PROJECT CONCEPT NOTE

Title: 82 MW Bagasse-Based Renewable Energy Project at DSPL, Pune.

CARBON OFFSET UNIT (COU) PROJECT

Version 1.0

Date 02-12-2024

First CoU Issuance Period: 11 Years

Crediting Period: 01-01-2013 to 31-12-2023

BASIC INFORMATION	
Title of the Project activity	82 MW Bagasse-Based Renewable Energy Project at DSPL, Pune
Scale of the project activity	Large Scale
Completion date of the PCN	02-12-2024
Project Participants	Project Proponent: M/S Daund Sugar Private limited (DSPL) at post- Alegoan Tal – Daund Dist: Pune, 413 801 Maharashtra. Aggregator: Climekare Sustainability Pvt ltd.(336812961)
Host Party	India
Applied methodologies and standardized baselines	CDMUNFCCC Methodology ACM0006: Electricity and heat generation from biomass(Ver.16) & UCR Standard for Emission Factor
Sectoral scopes	01 Energy industries (Renewable/Non-Renewable Sources)
Estimated total amount of average GHG emission reductions per year	46,022 CoUs/yr or (46,022 tCO2eq/yr)

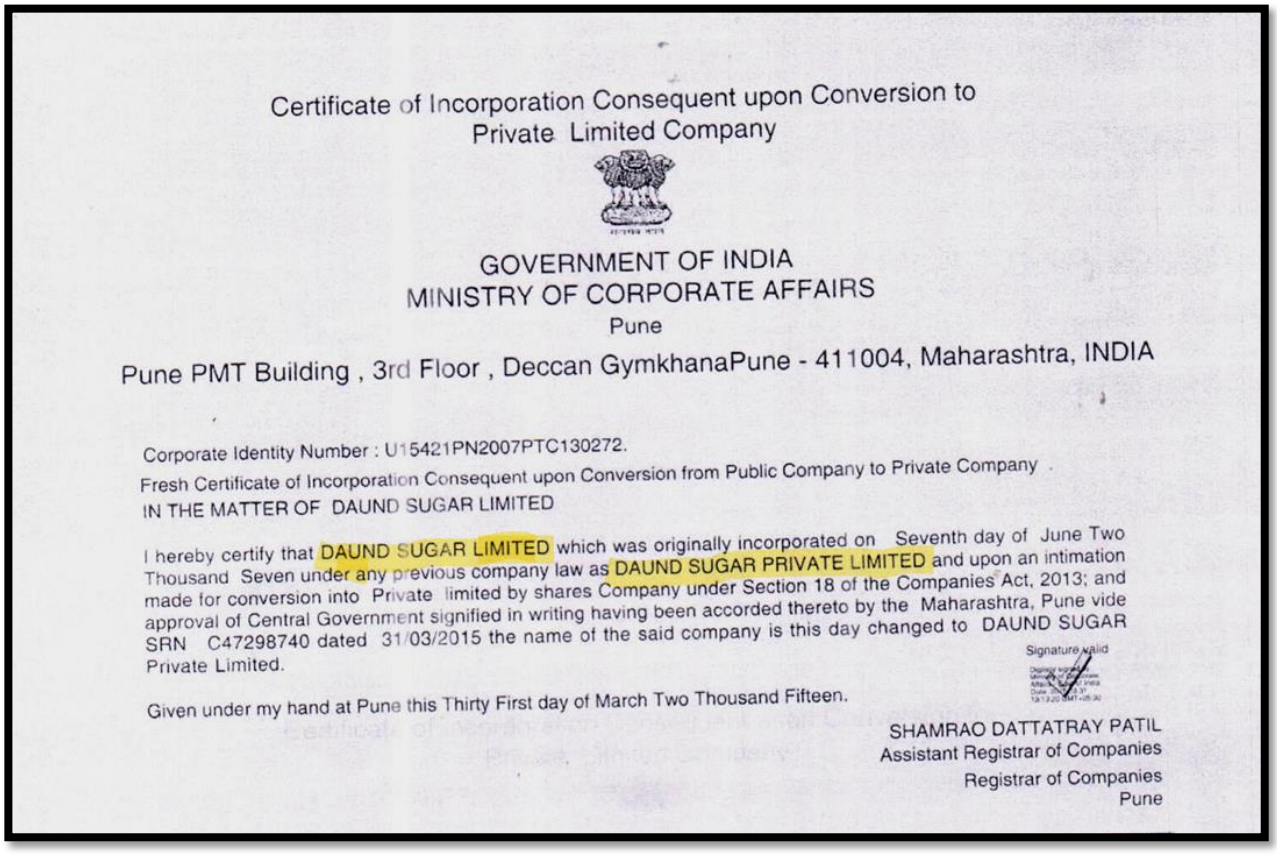
SECTION A. Description of Project Activity

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

The sugar industry in the state is contributing more than 40% of sugar production of the country. Pune district is treated as traditional cane growing area and increased sugarcane area in pune district motivated shri Gajanan vishwanath patkar a well-known industrialist and noted chartered accountant has decided to set up a sugar mill of 3500 TCD at alegaon (kadam wasti), tal Daund, dist: Pune with the active support of cane growers of daund tahasil.

Daund tahasil, due to surplus sugarcane production, is facing problem of disposal of cane, can give required cane to propose sugar mill. Similarly the farmers are willing to contribute and raise required promoters equity for setting up sugar mill.

Accordingly shri Gajanan vishwanath patkar has submitted IEM to the department of industries, Govt. of India and has obtained ack no 2538/SIA/IMO/2008 Dated 07/08/2008 for setting up 3500 TCD sugar mill. The company is also registered with the registrar of companies, Maharashtra under the name and style of daund sugar ltd. bearing registration no U 15421 PN 2007 PTC 130272 dated 07/06/2007. The management has also decided to erect cogeneration 18 MW and 45 KLPD ethanol plant at sugar factory, for which company has obtained IEM No. 3247/SIA/IMO/2008 dated 7th October 2008 and IEM No. 3246/SIA/IMO/2008 dated 7th October 2008 respectively. Further name changes to daund sugar private limited.



Certificate of Incorporation Consequent upon Conversion to Private Limited Company

GOVERNMENT OF INDIA
MINISTRY OF CORPORATE AFFAIRS
Pune

Pune PMT Building , 3rd Floor , Deccan GymkhanaPune - 411004, Maharashtra, INDIA

Corporate Identity Number : U15421PN2007PTC130272.

Fresh Certificate of Incorporation Consequent upon Conversion from Public Company to Private Company .

IN THE MATTER OF DAUND SUGAR LIMITED

I hereby certify that DAUND SUGAR LIMITED which was originally incorporated on Seventh day of June Two Thousand Seven under any previous company law as DAUND SUGAR PRIVATE LIMITED and upon an intimation made for conversion into Private limited by shares Company under Section 18 of the Companies Act, 2013; and approval of Central Government signified in writing having been accorded thereto by the Maharashtra, Pune vide SRN C47298740 dated 31/03/2015 the name of the said company is this day changed to DAUND SUGAR Private Limited.

Signature valid

Given under my hand at Pune this Thirty First day of March Two Thousand Fifteen.

