIBER

DAILY LOG SHEE

Schreiber

Date: 31/08/2020

Mother Liquor Treatment Plant

Biogas Generated from MLTP

Time	Shift	Frequency	Mother Liquor Flow Rate M³/Hr FIQ32T07	Digester I Pressure MMWC	Digester I Temp °C	Digester I Biogas Generation NM3/hr FIQ-56MLD01	Digester I Consumption NM3/hr	Digester II Pressure MMWC	Digester II Temp °C	Digester II Generation NM3/hr FIQ-56MLD
8.00 AM	A		0.5			22	22			24
9.00 AM			0.5			23	23			26
10.00 AM			0.5			23	23			27
11.00 AM			0.5			24	24			27
12.00 AM			0.5			25	25			28
1.00 PM			0.5			25	25			27
2.00 PM			0.5			26	26			29
3.00 PM			0.5			26	26			
4.00 PM	B		0.5			22	24			3
5.00 PM			0.5			24	24			29
6.00 PM			0.5			23	23			3
7.00 PM			0.5			24	24			3
8.00 PM			0.5			23	23			3
9.00 PM			0.5			22	22			3
10.00 PM			0.5			24	24			3
11.00 PM			0.5			23	23			3
12.00 PM	C		—			24	24			3
1.00 AM			0.5			25	25			31
2.00 AM			0.5			26	28			3
3.00 AM			0.5			24	25			31
4.00 AM			0.5			24	24			3
5.00 AM			0.5			26	26			2
6.00 AM			0.5			25	25			2
7.00 AM			—			23	23			2
			Totalized ML Flow M³/Day			Totalized Gas Flow NM³/Day	Totalized Gas Flow NM³/Day			Totaliz Flow N
			Totalized Readings							

RAJ CONTROLS

CALIBRATION SALES AND SERVICES

Off. : Gajara Appt., Block No. 1, Ashoknagar, Baramati. Dist : Pune. 413 102
M : 9370475047 / 8975689560
Rajcontrol2011@rediffmail.com / Rajcontrol2011@gmail.com

Baramati, Pune, Satara

CALIBRATION CERTIFICATE

1.	REQUESTED BY (NAME & ADDRESS):	CERTIFICATE NO.	RC/SDPV/10
	SCHREIBER DYNAMIX PVT. LTD E-94/E-250, MIDC, BHIGWAN ROAD, BARAMATI-413133	JOB NO.	RC/06
		CONDITION OF ITEM AT RECEIPT	OK
		CALIBRATED DATE	14/07/2023
	CALIBRATION LOCATION: ON SITE	CALIBRATION DUE DATE	13/07/2025

2. DESCRIPTION OF ITEM:

NAME	FLOW METER	RANGE	0 to 200 m3/hr
MAKE	ROSE MOUNT	L.C	0.1 m3/hr
TAG NO	FIQ – 56 EQT 401	SR.NO	390584
MODEL	8711EHA	LOCATION	EQULISATION TANK T-401 TO DAF3-1500 m3 PLANT

3. CALIBRATION STANDARDS USED:

NO.	NAME	ID. NO.	CAL BY	REPORT NO.	CAL VALIDITY
1	UNIVERSAL CALIBRATOR	RC-06	SBQ	2246432	28/03/2024
2	DIGITAL MULTIMETER	RC-04	SBQ	2246417	28/03/2024

4. CALIBRATION PROCEDURE NO. : CP-T/02

HUMIDITY: < 70 % RH — AMBIENT TEMP.: 25±4°C

5. CALIBRATION RESULTS:

SR. NO.	% FLOW	ACTUAL CUURNT (MA)	OBSERVED CUURNT (MA)	ACTUAL FLOW RATE M3/HR	BOSERVED FLOW RATE M3/HR	ERROR m3/hr
1	0	4.0	4.0	0.0	0.0	0.0
2	25	8.0	8.1	50.00	50.01	0.1
3	50	12.0	12.1	100.00	100.01	0.1
4	75	16.0	15.7	150.00	150.02	0.2
5	100	20.0	20.0	200.00	200.01	0.1

6. REMARKS:
1. A sticker indicating "CALIBRATION STATUS" has been affixed on the UUC.
2. The standards used for calibration were calibrated by using reference standard traceable to National/International standard.
3. Expanded Uncertainty is calculated at 95.45 % of confidence level where coverage factor k = 2.

CALIBRATED BY NILESH JAGTAP

APPROVED BY VINAYAK KAKADE.

RAJ CONTROLS BARAMATI

SB QUALITY SOLUTIONS

Calibration I Validation I Testing & Measurement I Sales & Services
Head Office : Flat No. 13, Ganesh Darshan, Survey No. 31, Dhankawadi, Pune - 411 043. Maharashtra, India.

9822320146

Certificate of Calibration

Certificate No. 2246417 — **Page 1 of 12**

Client
Raj Control's
Flat No.01 , Gajra Appt. , Ashoknagar,
Bhigwan Road , Baramati.

Date of Receipt 29.03.2023
Physical Condition Satisfactory
Customer Service Request P.O.
UUC Calibrated at In Lab.

CO-2560

Cal. Date : 29.03.2023 **Cal. Freq. :** 12 months **Rec. Due Date :** 28.03.2024

Description of UUC

Name Dig.Multimeter — **ID Code :** RC-04
Make Metravi — **Location :** Calibration Lab.
Sr. No. 9078509
Model No. SAFE-19

Environmental Conditions : Ambient Temp. : 25±4 °C — Humidity : < 70 %

Master Instruments used for calibration of UUC

Sr.	Description	Sr. / ID No.	Certified By	Certificate No.	Validity
1	5 & ½ Dig.Multimeter	118319	EQDC, Gandhinagar.	E/G0223/0121/22-23	27.02.2025

Observations

Parameter : DC Voltage

Range 0 to 400 mV DC — Least Count 0.01 mV DC — Accuracy ± (0.06 % OF RDG + 4 DIG.)

Master Instrument Reading in mV DC	UUC Reading in mV DC	Actual Error	Permissible Error	Uncertainty in ± %	Remark
80	79.99	-0.010	0.088	0.28	OK
160	159.98	-0.020	0.136	0.28	OK
240	239.98	-0.020	0.184	0.28	OK
320	319.97	-0.030	0.232	0.28	OK
390	389.96	-0.040	0.274	0.28	OK

Range 0 to 4 V DC — Least Count 0.0001 V DC — Accuracy ± (0.06 % OF RDG + 4 DIG.)

