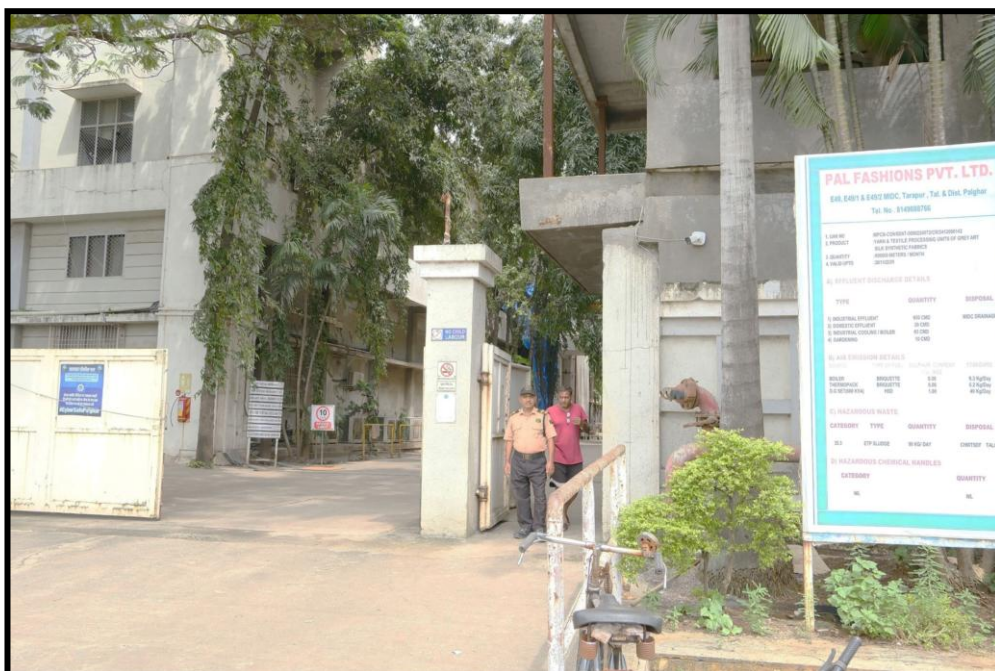


Monitoring Report

CARBON OFFSET UNIT (CoU) PROJECT



Title: Renewable Biomass Based Thermal Energy Generation by Pal Fashions, Palghar, Maharashtra, India.

UCR PROJECT ID: 586

MR Version 1.0

MR Date: 17/03/2026

First CoU Issuance Period: 10 years, 00 months

First Monitoring Period: 01/01/2013 to 31/12/2022 (10 years, 00 months)

Project Activity meets the following UN SDGs





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

Monitoring Report	
Title of the project activity	Renewable Biomass Based Thermal Energy Generation by Pal Fashions, Palghar, Maharashtra, India.
UCR Project Registration Number	586
Version	1.0
Scale of the project activity	Small Scale
Completion date of the MR	17/03/2026
Project participants	Project Owner: Pal Fashions Private Limited UCR ID: 891792674
Host Party	India
SDGs	SDG 7: Affordable and Clean Energy SDG 8: Decent Work and Economic Growth SDG 9: Industry, Innovation & Infrastructure SDG 12: Responsible Consumption & Production SDG 13: Climate Action SDG 15: Life on Land
Applied methodologies and standardized baselines	Type I (Renewable Energy Projects) UNFCCC CDM Methodology Category UNFCCC Methodology Category, “AMS-I.C.: Thermal energy production with or without electricity - Version 22.0” UCR Protocol Standard Baseline Emission Factor
Sectoral scopes	01 Energy industries (Renewable / Non-renewable Sources)
Amount of GHG emission reductions for the crediting period per year.	2013: 8,383 CoUs (8,383 tCO₂eq)
	2014: 7,317 CoUs (7,317 tCO₂eq)
	2015: 8,357 CoUs (8,357 tCO₂eq)
	2016: 8,443 CoUs (8,443 tCO₂eq)
	2017: 8,724 CoUs (8,724 tCO₂eq)
	2018: 9,582 CoUs (9,582 tCO₂eq)
	2019: 9,557 CoUs (9,557 tCO₂eq)
	2020: 3,491 CoUs (3,491 tCO₂eq)
	2021: 5,228 CoUs (5,228 tCO₂eq)
	2022: 7,200 CoUs (7,200 tCO₂eq)
	Total: 76,282 CoUs (76,282 tCO₂eq)

SECTION A. Description of project activity

A.1. Purpose and general description of project activity >>

The project activity *Renewable Biomass Based Thermal Energy Generation by Pal Fashions, Palghar, Maharashtra, India* is located at Plot No. E-49, E-49/1 & E-49/2, MIDC Tarapur Industrial Area, District Palghar, State of Maharashtra, India.

a) Purpose of the project activity and the measures taken for GHG emission reductions >>

The project activity titled “**Renewable Biomass Based Thermal Energy Generation by Pal Fashions, Palghar, Maharashtra, India**” involves the generation of thermal energy in the form of steam and process heat using renewable biomass briquettes, replacing fossil fuel-based thermal energy that would otherwise have been generated using coal.

The purpose of the project activity is to reduce greenhouse gas (GHG) emissions associated with coal combustion in textile processing operations by implementing a renewable biomass-based fuel switch for captive thermal energy generation. The project is implemented at the manufacturing facility of Pal Fashions Private Limited located at MIDC Tarapur Industrial Area, District Palghar, Maharashtra, India.

The textile processing operations at the facility require continuous and reliable steam supply for dyeing, washing, finishing, and related thermal applications. In the absence of the project activity, coal-fired systems would have continued to be used to meet this process heat demand, resulting in significant carbon dioxide (CO₂) emissions.

To achieve GHG emission reductions, the Project Proponent implemented the following measures:

- Installation and operation of one **4 TPH biomass-fired steam boiler (Stack ID S-1)** utilizing renewable biomass briquettes.
- Installation and operation of one biomass-based **Thermopac unit (Stack ID S-2)** for process heat generation using the same renewable biomass fuel.
- Complete replacement of coal as a primary thermal energy source with renewable biomass briquettes derived from agricultural and agro-industrial residues.
- Implementation of systematic monitoring and recording of biomass consumption to quantify fossil fuel displacement in accordance with UNFCCC small-scale methodology **AMS-I.C: Thermal energy production with or without electricity (Version 22.0)**.

The renewable biomass briquettes used under the project activity are produced from agricultural residues such as soya and corn waste. These materials are renewable in nature and considered carbon neutral under the applied methodology, as the CO₂ released during combustion is offset by CO₂ absorbed during biomass growth.



Under the defined project boundary and crediting scope:

- Emission reductions from the **4 TPH Biomass-fired Boiler (Stack ID S-1)** are accounted for the period **01 January 2013 to 31 December 2022**.
- Emission reductions from the **Thermopac unit (Stack ID S-2)** are accounted for the period **01 January 2013 to 31 December 2022**.

Through the displacement of coal with renewable biomass, the project achieves real, measurable, and verifiable greenhouse gas emission reductions by avoiding CO₂ emissions that would have occurred under the baseline scenario.

b) Brief description of the installed technology and equipment >>

The project activity involves renewable biomass–based thermal energy generation systems installed within the manufacturing facility of Pal Fashions Private Limited at MIDC Tarapur Industrial Area, Maharashtra, India.

The installed technology comprises the following primary thermal energy generation units:



1. Biomass-Fired Steam Boiler (4 TPH) – Stack ID S-1

The project includes one 4 TPH biomass-fired steam boiler designed to generate saturated steam for textile processing applications. The boiler operates at an average working pressure of approximately 5 kg/cm² (g) and supplies steam to various production processes including dyeing, washing, finishing, and related thermal operations.

The boiler utilizes renewable biomass briquettes as fuel. These briquettes are manufactured from agricultural and agro-industrial residues such as soya and corn residues. The boiler was originally commissioned in 2008 and has been in regular operation during the monitoring period.

Under the defined crediting boundary of this project:

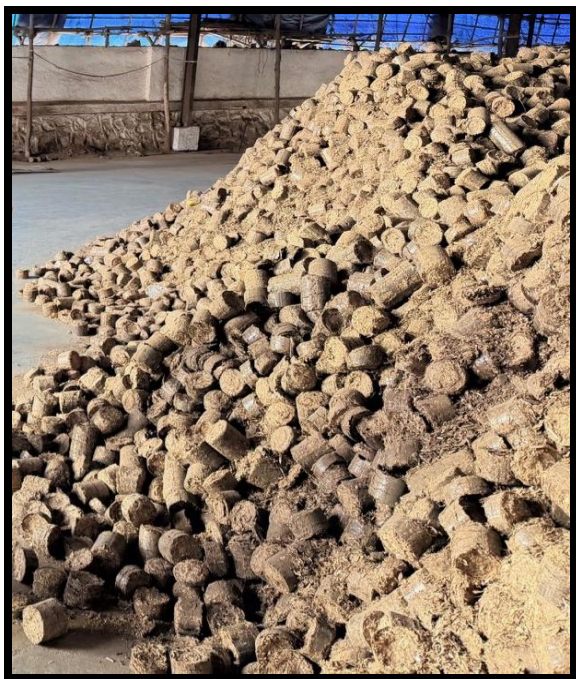
- Emission reductions from the 4 TPH Boiler are accounted for the period **01 January 2013 to 31 December 2022**.