SHAMRAO DATTATRAY PATIL
Assistant Registrar of Companies
Registrar of Companies
Pune

M/s. Daund Sugar Pvt. Ltd. is an existing industry located in village Alegaon in Daund Taluka of Pune district in the state of Maharashtra. Mr. Jagdish Laxmanrao Kadam is the Chairman & Director. Mr. Shahaji Balasaheb Gaikwad is the Whole time Director. DSPL has acquired 5,73,803 m2 land near village Alegaon in Daund Taluka of Pune district in the state of Maharashtra. Here the company has presently set up a sugar mill with cogeneration unit & molasses based Distillery. Sugar mill cane crushing capacity is 20000 TCD. Cogeneration unit generates 82 MW electrical powers, Distillery capacity is 370 KLPD. Sugar manufacture from cane generates several byproducts use of which increases productivity and profitability of unit.

The by-product of 20,000 TCD sugar mill are

(i) Bagasse 168000 MTD,
(ii) Sugar 69000 MT/M
(iii) Co-gen 82 MW
(iv) Molasses 24000 MTD
(v) Press mud 24000 MTD.

DSPL Sugar engineering is large well managed; it comprises the sugar, co-gen, and distillery. The manufacturing units equipped with the latest machinery and equipment, and handled by professional from the chemical industry.

All of the world high quality & standard machinery used in the manufacturing process are kept under strict inspection of technocrats, ensuring quality product. DSPL technical and operating efficiency is driven by state of the art facilities, with modern equipment and complete wheel assembly and tool unit, workshop, leading to higher well skilled officer & staff.

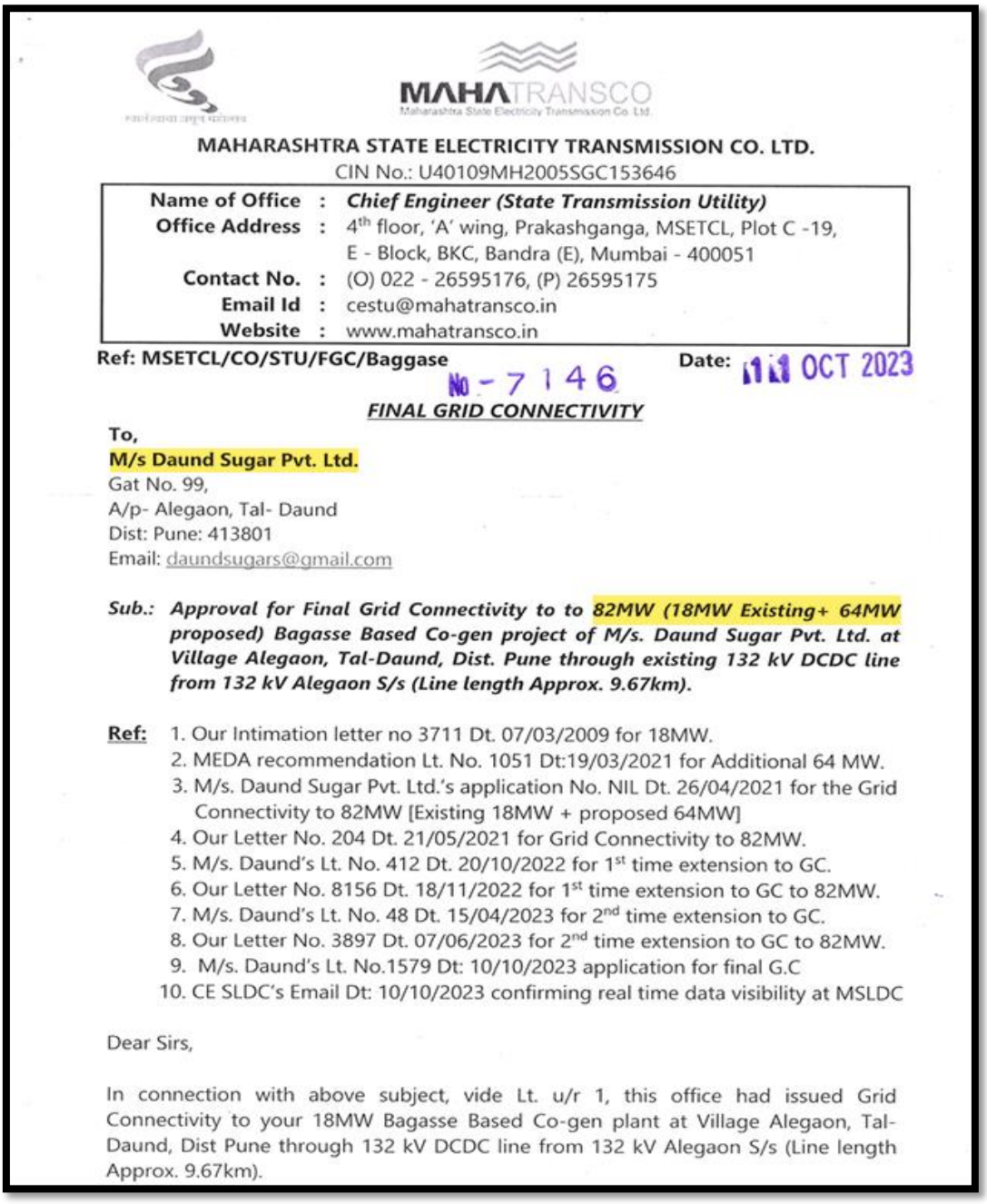
DSPL have fully integrated sugar factory with the distillery, co-generation and bio-compost units. Most of the sugars produce confines to EU grade. The result is energy conservation, optimal utilization of by-products, cost savings and most importantly, a product portfolio that includes specialty sugars, ethanol, power and organic manure. Improved cane varieties, cane seed sets are provided to farmers. Based on these findings, a continuous feedback is provided to farmers, with whom DSPL are in close contact at every stage of the crop cycle.

Daund Sugar Private Limited, Alegaon, Tal-Daund, Dist-Pune. (DSPL) is one of the leading organization in Maharashtra having production capacity 370 KLPD Wash to Rectified Spirit / Extra Neutral Alcohol & 370 KLPD Absolute Alcohol (Ethanol). Daund Sugar Pvt. Ltd. Alegaon, has adopted modern technology like Vacuum Multi pressure distillation, integrated type Evaporation & Molecular sieve based Absolute Alcohol (Ethanol) Plants supplied by Praj Industries Limited, Pune.

The project titled "82 MW Bagasse-Based Renewable Energy Project at DSPL, Pune " is a bagasse-based co-generation (co-gen) power project successfully commissioned by Maharashtra State Electricity Transmission Company Limited (MSETCL).

- The 18 MW co-generation plant was commissioned on December 27, 2009.
- Another 64 MW (32mw*2) co-generation plant was synchronized on October 20, 2023, and started exporting power on October 20, 2023. From November 2023, the total capacity of the project proponent's turbine is 82 MW.

  During the absence of biomass, coal is used to generate electricity. The amount of fossil fuels co-fired does not exceed 80% of the total fuel fired on an energy basis according to ACM0006-CDM methodology booklet of UNFCCC. Hence the project is eligible for UCR CoUs.



MAHATRANSCO
Maharashtra State Electricity Transmission Co. Ltd.

MAHARASHTRA STATE ELECTRICITY TRANSMISSION CO. LTD.