Master Instrument Reading in V DC	UUC Reading in V DC	Actual Error	Permissible Error	Uncertainty in ± %	Remark
1	0.9999	0.000	0.001	0.28	OK

Schreiber

Date: 30/11/2023

Mother Liquor Treatment Plant

Biogas Generated from MLTP

Time	Shift	Mother Liquor Flow Rate M³/Hr. FIQ32T07	Digester I Pressure MMWC	Digester I Temp. °C	Digester I Biogas Generation NM3/hr. FIQ-56MLD01	Digester I Consumption NM3/hr.	Digester II Pressure MMWC	Digester II Temp. °C	Digester II Generation NM3/hr. FIQ-56MLD02
8.00 AM	A	0.7			30	30			32
9.00 AM		0.7			31	31			33
10.00 AM		0.7			32	32			34
11.00 AM		0.7			32	32			35
12.00 AM		0.7			31	31			36
1.00 PM		0.7			30	30			35
2.00 PM		0.8			31	31			35
3.00 PM	B	1			32	32			36
4.00 PM		1			33	33			37
5.00 PM		1			34	34			36
6.00 PM		1			35	35			37
7.00 PM		1			34	34			32
8.00 PM		–			28	28			24
9.00 PM		–			20	20			20
10.00 PM		–			18	18			22
11.00 PM		–			19	19			20
12.00 PM	C	1			20	20			21
1.00 AM		1			21	21			28
2.00 AM		1			22	28			24
3.00 AM		1			28	28			25
4.00 AM		1			24	24			24
5.00 AM		–			22	22			25
6.00 AM		–			24	24			
7.00 AM		–							
Totalized Readings		Totalized ML Flow M³/Day = 1565.1	-	-	Totalized Gas Flow NM³/Day = 1006970	Totalized Gas Flow NM³/Day = 555 NM3	-	-	Totalized Gas Flow NM³/Day = 432170 = 1617

Shot on motorola edge 40
R
29 Jan 2024, 11:56

SB QUALITY SOLUTIONS

Calibration I Validation I Testing & Measurement I Sales & Services
Head Office : Flat No. 13, Ganesh Darshan, Survey No. 31, Dhankawadi, Pune - 411 043. Maharashtra, India.

9822320146

Certificate of Calibration

Certificate No. 2246432 — **Page 1 of 4**

Client
Raj Control's
Flat No.01 , Gajra Appt. , Ashoknagar,
Bhigwan Road , Baramati.

Date of Receipt 29.03.2023
Physical Condition Satisfactory
Customer Service Request P.O.
UUC Calibrated at On site

CO-2560

Cal. Date : 29.03.2023 **Cal. Freq. :** 12 months **Rec. Due Date :** 28.03.2024

Description of UUC

Name Dig.Calibrator — **ID Code :** RC-06
Make Sonit — **Location :** Calibration Lab.
Model No. SE-401

Environmental Conditions : Ambient Temp. : 25±4 °C — Humidity : < 70 %

Master Instruments used for calibration of UUC

Sr.	Description	Sr. / ID No.	Certified By	Certificate No.	Validity
1	5 & ½ Dig.Multimeter	118319	EQDC, Gandhinagar.	E/G0223/0121/22-23	27.02.2025
2	Universal Calibrator.	DCB-03	EQDC, Gandhinagar.	E/G1023/0064/2022	10.11.2024

Observations

Parameter : mV Source

Range -199.99 to 0 mV DC — Least Count 0.01 mV DC — Accuracy ± 1 % F.S.D.

Master Instrument Reading in mV DC	UUC Reading in mV DC	Error in %	Uncertainty in ± %	Remark
-199.00	-199.00	0.000	0.32	OK
-150.01	-150.00	0.005	0.32	OK
-100.01	-100.00	0.005	0.32	OK
-50.01	-50.00	0.005	0.32	OK
0.00	0.00	0.000	0.32	OK

Range 0 to 199.99 mV DC — Least Count 0.01 mV DC — Accuracy ± 1 % F.S.D.

Master Instrument Reading in mV DC	UUC Reading in mV DC	Error in %	Uncertainty in ± %	Remark
0.00	0.00	0.000	0.32	OK

