



# MONITORING REPORT

CARBON OFFSET UNIT (CoU) PROJECT



**Title: Renewable biomass based thermal energy generation by SIPL, Hadapsar, Pune, Maharashtra**

Version 1.0

**Date of MR:** 10/03/2023

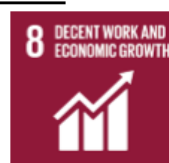
**Monitoring No:** 01

**1<sup>st</sup> CoU Issuance Period:** 01/01/2013 to 31/12/2022, 10 Years, 0 Months

**1<sup>st</sup> Crediting Period:** 01/01/2013 to 31/12/2022, 10 Years, 0 Months

**1<sup>st</sup> Monitoring Period:** 01/01/2013 to 31/12/2022, 10 Years, 0 Months

**Project Activity meets the following UN SDGs**



**UCR PROJECT ID: 273**



Monitoring Report (MR)  
CARBON OFFSET UNIT (CoU) PROJECT

**BASIC INFORMATION**

Title of the project activity	<b>Renewable biomass based thermal energy generation by SIIPL, Hadapsar, Pune, Maharashtra</b>
Scale of the project activity	Small Scale
UCR PROJECT ID	273
Completion date of the MR	10/03/2023
Project participants	<b><u>Project Owner:</u></b> Serum Institute of India Pvt Ltd (SIIPL), Pune, Maharashtra  <b><u>Aggregator:</u></b> Egis India Consulting Engineers Pvt Ltd  <b><u>UCR ID:</u></b> 467947294
Host Party	India
Applied methodologies and standardized baselines	<b>CDM UNFCCC Methodology</b> <b>AMS-1.C.:</b> Thermal energy production with or without electricity (Ver.21.0)
Sectoral scopes	01 Energy industries (Renewable/NonRenewable Sources)
Calculated amount of annual average GHG emission reductions each crediting year	2013: 17050 tCO <sub>2</sub> (17050 CoUs)
	2014: 21524 tCO <sub>2</sub> (21524 CoUs)
	2015: 24919 tCO <sub>2</sub> (24919 CoUs)
	2016: 24003 tCO <sub>2</sub> (24003 CoUs)
	2017: 23184 tCO <sub>2</sub> (23184 CoUs)
	2018: 24222 tCO <sub>2</sub> (24222 CoUs)
	2019: 24598 tCO <sub>2</sub> (24598 CoUs)
	2020: 22035 tCO <sub>2</sub> (22035 CoUs)
2021: 34128 tCO <sub>2</sub> (34128 CoUs)	
2022: 46078 tCO <sub>2</sub> (46078 CoUs)	
Calculated total GHG emission reductions this crediting period	<b>261741 tCO<sub>2</sub> (261741 CoUs)</b>

## SECTION A. Description of project activity

### A.1. Purpose and general description of Carbon offset Unit (CoU) project activity >>

The project **Renewable biomass based thermal energy generation by SIIPL, Hadapsar, Pune, Maharashtra** is located at Village: Hadapsar, District: Pune, State: Maharashtra, Country: India

The details of the registered project are as follows:

#### **Purpose of the project activity:**

Serum Institute of India Pvt Ltd (SIIPL), the project proponent (PP), is an Indian biotechnology and biopharmaceuticals company founded in 1966 and since then it has established itself as the world's largest manufacturer of vaccines.

The UCR project activity consists of the generation of thermal energy by utilizing renewable biomass (Briquettes) boilers of total installed current capacity of 37 TPH at the Hadapsar (Pune) vaccine plant owned and operated by the PP. The project activity currently involves the installation of two (2) biomass briquette fired steam boilers ranging in steam output capacities of 15 TPH and 22 TPH. This project activity uses renewable biomass briquettes as fuel and supplies the process steam throughout the plant for an important process of sterilization and clean steam generation for advanced procedures within the project boundary at Hadapsar

The first boiler (**8 TPH**) in the project activity was commissioned in **2011** and was **upgraded** to the current capacity of **22 TPH in 2013**. The latest **15 TPH** biomass boiler was commissioned in **2021** within the project activity. Hence the start date of the current project activity is **2011** and the total installed capacity from the start date is **45 TPH**. However, since the 8 TPH boiler **only operated for 82 days in 2013** (prior to being upgraded and replaced with the current 22 TPH boiler), the **current installed capacity** of the project activity is **37 TPH**.

The project activity is the thermal energy production using renewable energy sources that displaces fossil fuel use and avoids GHG emissions (CO<sub>2</sub>). In the pre-project scenario, the process demand of steam would have been met by a coal fired boiler. The project results in reductions of CO<sub>2</sub> emissions that are real, measurable and give long-term benefits to the mitigation of climate change. The project results in reductions of CO<sub>2</sub> emissions that are real, measurable and give long-term benefits to the mitigation of climate change.