CIN No.: U40109MH2005SGC153646

Name of Office	:	***Chief Engineer (State Transmission Utility)***
Office Address	:	4th floor, 'A' wing, Prakashganga, MSETCL, Plot C -19, E - Block, BKC, Bandra (E), Mumbai - 400051
Contact No.	:	(O) 022 - 26595176, (P) 26595175
Email Id	:	cestu@mahatransco.in
Website	:	www.mahatransco.in

Ref: MSETCL/CO/STU/FGC/Baggase **Date:** 11 OCT 2023

No - 7146

FINAL GRID CONNECTIVITY

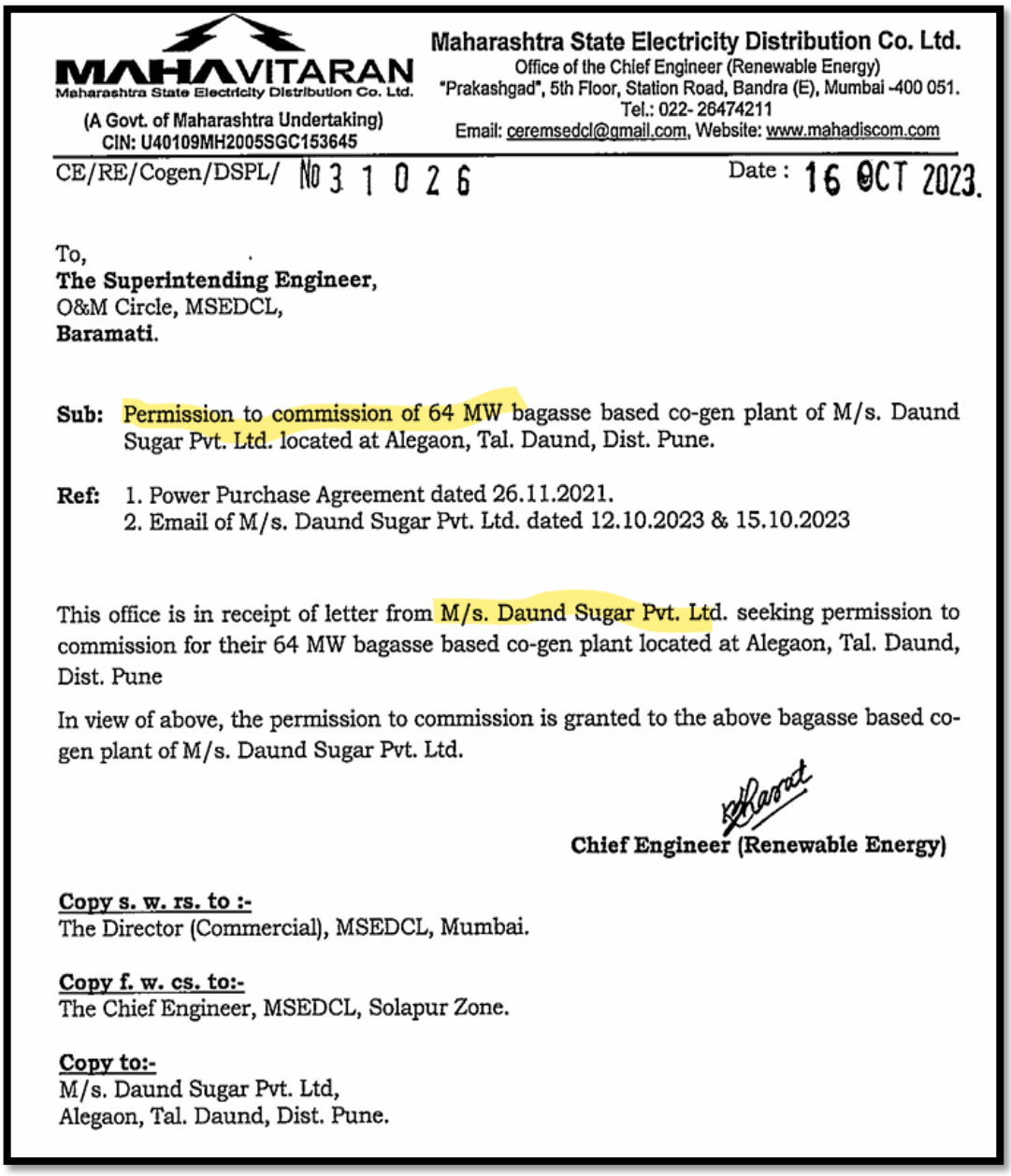
To,
M/s Daund Sugar Pvt. Ltd.
Gat No. 99,
A/p- Alegaon, Tal- Daund
Dist: Pune: 413801
Email: daundsugars@gmail.com

Sub.: Approval for Final Grid Connectivity to to 82MW (18MW Existing+ 64MW proposed) Bagasse Based Co-gen project of M/s. Daund Sugar Pvt. Ltd. at Village Alegaon, Tal-Daund, Dist. Pune through existing 132 kV DCDC line from 132 kV Alegaon S/s (Line length Approx. 9.67km).

Ref:
1. Our Intimation letter no 3711 Dt. 07/03/2009 for 18MW.
2. MEDA recommendation Lt. No. 1051 Dt:19/03/2021 for Additional 64 MW.
3. M/s. Daund Sugar Pvt. Ltd.'s application No. NIL Dt. 26/04/2021 for the Grid Connectivity to 82MW [Existing 18MW + proposed 64MW]
4. Our Letter No. 204 Dt. 21/05/2021 for Grid Connectivity to 82MW.
5. M/s. Daund's Lt. No. 412 Dt. 20/10/2022 for 1st time extension to GC.
6. Our Letter No. 8156 Dt. 18/11/2022 for 1st time extension to GC to 82MW.
7. M/s. Daund's Lt. No. 48 Dt. 15/04/2023 for 2nd time extension to GC.
8. Our Letter No. 3897 Dt. 07/06/2023 for 2nd time extension to GC to 82MW.
9. M/s. Daund's Lt. No.1579 Dt: 10/10/2023 application for final G.C
10. CE SLDC's Email Dt: 10/10/2023 confirming real time data visibility at MSLDC

Dear Sirs,

In connection with above subject, vide Lt. u/r 1, this office had issued Grid Connectivity to your 18MW Bagasse Based Co-gen plant at Village Alegaon, Tal-Daund, Dist Pune through 132 kV DCDC line from 132 kV Alegaon S/s (Line length Approx. 9.67km).



MAHAVITARAN
Maharashtra State Electricity Distribution Co. Ltd.
(A Govt. of Maharashtra Undertaking)
CIN: U40109MH2005SGC153645

Maharashtra State Electricity Distribution Co. Ltd.
Office of the Chief Engineer (Renewable Energy)
"Prakashgad", 5th Floor, Station Road, Bandra (E), Mumbai -400 051.
Tel.: 022- 26474211
Email: ceremsedcl@gmail.com, Website: www.mahadiscom.com

CE/RE/Cogen/DSPL/ No 31026 Date : 16 OCT 2023.

To,
The Superintending Engineer,
O&M Circle, MSEDCL,
Baramati.

Sub: Permission to commission of 64 MW bagasse based co-gen plant of M/s. Daund Sugar Pvt. Ltd. located at Alegaon, Tal. Daund, Dist. Pune.

Ref: 1. Power Purchase Agreement dated 26.11.2021.
2. Email of M/s. Daund Sugar Pvt. Ltd. dated 12.10.2023 & 15.10.2023

This office is in receipt of letter from M/s. Daund Sugar Pvt. Ltd. seeking permission to commission for their 64 MW bagasse based co-gen plant located at Alegaon, Tal. Daund, Dist. Pune

In view of above, the permission to commission is granted to the above bagasse based co-gen plant of M/s. Daund Sugar Pvt. Ltd.

Chief Engineer (Renewable Energy)

Copy s. w. rs. to :-
The Director (Commercial), MSEDCL, Mumbai.

Copy f. w. cs. to:-
The Chief Engineer, MSEDCL, Solapur Zone.