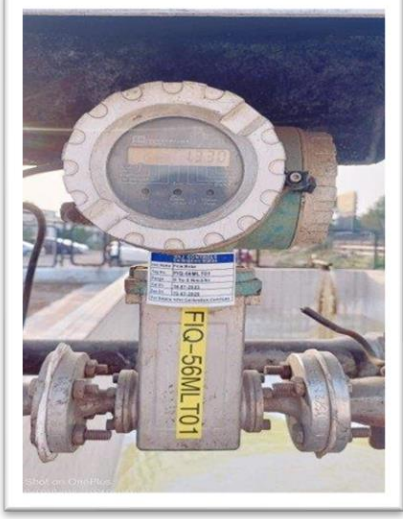

FIQ-56T1030.2
KROHNE
MARSHALL

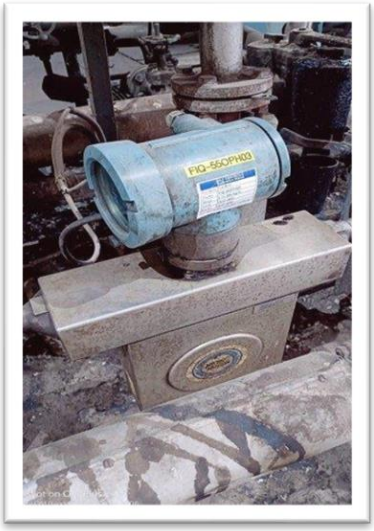

FIQ-56T1030.1


FIQ-56MLD01

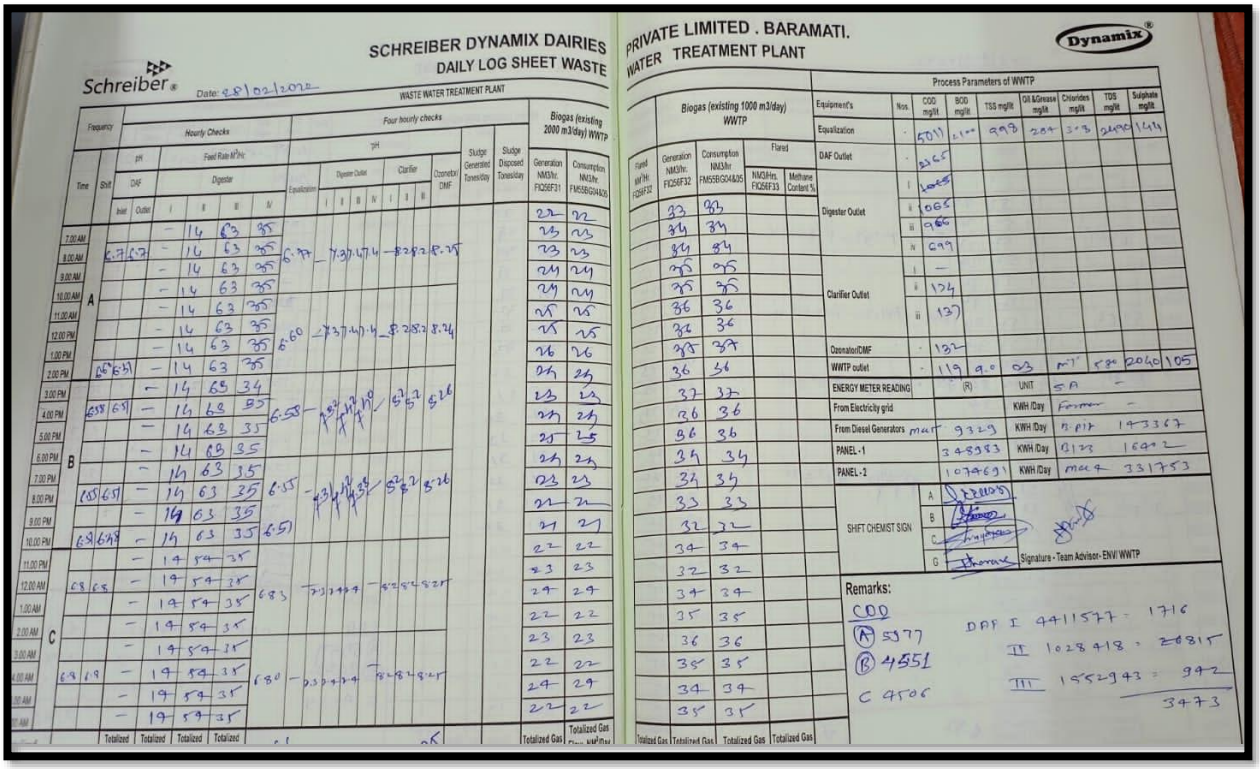

FIQ-56MLD02


FIQ-56T403


FIQ-56MLT01




RFB60 Steam Flow
FLOW INTEGRATOR TOTALISER
156592
2516
R1 R2 B1 B2 Tx Rx
RST
FIT-3000
RAJ CONTROLS
Calibration Status
Inst. Name Flow Totalizer
Tag No. FIQ56BLR03
Range 0 To 6 Ton/Hr
Cal Dt. 14-07-2023
Due Dt. 12-07-2025
For Details refer Calibration Certificate



Applied methodologies and standardized baselines:

UCR Protocol Standard

SECTORAL SCOPE	- 13 Waste handling and disposal.
TYPE I	- III - Other project activities.
CATEGORY	- AMS-III.H. Methane Recovery in Wastewater Treatment, version 19.
SECTORAL SCOPE	- 01 Energy Industries (Renewable / Non-renewal Sources)
TYPE I	- Renewable Energy Projects
CATEGORY	- AMS-I.C. Thermal energy production with / without electricity, version 22.

The project activity involves mother liquor treatment in anaerobic digesters that otherwise would continue to be treated in anaerobic deep lagoons without any biogas recovery. Generated biogas in the project activity is used in the boiler thereby replacing corresponding quantity of FO.

Hence, simplified baseline for the project activity is, continued treatment of Mother Liquor in anaerobic deep lagoons without biogas recovery and consumption of equivalent quantity of FO that otherwise would have been consumed in the boiler to generate corresponding quantity of steam.

Application of methodologies and standardized baselines

For AMS III.H. Version 19

Applicability Clause	Applicability Criteria	Project activity	Accepted?
2.1 - 2	This methodology comprises measures that recover biogas frombiogenic organic matter in wastewater by means of one, or a combination, of the following options:	The methodology comprises measures that recover biogas from biogenic organic matter in the waste water (Mother Liquor composing of Carbohydrates, proteins & fat) by means of applicability criteria option (f).	Yes
2.1 –2 a)	Substitution of aerobic wastewater or sludge treatment systems with anaerobic systems with biogas recovery and combustion.	This criterion is not applicable since the project activity involves replacement of existing anaerobic system.	Yes
2.1 – 2 b)	Introduction of anaerobic sludge treatment system with biogas recovery and combustion to a wastewater treatment plant without sludge treatment.	This criterion is not applicable since the project activity does not involve installation of anaerobic sludge treatment system.	Yes
2.1 – 2 c)	Introduction of biogas recovery andcombustion to a sludge treatment system.	This criterion is not applicable since the project activity does not involve introduction of biogas recovery and combustion to an existing sludge treatment system.	Yes
2.1 – 2 d)	Introduction of biogas recovery and combustion to an anaerobic wastewater treatment system such asanaerobic reactor, lagoon, septic tank or an on site industrial plant.	This criterion is not applicable since theproject activity does not involve introduction of biogas recovery to anexisting treatment system i. e. anaerobic lagoon.	Yes

2.1 – 2 e)	Introduction of anaerobic wastewater treatment with biogasrecovery and combustion, with orwithout anaerobic sludge treatment,to an untreated wastewater stream.	This criterion is not applicable since the project activity involves installation of Up flow Anaerobic Sludge Blanket digesters with methane recovery and combustion to a waste water stream which was previously treated in an existing anaerobic wastewater treatment system i.e., anaerobic lagoon.	Yes
2.1 – 2 f)	Introduction of a sequential stage of wastewater treatment with biogas recovery and combustion, with or without sludge treatment, to an anaerobic wastewater treatment system without biogas recovery (e.g.introduction of treatment in an anaerobic reactor with biogas recovery as a sequential treatment step for the wastewater that is presently being treated in an anaerobic lagoon without methane recovery).	This criterion is applicable since the project activity involves installation of Up flow Anaerobic Sludge Blanket digesters with methane recovery and combustion followed by further treatment in aerobic as well as anaerobic process.	Yes
2.2 – 3	In cases where baseline system is anaerobic lagoon the methodology isapplicable if;		Yes
2.2 – 3 a)	(a) The lagoons are ponds with a depth greater than two meters, without aeration. The value for depth is obtained from engineering design documents, or through directmeasurement, or by dividing the surface area by the total volume. If the lagoon filling level varies seasonally, the average of the highest and lowest levels may be taken	The anaerobic lagoons are ponds with a depth greater than two meters, without aeration	Yes
2.2 – 3 b)	(b) Ambient temperature above 15□C, at least during part of the year, on a monthly average basis	Ambient temperature of the Project site isabove 15Con a monthly average basis	Yes

2.2 – 3 c)	(c) The minimum interval betweentwo consecutive sludge removal events shall be 30 days	The minimum interval between two consecutive sludge removal events is 30days	Yes
2.2 – 4	The recovered biogas from the above measures may also be utilized for the following applications instead of combustion/flaring.		Yes
2.2 – 4 a)	Thermal or mechanical, electrical energy generation directly;	This criterion is applicable since the project activity involves utilization of recovered biogas for thermal energy generation directly in boilers for steam generation.	Yes
2.2 – 4 b)	Thermal or mechanical, electrical energy generation after bottling of upgraded biogas, in this case additional guidance provided in theappendix shall be followed;	This criterion is not applicable since the recovered biogas is utilized for thermal energy generation directly without bottling	Yes
2.2 – 4 c)	Thermal or mechanical, electrical energy generation after upgrading and distribution, in this case additional guidance provided in theappendix shall be followed: (i) Upgrading and injection of biogas into a natural gas distributiongrid with no significant transmission constraints; (ii) Upgrading and transportation ofbiogas via a dedicated piped network to a group of end users; or (iii) Upgrading and transportation of biogas (e.g. by trucks) to distribution points for end users;	This criterion is not applicable since the recovered biogas is utilized for thermal energy generation directly without upgrading and distribution. This criterion is not applicable since there is no upgrading and injection of biogas into a natural gas distribution grid. This criterion is not applicable since there is no up gradation and transportation of biogas via a dedicated piped network to a group of end users. This criterion is not applicable since there is no upgrading and transportation of biogas (e.g. by trucks) to distribution points for end users.	Yes
2.2 – 4 d)	Hydrogen production	This criterion is not applicable since there is no hydrogen production from the recovered biogas.	Yes