## A.2. Location of project activity >>

Country: India

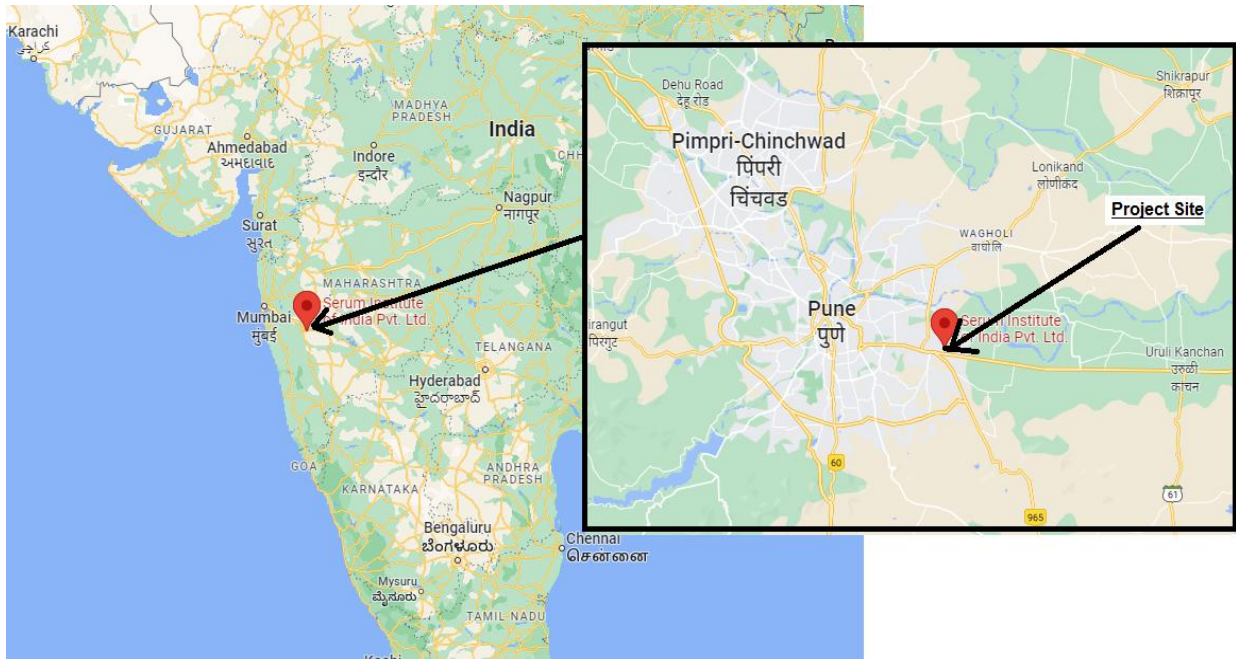
Village: Hadapsar

District: Pune

State: Maharashtra

Latitude: 18°30'56.1"N,

Longitude: 73° 57'47.2"E



### A.3. Technologies/measures >>

The UCR project activity consists of the generation of thermal energy by utilizing renewable biomass (Briquettes) boilers of total installed current capacity of 37 TPH at the Hadapsar (Pune) vaccine plant owned and operated by the PP. The project activity currently involves the installation of two (2) biomass briquette fired steam boilers ranging in steam output capacities of 15 TPH and 22 TPH. This project activity uses renewable biomass briquettes as fuel and supplies the process steam throughout the plant for an important process of sterilization and clean steam generation for advanced procedures within the project boundary at Hadapsar.

The CO<sub>2</sub> emission due to the combustion of biomass is neutralized by the photosynthesis process of agricultural crops. Hence, it "recycles" atmospheric carbon and does not add to the greenhouse effect. And also the biomass contains negligible quantities of nitrogen and sulphur, hence the other greenhouse gases (GHGs) from the combustion of biomass can be neglected. The coal being a carbon intensive fuel leads to GHG emissions hence implementation of the project activity leads to GHG emission reductions.

No transfer of technology is involved to host country because technology is available within India from reputed manufacturers.

Description/Data		
Capacity of Current Boilers	22 TPH (6.1 kg/sec)	15 TPH (4.1 kg/sec)
Number of Boilers	1	1
Pressure	10.5 kg/cm <sup>2</sup>	10.5 kg/cm <sup>2</sup>
Feed Material	Agro based industrial residues (bagasse) and crop residues (soya bean waste and groundnut shells)	
Enthalpy of Steam (Boiler outlet temp 280 °C)*	3.00 MJ/kg	
Operation days/annum	330 days/yr (24hrs/day)	
Enthalpy of water @100 °C	0.418 MJ/kg	
Boiler Rating	$22 \times (3.0 - 0.418) / 3.6 = 15.77 \text{ MW}_{\text{thermal}}$	$15 \times (3.0 - 0.418) / 3.6 = 6.5 \text{ MW}_{\text{thermal}}$
NCV of Biomass	4000 kcal/kg	

Description	Data
Capacity of Replaced Boiler	8 TPH (2.2 kg/sec)
Number of Boilers	1 (Discontinued)
Pressure	10.5 kg/cm <sup>2</sup>
Enthalpy of Steam (Boiler outlet temp 280 °C)*	3.00 MJ/kg
Operation days/annum	82 days/yr (2013) and discontinued thereafter
Enthalpy of water @100 °C	0.418 MJ/kg
Boiler Rating	$8 \times (3.0 - 0.418) / 3.6 = 5.73 \text{ MW}_{\text{thermal}}$

\*<https://www.spiraxsarco.com/resources-and-design-tools/steam-tables/superheated-steam-region>

#### A.4. Parties and project participants >>

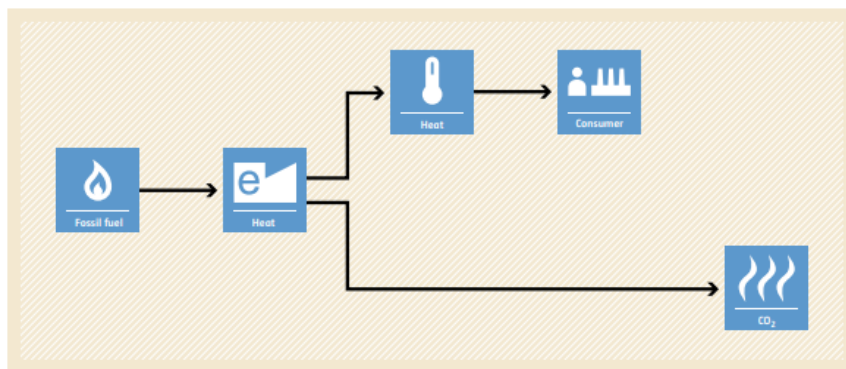
The project activity has been developed completely on the basis of in-house resources of the PP. Project activity does not involve any public funding from Annex I Party, which leads to the diversion of the official development assistance.

Party (Host)	Participants/Aggregator
India	<p><b>Project Owner:</b> Serum Institute of India Pvt Ltd (SIPL), Pune, Maharashtra</p> <p><b>Aggregator:</b> Egis India Consulting Engineers Pvt Ltd</p> <p><b>UCR ID:</b> 467947294</p> <p><b>Email:</b> sneha.k@egis-india.com</p>

#### A.5. Baseline Emissions>>

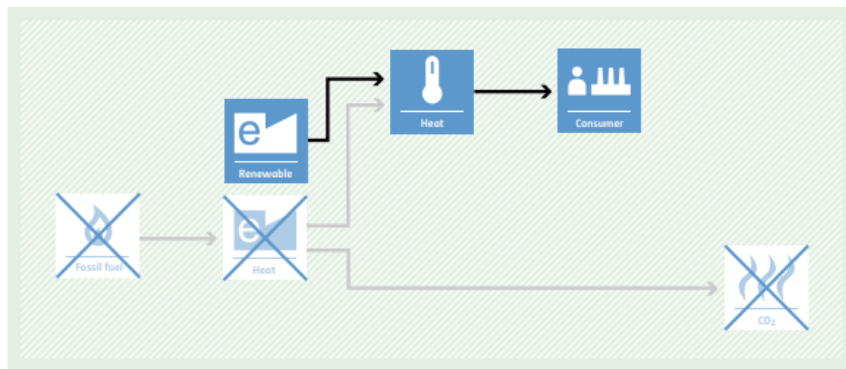
##### **BASILINE SCENARIO**

Energy generation (thermal heat and / or electricity) by more-carbon-intensive technologies based on fossil fuel. In case of retrofits or capacity addition, operation of existing renewable power units without retrofit and capacity addition.



##### **PROJECT SCENARIO**

Energy generation by installation of new renewable energy generation units, by retrofitting or replacement of existing renewable energy generation units as well as by switch from fossil fuel to biomass in modified existing facilities.



The approved baseline methodology AMS IC, has been referred from the indicative simplified baseline and monitoring methodologies for selected small-scale UNFCCC CDM project activity categories.