Copy to:-
M/s. Daund Sugar Pvt. Ltd,
Alegaon, Tal. Daund, Dist. Pune.

Purpose of the project activity:

The purpose of the project activity is to generate electricity using renewable biomass (Bagasse) and thereby reduce GHG emissions by displacing the fossil fuel dominated grid based electricity with biomass based renewable electricity. The electricity produced by the project is directly contributing to climate change mitigation by reducing the anthropogenic emissions of greenhouse gases (GHGs) into the atmosphere by displacing an equivalent amount of fossil power at grid.

The PP has set up an integrated sugar mill with sugar crushing capacity of 3500 TCD (Further increased to 20,000 TCD). This has removed the dependency of the sugar mill on the power supplied from the state grid. Power generated from this project activity is used for meeting plant requirement. After fulfilling its captive energy requirement, remaining power is sold to

the state grid as per the Power Purchase Agreement / Energy Purchase agreement.

The Co-gen power project of 82 MW capacities is operating on bagasse for 200 to 250 days during season and off season days. Actual number of mill operation days will be mentioned in the monitoring period. The project is generating clean energy at the designed level and after meeting the captive requirement, the surplus energy is exported to the Maharashtra State Electricity Transmission Company Limited (MSEDCL). All the steam and power requirements of the sugar mill and co-gen power plant are meeting internally from the project itself.

1. Gross Power Generation Capacity (18+64= 82 MW)

- This represents the total installed power generation capacity of the sugar mill, which is 82 megawatts (MW). This power is generated mainly using bagasse, a by-product of the sugarcane milling process.
- **Season**: The mill has the capability to generate **82 MW** of power during the sugarcane crushing season.
- **Off-Season**: The power generation capacity is reduced to approximate **32 MW** during the off-season. This reduction is likely because the mill and associated operations consume less energy during this period, and fewer resources like bagasse are used for power generation.

2. Power Consumption (For Sugar Mill Cane Crushing & Boiler Auxiliary)

- **Season**: During the sugarcane crushing season, the mill consumes 8.10 MW of power for operations like cane crushing and for auxiliary systems related to the boiler.
- **Off-Season**: During the off-season, only 2.00 MW is consumed, as the sugar mill is not in full operation, and energy consumption is significantly lower.
- **Season**: During the active sugarcane crushing season, the mill consumes **17.96 MW** for its operations, which include the cane crushing process and running the boiler's auxiliary systems.
- **Off-Season**: Power consumption drops significantly to **2.40 MW** because cane crushing is not happening, and only essential equipment or maintenance activities are running.

3. Power Consumption (For Distilleries)

- The distilleries consume a small amount of power, approximately 4 MWh in both seasons.

4. Total Auxiliary Consumption

- This is the total power consumed by the mill's internal operations (for the mill, boiler auxiliary, distilleries, and colonies):
    - **Season**: 8.13 MW
    - **Off-Season**: 2.03 MW
- This row represents the total internal power consumption by the mill and other activities:
    - **Season**: The total power consumption during the season is **17.96 MW** (entirely used for the mill's operations).
    - **Off-Season**: The total power consumption during the off-season is much lower at **2.40 MW**.

Images: DSPL

5. Exportable Power at Interconnection Point (Aggregate Exportable Contracted Capacity)

- After meeting internal consumption needs, the excess power is available for export to the grid:
    - **Season**: The exportable power during the season is 9.87 MW.
    - **Off-Season**: In the off-season, since internal consumption is lower, the exportable power increases to 15.97 MW.
- After the mill's internal consumption is met, the remaining power is exported to the grid:
    - **Season**: During the sugarcane season, **46.04 MW** of power is exportable to the grid.
    - **Off-Season**: Since internal consumption is low, the exportable power increases to **29.60 MW** during the off-season.

The project activity also induces environmental and sustainable development benefits. The project activity has introduced efficient high pressure cogeneration technology to the Indian sugar industry; reducing power shortages in the state of Maharashtra India; and fostering sustainable economic growth through promoting energy self-sufficiency and resource conservation in India's sugarcane industry. Hence, project activity is displacing the estimated annual net electricity generation i.e., **57,072 MWh** from the Indian grid system, which otherwise would have been generated by the operation of fossil fuel-based grid-connected power plants. The project activity doesn't involve any GHG emission sources. The estimated annual CO2e emission reductions by the project activity are expected to be **46,022 tCO2e**, whereas actual emission reductions achieved during the first CoU period shall be submitted as a part of first monitoring and verification.

The technology used in the project activity is highly replicable as the country's sugar mills produce large quantities of bagasse that could be efficiently utilized to generate power. The export of electricity hence reduces GHG emissions by replacing the fossil fuel dominated grid based electricity with a renewable source of electricity. The high pressure boilers are fired by bagasse, a byproduct from the sugar manufacturing process to generate steam, which in turn powers all the steam turbines to generate electricity.

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

There are social, environmental, economic and technological benefits which contribute to sustainable development.

There are no Eco-sensitive zones like Tropical Forests, Biosphere Reserves, National Parks, Wild Life Sanctuaries, and Coral Formation Reserves within 10 km Influence Zone of the Project site.

Social benefits:

- The project activity contributes to employment generation in the local area for both skilled & unskilled people for operation and maintenance of the equipment. The project creates several permanent jobs.

- It has created steady higher value jobs and skilled workers at the facility. The project activity is contributing to the national energy security by reducing consumption of fossil fuels.
- The technology being used in the project is proven and safe for power generation. An increase in such kind of projects shall enable all the technology suppliers to continuously innovate and modernize on the technology front. The local people will know the technological advancement and will help in capacity building.

Rural Development: The industry promotes rural development by setting up essential infrastructure, including housing colonies for workers, schools, hospitals, and roads. By engaging with local communities, it uplifts rural areas, providing stability to the region.

Support to Farmers: Through initiatives like improved cane variety distribution, agricultural services, and technical assistance, Daund Sugar helps local farmers increase their crop yield and improve agricultural practices.

Environmental benefits:

- The project activity is a renewable energy project, which utilizes biomass as a fuel for power generation and heat, a move that is voluntary and not mandated under current environmental laws of India. Since this project activity generates green energy in the form of power and heat, it has positively contributed towards the reduction in (demand) use of finite natural resources like coal, gas and oil, minimizing depletion and in turn increasing its availability to other important purposes. Therefore, this project activity helps to environment sustainability by reducing GHG emission in the atmosphere.
- Avoids global and local environmental pollution, leading to reduction of GHG emissions.
- Indirect capacity building by providing a case example to other sugar mills in the region for switching to high capacity cogeneration configuration, for electricity generation. In addition to the reduction in carbon dioxide (CO2) emissions the project implementation will result in reduction of other harmful gases (NOx and SOx) that arise from the combustion of coal used in power generation. The project activity also leads to reduce ash generation since the ash content in bagasse is lower than that of Indian coal.
- The bagasse generated in sugar mills in the region is generally in excess and hence get disposed in unplanned ways including dumping into nearby land or rivers. This will be reduced.

Renewable Energy (Co-Generation): DSPL uses bagasse (a by-product of sugarcane) as a fuel source in its co-generation plant to produce electricity. This practice reduces the industry's dependence on fossil fuels and contributes to renewable energy production. The co-generation process helps achieve self-sufficiency in power and exports surplus electricity to the grid(

Waste Utilization: The Company promotes sustainable practices by utilizing waste products from sugarcane processing to create organic manure and fertilizers. This reduces waste and contributes to improved soil health.