2.2 – 4 e)	Use as fuel in transportation applications after upgrading	This criterion is not applicable since biogas is not used as fuel in transportation applications after upgrading	Yes
2.2 – 5)	If the recovered biogas is used for project activities covered under paragraph 4(a), that component ofthe project activity can use a corresponding methodology underType I.	The recovered biogas is used for thermal (steam) energy generation in project activities covered under paragraph 4 (a) and hence the project activity can use a corresponding methodology under Type I and the methodology AMS I.C. is used	Yes
2.2 – 6)	For project activities covered under paragraph 4 (b), if bottles with upgraded biogas are sold outside the project boundary, the end-use of the biogas shall be ensured via a contract between the bottled biogas vendor andthe end-user. No emission reductions may be claimed from the displacementof fuels from the end use of bottled biogas in such situations. If however the end use of the bottled biogas is included in the project boundary and is monitored during the crediting period CO2 emissions avoided by the displacement of fossil fuel can be claimed under the corresponding TypeI methodology, e.g. AMS-I.C "Thermal energy production with or without electricity".	This criterion is not applicable since project activity is not covered under paragraph 4 (b).	Yes
2.2 – 7)	For project activities covered under paragraph 4 (c) (i), emission reductions from the displacement of the use of natural gas are eligible under this methodology, provided the geographical extent of the natural gasdistribution grid is within the host country boundaries.	This criterion is not applicable since project activity is not covered under paragraph 4 (c) (i).	Yes

2.2 – 8)	For project activities covered under paragraph 4(c)(ii), emission reductions for the displacement of theuse of fuels can be claimed following the provision in the corresponding Type I methodology, e.g. AMS-I.C.	This criterion is not applicable since project activity is not covered under paragraph 4 (c) (ii).	Yes
2.2 – 9)	In particular, for the case of paragraph4(b) and (c)(iii), the physical leakage during storage and transportation of upgraded biogas, as well as the emissions from fossil fuel consumed by vehicles for transporting biogas shall be considered. Relevant procedures in paragraph 18 of the appendix of "AMS-III.H.: Methane recovery in wastewater treatment" shall be followed in this regard	This criterion is not applicable since projectactivity is not covered under paragraph 4 (b) and (c) (iii).	Yes
2.2 – 10)	For project activities covered under paragraph 4(b) and (c), this methodology is applicable if the upgraded methane content of the biogas is in accordance with relevant national regulations (where these exist) or, in the absence of national regulations, a minimum of 96 per cent(by volume)	This criterion is not applicable since project activity is not covered under paragraph 4 (b)and (c).	Yes
2.2 – 11)	If the recovered is utilized for the production of hydrogen (project activities covered under paragraph 3(d)), that component of the project activity shall use the corresponding methodology "AMS-III.O.: Hydrogen production using methane extractedfrom biogas".	This criterion is not applicable since the recovered biogas is not utilized for production of hydrogen.	Yes
2.2 – 12)	If the recovered biogas is used for project activities covered under paragraph 4(e), that component of theproject activity shall use corresponding methodology "AMS-III.AQ.: Introduction of Bio-CNG intransportation applications".	This criterion is not applicable since the recovered biogas is not used for project activities covered under paragraph 4 (e).	Yes

2.2 – 13)	New facilities (Greenfield projects) and project activities involving a change of equipment resulting in a capacity addition of the wastewater orsludge treatment system compared to the designed capacity of the baseline treatment system are only eligible to apply this methodology if they complywith the relevant requirements in the "General guidelines for SSC CDM methodologies". In addition, the requirements for demonstrating the remaining lifetime of the equipment replaced, as described in the general guidelines shall be followed.	The project activity is not a green field project and it does not involve any change of equipment resulting in a capacity addition of the wastewater treatment system compared to the designed capacity of the baseline treatment system.	Yes
2.2 – 14)	The location of the wastewater treatment plant shall be uniquely defined as well as the source generating the wastewater shall beuniquely defined and described in the PCN.	The location of the wastewater treatment plant is defined in PCN. The sourcegenerating the wastewater is process units for manufacturing of dairy products and other products at SDDPL is defined in PCN	Yes
2.2 – 15)	Measures are limited to those that result in aggregate emission reductions of less than or equal to 60kt CO2 equivalent annually from allType III components of the project activity.	The project activity will result in emission reduction of 12,000 tCO2 annually which isless than 60 kt CO2 equivalent annually	Yes

For AMS I.C. Version 22

Applicability Clause	**Applicability Criteria**	**Project activity**	**Accepted?**
2.2 – 3)	Biomass-based cogeneration and tri-generation systems are included in this category.	The project activity does not involve biomass based cogeneration system and hence this criterion is not applicable.	Yes

2.2 – 4)	Emission reductions from a biomass cogeneration or tri-generation system can accrue from one of the following activities: (a) Electricity supply to a grid; (b)Electricity and/or thermal energyproduction for on-site consumptionor for consumption by otherfacilities; (c) Combination of (a) and (b).	The project activity does not involve biomass cogeneration and hence none of the activities is applicable.	Yes
2.2 – 5)	Project activities that seek to retrofit or modify an existing facility for renewable energy generation are included in this category.	The project activity involves retrofitting the existing facilities (Furnace Oil fired boilers) for renewable energy generation though firing biogas.	Yes
2.2 – 6)	In the case of new facilities (Greenfield projects) and project activities involving capacity additions the relevant requirementsrelated to determination of baseline scenario provided in the "General guidelines for SSC CDM methodologies" for Type-II and Type-III Greenfield/capacity expansion project activities also apply.	The project activity does not involvecapacity addition.	Yes
2.2 – 7)	The total installed/rated thermalenergy generation capacity of theproject equipment is equal to or less than 45 MW thermal	The total installed/rated thermal energy generation capacity of the project equipment is 6.5 MW	Yes
2.2 – 8)	For co-fired systems, the total installed thermal energy generationcapacity of the project equipment, when using both fossil and renewable fuel, shall not exceed 45MW thermal (see paragraph 9 for the applicable limits for cogeneration project activities).	The Project activity is a co-fired system and the total installed thermal energy generation capacity of the project equipment, when using both fossil and renewable fuel is 16.56 MW thermal and does not exceed 45 MW thermal.	Yes

2.2 – 9)	The following capacity limits apply for biomass cogenerationand tri-generation units: (a) If the emission reductions of the project activity are on account of thermal and electrical energy production, the total installed thermal and electrical energy generation capacity of the project equipment shall not exceed 45 MWthermal. For the purpose of calculating the capacity limit the conversion factor of 1:3 shall be used for converting electrical energy to thermal energy (i.e. for renewable energy project activities,the installed capacity of 15 MW(e)is equivalent to 45 MW thermal output of the equipment or the plant); (b) If the emission reductions of the project activity are solely on account of thermal energy production (i.e. no emission reductions accrue from the electricity component), the total installed thermal energy productioncapacity of the project equipment shall not exceed 45 MW thermal; (c) If the emission reductions of the project activity are solely on account of electrical energy production (i.e. no emission reductions accrue from the thermalenergy component), the total installed electrical energy generation capacity of the projectequipment shall not exceed 15 MW.	The project activity does not involve biomass co-generation and hence none ofthe activities is applicable.	Yes