2. Biomass-Based Thermopac Unit – Stack ID S-2

The project also includes one biomass-based Thermopac thermal fluid heater with an approximate thermal capacity of 1,500,000 kcal/hr (≈ 1.7 MWth) used for process heat generation. The Thermopac operates using renewable biomass briquettes as fuel and functions alongside the steam boiler to meet overall thermal demand within the facility.

The Thermopac unit remains included in the project boundary for the monitoring period from **01 January 2013 to 31 December 2022**, and emission reductions associated with this unit are accounted accordingly.

Fuel Handling and Combustion System



The renewable biomass briquettes are:

- Procured from third-party suppliers,
- Stored in covered areas within the factory premises,
- Fed into the combustion systems through controlled feeding mechanisms.

Both the boiler and Thermopac systems are equipped with appropriate air pollution control systems, including dust collectors and scrubbers, and operate with designated stacks (S-1 and S-2) in compliance with regulatory requirements.

Monitoring Equipment

For the purpose of emission reduction calculation under AMS-I.C (Version 22.0), the project applies the fuel-input approach. Accordingly:

- Biomass consumption is measured using calibrated weighing systems.
- Net Calorific Value (NCV) is determined from laboratory test reports.

- Operational records are maintained on a daily basis.

Steam parameters such as pressure and temperature are monitored for operational efficiency but are not used for emission reduction calculation.

The installed biomass-based thermal energy systems represent proven renewable energy technologies that enable displacement of coal-based thermal energy generation and result in measurable and verifiable greenhouse gas emission reductions.



c) Relevant dates for the project activity (e.g. construction, commissioning, continued operation periods, etc.) >>

- **UCR Project ID: 586**
- **Commissioning of Biomass-Fired Boiler (4 TPH – Stack ID S-1): 2008**
- **Commissioning of Biomass-Based Thermopac (Stack ID S-2): 2008**
- **Start Date of Crediting Period: 01 January 2013**
- **End Date of Crediting Period: 31 December 2022**

The biomass-fired steam boiler and Thermopac unit were commissioned in 2008 and have been operational at the project site since commissioning.

For the purpose of emission reduction accounting under this project:

- Emission reductions from the **4 TPH Biomass-Fired Boiler (Stack ID S-1)** are considered for the period **01 January 2013 to 31 December 2022**.

- Emission reductions from the **Thermopac unit (Stack ID S-2)** are considered for the period **01 January 2013 to 31 December 2022**.

The project activity has been in continuous operation throughout the monitoring period. This Monitoring Report covers the monitoring period from **01 January 2013 to 31 December 2022**, in accordance with the registered Project Concept Note (PCN – Version 02) and the defined project boundary.

d) Total GHG emission reductions achieved or net anthropogenic GHG removals by sinks achieved in this monitoring period >>

The total greenhouse gas (GHG) emission reductions achieved during the monitoring period from **01 January 2013 to 31 December 2022** have been calculated in accordance with UNFCCC small-scale methodology **AMS-I.C: Thermal energy production with or without electricity (Version 22.0)** and the monitoring plan described in the registered Project Concept Note (PCN – Version 02).

Under the applied methodology, emission reductions are calculated using the fuel-input approach based on monitored biomass consumption and the displacement of coal in the baseline scenario.

Under AMS-I.C methodology, emissions from biomass combustion are considered carbon neutral. However, in accordance with the latest Universal Carbon Registry guidance, emissions associated with transportation of biomass briquettes are conservatively accounted as project emissions. Leakage emissions are considered zero.

In line with the defined project boundary:

Emission reductions from the **4 TPH Biomass-Fired Boiler (Stack ID S-1)** are accounted for the period **01 January 2013 to 31 December 2022** only.

Emission reductions from the **Thermopac unit (Stack ID S-2)** are accounted for the period **01 January 2013 to 31 December 2022**.

No net anthropogenic GHG removals by sinks are involved in this project activity.

The emission reductions achieved are real, measurable, and verifiable and are calculated in accordance with the registered monitoring methodology and defined crediting boundary.

The total GHG emission reductions achieved in this monitoring period is as follows:

Summary of the Project Activity and ERs Generated for the Monitoring Period	
Start date of this Monitoring Period	01/01/2013
End date of this Monitoring Period	31/12/2022
Emission Reductions – Boiler (2013–2022)	47,927 tCO ₂ e
Emission Reductions – Thermopac (2013–2022)	28,355 tCO ₂ e
Total ERs Generated (tCO ₂ e)	76,282 tCO₂e
Leakage Emissions (tCO ₂ e)	0
Project Emissions (tCO ₂ e)	798
Net GHG Emission Reductions (tCO ₂ e)	76,282 tCO₂e

e) Baseline Scenario >>

The baseline scenario identified at the Project Concept Note (PCN) stage remains unchanged for the monitoring period.

In the absence of the project activity, thermal energy required for textile processing operations at the Pal Fashions manufacturing facility would have continued to be generated using coal-based thermal systems. Coal-fired boilers and related fossil fuel-based thermal energy systems would have supplied steam and process heat required for dyeing, washing, finishing, and other textile processing applications.

Coal combustion results in carbon dioxide (CO₂) emissions and represents the most plausible baseline scenario under UNFCCC small-scale methodology **AMS-I.C: Thermal energy production with or without electricity (Version 22.0)**.

The project activity replaces coal with renewable biomass briquettes for captive thermal energy generation through:

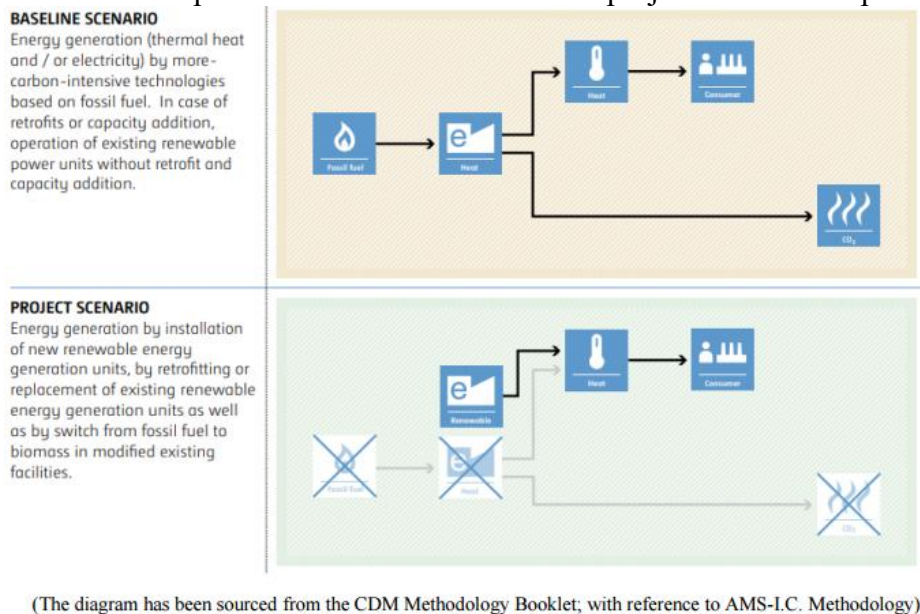
- A 4 TPH biomass-fired steam boiler (Stack ID S-1), and
- A biomass-based Thermopac unit (Stack ID S-2).

Under the defined crediting boundary for this Monitoring Report:

- The baseline scenario applies to the **4 TPH Boiler** for the period **01 January 2013 to 31 December 2022** only.
- The baseline scenario continues to apply to the Thermopac unit for the period **01 January 2013 to 31 December 2022**.

The project activity therefore results in the displacement of fossil fuel-based thermal energy with renewable biomass-based thermal energy, leading to measurable and verifiable CO₂ emission reductions.

A schematic representation of the baseline and project scenarios is provided below.