The applicable methodology and simplified modalities and procedures for small scale CDM project activities, states that “For renewable energy technologies that displace technologies using fossil fuels, the simplified baseline is the fuel consumption of the technologies that would have been used in the absence of the project activity times an emission coefficient for the fossil fuel displaced. IPCC default values for emission coefficients may be used.”

#### **Emission coefficient of fuel used in the baseline scenario**

In absence of the project activity, the probable baseline scenario would have been steam generation

using fossil fuel (coal). Thus to determine emission co-efficient SIIPL has used emission factor for coal as per 2006 IPCC Guidelines for National Greenhouse Gas Inventories for GHG emissions which is 96.1 tCO<sub>2</sub> /TJ.

**Emission coefficient of fuel used in the project activity**

The fuel used in the project activity is the biomass residues (bagasse/agricultural waste), which is a carbon neutral fuel and therefore the emission coefficient (tC/TJ) is zero.

**A.6. Debundling>>**

This project is not a debundled component of a larger registered carbon offset project activity.

## SECTION B. Application of methodologies and standardized baselines

### B.1. References to methodologies and standardized baselines >>

SECTORAL SCOPE - 01 Energy industries (Renewable/Non-renewable sources)

TYPE I - Renewable Energy Projects

CATEGORY- **AMS-I.C.: Thermal energy production with or without electricity (Ver. 21.0)**

This methodology comprises renewable energy technologies that supply users i.e. residential, industrial or commercial facilities with thermal energy that displaces fossil fuel use. These units include technologies such as energy derived from renewable biomass and other technologies that provide thermal energy that displaces fossil fuel.

### B.2. Applicability of methodologies and standardized baselines >>

The project activity is thermal energy generation project using a biomass (bagasse and crop residues i.e. soya bean waste, groundnut shell etc) based boiler that displaces equivalent amount of thermal energy that would have been generated by a fossil fuel based boiler. Since the project activity utilises biomass for the generation of thermal energy by displacing fossil fuel (coal), it meets the primary applicability criteria of the methodology.

The thermal generation capacity of project activity is currently 22.27MW<sub>thermal</sub> which is less than the threshold of 45MW<sub>thermal</sub> as per the applied methodology. The capacity limits specified in the methodologies apply to both existing and additional units within the project activity. In the present case of the project activity, a 15 TPH boiler was added to the already installed 22 TPH boiler, however, the total capacity of the units added within the project activity (since 2011, is 45 TPH), and this results in a thermal capacity generation of 28 MW<sub>thermal</sub> which also complies with capacity limits of the methodology. All boilers are physically distinct from each other.

The biomass used by the project plant is not stored for more than one year.

The project activity does not involve recovery and utilization of biogas for power/heat production.

The project activity is neither a co-generation nor co-firing system, therefore this condition is not applicable in the case of current project activity.

Biomass generated steam is used for captive use. The steam produced in the project activity is utilized in the process of SIIL. It is not delivered to any third party.

The project activity does not involve the use of any refrigerant within its boundaries and hence the given applicability clause in the methodology is not fulfilled here.

The PP is not the producer of the processed solid biomass fuel. The PP has a contract with the biomass briquette supplier for the supply of the same which will ensure that there is no double-counting of emission reductions by the supplier.


Thermal energy generation capacity are determined by taking the difference between enthalpy of total output leaving the project equipment and the total enthalpy of input entering the project equipment.


The installed biomass boiler generates steam to meet the demand of steam recipient plant and displace fully the use of fossil fuel based boilers. The project technology utilizes appropriate treatment systems to ensure exhaust gas and discharged water in compliance with national environmental regulations. Note that fossil fuel (i.e. furnace oil, coal, gas, etc) cannot be used for biomass fired boilers due to its specialized design of combustion chamber. The service level (e.g. temperature, pressure) of supplied steam in case of utilizing different types of renewable biomass residues is ensured by qualified boiler operators and is monitored by steam flow meter at recipient plant. The project activity will thus reduce Green house gas (GHG) emissions associated with the combustion of fuel oil in baseline boilers. The project activity claims emission reduction for the thermal energy production by renewable energy technologies (biomass boilers) that displace the use of fossil fuel based boilers. This is in line with the applied methodology AMS I.C requirements.



### B.3. Applicability of double counting emission reductions >>

The biomass boilers are constructed by the PP within the boundary. The biomass boilers have unique IDs (MR/15691 and MR/17970), which are visible on the units.

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

NO.: 2231005310019677 

Registry Number of Boiler - MR/15691	Type of Boiler - Smoke Tube
Boiler Rating - 590 sq.mtr.	
Maximum Continuous Evaporation - 22000.00 kg. Per hr.	Place and year of manufacture - Pune-2012
Name of Owner - Serum Institute of India Ltd.,	
Situation of Boiler - S. No. 212/2, Soli Poonawala Road, Hadapsar PUNE 411028	
Repairs - NIL	
Remark - BOILER ENTIRELY BARED IN THE YEAR 2022..CWS F=28.5mm,R=33.7mm thk.	
Hydraulically Tested on 02/11/2022 to 15.81 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 10.54 kg. per sq. cm. for the period from 02/11/2022 to 01/11/2023

The loading on 0.00mm 0.00mm 0.00mm mm diameter SLSVs not to exceed 10.54 kg/cm<sup>2</sup>, CWS F/L=28.50mm, R=33.70 mm thick.

  
**Form V**  
**[Regulation 381 (c)]**  
**Provisional Order under section 9 of the Boilers Act of 1923**

No.: 222PUN2020

SEZ BIOTECH SERVICES PRIVATE LIMITED, , 212/2, SOLI POONAWALLA ROAD , HADAPSAR, NEAR AKSAHWANI, Haveli, Pune, Hadapsar Maharashtra-411028 are hereby permitted to use the Boiler MR-17970 Boiler Rating 785 Made by Forbes Vyncke Pvt Ltd and bearing Makers number FV17095 at a maximum pressure of 10.54 kg. per square cm pending the issue or refusal of a certificate within six months from the date hereof after which period this order will become void.

Period from 12/02/2020 to 11/08/2020

Dated: 19/05/2020

Yours faithfully,

**LIMESH SHANKARRAO MADANE**  
Joint Director,  
Maharashtra, Pune  
(Government of Maharashtra)  
Date: 19-May-2020 14:17:29 IST

N.B.: This order must be produced on demand by any authorised person and surrendered to the Director on receipt of orders.