2.2 – 10)	The capacity limits specified in paragraphs 7 to 9 above apply toboth new facilities and retrofit projects. In the case of project activities that involve the addition of renewable energy unitsat an existing renewable energy facility, the total capacity of the units added by the project shall comply with capacity limits specified in the paragraphs 7 to 9, and shall be physically distinctfrom the existing units	The project activity does not involve addition of renewable energy units at existing renewable energy facility.	Yes
2.2 – 11)	If solid biomass fuel (e.g. briquette) is used, it shall be demonstrated that it has been produced using solely renewable biomass and all project or leakageemissions associated with its production shall be taken into account in the emissions reduction calculation.	The project activity does not involve solidbiomass fuel (e.g. briquette).	Yes
2.2 – 12)	Where the project participant is notthe producer of the processed solid biomass fuel, the project participant and the producer are bound by a contract that shall enable the project participant to monitor the source of the renewable biomass to account for any emissions associated with solidbiomass fuel production. Such a contract shall also ensure that thereis no double-counting of emission reductions.	The project activity does not involve solidbiomass fuel.	Yes
2.2 – 13)	If electricity and/or thermal energyproduced by the project activity is delivered to a third party i.e. another facility or facilities within the project boundary, a contract between the supplier and consumer(s) of the energy will have to be entered into	The steam produced by the project activity is not delivered to a third party i.e. another facility or facilities within the project boundary.	Yes

	that ensuresthere is no double-counting of emission reductions.		
2.2 – 14)	If the project activity recovers andutilizes biogas for producing electricity and/or thermal energy and applies this methodology on astandalone basis i.e. without usinga Type III component of a SSC methodology, any incremental emissions occurring due to the implementation of the project activity (e.g. physical leakage of the anaerobic digester, emissions due to inefficiency of the flaring), shall be taken into account either as project or leakage emissions as per relevant procedures in the tool"Emissions from solid waste	The project activity recovers and utilizes biogas for heat production and type III component of a SSC methodology is considered i. e. AMS III.H.	Yes
	disposal sites" and/or "Project emissions from flaring". In the event that the biomass fuel (solid/liquid/gas) is sourced from an existing CDM project, then theemissions associated with the production of the fuel shall be accounted with that project.		Yes
2.2 – 15)	If project equipment contains refrigerants, then the refrigerant used in the project case shall haveno ozone depleting potential (ODP).	The project activity does not involve refrigerants and hence not applicable.	Yes

2.2 – 16)	Charcoal based biomass energy generation project activities are eligible to apply the methodology only if the charcoal is produced from renewable biomass sources, provided: (a) Charcoal is produced in kilns equipped with methane recovery and destruction facility; or (b) If charcoal is produced in kilns not equipped with a methane recovery and destruction facility, methane emissions from the production of charcoal shall be considered. These emissions shall be calculated as per the procedures defined in the approved methodology "AMS-III.K.: Avoidance of methane release from charcoal production by shifting from traditional open-ended methods to mechanized charcoaling process". Alternatively, conservative emission factor values from peer reviewed literature or from a registered CDM project activity can be used, provided that it can be demonstrated that the parameters from these are comparable e.g. source of biomass, characteristics of biomass such as moisture, carbon content, type of kiln, operating conditions such as ambient temperature.	The project activity does not involve charcoal based biomass energy generation.	Yes
			Yes

2.2 – 17)	In the case the project activities utilizes biomass, the "TOOL16: Project and leakage emissions frombiomass" shall be applied to determine the relevant project emissions from the cultivation of biomass and the utilization of biomass or biomass residues.	The project activity does not utilize biomass	Yes

Applicability of double counting emission reductions

The project activity has been registered as a CDM project activity (registration date of the project activity under CDM mechanism is 04/09/2012) in the past as follows:

UNFCCC CDM Title	Waste water treatment and biogas recovery project	
CDM ID	2503	
Host Parties	Schreiber Dynamix Dairies Ltd.	
Sectoral Scopes	1: Energy industries (renewable - / non-renewable sources) 13: Waste handling and disposal	
Methodology	AMS-III.H. ver. 19 - Methane recovery in wastewater treatment AMS-I.C. ver. 22 - Thermal energy production with or without electricity	
Other Details	CDM Registration Date	04 Sep 12 (Date of registration action 15 Nov 12)
	Crediting Period	04 Sep 12 - 03 Sep 22 (Fixed)
Prior Issuance of CDM credits	Nil	

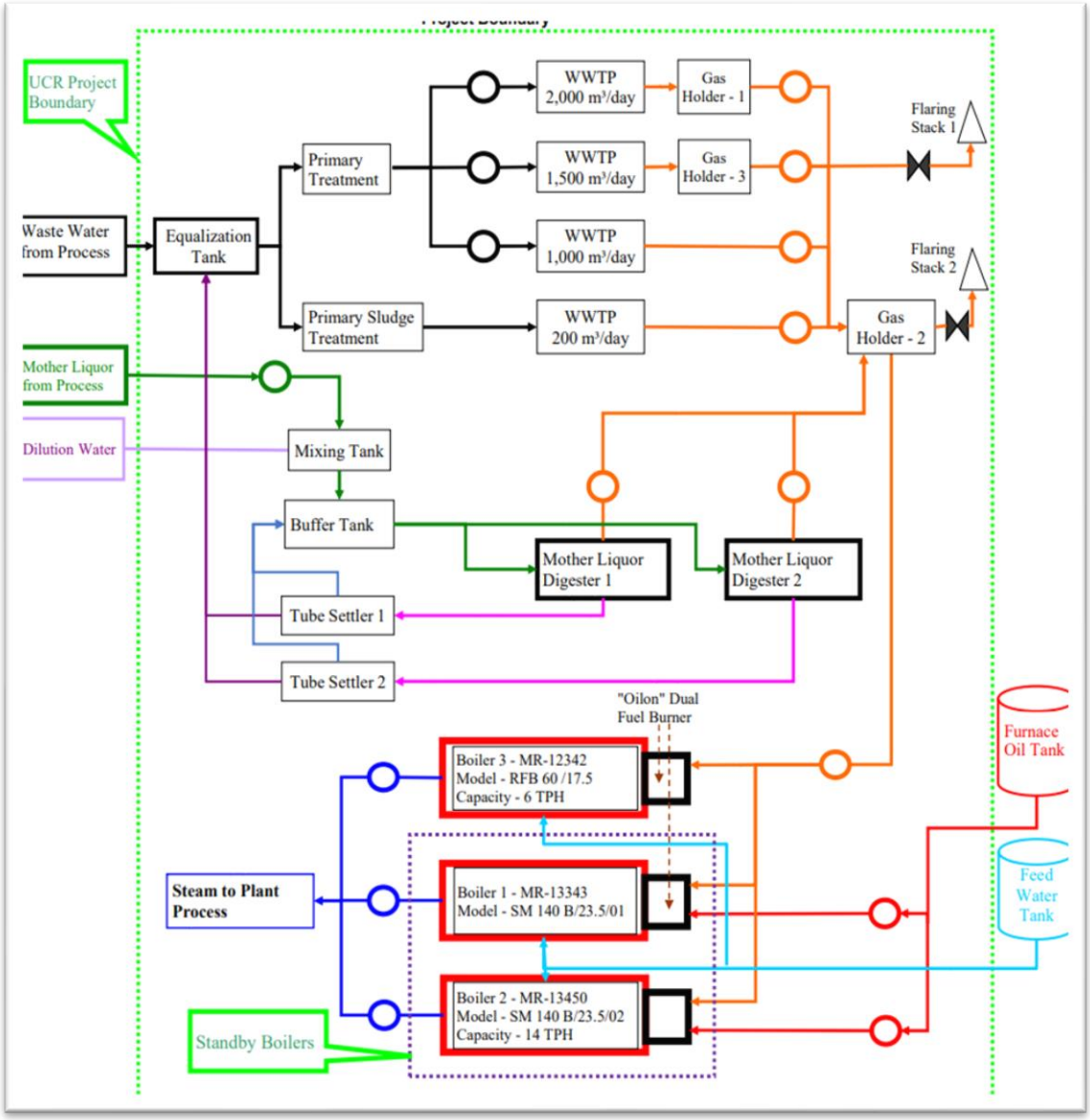
The project activity was registered under CDM under ID 2503 on 04 Sep 12 for the 04 Sep 12 - 03 Sep 22, however no CER's have been issued for the same. The project activity is now seeking CoUs under the UCR CoU Standard/Program for the period 01/01/2014 to 31/12/2023 and hence there is no double counting issue of carbon credits for the said vintageperiod. Additionally, the same has been stated in the undertaking provided in the Double Counting Avoidance Assurance Document (DAA) by SDDPL dated 09.04.2024.