Zero Liquid Discharge (ZLD): Daund Sugar has achieved Zero Liquid Discharge status, meaning it does not release untreated liquid waste into the environment. Instead, all effluents are treated and recycled, reducing water pollution.

Economic benefits:

Income for Farmers: The sugar industry is a major source of income for sugarcane farmers. Farmers benefit from contracts with Daund Sugar for consistent purchase of their crops, creating a reliable source of revenue. This helps stabilize the rural economy.

Contribution to the Regional Economy: DSPL contributes to the economy of Maharashtra by generating revenues through the sale of sugar, ethanol, and power. The co-generation plant at Daund Sugar sells surplus power to the grid, providing an additional stream of income and reducing reliance on external energy sources.

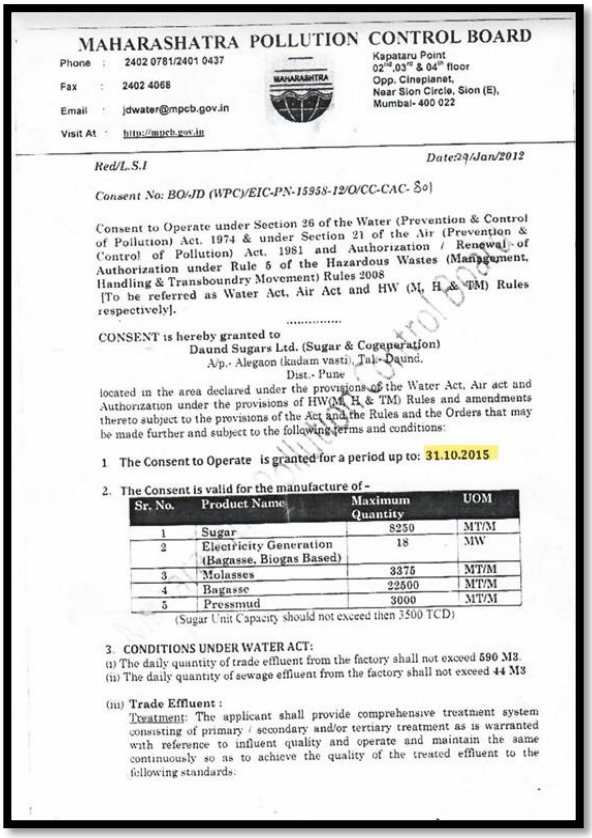
Export Earnings: Daund Sugar generates exportable power from its co-generation plants, boosting the region's energy export potential. Additionally, products like ethanol can be exported or used in domestic markets as fuel additives, further adding to the economic benefits.

- The project activity creates employment opportunities during the project stage and operation and maintenance of the Co-gen power plant.
  Employment Generation :- Factory workers, Sugarcane cutting contract workers, Sugarcane transport contract workers, Hamali work, Bagasse baling, Wheat work, Cleaning etc. Direct employment to thousands of workers through the work and as the above workers live in the factory premises, grocery, hotel, tire puncture, welding, garage, vegetable, chicken center, saloon, cloth, slippers, weekly market, fertilizers, medicines, drip irrigation etc. With the flourishing of businesses, thousands of unemployed have been provided indirect employment in the form of business.
- The project activity helps in conservation of fast depleting natural resources like coal and oil thereby contributing to the economic wellbeing of country as a whole.
- The increase in demand of bagasse exerted by the project has had a local effect on its price and generates additional revenue for the sugarcane farmers. The project activity results in saving the coal and allowing it to be diverted to other needy section of the economy.
- The various other benefits due to the project activity ensure that the project is contributing to the sustainable development of the region by bringing in green technologies and processes to a backward region. The technology is indigenous and by implementing such projects the country is showcasing its GHG mitigation actions in its efforts to combat climate change.

ACHIVEMENT & AWARDS:

- Best Technical Efficiency II Award in Central Zone Maharashtra by VSI, Pune for season 2012-13.
- Best Distillery Award by VSI, Pune for season 2012-13.
- Best Technical Efficiency I Award in Central Zone Maharashtra by VSI, Pune for season 2014-15.
- Best Overall Performance Private Sugar Mill Award by Bharatiya Sugar for season 2014-15.
- Most Innovative Sugar factory in Maharashtra Award by VSI, Pune for season 2015-16.
- Late. Vasantdada Patil Award Best Overall Performance Private Sugar Factory Award by VSI, Pune for season 2018 19.
- Best Financial Management Award in Central Zone Maharashtra by VSI, Pune for season 2020-21.

Consent to operate from 2013 to 2023



MAHARASHATRA POLLUTION CONTROL BOARD

Phone : 2402 0781/2401 0437
Fax : 2402 4068
Email : jdwater@mpcb.gov.in
Visit At : http://mpcb.gov.in

Kapataru Point 02nd,03rd & 04th floor Opp. Cineplanet, Near Sion Circle, Sion (E), Mumbai- 400 022

Red/L.S.I Date:24/Jan/2012

Consent No: BO/JD (WPC)/EIC-PN-15958-12/O/CC-CAC- 801

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 / Renewal of Authorization under Rule 5 of the Hazardous Wastes (Management, Handling & Transboundry Movement) Rules 2008 [To be referred as Water Act, Air Act and HW (M, H & TM) Rules respectively].

CONSENT is hereby granted to
Daund Sugars Ltd. (Sugar & Cogeneration)
A/p.- Alegaon (kadam vasti), Tal.- Daund,
Dist.- Pune

located in the area declared under the provisions of the Water Act, Air act and Authorization under the provisions of HW(M, H & TM) Rules and amendments thereto subject to the provisions of the Act and the Rules and the Orders that may be made further and subject to the following terms and conditions:

1. The Consent to Operate is granted for a period up to: 31.10.2015

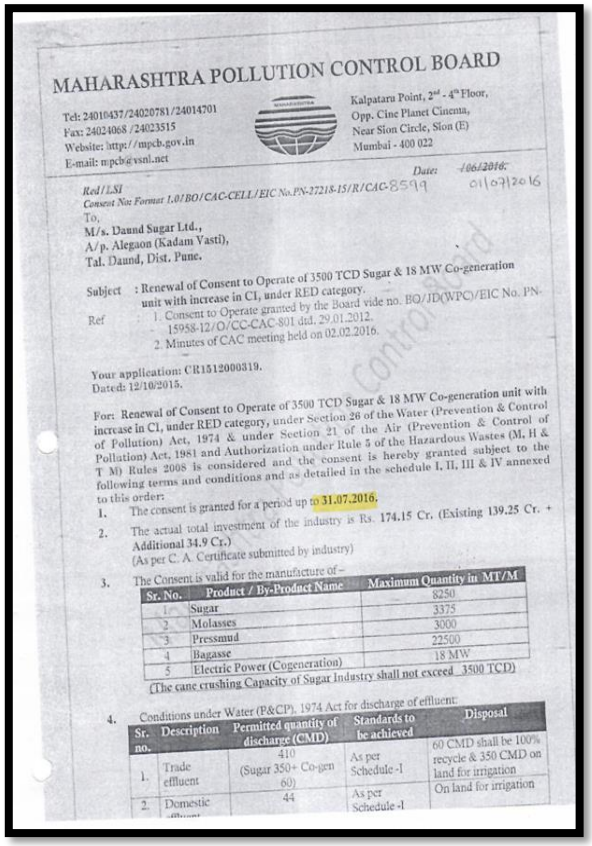
2. The Consent is valid for the manufacture of –

Sr. No.	Product Name	Maximum Quantity	UOM
1	Sugar	8250	MT/M
2	Electricity Generation (Bagasse, Biogas Based)	18	MW
3	Molasses	3375	MT/M
4	Bagasse	22500	MT/M
5	Pressmud	3000	MT/M

(Sugar Unit Capacity should not exceed then 3500 TCD)

3. CONDITIONS UNDER WATER ACT:
(i) The daily quantity of trade effluent from the factory shall not exceed 590 M3.
(ii) The daily quantity of sewage effluent from the factory shall not exceed 44 M3

(iii) Trade Effluent :
Treatment: The applicant shall provide comprehensive treatment system consisting of primary / secondary and/or tertiary treatment as is warranted with reference to influent quality and operate and maintain the same continuously so as to achieve the quality of the treated effluent to the following standards.