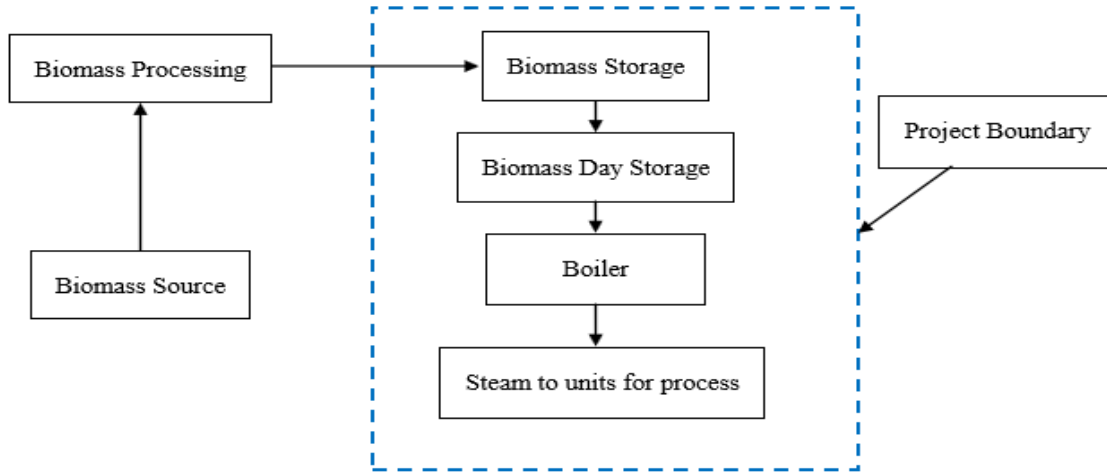
Copies of all related Boiler Inspection Reports are provided to the UCR verifier during the verification process.

The project activity has earlier applied for registration under the UNFCCC CDM mechanism (link: <https://cdm.unfccc.int/Projects/Validation/DB/3KIQ1IZ8MPMHT4GR9N1RKIFYLWNLKD/view.html>), however, the PP has not completed the validation process, nor has generated a CDM registration number or generated carbon credits under the CDM or any other GHG mechanism for the current UCR monitoring and crediting period. Hence there is no double counting of the credits anticipated for the current project activity. The double counting avoidance agreement will be provided to the UCR verifier during the verification process.

#### B.4. Project boundary, sources and greenhouse gases (GHGs)>>

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

- Site of the renewable energy generation
- Biomass based boiler, which starts from the biomass storage to the point of steam supply
- Biomass storage facility



Leakage Emissions is not applicable as the project activity does not use technology or equipment transferred from another activity.

There is no registered or an application to register another small-scale carbon project activity with the same project participants in the same project category **within 1 km of the project boundary**, hence the project activity is not a debundled component of a large scale project.

By using locally sourced GHG-neutral biomass, the PP is successfully able to avoid the fossil fuel emissions and thereby GHG emissions due to in-house cogeneration energy requirements and also vehicular emissions avoiding sourcing of biomass fuel from a large distance.

	Source	GHG	Included?	Justification/Explanation
Baseline	Co2 Emissions from fossil fuel in boilers for heat	CO <sub>2</sub>	<b>Included</b>	Major source of GHG emissions
		CH <sub>4</sub>	Excluded	Excluded for simplification. This is conservative
		N <sub>2</sub> O	Excluded	Excluded for simplification. This is conservative
Project Activity	Emissions from Biomass Project Activity	CO <sub>2</sub>	Excluded	Excluded for simplification. This is conservative
		CH <sub>4</sub>	Excluded	Excluded for simplification. This is conservative
		N <sub>2</sub> O	Excluded	Excluded for simplification. This is conservative

## B.5. Establishment and description of baseline scenario >>

The baseline scenario identified at the PCN stage of the project activity is:

- *Renewable energy technologies that displace technologies using fossil fuels, wherein the simplified baseline is the fuel consumption of the technologies that would have been used in the absence of the project activity, times an emission factor for the fossil fuel displaced.*

**Emission Reductions (ER<sub>y</sub>)** The emission reduction due to the project activity is calculated as the difference between the baseline emissions and the sum of the project emissions and the leakage:

$$ER_y = BE_y - (PE_y + LE_y)$$

**BE<sub>y</sub>** = Baseline emissions in year y (t CO<sub>2e</sub>)

*As mentioned in the methodology AMS I.C, for steam produced using fossil fuels the baseline emissions are calculated as follows:*

$$BE_y = (HG_y * EF_{CO_2}) / \eta_{th}$$

Where:

**HG<sub>y</sub>** = The net quantity of heat supplied by the project activity during the year in TJ. It is calculated as product of quantity of steam generated and net enthalpy of steam. The net enthalpy of steam is calculated as difference of enthalpy of steam and enthalpy of feedwater. The enthalpy of steam is calculated from steam pressure and steam temperature..

**EF<sub>CO<sub>2</sub></sub>** = The CO<sub>2</sub> emission factor per unit of energy of the fuel that would have been used in the baseline plant in (tCO<sub>2</sub>/TJ), obtained from reliable local or national data if available, otherwise, IPCC default emission factors are used.

**η<sub>th</sub>** – The efficiency of the boiler using fossil fuel that would have been used in the absence of the project activity (Table 1 below).

**PE<sub>y</sub>** = Project activity emissions. The GHG emissions due to the combustion of biomass is neutralized by the sequestration done during the growth of the biomass, thereby making it a carbon neutral fuel. Further the bagasse contains negligible quantities of nitrogen and sulphur, the other green house gas from the combustion of biomass can be considered as negligible. Therefore essentially there would not be any GHG emissions due to the project activity within the project boundary.

However, as per paragraph 31 under Section 5.2 of the given methodology, the PP must “*For microscale and small-scale project activities, apply a default emission factor of 0.0142 tCO<sub>2</sub>/tonne of biomass*”.

**LE<sub>y</sub>** = Leakage emissions. Leakages is to be considered if the energy generating equipment is transferred from another activity or if the existing is transferred to another activity. There is no transfer of energy generating equipment or existing equipment to another activity. Further, emissions arising during the transportation of husk and biomass to the site, is negligible since the biomass is sourced locally within a radius of less than 200 kms, hence considered as negligible.

Yearly Data of 22 TPH Boiler (MR-15691) at Hadapsar					
Sr. No.	Year	Steam Generation (Ton)	Briquette consumption (Ton)	Steam pressure (Kg/sqcm)	Feed water Temperature (°C)
1	2013	54624.8	13162.5	7.8	65.4
2	2014	81468.6	19532.8	8.0	63.1
3	2015	94263.9	21577.2	7.8	71.7
4	2016	90840.1	21551.8	7.4	72.2
5	2017	87819.8	22307.9	7.2	71.1
6	2018	91710.4	22554.5	7.5	71.3
7	2019	93126.8	22726.2	8.4	78.3
8	2020	83373.3	19396.3	8.5	66.5
9	2021	80396.1	18683.9	7.7	75.3
10	2022	75525.7	19063.7	8.2	80.9
<b>Total</b>		<b>833149.3</b>	<b>200556.9</b>	<b>7.9</b>	<b>71.6</b>

Monthly Steam Data for 8TPH Boiler until upgrade			
S. No.	Month	Steam Generation (t)	Fuel Consumption (t)
1	Jan-13	3728.1	950.1
2	Feb-13	2985.9	668.6
3	Mar-13	3199.9	774.6
<b>Total</b>		<b>9914.0</b>	<b>2393.4</b>