Project boundary, sources and greenhouse gases (GHGs)

The project boundary includes the physical, geographical site(s) of:

a) where the wastewater and sludge treatment takes place, in the baseline and project situations. It covers all facilities affected by the project activity including sites where processing, transportation and application or disposal of waste products as well as biogas takes place.;

b) All power plants generating power and/or heat located at the project site, whether fired with biomass, fossil fuels or a combination of both;



The following table summarizes the source and type of emissions associated with the project activity:

	Source	Gas	Included	Justification /Explanation
Baseline	**Combustion of FurnaceOil (FO) for steam generation**	CO_2	Included	Emissions due to Furnace oil combustion for the steam generation.
		CH_4	Excluded	Excluded for simplification
		N_2O	Excluded	Excluded for simplification
	Mother Liquor treatmentin Anaerobic Lagoon	CO_2	Excluded	Excluded for simplification
		CH_4	Included	Emissions due to mother liquor treatment in anaerobic lagoons
		N_2O	Excluded	Excluded for simplification
	Existing Waste watertreatment System	CO_2	Excluded	Excluded for simplification
		CH_4	Included	Emissions due to Waste water treatment.
		N_2O	Excluded	Excluded for simplification
Project activity	**Combustion of Furnace Oil(FO) for steam generation**	CO_2	Included	Emissions due to Furnace oil combustion for the steam generation.
		CH_4	Excluded	Excluded for simplification
		N_2O	Excluded	Excluded for simplification
	Electricity consumption	CO_2	Included	Emission due to electricity consumption in the project activity
		CH_4	Excluded	Excluded for simplification
		N_2O	Excluded	Excluded for simplification
	45 m^3/day Mother Liquortreatment system	CO_2	Excluded	Excluded for simplification
		CH_4	Included	Emissions due to mother liquor treatment
		N_2O	Excluded	Excluded for simplification
	4,500 m^3/day Wastewater treatment systems	CO_2	Excluded	Excluded for simplification
		CH_4	Included	Emissions due to affected part of waste water treatment
		N_2O	Excluded	Excluded for simplification
	Biogas flaring system	CO_2	Excluded	Excluded for simplification
		CH_4	Included	Emissions due to inefficiency in the flaring system
		N_2O	Excluded	Excluded for simplification

Baseline Emissions (BE_y)

Baseline emissions as per AMS III. H.

$$BE_y = \{BE_{power,y} + BE_{ww,treatment,y} + BE_{s,treatment,y} + BE_{ww,discharge,y} + BE_{s,final,y}\}$$

Where:

BE_y = Baseline emissions in year *y* (t CO_2e)

$BE_{power,y}$ = Baseline emissions from electricity or fuel consumption in year *y* (t CO_2e)

$BE_{ww,treatment,y}$ = Baseline emissions of the wastewater treatment systems affectedby the project activity in year *y* (t CO_2e)

$BE_{s,treatment,y}$ = Baseline emissions of the sludge treatment systems affected by theproject activity in year *y* (t CO_2e)

$BE_{ww,discharge,y}$ = Baseline methane emissions from degradable organic carbon in treated wastewater discharged into sea/river/lake in year y (t CO_2e). The value of this term is zero for the case 1(b)

$BE_{s,final,y}$ = Baseline methane emissions from anaerobic decay of the final sludge produced in year *y* (t CO_2e). If the sludge is controlled combusted, disposed in a landfill with biogas recovery, or used for soil application in the baseline scenario, this term shall be neglected

$$BE_{ww,treatment,y} = \sum_i (Q_{ww,i,y} * COD_{\inf low,i,y} * \eta_{COD,BL,i} * MCF_{ww,treatment,BL,i}) * B_{o,ww} * UF_{BL} * GWP_{CH4}$$

Parameter	Symbol	Unit
Volume of waste water treated	Qww,i,y	m^3/year
Quanity of ML entering Mother Liquor Treatment Plant		m^3/year
COD inlet to WW treatment		kg/year
COD inlet to WW treatment		kg/m3
COD inlet to WW treatment	CODinflow,i,y	t/m^3
COD removal efficiency of the baseline treatment system i	ηCOD,BL,y	
Methane correction factor for the existing wastewater treatment system	MCFww,treatment,BL,i	
Methane generation capacity of the wastewater	Bo,ww	kg CH_4/kg COD
Model correction factor	UFBL	
Global warming potential of methane	$GWPCH_4$	$tCO2/tCH_4$
Baseline emissions from the baseline waste water treatment system	BEww, treatment,y	tCO_2e/year

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
BEww, treatment,y tCO_2e/year	11125	12704	14310	14830	13740	13378	11994	14361	14988	15376

Symbol	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
BEthermal,CO2,y tCO_2e/year	1438	1739	1068	1329	1171	803	1430	1563	3304	3387

Baseline emissions as per AMS I. C.

$$BE_{thermal,CO2,y} = (EG_{thermaly} / \eta_{BL,thermal}) * EF_{FF,CO_2}$$

Parameter	Symbol	Unit
Total energy generation	$EG_{thermal,y}$	TJ/year
Efficiency of the boiler	$\eta_{BL,thermal,y}$	%
Emission factor of FO	$EF_{FF,CO2}$	tCO_2/TJ
Baseline emissions due to combustion of furnace oil	$BE_{thermal,CO2,y}$	tCO_2e/year

Baseline emissions of the sludge treatment systems affected by the project activity:

As a conservative approach, baseline emissions from the sludge treatment systems have not been considered.

Baseline methane emissions on account of inefficiencies in the baseline wastewater treatment systems and presence of degradable organic carbon in the treated wastewater discharged into river/lake/sea:

Baseline emissions on account of inefficiencies in the baseline wastewater treatment systemsand presence of degradable organic carbon in the treated wastewater are not considered as a conservative approach.

Baseline methane emissions from anaerobic decay of the final sludge

As a conservative approach, Methane emissions from anaerobic decay of the final sludge have not been considered in the baseline calculations.