A.2. Location of project activity>>

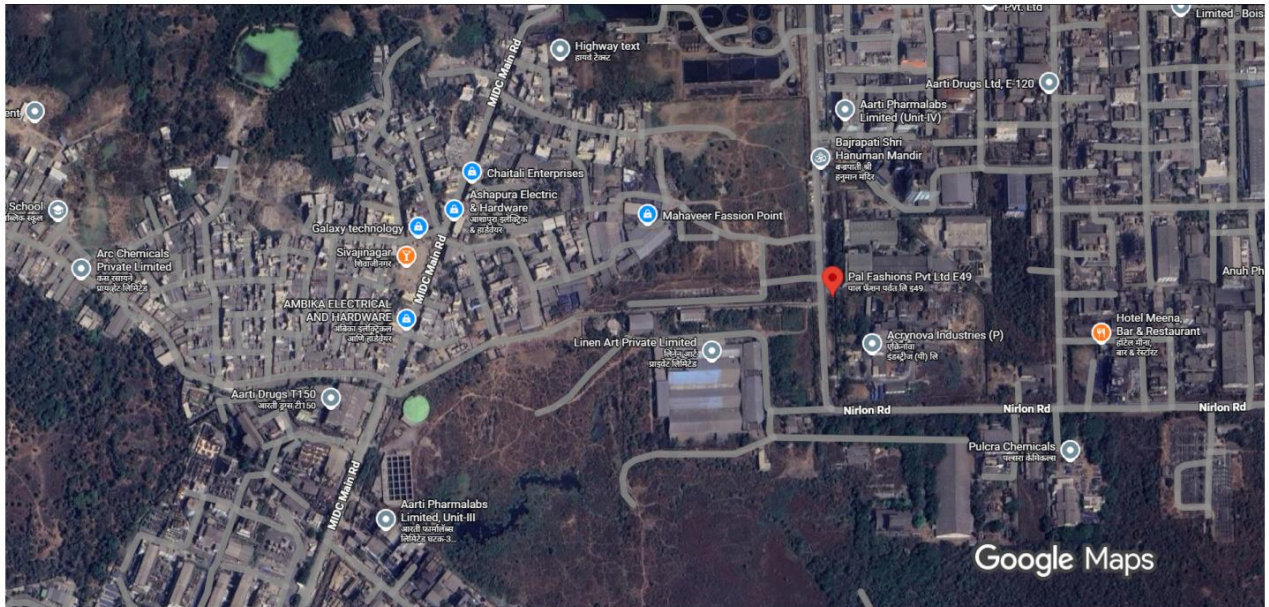
Country	: India.
District	: Palghar
Taluka	: Palghar
State	: Maharashtra
Industrial Area	: MIDC Tarapur Industrial Area
Latitude	: 19.79° N
Longitude	: 72.76° E
Project Site Address	: Plot No. E-49, E-49/1 & E-49/2, MIDC Tarapur, Taluka & District Palghar, Maharashtra, India.
Project Commissioning Year	: 2008

The representative location map is included below:

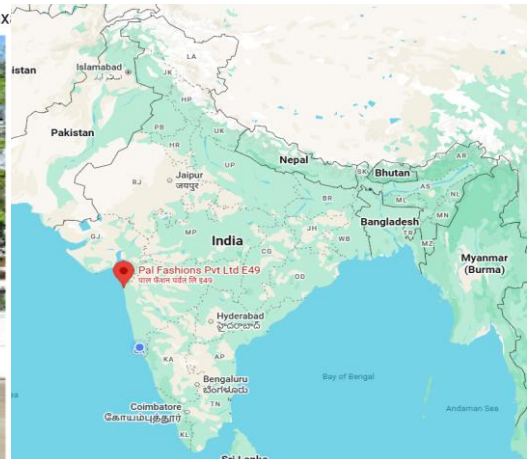
Pal Fashions Pvt Ltd E49



Satellite Map Image



Imagery ©2026 Airbus, Max



A.3. Parties and project participants >>

Party (Host)	Participants
India	Project Proponent / Owner: PAL FASHIONS PRIVATE LIMITED Address: E49, E49/1, E49/2 MIDC Tarapur, District Palghar, Maharashtra 401506 Contact Person: Mr. Charanpreet Singh Ahuja Email id: charan@palfashions.com UCR ID: 891792674

A.4. 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 (Version 22.0)

This methodology is applicable to project activities that generate useful thermal energy using renewable energy sources and displace fossil fuel-based thermal energy generation. The project activity involves the generation of thermal energy in the form of steam and process heat using renewable biomass briquettes and displaces coal-based thermal energy that would otherwise have been used in the baseline scenario.

The methodology provides procedures for:

- Identification of the baseline scenario,
- Calculation of baseline emissions based on fossil fuel displacement,
- Treatment of project emissions from renewable biomass combustion as zero, and
- Conservative treatment of leakage emissions.

A.5. Crediting period of project activity >>

First CoU Issuance Period: 01/01/2013 to 31/12/2022 (10 years, 00 months)

First Crediting Period: 01/01/2013 to 31/12/2022 (10 years, 00 months)

The crediting period of the project activity remains unchanged as defined in the registered Project Concept Note.

In accordance with the defined project boundary:

- Emission reductions from the 4 TPH Biomass-Fired Boiler (Stack ID S-1) are accounted for the period 01/01/2013 to 31/12/2022.
- Emission reductions from the Thermopac unit (Stack ID S-2) are accounted for the period 01/01/2013 to 31/12/2022.

A.6. Contact information of responsible persons/entities >>

UCR Aggregator: Charanpreet Singh Ahuja

UCR ID: 891792674

Email Address: charan@palfashions.com

Company Name: Pal Fashions Private Limited. (PP)

Company Website: <https://www.palfashions.com>

SECTION B. Implementation of project activity

B.1. Description of implemented registered project activity >>

a) Provide information on the implementation status of the project activity during this monitoring period in accordance with UCR PCN>>

The project activity “*Renewable Biomass Based Thermal Energy Generation by Pal Fashions, Palghar, Maharashtra, India*” has been **implemented and operated in accordance with the registered Project Concept Note (PCN)** and the requirements of the Universal Carbon Registry.

The project involves the **generation of useful thermal energy in the form of steam and process heat** using renewable biomass briquettes for captive industrial consumption at the Pal Fashions Private Limited textile processing facility.

Key implementation details are as follows:

- One **4 TPH biomass-fired steam boiler (Stack ID S-1)** and one biomass-based **Thermopac unit (Stack ID S-2)** are installed and operational at the project site.
- The boiler and thermopac systems were commissioned in 2008 and have been in regular industrial operation since commissioning.
- The crediting period under UCR is from **01 January 2013 to 31 December 2022**.
- Emission reductions from the **4 TPH Biomass-Fired Boiler (Stack ID S-1)** are accounted for the period **01 January 2013 to 31 December 2022** only.
- Emission reductions from the **Thermopac unit (Stack ID S-2)** are accounted for the period **01 January 2013 to 31 December 2022**.
- Renewable biomass briquettes (including soya and corn-based briquettes) are used as the primary fuel for thermal energy generation.
- The generated steam and process heat are used entirely for captive consumption within the

textile processing operations of the facility.

- No electricity is generated or exported, and the project activity does not involve grid interaction.

During the monitoring period, the project operated under normal industrial conditions with routine maintenance shutdowns only. No major modifications were made to the installed capacity, fuel type, or operational configuration that would affect the applicability of the applied methodology.

b) Description of the installed technologies, technical process, and equipment >>



The installed renewable thermal energy generation system under the project activity consists of the following main components:

- **Biomass-Fired Steam Boiler (4 TPH Capacity – Stack ID S-1):**
The boiler generates saturated steam at an average operating pressure of approximately 5 kg/cm² (g). The steam produced is used for textile processing operations such as dyeing, washing, finishing, and other thermal applications.
- **Biomass-Based Thermopac System (Stack ID S-2):**
The Thermopac unit generates process heat required for specific textile manufacturing operations and operates using renewable biomass briquettes as fuel.
- **Fuel Handling and Feeding System:**
Biomass briquettes are procured from third-party suppliers, stored within the plant premises, and fed into the combustion systems through controlled feeding mechanisms.

- **Air Pollution Control Systems:**

Dust collectors and wet scrubbers are installed and operated to ensure compliance with applicable emission standards, in accordance with regulatory approvals issued by the Maharashtra Pollution Control Board (MPCB).

- **Biomass Measurement and Monitoring Systems:**

Biomass consumption is measured using calibrated weighing systems. Operational data are recorded daily and maintained in plant logbooks for the purpose of emission reduction calculation under the fuel-input approach of AMS-I.C (Version 22.0).

Steam parameters such as pressure and temperature are monitored for operational efficiency but are not directly used for emission reduction calculations.

The overall system represents a fuel switch from fossil fuel-based thermal energy generation (coal) to renewable biomass-based thermal energy generation.

Description	Project-Specific Value
Capacity of Biomass Steam Boiler	4 TPH (Tonnes of steam per hour)
Number of Steam Boilers	1 No.
Pressure	5 kg/cm ² (g)
Feed Material	Biomass briquettes
Operation days / annum	≈ 300 days per year
Boiler Rating	2.6 MWth
NCV of Biomass	14.5 MJ/kg

B.2 Do no harm or Impact test of the project activity>>

The project activity “Renewable Biomass Based Thermal Energy Generation by Pal Fashions, Palghar, Maharashtra, India” has been assessed for its social, environmental, economic, and technological impacts during the monitoring period to determine whether it has caused any net harm.

Based on the assessment carried out by the Project Proponent, supported by operational practices, regulatory compliance, and prevailing local conditions, it is concluded that the project activity has not caused any net negative impacts and contributes positively to sustainable development.

The installed systems include a 4 TPH biomass-fired steam boiler (Stack ID S-1) and a biomass-based Thermopac unit (Stack ID S-2). While the boiler is excluded from emission reduction accounting from 01 January 2024 onward under this project, both systems continue to operate within the same industrial premises using renewable biomass fuel.