Monthly Steam Data for 15 TPH Boiler						
Sr. No	Year	Month	Steam Generation (Tons)	Fuel Consumption (Tons)	Feed Water Temperature (°C)	Steam Pressure (Kg/cm2)
1	2021	Jun-21	2573	533	104.0	8.7
		Jul-21	7402	1534	102.3	8.8
		Aug-21	7927	1659	103.8	8.8
		Sep-21	7912	1782	102.8	8.9
		Oct-21	7041	1494	102.8	8.7
		Nov-21	8151	1746	103.6	8.7
		Dec-21	7644	1680	103.2	8.7
<b>2021- Total</b>			<b>48649</b>	<b>10429</b>	<b>103.2</b>	<b>8.7</b>

2	2022	Jan-22	5054	1108	103.5	8.7
		Feb-22	7738	1620	103.3	8.9
		Mar-22	8549	1764	103.5	8.9
		Apr-22	8041	1656	103.7	8.8
		May-22	8964	1832	103.5	9.0
		Jun-22	9032	1837	103.9	9.1
		Jul-22	8682	1793	103.4	8.9
		Aug-22	8505	1786	104.0	8.9
		Sep-22	8666	1925	103.5	8.8
		Oct-22	8524	1901	101.8	8.7
		Nov-22	8252	1705	102.8	8.7
		Dec-22	8707	1819	102.8	8.8
<b>2022 - Total</b>		<b>98714</b>	<b>20747</b>	<b>103.3</b>	<b>8.8</b>	

(Table 1) Default baseline efficiency values for different technologies as per AMS IC Methodology

Technology of the energy generation system	Default efficiency
New natural gas fired boiler (w/o condenser)	92%
New oil fired boiler	90%
Old natural gas fired boiler (w/o condenser)	87%
New coal fired boiler	85%
Old oil fired boiler	85%
Old coal fired boiler	80.00%

Year	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Baseline Emissions (TCO <sub>2</sub> eq)	17271	21801	25225	24309	23501	24542	24921	22311	34541	46644
Project Emissions (tCo <sub>2</sub> eq)	221	277	306	306	317	320	323	275	413	565
Emission Reductions (tCo <sub>2</sub> eq)	17050	21524	24919	24003	23184	24222	24598	22035	34128	46078
<b>Total (2013-2022)</b>	<b>261741</b>									

## B.6. Prior History>>

The project activity has earlier applied for registration under the UNFCCC CDM mechanism (link: <https://cdm.unfccc.int/Projects/Validation/DB/3KIQ1IZ8MPMHT4GR9N1RKIFYLWNLKD/view.html>), however, the PP has not completed the validation process, nor has generated a CDM registration number or generated carbon credits under the CDM or any other GHG mechanism for the current UCR monitoring and crediting period. Hence there is no double counting of the credits anticipated for the current project activity for the current UCR monitoring and crediting period.

**B.7. Changes to start date of crediting period >>**

There is no change in the start date of crediting period.

**B.8. Permanent changes from PCN monitoring plan, applied methodology or applied standardized baseline >>**

There are no permanent changes from registered PCN monitoring plan and applied methodology

**B.9. Monitoring period number and duration>>**

**Monitoring No:** 01

**1<sup>st</sup> CoU Issuance Period:** 01/01/2013 to 31/12/2022, 10 Years, 0 Months

**1<sup>st</sup> Crediting Period:** 01/01/2013 to 31/12/2022, 10 Years, 0 Months

**1<sup>st</sup> Monitoring Period:** 01/01/2013 to 31/12/2022, 10 Years, 0 Months

**B.10. Monitoring plan>>**

The monitoring and recording of the required parameters is carried out by trained personnel who are managed by the Project Managers decided by the PP. All measurements use calibrated measurement equipment that are maintained regularly and checked for its functioning which will meet the minimum requirement of the methodology. Calibration record have been provided to the verifier.

All indicators of importance for controlling and reporting of projects performance have been incorporated in the monitoring protocol and work instructions available in the control room at the site.

Data parameters and log books and invoices of biomass receipts are provided during the verification of the project activity.

Year	Operating Days/Year		
	8 TPH	22 TPH	15 TPH
2013	82	253	0
2014	0	338	0
2015	0	348	0
2016	0	317	0
2017	0	336	0
2018	0	293	0
2019	0	329	0
2020	0	272	0
2021	0	310	229
2022	0	290	291

Book No - 18



SERUM INSTITUTE OF INDIA PVT. LTD.

Cyrus Poonawalla Group

BOILER LOG BOOK

BOILER MR NO: 15691		ECONOMISE R - MR/E-97										DATE: 01/10/2007					
TIME	PRESSURE (kg/cm <sup>2</sup> /MMWC)					TEMPERATURE					FLOW RATE (KG)		BOILER LOAD %	FEED WATER TANK LEVEL	FEED PUMP IN USE	O/N	
	STEAM	FURNACE	ID DP	SAG FILTER DP	ECO. DP	FURNACE	ECO. WATER INLET	ECO. WATER OUTLET	ECO. FLUE GAS INLET	ECO. FLUE GAS OUTLET	STEAM	FUEL					
FIRST SHIFT																	
08.00	5.75	-2.45	2.00	1.80	90	481	73	100	22.5	167	17430	1530	40	50	01	0.8	
09.00	5.27	-2.11	2.50	2.30	90	241	57	100	23.8	174	16001	2070	100	42	01	0.5	
10.00	5.46	-2.47	2.29	2.00	90	250	84	100	22.0	173	15200	3700	100	00	01	0.7	
11.00	5.90	-2.27	2.70	2.50	90	200	80	100	22.2	158	14500	4000	100	07	01	0.8	
12.00	5.21	-2.54	2.80	2.70	90	250	80	100	23.6	153	16630	2600	100	00	01	0.7	
13.00	5.10	-2.12	2.00	2.00	90	200	80	100	23.4	100	15100	4000	100	00	01	0.6	
14.00	5.24	-2.45	2.70	2.20	90	200	80	100	23.6	173	15700	3700	100	01	01	0.7	
15.00	7.22	-2.75	2.70	2.00	90	200	80	100	23.5	173	13100	2150	100	00	01	0.4	
SECOND SHIFT																	
16.00	5.40	-2.24	2.50	2.00	90	270	80	100	22.8	172	16000	4000	70	45	01	0.0	
17.00	5.00	-2.27	2.70	2.40	90	200	80	100	22.9	170	12370	4350	70	00	01	0.5	
18.00	7.11	-2.07	1.80	2.00	90	270	80	100	22.0	170	9900	3300	70	00	01	0.3	
19.00	7.24	-2.02	1.70	1.60	90	270	80	100	22.0	158	9100	2300	60	00	00	0.2	
20.00	7.64	-3.19	1.70	1.60	90	440	80	100	21.3	160	10400	4100	65	00	02	0.7	
21.00	7.22	-4.45	2.40	2.00	60	370	80	110	19.7	158	7475	2930	38	40	02	10.4	
22.00	7.70	-0.68	1.70	1.60	50	380	80	110	20.0	150	7415	2720	44	00	02	0.2	
23.00	7.00	-2.33	1.70	1.40	60	380	80	110	20.7	160	4520	2190	70	45	02	0.3	
THIRD SHIFT																	
00.00	7.50	-2.41	1.60	1.40	50	340	80	110	19.0	153	6165	2600	80	60	02	0.3	
01.00	7.64	-2.45	1.60	1.40	50	400	80	110	20.3	156	6940	2700	45	40	02	0.6	
02.00	7.53	-4.30	1.50	1.40	50	380	80	110	19.2	151	6600	2440	30	40	02	11.0	
03.00	7.27	-1.00	1.40	1.20	40	300	80	100	18.8	151	6200	2000	30	40	02	0.5	
04.00	7.35	-3.24	1.60	1.60	60	300	80	90	19.9	152	6074	2140	85	70	02	0.4	
05.00	7.47	-1.13	1.60	1.50	50	300	80	90	20.1	148	6076	1900	57	40	02	0.0	
06.00	7.60	-2.73	1.60	1.40	50	430	80	90	21.2	156	7245	2040	57	01	02	0.2	
07.00	7.50	-5.44	1.70	1.50	60	470	70	90	21.4	159	8775	2070	50	60	01	0.4	
WATER PARAMETERS																	
FEED WATER PH: 8.7 HARDNESS: 111 TDS: 2.5																	
COND. VALUE: 11.3																	