MAHARASHTRA POLLUTION CONTROL BOARD

Tel: 24010437/24020781/24014701
Fax: 24024068 /24023515
Website: http://mpcb.gov.in
E-mail: mpcb@vsnl.net

Kalpataru Point, 2nd - 4th Floor, Opp. Cine Planet Cinema, Near Sion Circle, Sion (E) Mumbai - 400 022

Date: 1/06/2016. 01/07/2016

Red/LSI
Consent No: Format 1.0/BO/CAC-CELL/EIC No.PN-27218-15/R/CAC-8599

To,
M/s. Daund Sugar Ltd.,
A/p. Alegaon (Kadam Vasti),
Tal. Daund, Dist. Pune.

Subject : Renewal of Consent to Operate of 3500 TCD Sugar & 18 MW Co-generation unit with increase in CI, under RED category.

Ref 1. Consent to Operate granted by the Board vide no. BO/JD(WPC)/EIC No. PN-15958-12/O/CC-CAC-801 dtd. 29.01.2012.
2. Minutes of CAC meeting held on 02.02.2016.

Your application: CR1512000319.
Dated: 12/10/2015.

For: Renewal of Consent to Operate of 3500 TCD Sugar & 18 MW Co-generation unit with increase in CI, under RED category, 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 5 of the Hazardous Wastes (M, H & T M) Rules 2008 is considered and the consent is hereby granted subject to the following terms and conditions and as detailed in the schedule I, II, III & IV annexed to this order:

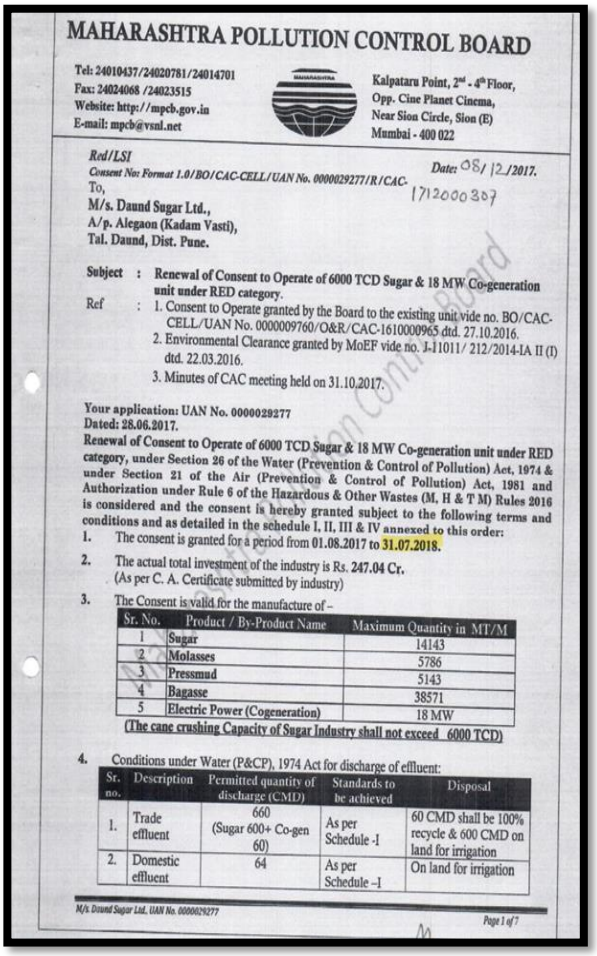
1. The consent is granted for a period up to 31.07.2016.
2. The actual total investment of the industry is Rs. 174.15 Cr. (Existing 139.25 Cr. + Additional 34.9 Cr.)
(As per C. A. Certificate submitted by industry)
3. The Consent is valid for the manufacture of –

Sr. No.	Product / By-Product Name	Maximum Quantity in MT/M
1	Sugar	8250
2	Molasses	3375
3	Pressmud	3000
4	Bagasse	22500
5	Electric Power (Cogeneration)	18 MW

(The cane crushing Capacity of Sugar Industry shall not exceed 3500 TCD)

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

Sr. no.	Description	Permitted quantity of discharge (CMD)	Standards to be achieved	Disposal
1.	Trade effluent	410 (Sugar 350+ Co-gen 60)	As per Schedule -I	60 CMD shall be 100% recycle & 350 CMD on land for irrigation
2.	Domestic	44	As per Schedule -I	On land for irrigation



MAHARASHTRA POLLUTION CONTROL BOARD

Tel: 24010437/24020781/24014701
Fax: 24024068 /24023515
Website: http://mpcb.gov.in
E-mail: mpcb@vsnl.net

Kalpataru Point, 2nd - 4th Floor,
Opp. Cine Planet Cinema,
Near Sion Circle, Sion (E)
Mumbai - 400 022

Red/LSI
Consent No: Format 1.0/BO/CAC-CELL/UAN No. 0000029277/R/CAC-1712000307

Date: 08/12/2017.

To,
M/s. Daund Sugar Ltd.,
A/p. Alegaon (Kadam Vasti),
Tal. Daund, Dist. Pune.

Subject : Renewal of Consent to Operate of 6000 TCD Sugar & 18 MW Co-generation unit under RED category.

Ref :
1. Consent to Operate granted by the Board to the existing unit vide no. BO/CAC-CELL/UAN No. 0000009760/O&R/CAC-1610000965 dtd. 27.10.2016.
2. Environmental Clearance granted by MoEF vide no. J-11011/ 212/2014-IA II (I) dtd. 22.03.2016.
3. Minutes of CAC meeting held on 31.10.2017.

Your application: UAN No. 0000029277
Dated: 28.06.2017.