MAHARASHTRA POLLUTION CONTROL BOARD

Tel: 24010706/24010437
Fax: 24044532/4024068/4023516
Website: <http://mpcb.gov.in>
Email: jdwater@mpcb.gov.in



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

RED/M.S.I (R40)
No:- Format1.0/JD (WPC)/UAN
No.0000125038/CR/2203000354

Date: 07/03/2022

To,
M/s. Pal Fashions Private Limited
Plot No E-49, E-49/1 & E-49/2 MIDC Tarapur,
Tal & Dist :Palghar.



Sub: Renewal of Consent to operate Yarm & Textile Processing Unit granted under red category.

Ref: Consent to Operate granted vide no. RO-Thane/Consent/1702001068/TR-I/535129 dtd. 20.02.2017 valid up to: 30/11/2021

Your application No.MPCB-CONSENT-0000125038 Dated 03.11.2021

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:

- The Renewal of Consent to Operate is granted for period valid up to: 30/11/2024
- The capital investment of the project is Rs.17.66 Crs. (As per C.A Certificate submitted by industry Existing CI is-Rs. 6.20 Crs + Expansion/Increase in C.I. - Rs. 11.46 Crs)
- Consent is valid for the manufacture of:

Sr No	Product	Maximum Quantity	UOM
Products			
1	Grey Art Silk Synthetics Fabrics	800000	Mtrs/M

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

Sr No	Description	Permitted (in CMD)	Standards to	Disposal Path
1.	Trade effluent	500	As per Schedule-I	40 % Recycle/ reuse in process & 60 % CETP through MIDC drainage line
2.	Domestic effluent	18	As per Schedule-I	On land for gardening

Pal Fashions Private Limited/CR/UAN No.MPCB-CONSENT-0000125038 (07-03-2022 01:10:18 pm)
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- 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	S-1	BOILER (4 TPH)	1	As per Schedule -II
2	S-2	THERMOPACK	1	As per Schedule -II
3	S-3	D.G SET (600 KVA)	1	As per Schedule -II

- Non-Hazardous Wastes:

Sr No	Type of Waste	Quantity	UoM	Treatment	Disposal
1	N.A	0	--NA--	N.A	N.A

- Conditions under Hazardous & Other Wastes (M & T M) Rules 2016 for treatment and disposal of hazardous waste:

Sr No	Category No./ Type	Quantity	UoM	Treatment	Disposal
1	35.3 Chemical sludge from waste water treatment	25	Kg/Day	NA	CHWTSDF

- The Board reserves the right to review, amend, suspend, revoke this consent and the same shall be binding on the industry.
- This consent should not be construed as exemption from obtaining necessary NOC/ permission from any other Government authorities.
- The applicant shall make an application for renewal of consent 60 days prior to date of expiry of the consent. (Operate/Renewal)



Signed by: Dr. Y.R. Sontakhe
Joint Director (WPC)
For and on behalf of
Maharashtra Pollution Control Board
jdwater@mpcb.gov.in
2022-03-07 13:10:42 IST

Received Consent fee of -

Sr.No	Amount(Rs.)	Transaction/DR.No.	Date	Transaction Type
1	250000.00	TXN2111000268	03/11/2021	Online Payment
2	50000.00	TXN2202001552	11/02/2022	Online Payment

Industry has submitted Consent fees of Rs. 2,50,000/- (Rs. Two Lakhs Fifty Thousand Rupees) Out of with Rs. 1,50,000/- (Rs. One Lakhs Fifty thousand Rupees) has been considered for grant of Renewal of Consent to Operate vide UAN no: 125038 & now Consent fees of Rs. 1,00,000/- (Rs. One Lakhs Rupees) has been Balanced with MPC Board, & same will be consider at the time of next Renewal of Consent to Operate.

Copy to:

Pal Fashions Private Limited/CR/UAN No.MPCB-CONSENT-0000125038 (07-03-2022 01:10:18 pm)
QMS.P06_F02/00

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Social Impacts

The project activity does not involve land acquisition, resettlement, or displacement of local communities. The biomass-fired boiler and Thermopac systems are located entirely within the existing industrial premises of Pal Fashions Private Limited.

Positive social impacts include:

- Improved workplace conditions due to elimination of coal handling and reduction in coal dust exposure.
- Continued industrial operation supporting stable employment for workers engaged in textile processing and plant operations.
- Enhanced energy security for the facility, ensuring uninterrupted production and supporting livelihoods dependent on plant operations.

No adverse social impacts such as health hazards, community conflicts, or infringement of local rights were identified during the monitoring period.

Environmental Impacts

The project activity results in significant positive environmental impacts, particularly in terms of reduction of fossil fuel use and associated greenhouse gas emissions.

Positive environmental impacts include:

- Reduction in coal consumption and associated CO₂ emissions.
- Avoidance of environmental impacts linked to coal storage, handling, and ash disposal.
- Productive utilization of renewable biomass briquettes derived from agricultural and agro-industrial residues.

The project operates under valid environmental approvals issued by the Maharashtra Pollution Control Board (MPCB). Air pollution control systems, including dust collectors and wet scrubbers, are installed and maintained to ensure compliance with applicable emission standards.

No negative environmental impacts such as deforestation, biodiversity loss, soil degradation, or water contamination were observed or reported during the monitoring period.

Economic Impacts

The project activity contributes positively to the local and regional economy by:

- Reducing dependence on fossil fuels.
- Supporting local biomass supply chains through procurement of briquettes from third-party suppliers.
- Improving long-term cost stability and operational efficiency of the textile facility.

No adverse economic impacts on local communities or competing activities were identified.

Technological Impacts

The project activity promotes renewable energy adoption in the industrial sector by:

- Demonstrating the reliability of biomass-based thermal energy systems.
- Supporting transition from fossil fuel-based thermal energy generation.
- Encouraging improved operational control and monitoring practices.

The technology employed is proven, commercially viable, and appropriate for the scale and nature of the facility.

Conclusion of Do No Harm Assessment

Based on the assessment above, the Project Proponent concludes that the project activity has not caused any net harm to society, the environment, or the local economy during the monitoring period. The project delivers measurable environmental benefits, supports sustainable industrial operations, and aligns with the climate mitigation objectives of the Universal Carbon Registry.

United Nations Sustainable Development Goals:

The project activity contributes positively to multiple **United Nations Sustainable Development Goals (UN SDGs)** by promoting renewable energy use, reducing greenhouse gas emissions, improving local environmental quality, and supporting sustainable industrial practices. By replacing coal-based thermal energy generation with renewable biomass briquettes, the project advances climate change mitigation, resource efficiency, and sustainable industrial development.

UN SDG Goal	SDG Title	Relevance to the Project	Description of Contribution
SDG 7  7 AFFORDABLE AND CLEAN ENERGY	Affordable and Clean Energy	High	The project promotes the use of renewable biomass energy for industrial thermal applications by replacing coal with biomass briquettes, supporting clean, reliable, and sustainable energy use in the textile sector.
SDG 8  8 DECENT WORK AND ECONOMIC GROWTH	Decent Work and Economic Growth	Medium	The project supports local employment generation across biomass supply, transportation, boiler operation, and maintenance activities, contributing to inclusive economic growth.
SDG 9  9 INDUSTRY, INNOVATION AND INFRASTRUCTURE	Industry, Innovation and Infrastructure	High	Adoption of biomass-based thermal energy technology demonstrates sustainable industrialization and encourages replication of clean fuel-switch solutions in energy-intensive industries.
SDG 12  12 RESPONSIBLE CONSUMPTION AND PRODUCTION	Responsible Consumption and Production	High	The project promotes responsible resource utilization by using agricultural and agro-industrial residues as fuel, preventing waste burning and supporting circular economy principles.
SDG 13  13 CLIMATE ACTION	Climate Action	Very High	The project directly contributes to climate change mitigation by avoiding CO ₂ emissions from coal combustion, achieving significant and verifiable greenhouse gas emission reductions through the displacement of coal-based thermal energy
SDG 15  15 LIFE ON LAND	Life on Land	Medium	Reduced dependence on coal mining and productive use of biomass residues indirectly support land conservation and reduction of environmental degradation associated with fossil fuel extraction.

B.3. Baseline Emissions>>

The baseline scenario identified at the PCN stage remains unchanged for the monitoring period. In the absence of the project activity, thermal energy in the form of steam and process heat required for textile processing operations at Pal Fashions Private Limited would have been generated using coal-based thermal systems.

Coal combustion results in emissions of carbon dioxide (CO₂), which constitute baseline greenhouse gas emissions under UNFCCC small-scale methodology **AMS-I.C: Thermal energy production with or without electricity (Version 22.0)**.

The project activity replaces coal with renewable biomass briquettes for captive thermal energy generation through a 4 TPH biomass-fired steam boiler (Stack ID S-1) and a biomass-based Thermopac unit (Stack ID S-2).

Under AMS-I.C, emissions from renewable biomass combustion are considered carbon neutral. Accordingly, baseline emissions represent the fossil fuel emissions avoided due to the project activity.