Cyrus Poonawalla Group

BOILER LOG BOOK

REMARK		TOTAL STEAM GENERATION	
STEAM TOTALIZER READING	29759.57	KG	256.138
STEAM GENERATION	124.958	KG	68.699
1) Both water gauge glasses tested at 7:10 Hrs.		TOTAL FUEL CONSUMPTION	
2) Mobrey cylinder tested at 7:12 Hrs.		LTR. 215.52	
3) Boiler drum blow down at 7:20 Hrs. For 60 Secat @ 20 kg/cm <sup>2</sup>		STEAM FUEL RATIO	
4) Both Membranes blow down at 7:40 Hrs. For 60 Secat @ 20 kg/cm <sup>2</sup>		%	
① Feed water pump No. 1 Running normal		TOTAL RUNNING HOURS	
② Boiler load manager seat point change at time 5:30 am @ 8:50 kg/cm <sup>2</sup>		HRS 24	
③ Boiler Running in auto mode normal condition		ASH WEIGHT	
		KG 1.8935	
		ASH TRIP	
		NOS 05	
		BRIQUETTE OPENING BALANCE	
		KG 34.198	
		BRIQUETTE CLOSING BALANCE	
		KG 115.799	
		BRIQUETTE UNLOADING QTY.	
		KG 90.300	
		SOFT water consumption	
		KL 18	
Remark:			
4 Ash conveyor spindle chain change slow fitting done in front room sir boiler load manager @ 8:50 am to 9:20 pm			
STEAM TOTALIZER READING		FUEL TOTALIZER READING:	
STEAM GENERATION		FUEL CONSUMPTION	
1) Both water gauge glasses tested at 10:40 Hrs.		CHARGE GIVEN	
2) Mobrey cylinder tested at 10:50 Hrs.		NAGAWADE GANESH	
3) Boiler drum blow down at 10:50 Hrs. For 60 Secat @ 40 kg/cm <sup>2</sup>		LIC. NO: 02008	
4) Both Membranes blow down at 10:57 Hrs. For 60 Secat @ 10 kg/cm <sup>2</sup>		Exam. P. 3: 20/10/2003	
① Boiler load manager seat point change at time 17:00 pm @ 8:50 kg/cm <sup>2</sup>		CHARGE TAKEN	
② Feed water pump No. 2 stop and pump No. 1 start		SOMAR VISHNU	
③ Boiler Running in Auto mode normal condition.		LIC. NO: 7734	
		Exam. P. 3: 15/10/2003	
STEAM TOTALIZER READING		FUEL TOTALIZER READING:	
STEAM GENERATION		FUEL CONSUMPTION	
1) Both water gauge glasses tested at 11:20 Hrs.		CHARGE GIVEN	
2) Mobrey cylinder tested at 11:30 Hrs.		SOMAR VISHNU	
3) Boiler drum blow down at 11:40 Hrs. For 60 Secat @ 7.80 kg/cm <sup>2</sup>		LIC. NO: 7734	
4) Both Membranes blow down at 11:45 Hrs. For 60 Secat @ 7.70 kg/cm <sup>2</sup>		Exam. P. 3: 15/10/2003	
① Boiler load manager seat point change at time 1:30 am @ 8:50 kg/cm <sup>2</sup>		CHARGE TAKEN	
② Feed water pump No. 2 off & pump No. 1 started Running normal condition.		SOMAR VISHNU	
③ Boiler Running in Auto mode normal condition.		LIC. NO: 7734	
		Exam. P. 3: 15/10/2003	
Sign of Incharge:			

Sample Log Book Daily Entry Records

CUSTOMER : SERUM INSTITUTE OF INDIA LTD.

BOILER MODEL : CPRG220/10.54

BOILER Sr.No. : 1

Window Snip



## COMMISSIONING & HANDING OVER REPORT

MAKE : THERMAX INDIA LTD.

Member Presents -:

FOR Serum Institute Of India Ltd.

*Babari Chandan*

THERMAX INDIA LTD.

*Abhishek Singh*

The Boiler was successfully commissioned and handed over to the customer for Commercial use & regular operation & Maintenance. All the control and safety circuit was checked and working satisfactorily. The Boiler was given on load from 9 March 2013

The details list of activities carried out during the commissioning visit are listed in Attachment – 1. The details commissioning parameters details are Enclosed in Attachment – 2.

The operation & Maintenance manual for boiler and electrical circuit drawing and its Wiring diagram is handed over to customer. Customer is requested to please take care of the points mentioned in Attachment –1.

**22 TPH Boiler Commissioning Certificate from Thermax dated 09/03/2013**





**Government of Maharashtra**  
**Labour Department**  
**Office of the Joint Director of Steam Boilers, Pune.**

Kamgar Kalyan Bhavan, 2<sup>nd</sup> Floor, Sambhajinagar,  
☎ 020-27371697/27371051, Chinchwad, Pune-411 019.  
<https://mahalabour.maharashtra.gov.in>, <http://www.mahaboiler.in>  
E-mail: [jdirsb.pune@maharashtra.gov.in](mailto:jdirsb.pune@maharashtra.gov.in), [jdsbpune@rediffmail.com](mailto:jdsbpune@rediffmail.com), <http://www.mahaboiler.in>

No: SB-6/SNC/2023/1280

Date:

13 FEB 2023

To,  
M/s. Sez Biotech Services Pvt. Ltd.,  
212/2, Soli Poonawala Road, Near Akashwani,  
Hadapsar, Pune - 411 028.