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Baseline emissions as per AMS III H	11125	12704	14310	14830	13740	13378	11994	14361	14988	15376
Baseline emissions as per AMS I C	1438	1739	1068	1329	1171	803	1430	1563	3304	3387
Total Baseline Emissions	12563	14443	15378	16159	14911	14181	13424	15924	18292	18763

Project Emissions (PE_Y)

Project emissions consists of:

CO_2 emissions from electricity and fuel used by the project facilities ($PE_{power,y}$);

Methane emissions from wastewater treatment systems affected by the project activity, and not equipped with biogas recovery in the project scenario ($PE_{ww,treatment,y}$);

Methane emissions from sludge treatment systems affected by the project activity, and not equipped with biogas recovery in the project situation ($PE_{s,treatment,y}$);

Methane emissions on account of inefficiency of the project activity wastewater treatment systems and presence of degradable organic carbon in treated wastewater ($PE_{ww,discharge,y}$);

Methane emissions from the decay of the final sludge generated by the project activity treatment systems ($PE_{s,final,y}$);

Methane fugitive emissions due to inefficiencies in capture systems ($PE_{fugitive,y}$);Methane emissions

due to incomplete flaring ($PE_{flaring,y}$);

Methane emissions from biomass stored under anaerobic conditions which would not have occurred in the baseline situation ($PE_{biomass,y}$).

$$PE_y = \left\{ \begin{array}{l} PE_{power,y} + PE_{ww,treatment,y} + PE_{s,treatment,y} + PE_{ww,discharge,y} + PE_{s,final,y} + \\ PE_{fugitive,y} + PE_{biomass,y} + PE_{flaring,y} \end{array} \right\}$$

Project Emissions as per AMS III.H.

$PE_{power,y} = \sum_j EC_{PJ,j,y} * EF_{j,y} * (1 + TDL_{j,y})$

In case of project activity, CO_2 emissions on account of power used by the project activity are from two different sources, regional electricity grid ($PE_{Grid,y}$) and off grid captive power plant i.e. diesel generator sets ($PE_{DG,y}$).

$PE_{power,y} = PE_{Grid,y} + PE_{DG,y}$

$PE_{Grid,y} = EC_{PJ,Grid,y} * EF_{EL,Grid,y} * (1 + TDL_{Grid,y})$ $PE_{DG,y} =$

$EC_{PJ,DG,y} * EF_{EL,DG,y} * (1 + TDL_{DG,y})$

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
MDy tCO_2e/year	19359	17374	12476	14148	12871	8096	12915	15531	27761	26000
PEpower,y tCO_2e/year	2155	2218	2122	2188	2124	1951	1705	1918	2125	1789

Methane emissions from wastewater treatment systems affected by the project activity and not equipped with biogas recovery in the project scenario ($PE_{ww,treatment,y}$),

Project activity will affect existing 4,500 m^3/day waste water treatment plant. These emissions shall be calculated as per AMS III.H. Version 19, using an uncertainty factor of 1.12 and data applicable to the project situation ($MCF_{ww,treatment,PJ,k}$ and $\eta_{PJ,k,y}$):

$$PE_{ww,treatment,y} = \sum (Q_{ww,i,y} * COD_{inlow,i,y} * \eta_{PJ,k} * MCF_{ww,treatment,PJ,k}) * B_{o,ww} * UF_{PJ} * GWP_{CH4}$$

Volume of the waste water treated in the year	Qww,i,y	m^3/year
Inlet COD to the waste water treatment system	CODinflow,i,y	t/m^3
COD removal efficiency of the project treatment system i	ηPJ,k	%
Methane correction factor for project wastewater treatment system k	MCFww,teatment,PJ,k	
Methane producing capacity of the wastewater	Bo,ww	kg CH_4/kg COD
Model correction factor to account for model uncertainties	UFPJ	
Global Warming Potential for methane	$GWPCH_4$	$tCO2/tCH_4$
Methane emissions from wastewater treatment systems affected by the project activity, and not equipped with biogas recovery, in year y	PEww,treatment,y	tCO2e/year

$$PE_{ww,discharge,y} = Q_{ww,y} * GWP_{CH4} * B_{o,ww} * UF_{PJ} * COD_{ww,discharge,PJ,y} * MCF_{ww,PJ,discharge}$$

Volume of the waste water treated in the year	Qww,y	m^3/year
Chemical oxygen demand of treated wastewater in the year	CODww,discharge,PJ,y	t/m^3
Methane generation capacity of the wastewater	Bo,ww	kg CH_4/kg COD
Methane correction factor based on type of treatment and discharge pathway of the wastewater	MCFww,PJ,discharge	
Model Correction factor to account for model uncertainities	UF_{PJ}	
Global warming potential of methane	$GWPCH_4$	$tCO2/tCH_4$
Methane emissions on account of inefficiency of the project activity wastewater treatment systems and presence of degradable organic carbon in treated wastewater	PEww,discharge,y	tCO2e/year

Methane emissions from sludge treatment systems affected by the project activity, andnot equipped with biogas recovery in the project situation ($PE_{s,treatment}$)

These project emissions are not considered as sludge treatment systems are not affectedby the project activity.

Methane emissions from degradable organic carbon in treated wastewater inyear y ($PE_{,ww, discharge,y}$)

These emissions shall be calculated as per AMS III.H using an uncertainty factor of 1.12 and data applicable to the project situation ($COD_{ww,discharge,PJ,y}$, $MCF_{ww,PJ,discharge}$)

Methane emissions from the decay of the final sludge generated by the projectactivity treatment systems ($PE_{s,final,y}$)

As explained above, if the sludge is controlled combusted, disposed in a landfill with biogas recovery, or used for soil application in aerobic conditions in the project activity, this term shall be neglected. Since the sludge generated in the project activity would be used for soil application, methane emissions from the decay of the sludge are neglected.

Methane fugitive emissions on account of inefficiencies in capture systems ($PE_{fugitive,y}$)

As per AMS III. H. version 19, project activity emissions form methane release in capture systems are determined as follows,

$$PE_{fugitive,y} = PE_{fugitive,ww,y} + PE_{fugitive,s,y}$$

$$PE_{fugitive,s,y} = 0$$

$$PE_{fugitive,ww,y} = (1 - CFE_{ww}) * MEP_{ww,treatment,y} * GWP_{CH4}$$

Capture efficiency of the biogas recovery equipment in the wastewater treatment systems	CFEww	
Methane emission potential of wastewater treatment systems equipped with biogas recovery system in year y	MEPww,treatment,y	t
Volume of the ML treated in the year	Qww,y	m^3/year
methane generation capacity of the wastewater	Bo,ww	kg CH_4/kg COD
Model Correction factor to account for model uncertainities	UFPJ	
Global Warming Potential for methane	$GWPCH_4$	tCO_2/tCH_4