In accordance with the defined project boundary:

- Baseline emissions from the 4 TPH Biomass-Fired Boiler (Stack ID S-1) are considered for the period 01 January 2013 to 31 December 2022.
- Baseline emissions from the Thermopac unit (Stack ID S-2) are considered for the period 01 January 2013 to 31 December 2022.

Detailed calculation of baseline emissions and emission reductions is presented in Section C.5 of this Monitoring Report.

B.4. Debundling>>

The project activity “Renewable Biomass Based Thermal Energy Generation by Pal Fashions, Palghar, Maharashtra, India” is not a debundled component of a larger project activity.

The biomass-fired steam boiler and thermopac system are installed and operated as part of a single, integrated renewable thermal energy system within the existing industrial premises of Pal Fashions Private Limited.

The project has not been artificially split or structured to remain within the small-scale threshold limits under UNFCCC small-scale methodology AMS-I.C (Version 22.0).

There are no other registered or planned project activities at the same site under the control of the same project proponent that, in combination, would exceed the applicable small-scale capacity limits.

Accordingly, the project complies with the debundling provisions of AMS-I.C and the Universal Carbon Registry.

SECTION C. Application of methodologies and standardized baselines

C.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 (Version 22.0)

The project activity involves the generation of useful thermal energy in the form of steam and process heat using renewable biomass briquettes for captive industrial use at the Pal Fashions textile processing facility.

The installed systems include a 4 TPH biomass-fired steam boiler and a biomass-based Thermopac unit, both utilizing renewable biomass briquettes as fuel. The project represents a fuel switch from coal-based thermal energy generation to renewable biomass-based thermal energy generation.

The project qualifies as a small-scale renewable energy project under the provisions of UNFCCC small-scale methodology AMS-I.C (Version 22.0). The methodology is applicable to project activities that generate useful thermal energy from renewable sources and displace fossil fuel-based thermal energy generation.

The applicability conditions and monitoring approach are addressed in the subsequent sections of this Monitoring Report.

C.2. Applicability of methodologies and standardized baselines >>

The project activity involves the generation of thermal energy in the form of steam and process heat using a renewable energy source, namely biomass briquettes, for captive industrial use.
The project comprises: • One 4 TPH biomass-fired steam boiler (Stack ID S-1), and • One biomass-based Thermopac unit (Stack ID S-2), both utilizing renewable biomass briquettes as fuel.
The thermal energy generated under the project activity is used entirely within the project boundary for textile processing operations such as dyeing, washing, finishing, and other thermal applications. No export of electricity or thermal energy occurs.
The project represents a fuel switch from fossil fuel (coal) to renewable biomass briquettes for thermal energy generation at the project site.
The renewable biomass used under the project activity is derived from agricultural and agro-

industrial residues and qualifies as renewable biomass under the provisions of AMS-I.C methodology.
The project does not involve electricity generation or grid interaction and therefore falls within the scope of thermal energy production without electricity as defined under AMS-I.C.
The total installed thermal capacity of the project activity remains within the small-scale threshold limits specified for Type I renewable energy project activities under the applied methodology.
For emission reduction purposes: • The 4 TPH Biomass-fired Boiler (Stack ID S-1) is included from 01 January 2013 to 31 December 2022. • The Thermopac unit (Stack ID S-2) is included from 01 January 2013 to 31 December 2022.
Project emissions associated with transportation of biomass briquettes are conservatively considered under the project boundary. In accordance with the latest Universal Carbon Registry guidance, a default emission factor of 0.0142 tCO ₂ per tonne of biomass briquettes transported is applied when determining project emissions. Emissions from biomass combustion remain zero under AMS-I.C methodology.
No significant leakage emissions are identified, as biomass briquettes are sourced from residues and their utilization does not result in displacement of other energy services.

C.3 Applicability of double counting emission reductions >>

The project activity “Renewable Biomass Based Thermal Energy Generation by Pal Fashions, Palghar, Maharashtra, India” has not been registered under any other GHG programme or carbon market for the monitoring period covered under this Monitoring Report.

No emission reductions for the period 01 January 2013 to 31 December 2022, as defined under the Universal Carbon Registry (UCR), have been issued, claimed, or transferred under any other mechanism.

The project involves captive generation and consumption of thermal energy and does not involve electricity generation, grid export, renewable energy certificates, or participation in any parallel carbon crediting scheme for the emission reductions claimed under UCR.

In accordance with the defined project boundary:

- Emission reductions from the 4 TPH Biomass-Fired Boiler (Stack ID S-1) are claimed under UCR only for the period 01 January 2013 to 31 December 2022.

This structured boundary definition ensures that emission reductions claimed under UCR are uniquely attributable to this project activity and do not result in double registration, double issuance, or double claiming of emission reductions.

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

The project boundary includes the physical and geographical site where the renewable biomass-based thermal energy generation systems are installed and operated at the Pal Fashions Private Limited manufacturing facility.

The project boundary encompasses:

- Receipt, storage, and handling of renewable biomass briquettes;
- Biomass-fired steam boiler (Stack ID S-1);
- Biomass-based Thermopac unit (Stack ID S-2);
- Combustion of biomass briquettes for thermal energy generation;
- Generation and captive use of steam and process heat within the textile processing facility.

In accordance with the defined crediting boundary:

- The 4 TPH Biomass-Fired Boiler (Stack ID S-1) is included for emission reduction accounting from **01 January 2013 to 31 December 2022**.
- The Thermopac unit (Stack ID S-2) is included for emission reduction accounting from **01 January 2013 to 31 December 2022**.

The project boundary does not include:

- Electricity generation or export to the grid;
- Off-site activities related to biomass production or transport;
- Any third-party consumption of thermal energy.

All thermal energy generated under the project activity is used exclusively for captive industrial purposes within the facility.

Sources and Greenhouse Gases

The greenhouse gases and emission sources considered under the baseline and project scenarios are identified in accordance with AMS-I.C (Version 22.0) and are summarized below.

Source		GHG	Included?	Justification/Explanation
Baseline	Coal combustion for thermal energy generation	CO ₂	Included	Major source of baseline emissions under AMS-I.C
		CH ₄	Excluded	Minor source; conservatively excluded
		N ₂ O	Excluded	Minor source; conservatively excluded
Project Activity	Biomass combustion (Boiler & Thermopac)	CO ₂	Excluded	Biomass combustion considered carbon neutral under AMS-I.C
		CH ₄	Excluded	Conservatively excluded
		N ₂ O	Excluded	Conservatively excluded

Conclusion

In line with the applied methodology AMS-I.C (Version 22.0), only baseline CO₂ emissions from fossil fuel (coal) combustion are included in the baseline emission calculations.

Under the project activity, CO₂ emissions from biomass combustion are considered carbon neutral and therefore excluded from the emission reduction calculations. However, project emissions associated with the transportation of biomass briquettes to the project site are accounted for in the project emissions.

Leakage emissions have been conservatively considered as zero. Accordingly, the emission reductions achieved by the project activity during the monitoring period are calculated as:

$$ER_y = BE_y - PE_y$$

C.5. Establishment and description of baseline scenario (UCR Protocol) >>

Establishment and description of the baseline scenario

The baseline scenario identified at the PCN stage remains valid for the monitoring period. In the absence of the project activity, thermal energy required for textile processing operations would have continued to be generated using coal-based thermal systems.

Coal combustion emits CO₂, which constitutes baseline greenhouse gas emissions under AMS-I.C (Version 22.0).

The project activity involves a complete fuel switch from coal to renewable biomass briquettes for thermal energy generation. Under AMS-I.C, CO₂ emissions from renewable biomass combustion are considered carbon neutral. Therefore, baseline emissions represent the fossil fuel

emissions avoided due to the project activity.

Baseline Emissions (BE_y)

Baseline emissions for year y are calculated using the fuel-input approach in accordance with AMS-I.C:

$$BE_y = FC_{Bio,y} \times NCV_{bio} \times 10^{-6} \times EF_{coal}$$

Where:

- BE_y = Baseline emissions in year y (tCO₂e)
- $FC_{Bio,y}$ = Quantity of biomass briquettes consumed in year y (kg)
- NCV_{bio} = Net Calorific Value of biomass (MJ/kg)
- 10^{-6} = Conversion factor from MJ to TJ
- EF_{coal} = CO₂ emission factor of coal (94.6 tCO₂/TJ)

Parameters Used in Calculation

Parameter	Unit	Value used	Source
Net Calorific Value (NCV) of biomass	MJ/kg	14.5	Derived from biomass test reports / conservative
CO ₂ emission factor of coal	tCO ₂ /TJ	94.6	IPCC default
Project emission factor per tonne of biomass briquettes transported	tCO ₂ / tonne biomass	0.0142	Default emission factor prescribed by the Universal Carbon Registry.
Leakage emissions	tCO ₂ e	0	As per AMS-I.C.