Subject: Issue of Provisional Order for Boiler No. Boiler No.: MR/17970.

Gentlemen,

With reference to my visit to your factory, I have to inform you that the subject boiler was inspected on 18/01/2023 & thereafter hydraulically tested to 15.81 Kg/cm<sup>2</sup> on 19/01/2023 & both found satisfactory.

Now, I have to forward herewith provisional order no.289, dated 02/02/2023, to enable you to work your above boiler for the period from 19/01/2023 to 18/07/2023 at a maximum working pressure of 10.54 Kg/cm<sup>2</sup>.

Pending:-

1. Approval of Working Pressure by the Director of Steam Boilers, Mumbai.
2. Approval of Registration Steam Test by the Director of Steam Boilers, Mumbai.

The boiler must be offered for steam test within the period stipulated in the provisional order i.e. by 18/07/2023 or otherwise the same will have to be offered for re-inspection on payment of fresh inspection fees.

Please note that this office will not issue any reminder to offer the boiler for steam test before the validity of the provisional order expires. Therefore, in your own interest you should offer the boiler for steam test much in advance of the expiry period of the provisional order. Please note that a visit for steam test will also be not fixed within a short time. This office must be informed well in advance when the boiler is ready for steam test so that a visit on the suitable date can be arranged.

If the steam test is not completed within six months of stipulated period in the provisional order, the boiler will have to be shut down and offered for inspection and hydraulic test on payment of fresh inspection fees.

The full particulars of Boiler Attendant/Proficiency Engineer i.e. name, grade, no. and date of issue of their certificate should be submitted to this office for scrutiny and records.

Yours faithfully,

( S. N. Chivate )

✓ Joint Director of Steam Boilers,  
M.S., Pune

Encl: P.O.No.289, dated 02/02/2023.

**Current Boiler 15 TPH Permit**

Data/Parameter	Q <sub>biomass</sub>
Data unit	Average of MT
Description	The quantity of renewable biomass briquettes used to generate steam in the boilers
Source of data Value(s) applied	Plant records and log books receipts of incoming quantity
Measurement methods and procedures	Monitoring: The quantity of biomass fed into the boiler is controlled. Data type: Measured Responsibility: Boiler Operator /Plant in charge
Monitoring frequency	Daily
QA/QC	The amount of biomass used can be cross checked by the purchase orders and stock inventory for biomass as provided.

Thermax Onsite Energy Solution Limited  
Eco House, A-Wing, Ground Floor,  
D-13, MIDC Industrial Area, R.D. Age Road  
Chinchwad, Pune - 411 019, India

GST No: 27AADCT2702L1ZC  
CHALLAN FORMAT-WORK ORDER/ AGREEMENT

Delivery Challan No: SEZ/TOESL/ 1047      Date: 17-08-2022

Consignee Name & Address  
SEZ BIOTECH SERVICES PVT LTD.  
212/2 OFF. Soli Poonawala Road  
Hadapsar  
Pune-411028  
A/C.....  
GSTIN: 27AAJCS5738DL76

Place of supply: SBSPL,HADAPSAR  
Maharashtra

Description of Goods	HSN Code	Qty (KG)	Rate (RS/KG)	Amount
Briquette Fuel	4401	15385	7.200	110772

Remarks	Vendor Name	SHRIRAM ENT
	TOESL PO NO	1030011801
	DC NO	478
	Vehicle number	MH11AL5722

Note: This Challan is prepared for movement of project material for which running bill (Tax invoice) is submitted on monthly basis or stage wise completion of job/project

Taxable value: 110772  
Integrated Tax rate (IGST): 5%  
Tax Amount: 5538.60

**SEZ BIO-TECH SERVICES PRIVATE LIMITED**  
SPECIAL ECONOMIC ZONE  
212/2, HADAPSAR, PUNE-411028  
**MATERIAL INWARD**  
S. No.: 1783  
Date of Receipt: 17/08/2022  
Time of Receipt: 11:05  
Sign: [Signature] 17/08/2022

**For SEZ BIO-TECH SERVICES PVT LTD**  
Gate Entry No.: 1783  
Date of Receipt: 17.08.2022  
Time of Receipt: 11:00  
Authorised Signatory of Unit: [Signature]  
Authorised Officer SEZ Customs

D401842  
20/08/22

**Sample Copy of Biomass Purchase/Delivery/Quantity Receipts on File**

Year	Month	Biomass Purchase Receipts 15 TPH Quantity (t)	Year	Biomass Purchase Receipts 22 TPH Quantity (t)
2021	Apr-21	79	2013	13730.291
	May-21	528	2014	21402.428
	Jun-21	482	2015	21657.096
	Jul-21	1608	2016	20900.846
	Aug-21	1554	2017	22120.291
	Sep-21	1520	2018	23553.29
	Oct-21	1556	2019	22176.717
	Nov-21	1694	2020	19279.397
	Dec-21	1676	2021	17933.616
2022	Jan-22	1208	2022	19020.845
	Feb-22	1627		
	Mar-22	1769		
	Apr-22	1618		
	May-22	1772		
	Jun-22	1830		
	Jul-22	1836		
	Aug-22	1834		
	Sep-22	1939		
	Oct-22	1892		
	Nov-22	1699		
	Dec-22	1892		

Data/Parameter	Sp
Data unit	Range 7.0 - 10.54 Kg/cm <sup>2</sup> boiler
Description	Pressure of the steam at the outlet of the biomass boiler as monitored.
Source	The steam pressure is measured using pressure gauge. This parameter is used to calculate the Net Enthalpy of steam.
Measurement methods and procedures	Monitoring: Log book Data type: Monitored
Monitoring frequency	Daily/Hourly
QA/QC	The parameter is monitored and logged in log sheets. Based on the logged data, a report consisting of the parameter are prepared by Shift in charge in hard copy and are forwarded to manager on monthly basis. The data used is reviewed by conducting an inter department review meeting once in 6 months.

Data/Parameter	T <sub>feedwater</sub>
Data unit	90°C
Description	The temperature of feed water
Source of data Value(s) applied	Plant Log Sheets
Measurement methods and procedures	Feed water temperature is measured in the plant premises by using temperature gauge. This parameter is used to calculate the Net Enthalpy of steam. Monitoring: Log book Data type: Monitored
Monitoring frequency	Daily
QA/QC	The parameter is monitored and logged in log sheets. Based on the logged data, a report consisting of the parameter are prepared by Shift in charge in hard copy and are forwarded to manager on monthly basis. The data used is reviewed by conducting an inter department review meeting once in 6 months.