Chemical oxygen demand removed by the treatment system k (45 m3 Mother Liquor Treatment Plant) of the project activity equipped with biogas recovery equipment in year y	CODremoved,PJ,k,y	t/m^3
Methane correction factor for the project wastewater treatment systems k equipped with biogas recovery equipment	MCFww,treatment,PJ,y	
Methane fugitive emissions on account of inefficiencies in capture systems in MLTP	PEfugitive,ww,y	tCO2e/year
For Waste Water Treatment Plant (WWTP):		
Capture efficiency of the biogas recovery equipment in the wastewater treatment systems	CFEww	
Methane emission potential of wastewater treatment systems equipped with biogas recovery system in year y	MEPww,treatment,y	t
Volume of the waste water treated in the year	Qww,y	m^3/year
Methane generation capacity of the wastewater	Bo,ww	kg CH_4/kg COD
Model Correction factor to account for model uncertainities	UFPJ	
Global Warming Potential for methane	GWPCH4	$tCO2/tCH_4$
Chemical oxygen demand removed by the treatment system k (120 m3 Mother Liquor Treatment Plant) of the project activity equipped with biogas recovery equipment in year y	CODremoved,PJ,k,y	t/m3
Methane correction factor for the project wastewater treatment systems k equipped with biogas recovery equipment	MCFww,treatment,PJ,y	
Methane fugitive emissions on account of inefficiencies in capture systems in WWTP	PEfugitive,ww,y	tCO2e/year
Methane fugitive emissions on account of inefficiencies in capture systems	PEfugitive,y	tCO2e/year

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
PEww,treatment,y tCO2e/year	0	0	0	0	0	0	0	0	0	0
PEww,discharge,y tCO2e/year	47	55	64	73	80	67	62	76	77	76
PEfugitive,y tCO2e/year	112	132	122	111	84	70	63	82	89	81

Methane emissions due to incomplete flaring in year y ($PE_{flaring,y}$)

In the project activity, generated biogas will be consumed in the heat generating

equipment's (boilers). The project activity involves one heat generating equipment's (6TPH (F&A 100^0C) i.e. RFB-60 Boiler. When this boiler is forced shut down or is under maintenance, biogas can be supplied to another boilers (SM140.1 & SM140.2). Itis very unlikely that both the heat generating equipment's are under maintenance or forced shut down.

However, if such condition occurs, the number of hours of operation of flare shall be monitored as H_{flare} and the quantity of biogas flared shall be obtained by multiplying the flare capacity and number of hours of operation of flare. The project activity involves open flaring system. This system is now not operational in and use of the same is very unlikely because the generated biogas will be used in the boilers. Hence, the default value to be adapted for flare efficiency is 0%.

Leakage ($LE_{WW, y}$) **:**

There is no transfer of equipment from another activity nor the existing equipment is transferred to another activity, hence there is no leakage has been considered for this project activity.

For Computation of Emission reductions based on ex post values for mother liquor treatment (under AMS III.H), conservative values shall be considered as per:

$$ER_{y,ex\ post} = \min((BE_{y,ex\ post} - PE_{y,ex\ post} - LE_{y,ex\ post}),$$
$$(MD_y - PE_{power,y} - PE_{biomass,y} - LE_{y,ex\ post}))$$

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Total Project emissions as per AMS III.H.	2314	2405	2308	2372	2288	2088	1830	2076	2291	1946

Project Emissions as per AMS I. C.

CO_2 emission from onsite consumption of fossil fuels due to the project activity

$$PE_{FC,boiler,y} = (\sum_{FO} FC_{FO,bolier,y} \times COEF_{FO,y})$$

Quantity of Fossil fuel used in the project activity	FCFO,boiler,y	kg/year
Coefficient of emission factor	COEFFO,y	

NCV of FO	NCVFO,y	TJ/kg
Emission factor of FO	EFCO2,FO,y	tCO_2/TJ
CO2 emissions from on-site consumption of fossil fuels due to the project activity in year y	PEFC,boiler,y	$tCO_2/year$
Total Project emissions as per AMS I.C.		$tCO_2e/year$

'CO_2 emissions from electricity consumption by the project activity' will beconsidered and calculated as per AMS III.H. version 19 and are described above under $PE_{ww,y}$.

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Total Project emissions as per AMS I.C.	195	49	41	0	0	47	0	0	0	0

Total project emissions:

Therefore, Project emissions due to thermal energygeneration will be, $PE_{thermal,y} = PE_{FC,boiler,y}$

Leakage $(LE_{thermal,y})$ **:**

Leakage emissions are not considered since there is no transfer of equipment from another activity.

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Total Project emissions as per AMS III.H.	2314	2405	2308	2372	2288	2088	1830	2076	2291	1946
Total Project emissions as per AMS I.C.	195	49	41	0	0	47	0	0	0	0
Total Project Emissions	**2509**	**2454**	**2349**	**2372**	**2288**	**2135**	**1830**	**2076**	**2291**	**1946**

Establishment and description of baseline scenario (UNFCCC CDM-UCR Protocol)

The baseline scenario of the project activity is identified as:

The baseline of the project activity is identified as per paragraph 21, 22, 24, 25 & 26 of AMS III.H ver. 19. As per paragraph 24 AMS III. H ver.19, "Wastewater and sludge treatment systems equipped with a biogas recovery facility in the baseline shall be excluded from the baseline emission calculations." the existing WWTP is excluded from the baseline emission calculations.

Mother Liquor was treated in anaerobic lagoons which was not equipped with biogas recovery and hence, baseline emissions for the systems affected by the project activity are considered. The applicable Methane equipped Correction Factor (MCF) will be determined based on the given table AMS III.H.2.

And baseline of the project activity is identified as per paragraph 63 of AMS I.C. Version 22 as, for project activities that seek to retrofit or modify an existing facility for the purpose of fuel switch from fossil fuels to biomass in heat generation equipment, the baseline emissions shall be calculated as per equation 2". The equation 3 refers to paragraph 34 of the methodology. Thus, paragraph 34 is identified as baseline scenario.

The project activity involves mother liquor treatment in anaerobic digesters that otherwise would continue to be treated in anaerobic deep lagoons without any biogas recovery. Generated biogas in the project activity shall be used in the boiler thereby replacing corresponding quantity of FO.

Hence, simplified baseline for the project activity is, continued treatment of Mother Liquor in anaerobic deep lagoons without biogas recovery and consumption of equivalent quantity of FO that otherwise would have been consumed in the boiler to generate corresponding quantity of steam.

Emission Reductions (ER_y):

Therefore, total emission reduction because of this project activity is,

$$ER_y = ER_{ww,y} + ER_{thermal,y}$$

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
ERww,y	8811	10299	10354	11960	10747	6145	10164	12285	12697	13430
ERthermal,y	1243	1690	1027	1329	1171	756	1430	1563	3304	3387
ERy	10054	11989	11381	13289	11918	6901	11594	13848	16001	16817
	1,23,792									

Total Emission Reductions (ER_y) = 1,23,792 CoUs (1,23,792 tCO_2eq)

Conclusions:

Based on the audit conducted on the basis of UCR Protocol, which draws reference from UCR Standard, CDM UNFCCC Methodology AMS III. H: Methodology for methane recovery in wastewater treatment. version 19 and AMS-I.C: Methodology for Thermal energy production with or without electricity version 22, the audit conducted onsite and the documents verified and submitted during the verification including the Data, Project Concept Note (PCN) / Monitoring Report (MR), SQAC is able to certify that the emission reductions from the project - Wastewater Treatment and Biogas Recovery Project, SDDPL, Baramati, Maharashtra, India, (UCR ID – 421) for the period **01/01/2014 to 31/12/2023** amounts to **1,23,792 tCO_2 (1,23,792 CoUs)**

Santosh Nair Lead Verifier (Signature)	Sheetal Wader Verifier (Signature)	Praful Shinganapurkar Senior Internal Reviewer (Signature)

Date: 10/04/2024