Renewal of Consent to Operate of 6000 TCD Sugar & 18 MW Co-generation unit under RED category, 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 (M, H & T M) Rules 2016 is considered and the consent is hereby granted subject to the following terms and conditions and as detailed in the schedule I, II, III & IV annexed to this order:

1. The consent is granted for a period from 01.08.2017 to 31.07.2018.
2. The actual total investment of the industry is Rs. 247.04 Cr. (As per C. A. Certificate submitted by industry)
3. The Consent is valid for the manufacture of –

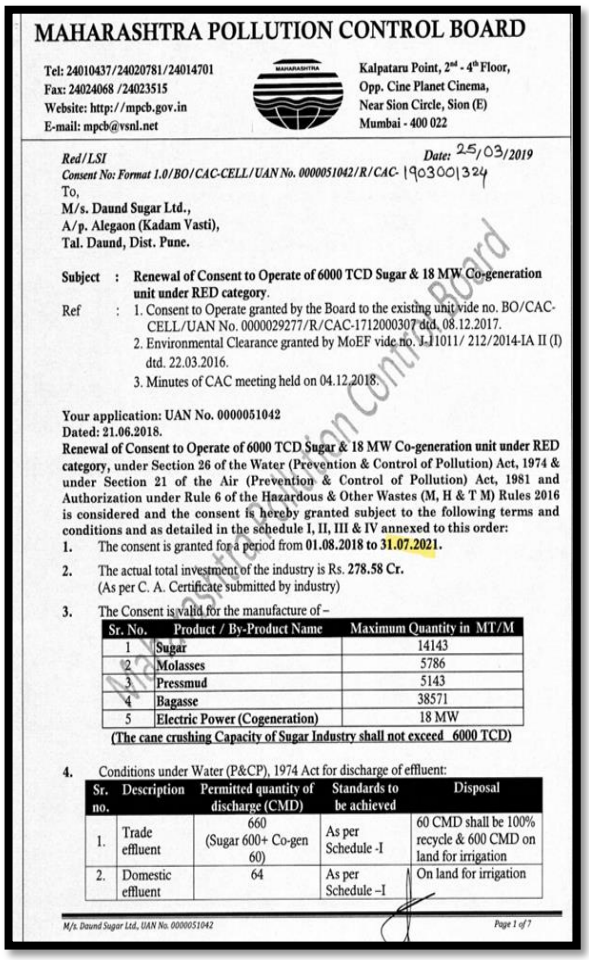
Sr. No.	Product / By-Product Name	Maximum Quantity in MT/M
1	Sugar	14143
2	Molasses	5786
3	Pressmud	5143
4	Bagasse	38571
5	Electric Power (Cogeneration)	18 MW

(The cane crushing Capacity of Sugar Industry shall not exceed 6000 TCD)

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

Sr. no.	Description	Permitted quantity of discharge (CMD)	Standards to be achieved	Disposal
1.	Trade effluent	660 (Sugar 600+ Co-gen 60)	As per Schedule -I	60 CMD shall be 100% recycle & 600 CMD on land for irrigation
2.	Domestic effluent	64	As per Schedule –I	On land for irrigation

M/s. Daund Sugar Ltd, UAN No. 0000029277 Page 1 of 7



MAHARASHTRA POLLUTION CONTROL BOARD

Tel: 24010437/24020781/24014701
Fax: 24024068 /24023515
Website: http://mpcb.gov.in
E-mail: mpcb@vsnl.net

Kalpataru Point, 2nd - 4th Floor,
Opp. Cine Planet Cinema,
Near Sion Circle, Sion (E)
Mumbai - 400 022

Red/LSI
Consent No: Format 1.0/BO/CAC-CELL/UAN No. 0000051042/R/CAC-1903001324

Date: 25/03/2019

To,
M/s. Daund Sugar Ltd.,
A/p. Alegaon (Kadam Vasti),
Tal. Daund, Dist. Pune.

Subject : Renewal of Consent to Operate of 6000 TCD Sugar & 18 MW Co-generation unit under RED category.

Ref :
1. Consent to Operate granted by the Board to the existing unit vide no. BO/CAC-CELL/UAN No. 0000029277/R/CAC-1712000307 dtd. 08.12.2017.
2. Environmental Clearance granted by MoEF vide no. J-11011/ 212/2014-IA II (I) dtd. 22.03.2016.
3. Minutes of CAC meeting held on 04.12.2018.

Your application: UAN No. 0000051042
Dated: 21.06.2018.

Renewal of Consent to Operate of 6000 TCD Sugar & 18 MW Co-generation unit under RED category, 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 (M, H & T M) Rules 2016 is considered and the consent is hereby granted subject to the following terms and conditions and as detailed in the schedule I, II, III & IV annexed to this order:

1. The consent is granted for a period from 01.08.2018 to 31.07.2021.
2. The actual total investment of the industry is Rs. 278.58 Cr. (As per C. A. Certificate submitted by industry)
3. The Consent is valid for the manufacture of –

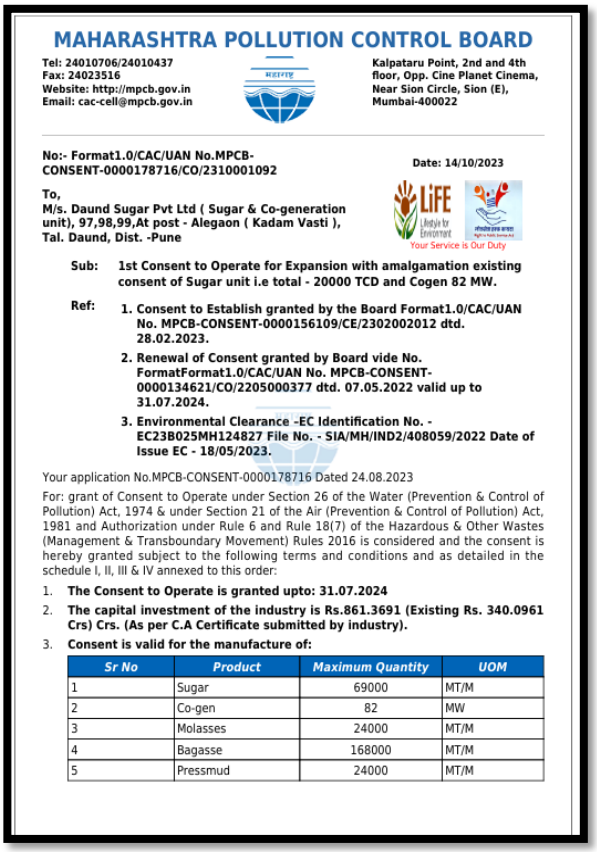
Sr. No.	Product / By-Product Name	Maximum Quantity in MT/M
1	Sugar	14143
2	Molasses	5786
3	Pressmud	5143
4	Bagasse	38571
5	Electric Power (Cogeneration)	18 MW

(The cane crushing Capacity of Sugar Industry shall not exceed 6000 TCD)

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

Sr. no.	Description	Permitted quantity of discharge (CMD)	Standards to be achieved	Disposal
1.	Trade effluent	660 (Sugar 600+ Co-gen 60)	As per Schedule -I	60 CMD shall be 100% recycle & 600 CMD on land for irrigation
2.	Domestic effluent	64	As per Schedule –I	On land for irrigation

M/s. Daund Sugar Ltd., UAN No. 0000051042 Page 1 of 7



MAHARASHTRA POLLUTION CONTROL BOARD

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

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

No:- Format1.0/CAC/UAN No.MPCB-CONSENT-0000178716/CO/2310001092

Date: 14/10/2023

To,
M/s. Daund Sugar Pvt Ltd (Sugar & Co-generation unit), 97,98,99,At post - Alegaon (Kadam Vasti), Tal. Daund, Dist. -Pune

Your Service is Our Duty

Sub: 1st Consent to Operate for Expansion with amalgamation existing consent of Sugar unit i.e total - 20000 TCD and Cogen 82 MW.