सी.ए.ए.ए. / GRN No. : MH001646847202223M

ReceiptNo : 221382101  
दिनांक/Date: 13-05-2022  
वैद्य मानसनाथ अधिका-शाचे नाव/  
Legal Metrology Officer  
DHUMAL BHARAT PRALHADRAO  
ओळख उमा क्र./Identification No  
MH 378



पबलाखणी प्रमाणपत्र / CERTIFICATE OF VERIFICATION  
वैद्य मानसनाथ अधिनियम, 2009 व महाराष्ट्र वैद्य मानसनाथ (संयतनवाचणी)  
नियम, 2011 बद्धुची-मंड (नियम 14(3) परा)  
See Rule 14(3) Schedule IX  
The Legal Metrology Act, 2009 & The Maharashtra Legal Metrology (Enforcement)



LCR NO : CLM17383128  
अ.क्र./ Sr.No: 91202213812760  
दिनांक/Date: 13/05/2022  
ठिकाण/Place: (Trader Premises)

मी, यादारे असे प्रमाणित करतो की, आज रोजी येथे SERUM INSTITUTE OF INDIA PVT LTD (SEZ / EOU UNIT), व्यवहार - , ठिकाण - 212/2 HADAPSAR PUNE रोजी घाली  
मसुदा केलेली वजन वा माप यांची पबलाखणी व मुद्रांकन केले  
I hereby certify that I have this day verified and stamped the under mentioned weights,measures,etc., belonging to Shi/M/s SERUM INSTITUTE OF INDIA PVT LTD (SEZ / EOU  
UNIT), Trade - , Locality - 212/2 HADAPSAR PUNE

मात्रा/ Quantity	वजन वा माप , प्रकार, अभिधान, धमता, वर्ग, बनावट(उत्पादन), मशीन क्रमांक, हलारीथा उपशील /Denomination, Capacity, Class, Make, Machine no., and type of Weight or Measure etc.	पबलाखणी शुल्क रू/ Verification Fee Rs.	हजर काकार (हाराखणी, प्रवास पथा, दैनिक पथा, समावोचन हलारीथा)/Carriage, Conveyance adjusting
1	NAWI-Electronics Scale: (1) Max.Capacity:50000kg, Make:ESSAE TEROKA, Model No:NA, Class III, Minimum Capacity:100kg, EValue:5kg , D-Value:. Sr.No:950073145 / 1 (Rs-4000)	4000	200
<b>एकूण रक्कम/Grand Total</b>		<b>₹ 4200.00</b>	

एकूण रक्कम (अक्षर/In words) Rupees Four Thousand Two Hundred only

दुरुस्तर /Repaired By S M Enterprises/  
पुनः पबलाखणीची गरिजा Next Verification Due On / Before : 12-05-2023

टीप :- 1) पुनः पबलाखणीच्या दिनांक दिनांकानुसार वजन वा मापानुसार पुनः पबलाखणी करावी असे अर्थ नसत असेल तर पुनः पबलाखणी करून घ्यावी.  
2) वजन वा माप वा रिकोटी उभारणे वेळीस असे अर्थ नसत असेल तर पुनः पबलाखणी करून घ्यावी.  
3) पुनः पबलाखणी करताना LCR बळकट करावी.  
4) हे प्रमाणपत्र दिनांकानुसार असे अर्थ नसत असेल तर पुनः पबलाखणी करावी.



Inspector of Legal Metrology, Haveli-2 Division  
Digitally signed By BHARAT PRALHADRAO DHUMAL,  
Date: 13/05/2022

### Weigh Bridge Calibration Report

# TESTCAL COMBUSTION SYSTEMS

HEAD OFFICE :- 637/2B OMKAR NAGER BIBAWADHIPUNE 411037

MOBIL Ph :- + 91- 8010395439 /9881396861/ 9307742092

Office Email ID:- Testcalpune@gmail.com / Tcssales@gmail.com /

Tcsservice@gmail.com Tcspurchase@gmail.com / TcsAccount@gmail.com

Website-[www.testcal.com](http://www.testcal.com)

Job Number: 221220

Certificate Number : TCCS37/22-23/29-07-2023

Customer Name and Address

M/s.

SERUM INSTITUTE OF INDIA

212/2, Hadapsar, Off, Pune 411028

Customer Reference

Verbal Order

## Details of the Instrument

Location	STEAM BOILER METER EOU
Description	FLOW Meter
Make	ENDRESS HAUSER
Model TM	-200°C TO 400°C
Serial number	F6023A2000D
Size	DN 65
Resolution	0.01 TON/PER HOURS
Accuracy	± 2%
Condition of the equipment on receipt	Good
Date of calibration	29.07.2022
Date of next calibration suggested	29.07.2025

## Calibration environments

Temperature	25.5°C
Relative humidity	58% RH

## Standard Instrument Details

Master - I

Description	Digital Thermometer
Make	Mextech
Type / Model	ST-9264
Identification number	Tccs/EQ-T--06
Report Number	2021-22/CFC/2141/1
Calibration valid till	30.12.2022

## Standard Instrument Details

Master - II

Description	Ultrasonic Flowmeter
Make	Manas
Type / Model	UF-HH-10/TS-2
Serial number	Indicator 6970/Sensor TM 00126912 /TS 0002479
Report Number	2021-22/CFC/2141/1
Calibration valid till	04.11.2023/03.11.2023

The Standards used are traceable to National / International Standards



**Flow Meter Calibration Certificate for 22 TPH Boiler**

# TESTCAL COMBUSTION SYSTEMS

HEAD OFFICE:- 637/2B OMKAR NAGER BIBAWADHIPUNE 411037

MOBIL Ph :- + 91- 8010395439 /9881396861/ 9307742092

Office Email ID:- Testcalpune@gmail.com / Tcssales@gmail.com / Tcsservice@gmail.com

Tcspurchase@gmail.com / TcsAccount@gmail.com

Website-www.testcal.com

Job Number: 221219

Certificate Number : TCCS36/22-23/29-07-2023

Customer Name and Address	M/s.	SERUM INSTITUTE OF INDIA 212/2, Hadapsar, Off, Pune 411028
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Customer Reference	Verbal Order
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## Details of the Instrument

Location	STEAM BOILER METER SEZ-10
Description	FLOW Meter
Make	KROHNE
Model	280T
Serial number	19200000004049
Size	DN 65
Resolution	0.01 TON/PER HOURS
Accuracy	± 2%
Condition of the equipment on receipt	Good
Date of calibration	29.07.2022
Date of next calibration suggested	29.07.2025

## Calibration environments

Temperature	25.5°C
Relative humidity	58% RH

## Standard Instrument Details

<b>Master - I</b>	
Description	Digital Thermometer
Make	Mextech
Type / Model	ST-9264
Identification number	Tccs/EQ-T-06
Report Number	2021-22/CFC/2141/1
Calibration valid till	30.12.2022

## Standard Instrument Details

<b>Master - II</b>	
Description	Ultrasonic Flowmeter
Make	Manas
Type / Model	UF-HH-10/TS-2
Serial number	Indicator 6970/Sensor TM 00126912 /TS 0002479
Report Number	2021-22/CFC/2141/1
Calibration valid till	04.11.2023/03.11.2023

The Standards used are traceable to National / International Standards



**Flow Meter Calibration Certificate for 15 TPH Boiler**