Monitored Biomass Consumption

4 TPH Boiler (2013–2022)

Total biomass consumption: **35,306 tons**

Year	Boiler Biomass Consumption (tons)
2013	3930
2014	3451
2015	3661
2016	3879
2017	3881
2018	4373
2019	4539
2020	1643
2021	2497
2022	3452
Total	35306

Thermopac (2013–2022)

Total biomass consumption: **20,887 tons**

Year	Thermopac Biomass Consumption (tons)
2013	2245
2014	1939
2015	2495
2016	2340
2017	2545
2018	2685
2019	2501
2020	929
2021	1354
2022	1852
Total	20887

Combined Total Biomass Consumption

Total biomass consumption during monitoring period: **54,193 tons**

(Values converted to kilograms for calculation.)

Year	Total Biomass Consumption (tons)
2013	6175
2014	5390
2015	6156
2016	6219
2017	6426
2018	7058
2019	7040
2020	2572
2021	3851
2022	5304
Total	56193

Project Emissions (PE_T)

Project emissions under the project activity include emissions associated with transportation of biomass briquettes used as fuel.

While emissions from biomass combustion are considered zero under AMS-I.C methodology, transportation emissions are conservatively accounted for using the default emission factor prescribed by the Universal Carbon Registry.

Project emissions are calculated as:

$$PE_y = FC_{bio,y} \times 10^{-3} \times EF_{transport}$$

Where:

PE_y = Project emissions from biomass transport in year y (tCO₂)

$FC_{bio,y}$ = Quantity of biomass briquettes consumed in year y (kg)

10^{-3} = Conversion factor from kilograms to tonnes

$EF_{transport}$ = 0.0142 tCO₂ per tonne biomass

Leakage Emissions (LE_y)

No significant leakage sources have been identified.

$$LE_y = 0$$

Emission Reductions (ER_y)

Emission reductions are calculated as:

$$ER_y = BE_y - PE_y - LE_y$$

Since:

$$LE_y = 0$$

Annual emission reductions are equal to the baseline emissions minus transportation emissions:

$$ER_y = BE_y - PE_y$$

System-wise Emission Reductions

4 TPH Boiler (2013–2022)

Total ER: 47,927 tCO₂e

Boiler Emission Reduction							
Year	Biomass (tons)	Energy from Biomass (TJ)	NCV of biomass	Coal emission factor	Baseline Emissions (BE _y)	Project Emissions (PE _y)	Emission Reductions (tCO ₂ e)
2013	3930	57	14.5	94.6	5391	56	5335
2014	3451	50	14.5	94.6	4733	49	4684
2015	3661	53	14.5	94.6	5022	52	4970
2016	3879	56	14.5	94.6	5321	55	5266
2017	3881	56	14.5	94.6	5323	55	5268
2018	4373	63	14.5	94.6	5999	62	5937
2019	4539	66	14.5	94.6	6226	64	6161
2020	1643	24	14.5	94.6	2254	23	2230
2021	2497	36	14.5	94.6	3425	35	3389
2022	3452	50	14.5	94.6	4735	49	4686
TOTAL					48429	501	47927

Thermopac (2013–2022)Total ER: **28,355 tCO₂e**

Thermopac Emission Reduction							
Year	Biomass (tons)	Energy from Biomass (TJ)	NCV of biomass	Coal emission factor	Baseline Emissions (BEy)	Project Emissions (PEy)	Emission Reductions (tCO ₂ e)
2013	2245	33	14.5	94.6	3080	32	3048
2014	1939	28	14.5	94.6	2660	28	2633
2015	2495	36	14.5	94.6	3423	35	3387
2016	2340	34	14.5	94.6	3210	33	3177
2017	2545	37	14.5	94.6	3491	36	3455
2018	2685	39	14.5	94.6	3683	38	3645
2019	2501	36	14.5	94.6	3431	36	3396
2020	929	13	14.5	94.6	1274	13	1261
2021	1354	20	14.5	94.6	1858	19	1838
2022	1852	27	14.5	94.6	2540	26	2514
TOTAL					28651	297	28355

Total Emission Reductions

Total verified emission reductions for the monitoring period

01 January 2013 to 31 December 2022: 76,282 tCO₂e

Total Emission Reduction							
Year	Biomass (tons)	Energy from Biomass (TJ)	NCV of biomass	Coal Emission factor	Baseline Emissions (BEy)	Project Emissions (PEy)	Emission Reductions (tCO ₂ e)
2013	6175	90	14.5	94.6	8471	88	8383
2014	5390	78	14.5	94.6	7394	77	7317
2015	6156	89	14.5	94.6	8445	87	8357
2016	6219	90	14.5	94.6	8531	88	8443
2017	6426	93	14.5	94.6	8815	91	8724
2018	7058	102	14.5	94.6	9682	100	9582
2019	7040	102	14.5	94.6	9657	100	9557
2020	2572	37	14.5	94.6	3528	37	3491
2021	3851	56	14.5	94.6	5283	55	5228
2022	5304	77	14.5	94.6	7275	75	7200
TOTAL					77080	798	76282

Conclusion

The total verified emission reductions for the monitoring period from **01 January 2013 to 31 December 2022** amount to: **76,282 tCO₂e**

C.6. Prior History>>

The project activity has never earlier applied for registration under any GHG mechanism for carbon credits. Hence there is no double counting of the credits anticipated for the current project activity for the current UCR monitoring and crediting period.

C.7. Monitoring period number and duration>>

Monitoring Period No: 01

1st Monitoring Period: 01/01/2013 to 31/12/2022 (10 years, 00 months)

C.8. Changes to start date of crediting period >>

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

C.9. Permanent changes from PCN monitoring plan, applied methodology or applied standardized baseline >>

There are no permanent changes from registered PCN Version 2 monitoring plan and applied methodology.

Applied Methodology

AMS-I.C.: Thermal energy production with or without electricity - Version 22.0

The selected methodology AMS-I.C. is applicable to the project activity, as the project involves the generation of thermal energy from renewable biomass for captive industrial use and results in the displacement of fossil fuel-based thermal energy that would otherwise have been generated using coal.

C.10. Monitoring plan>>

Monitoring and recording of the required parameters are carried out by trained personnel under the supervision of the Project Manager designated by the Project Proponent.

Emission reductions under this project are calculated using the fuel-input approach in accordance with AMS-I.C (Version 22.0). Accordingly, the primary monitored parameter is the quantity of renewable biomass briquettes consumed during the monitoring period.

All measurements are performed using calibrated weighing equipment, which is periodically maintained and verified to ensure accuracy. Calibration records are maintained on-site and are made

available during verification.

Daily operational records, biomass consumption logbooks, stock registers, and supplier invoices are maintained and cross-verified for accuracy. All relevant monitoring procedures and work instructions are available at the project site.

All activity data, supporting documentation, and calibration records have been made available to the verifier during the monitoring and verification process.

Data/Parameter	Date of commissioning of biomass boiler
Data unit	Date as per boiler test report
Description	Actual date of commissioning of the project device
Source of data Value(s) applied	Monitoring Report As and when commissioned
Measurement methods and procedures	The commissioning and operational records of the biomass-fired boiler and thermopac unit are maintained as part of project documentation.
Monitoring frequency	As and when commissioned and fixed and recorded in the monitoring report.
Purpose of data	Project documentation and eligibility confirmation

HEATEX ENGINEERING COMPANY PVT. LTD.
Plot No.: 983, Road No. 58,
GIDC Sachin, Dist: Surat - 394 230
Ph. No.: 0261-2397598 / 2397605
Fax No.: 0261-2397517

November 30, 2008

Statement of Account

To,
M/s. Pal Fashions P. Ltd.
E-49, MIDC Tarapur,
Boiser, Dist. Thane.

Dear Sir,

It is found from our records that due & payable principal amount of Rs. 100751.00 together with accrued & running interest is still outstanding in your account as per statement of account as on November 30, 2008 furnished below.

You are therefore requested to please send us the same immediately.

DEBIT			CREDIT		
Date	Particulars	Amount	Date	Particulars	Amount
21.10.08	B No 054/08-09	2100751.00	16.09.08	Ch No 498670	500000.00
			15.10.08	DD No 328627	1500000.00
				Amount Received Rs.	2000000.00
				Balance Amount Rs.	100751.00

Note: "c" form not received.

Please Send Demand Draft / Cheque for Due & payable amount in favour of Heatex Engineering Company Pvt. Ltd.

Details of above bill :
Basic : 1800000.00
14.42% Excise : 259560.00
2% VAT/CST : 41191.00
Total: 2100751.00

For, Heatex Engineering Company Pvt. Ltd.

THERMAX LIMITED DHANRAJ MAHAL, 2ND FLOOR, CHH. SHIVAJI MAHARAJ MARG
NEAR GATEWAY OF INDIA, MUMBAI 400 001 INDIA □ TEL: (022) 67542222, 22045391,
FAX : (022) 22040859 □ Website : www.thermaxindia.com □ IF PAN - AAAC73910D



CERTIFICATE

This is to certify that the fuel consumption of COMBIPAC BOILER MODEL CPD-40/10.54kg/cm² Sr. no 17 supplied to M/S PAL FASHIONS PVT LIMITED.
Plot No E/49, MIDC Inds Area, Tarapur, Boisar Dist Thane, Maharashtra
401501. vide Invoice no. 201267, 201265, 201260, 201262, 201252, 201251 & 201250 dated. August 2008 is 600 kgs/hr when
fired on Baggase of Net.cal val. 2700 cal/kg. and has an efficiency of 76%
and hence the same is classified as an energy saving equipment and is subject
to 100% depreciation as per Income tax rules.
The above machine is entitled for 100% depreciation under Section No 111 3(d)
Rule 5, appendix 1 of Income Tax Act.

for THERMAX LIMITED

AUTHORISED OFFICIAL

Date 12.09.2008

TO WHOMSOEVER IT MAY CONCERN

We hereby certify that the Thermax Make Husk fire 4TPH Cap. Steam Boiler
Machine put to use on dated 06.09.2008 for commercial production.

For Pal Fashions Pvt. Ltd.

Authorised Signatory.
Name: P. P. Kulkarni,
Designation: Engineer

Data / Parameter:	FC _{bio,y}
Data unit:	Kg/year
Description:	Net quantity of renewable biomass briquettes consumed during year y in the biomass-fired boiler (Stack ID S-1) and Thermopac unit (Stack ID S-2), within the defined project boundary.
Source of data:	Plant records and log books receipts
Measurement methods and procedures:	• Biomass briquettes received at the plant are weighed using calibrated weighing systems. • Daily biomass consumption is recorded in plant operational logbooks. • Monthly and annual summaries are prepared based on verified consumption data. • Cross-verification is conducted between purchase records, stock records, and consumption logs.
Monitoring frequency:	Daily recording; aggregated monthly and annually for reporting.

	Year	Total Biomass Consumption (tons)
	2013	6175
	2014	5390
	2015	6156
	2016	6219
	2017	6426
	2018	7058
	2019	7040
	2020	2572
	2021	3851
	2022	5304
	Total	56193
QA/QC:		
• Periodic reconciliation between procurement records and consumption logs. • Cross-check with physical stock verification. • Internal review by plant management on a monthly basis. • Independent verification during Monitoring Report preparation.		

Yearly Data of 4 TPH Boiler & Thermopac (1500U)							
Sr. No.	Year	Total Briquette Consumption (Kgs)	Boiler Bqt. Consp. Kgs	Feed Water (KL)	Steam Generation (Ton)	Thermopac Bqt. Consp. (Kgs)	No. of operational days in a year
1	2013	6175323	3930007	15734	12514	2245316	305
2	2014	5390177	3450827	14078	11303	1939350	309
3	2015	6156247	3661094	14550	11689	2495153	307
4	2016	6219440	3879106	16278	13265	2340334	305
5	2017	6426320	3880944	16575	13326	2545376	307
6	2018	7058470	4373122	16860	13355	2685348	307
7	2019	7040287	4538808	18256	14517	2501479	305
8	2020	2571883	1643090	6836	5485	928793	215
9	2021	3851093	2496820	10584	8408	1354273	307
10	2022	5303924	3451897	14280	11743	1852027	306

Data / Parameter:	Net Calorific Value (NCV _{bio})
Data unit:	MJ/kg
Description:	Net Calorific Value of renewable biomass briquettes used under the project activity.
Source of data:	- Biomass test reports - Supplier specifications - Laboratory test certificates
Measurement methods and procedures:	Gross Calorific Value (GCV) of biomass briquettes is determined through laboratory analysis. A conservative NCV value of 14.5 MJ/kg is derived and applied consistently across the crediting period to avoid overestimation of emission reductions.
Monitoring frequency:	Laboratory testing conducted periodically; conservative NCV applied consistently.
QA/QC:	Conservative NCV value (14.5 MJ/kg) applied consistently across the crediting period, ensuring that emission reductions are not overestimated relative to laboratory-tested calorific values.


ACCURA TEST LABORATORIES
Quality With Service

Date :- 05.07.2022

TEST REPORT NO : ATL/AHM/0304/2022-23

TEST REPORT

This is to certify that ACCURA TEST LABORATORIES, Ahmedabad carried out analysis of the sample of MUSTARD BIOMASS BRIQUETTES submitted by M/s. BANAS UNIVERSAL, Bhiwara.

CLIENT NAME : M/S. BANAS UNIVERSAL
ADDRESS : Mojeshwar mahadev chaman Chouraha Bhiwara-311601, Rajasthan, India
SAMPLE RECEIVED ON : 04.07.2022
SAMPLE DATE : Not mention
COMMODITY (AS DECLARED PARTY) : Mustard Biomass Briquettes
QUANTITY OF SAMPLES : 1.0Kgs per Sample
SAMPLE CONDITION/DESCRIPTION : Sample in plastic bags
SEAL NO : Unseal

Our Findings are :

Parameters/Mark	Units	Results	Test method
Total Moisture (ARB)	% (m/m)	8.62	IS 1350 (P-1) 1984 RA2019
Inherent Moisture (ADB)	% (m/m)	5.31	IS 1350 (P-1) 1984 RA2019
Ash Content (ADB)	% (m/m)	16.61	IS 1350 (P-1) 1984 RA2019
Volatile Matter (ADB)	% (m/m)	66.56	IS 1350 (P-1) 1984 RA2019
Fixed Carbon (ADB)	% (m/m)	11.52	IS 1350 (P-1) 1984 RA2019
Gross Calorific Value (ADB)	Kcal/Kg	3788	IS 1350 (P-2) 1975 RA2017
Gross Calorific Value (ARB)	Kcal/Kg	3655	IS 1350 (P-2) 1975 RA2017
Sulphur (ADB)	% (m/m)	0.18	IS 1350 (P-III) 1969 RA2015

Remark : Sample not drawn by us, submitted by the Party.

For Accura Test Laboratories
(Authorized Signatory)

Note :

- Quantity of the sample received was exhausted during our analysis
- The results are related to the sample's tested only
- Content of this report are meant for your guidance & should not used for Advertisement, evidence or Litigation.
- This test report shall not be reproduced except in full, without the written approval of Accura test laboratories

ISO 9001 : 2015
+91 94264 51485, +91 96748 33337 www.accuratestestlab @ accuratestestlab@gmail.com
302, Indraprastha Arcade & Industrial Estate, Chhatrapati Shivaji Maharaj Road Circle, Chhatrapati Shivaji Maharaj Road, Ahmedabad-380015

YOR LAB
AN ISO : 9001:2015, 14001:2015, 45001:2018 CERTIFIED LABORATORY
Plot No. 42/2, Survey No. 83, Opp. Gondal Bypass BRTS Bus Stop, 150 Feet Ring Road (West), Rajkot - 360 004.
E-mail : info@yorlab.com • Web : www.yorlab.com
Mo. : +91 94266 04335 / 94266 34335

Test Report

Report no. : Fe-1218015 Date : 10/12/2021
Name of Party : Black Industries, Mumbai.
Name of Sample : Bio Coal
Grade/Variety/type/size/class : Nil
Declared value, if any & Other Detail : Nil
Sample id : Nil
Quantity : 250 gm Approx
Mode of Packing : Plastic Bag
Sealed or not : Unsealed
Any other information : Nil
Date of receipt of sample : 09/12/2021
Date of completion of testing : 10/12/2021

TEST RESULT ARE AS UNDER

Sr. No.	Test Parameters	Units	Test Method	Test Results
01	Moisture	%	IS - 1350(Part-1)	10.60
02	Ash content	%	IS - 1350(Part-1)	5.31
03	Volatile matter	%	IS - 1350(Part-1)	75.19
04	Fixed Carbon	%	IS - 1350(Part-1)	7.89
05	Gross Calorific value	Cal/gm Approx	IS - 1350(Part-2)	3680

Remarks :

Prepared By :  Reviewed & Authorized Signatory : 
(Harish Kananiya)

NOTE :

- Sample not drawn by Yor Lab
- The Results relate only to the sample tested.
- Yor Lab has made their best endeavors to provide accurate and reliable information Yor Lab is not responsible for any financial liability due to any act of omission or error made.
- Tested Samples are returned to Customer / preserved for 7 days.
- Any ambiguity in test results should be brought forward to the lab management within this period.
- Sample Related information provided by Customer.
- No Liability Accept if Sample Return Back.
- The Test Report / Certificate Shall not be reproduced, except in full, without written permission of the laboratory.

END OF REPORT

Page 1 of 1

TESTING & CALIBRATION LABORATORY

Data / Parameter:	EF _{transport}
Data unit:	tCO ₂ /tonne biomass
Description:	Default emission factor for transportation emissions associated with biomass briquettes used under the project activity.
Value used:	0.0142 tCO ₂ per tonne biomass
Source of data:	Universal Carbon Registry guidance for biomass-based thermal energy projects.
Measurement methods and procedures:	Default conservative value applied as per UCR methodology guidance.
Monitoring frequency:	Fixed default value; no monitoring required.
QA/QC:	Conservative default parameter applied consistently across the crediting period.

Data / Parameter:	Baseline Emission Factor (EF _{coal})
Data unit:	tCO ₂ /TJ
Value Used:	94.6 tCO ₂ /TJ
Source of data:	IPCC default emission factor for coal as referenced under AMS-I.C methodology.
Monitoring frequency:	Fixed default value; no monitoring required.



Ratna Electronics Service
223, Sagar Industrial Estate, Near Dahisar Toll Naka, S. V. Road, Dahisar (East), Mumbai - 68. Mob: 94224 74457 / 87674 74457



Geotek Global
Certification Pvt. Ltd.

CALIBRATION CERTIFICATE

Certificate No.	Certificate Date	Cal. Date	Due Date	Physical Condition of UUC	Calibrated At
2023/RES/00001	14/07/2023	12/07/2023	11/07/2023	OK	Lab / Site

Name & Address of Customer: **Min. PAL FASHIONS (P) LTD.**
PLOT NO. E-49, E-49/1, E-49/2 & E-49/3 MIDC TARAPUR BOISAR
TAL. DIST. - PALGHAR

Details of UUC:

Instrument	Water Meter	Range	Accuracy	Cert. No.	Recommended Due On
Model	---	---	---	---	---
Manufacturer	---	---	---	---	---
Serial No.	---	---	---	---	---
Location	---	---	---	---	---

Cal. Procedure Used: RES/SOP/CA/23
Ambient Conditions: Temperature 30 ± 5 °C, Relative Humidity 60 ± 10 %RH

Instrument	Range	Accuracy	Cert. No.	Recommended Due On
Stopwatch	RES/SW/01 40 sec. to 15 min. 10 min and 15s.	---	COCEU/188021-21	10/03/2023
S. S. Weights	RES/WT/01 20 kg	M 1 Class	CONAR/27001-220kg CONAR/2701-20kg, Page 1 of 2	20/03/2023
S. S. Weights	RES/WT/02 20 kg	M 1 Class	CONAR/27001-220kg CONAR/2701-20kg, Page 1 of 2	20/03/2023
S. S. Weights	RES/WT/03 20 kg	M 1 Class	CONAR/27001-220kg CONAR/2701-20kg, Page 1 of 2	20/03/2023
S. S. Weights	RES/WT/04 20 kg	M 1 Class	CONAR/27001-220kg CONAR/2701-20kg, Page 1 of 2	20/03/2023
S. S. Weights	RES/WT/05 20 kg	M 1 Class	CONAR/27001-220kg CONAR/2701-20kg, Page 1 of 2	20/03/2023
S. S. Weights	RES/WT/06 10 kg	M 1 Class	CONAR/27001-220kg CONAR/2701-20kg, Page 1 of 2	20/03/2023
S. S. Weights	RES/WT/07 5 kg	M 1 Class	CONAR/27001-220kg CONAR/2701-20kg, Page 1 of 2	20/03/2023
S. S. Weights	RES/WT/08 2 kg	M 1 Class	CONAR/27001-220kg CONAR/2701-20kg, Page 1 of 2	20/03/2023
S. S. Weights	RES/WT/09 1 kg	M 1 Class	CONAR/27001-220kg CONAR/2701-20kg, Page 1 of 2	20/03/2023

Observations:

Range	Standard Readings	UUC Readings	Error	Remark
10 to 15 min	10.00	10.00	0.00	Calibrated & Testing OK.
10.00	10.00	10.00	0.00	
10.00	10.00	10.00	0.00	
10.00	10.00	10.00	0.00	
10.00	10.00	10.00	0.00	

Remarks:

- The observed readings have been reported.
- The calibration results reported are valid at the time of and under the conditions of measurement.
- This certificate should not be reproduced, except in full, without the prior permission of Ratna Electronics Services.
- The Standard(s) used for calibration is/are calibrated using reference Standards traceable to National / International Standards.

Calibrated By: 

Ratna Electronics Service

Witnessed By: _____

For PAL FASHIONS (P) LTD.



Ratna Electronics Service
223, Sagar Industrial Estate, Near Dahisar Toll Naka, S. V. Road, Dahisar (East), Mumbai - 68. Mob: 94224 74457 / 87674 74457



Geotek Global
Certification Pvt. Ltd.

CALIBRATION CERTIFICATE

Certificate No.	Certificate Date	Cal. Date	Due Date	Physical Condition of UUC	Calibrated At
2023/RES/00002	14/07/2023	12/07/2023	11/07/2023	OK	Lab / Site

Name & Address of Customer: **Min. PAL FASHIONS (P) LTD.**
PLOT NO. E-49, E-49/1, E-49/2 & E-49/3 MIDC TARAPUR BOISAR
TAL. DIST. - PALGHAR

Details of UUC:

Instrument	WEIGHING Scale	Range	Accuracy	Cert. No.	Recommended Due On
Model	---	---	---	---	---
Manufacturer	---	---	---	---	---
Serial No.	---	---	---	---	---
Location	---	---	---	---	---

Cal. Procedure Used: RES/SOP/CA/10
Ambient Conditions: Temperature 30 ± 5 °C, Relative Humidity 60 ± 10 %RH

Instrument	Range	Accuracy	Cert. No.	Recommended Due On
S. S. Weights	RES/WT/01 20 kg	M 1 Class	CONAR/27001-220kg CONAR/2701-20kg, Page 1 of 2	20/03/2023
S. S. Weights	RES/WT/02 20 kg	M 1 Class	CONAR/27001-220kg CONAR/2701-20kg, Page 1 of 2	20/03/2023
S. S. Weights	RES/WT/03 20 kg	M 1 Class	CONAR/27001-220kg CONAR/2701-20kg, Page 1 of 2	20/03/2023
S. S. Weights	RES/WT/04 20 kg	M 1 Class	CONAR/27001-220kg CONAR/2701-20kg, Page 1 of 2	20/03/2023
S. S. Weights	RES/WT/05 20 kg	M 1 Class	CONAR/27001-220kg CONAR/2701-20kg, Page 1 of 2	20/03/2023
S. S. Weights	RES/WT/06 10 kg	M 1 Class	CONAR/27001-220kg CONAR/2701-20kg, Page 1 of 2	20/03/2023
S. S. Weights	RES/WT/07 5 kg	M 1 Class	CONAR/27001-220kg CONAR/2701-20kg, Page 1 of 2	20/03/2023
S. S. Weights	RES/WT/08 2 kg	M 1 Class	CONAR/27001-220kg CONAR/2701-20kg, Page 1 of 2	20/03/2023
S. S. Weights	RES/WT/09 1 kg	M 1 Class	CONAR/27001-220kg CONAR/2701-20kg, Page 1 of 2	20/03/2023
S. S. Weights	RES/WT/10 20 kg	F 1 Class	CONAR/27001-220kg CONAR/2701-20kg, Page 1 of 2	20/03/2023
S. S. Weights	RES/WT/11 20 kg	F 1 Class	CONAR/27001-220kg CONAR/2701-20kg, Page 1 of 2	20/03/2023
S. S. Weights	RES/WT/12 20 kg	F 1 Class	CONAR/27001-220kg CONAR/2701-20kg, Page 1 of 2	20/03/2023
S. S. Weights	RES/WT/13 20 kg	F 1 Class	CONAR/27001-220kg CONAR/2701-20kg, Page 1 of 2	20/03/2023
S. S. Weights	RES/WT/14 20 kg	F 1 Class	CONAR/27001-220kg CONAR/2701-20kg, Page 1 of 2	20/03/2023
S. S. Weights	RES/WT/15 20 kg	F 1 Class	CONAR/27001-220kg CONAR/2701-20kg, Page 1 of 2	20/03/2023
S. S. Weights	RES/WT/16 20 kg	F 1 Class	CONAR/27001-220kg CONAR/2701-20kg, Page 1 of 2	20/03/2023
S. S. Weights	RES/WT/17 20 kg	F 1 Class	CONAR/27001-220kg CONAR/2701-20kg, Page 1 of 2	20/03/2023
S. S. Weights	RES/WT/18 20 kg	F 1 Class	CONAR/27001-220kg CONAR/2701-20kg, Page 1 of 2	20/03/2023
S. S. Weights	RES/WT/19 20 kg	F 1 Class	CONAR/27001-220kg CONAR/2701-20kg, Page 1 of 2	20/03/2023

Corporate Sustainability Communication

Becoming Carbon-negative with Biomass

The story of Pal Fashions' socio-environmental impact does not end here. For the past 14 years, Pal Fashions has been completely off fossil fuels. They are currently carbon-negative and have qualified to receive carbon credits. In 2008, as crude oil prices shot up, many industries shifted to coal as the cheapest alternative. But Pal Fashions walked a different path and chose biomass briquettes to power their boilers and thermic fluid heaters.

“For the last 14 years, we have been sourcing agri-waste briquettes the conventional way. Now with BiofuelCircle's online platform, we are able to source briquettes at optimal rates with much ease. We want to take our journey to the next level by replacing fossil fuel in many more industrial units of Palghar and Thane districts.

Arvinder Singh Ahuja
Chairman, Pal Fashions