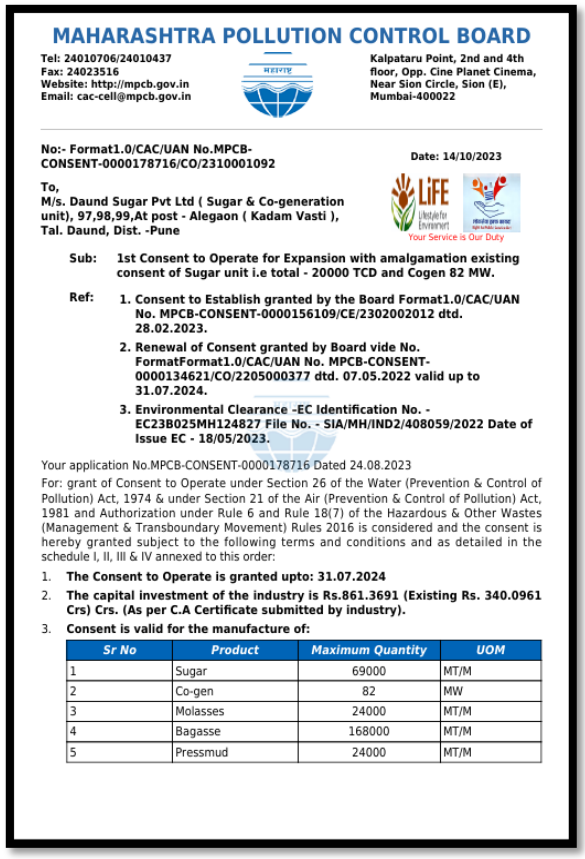
Ref:
1. Consent to Establish granted by the Board Format1.0/CAC/UAN No. MPCB-CONSENT-0000156109/CE/2302002012 dtd. 28.02.2023.
2. Renewal of Consent granted by Board vide No. FormatFormat1.0/CAC/UAN No. MPCB-CONSENT-0000134621/CO/2205000377 dtd. 07.05.2022 valid up to 31.07.2024.
3. Environmental Clearance -EC Identification No. - EC23B025MH124827 File No. - SIA/MH/IND2/408059/2022 Date of Issue EC - 18/05/2023.

Your application No.MPCB-CONSENT-0000178716 Dated 24.08.2023

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 and Rule 18(7) of the Hazardous & Other Wastes (Management & Transboundary Movement) Rules 2016 is considered and the consent is hereby granted subject to the following terms and conditions and as detailed in the schedule I, II, III & IV annexed to this order:

1. **The Consent to Operate is granted upto: 31.07.2024**
2. **The capital investment of the industry is Rs.861.3691 (Existing Rs. 340.0961 Crs) Crs. (As per C.A Certificate submitted by industry).**
3. **Consent is valid for the manufacture of:**

Sr No	Product	Maximum Quantity	UOM
1	Sugar	69000	MT/M
2	Co-gen	82	MW
3	Molasses	24000	MT/M
4	Bagasse	168000	MT/M
5	Pressmud	24000	MT/M



MAHARASHTRA POLLUTION CONTROL BOARD

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

No:- Format1.0/CAC/UAN No.MPCB-CONSENT-0000178716/CO/2310001092

Date: 14/10/2023

To,
M/s. Daund Sugar Pvt Ltd (Sugar & Co-generation unit), 97,98,99,At post - Alegaon (Kadam Vasti), Tal. Daund, Dist. -Pune

Your Service is Our Duty

Sub: 1st Consent to Operate for Expansion with amalgamation existing consent of Sugar unit i.e total - 20000 TCD and Cogen 82 MW.

Ref:
1. Consent to Establish granted by the Board Format1.0/CAC/UAN No. MPCB-CONSENT-0000156109/CE/2302002012 dtd. 28.02.2023.
2. Renewal of Consent granted by Board vide No. FormatFormat1.0/CAC/UAN No. MPCB-CONSENT-0000134621/CO/2205000377 dtd. 07.05.2022 valid up to 31.07.2024.
3. Environmental Clearance -EC Identification No. - EC23B025MH124827 File No. - SIA/MH/IND2/408059/2022 Date of Issue EC - 18/05/2023.

Your application No.MPCB-CONSENT-0000178716 Dated 24.08.2023

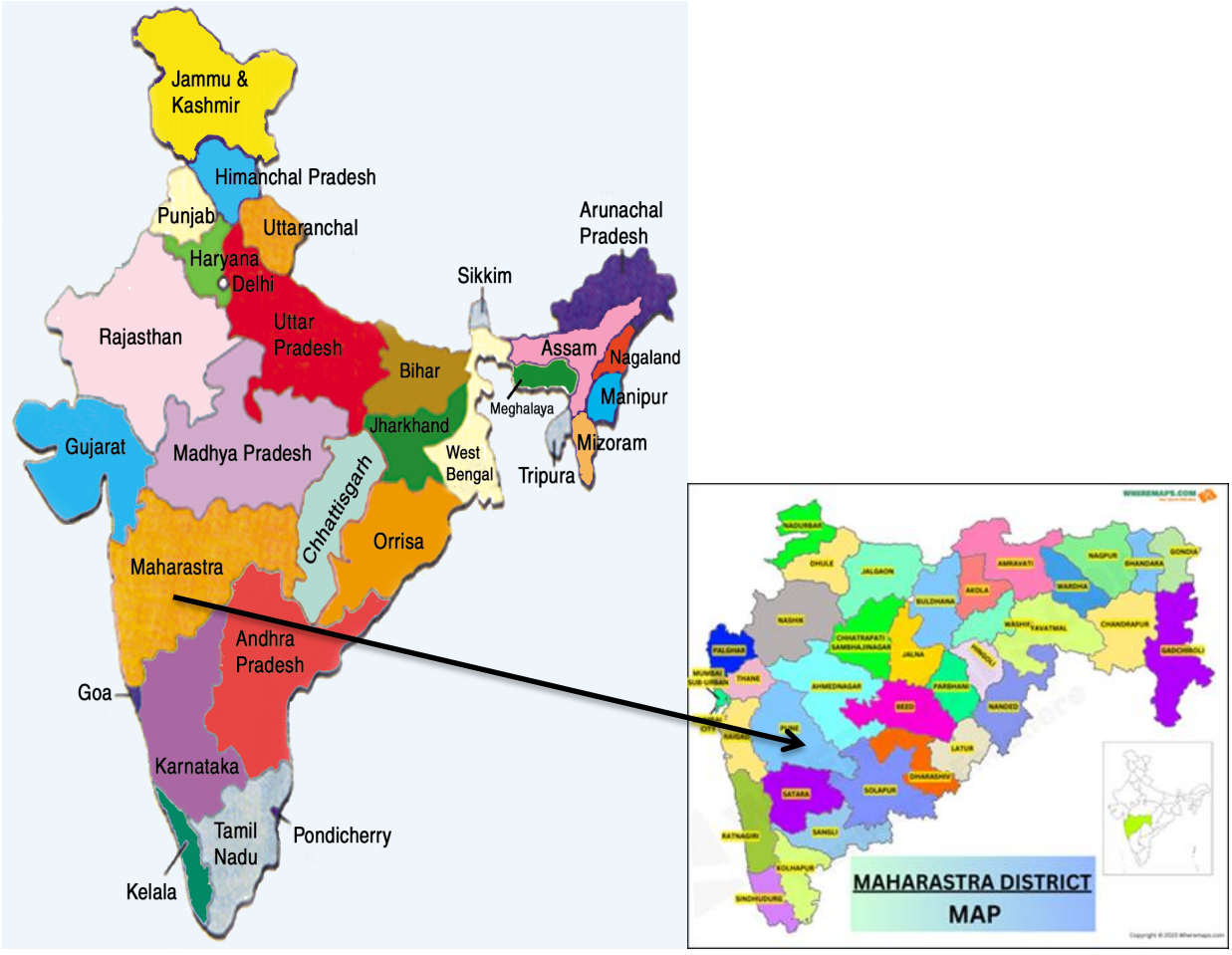
For: grant of Consent to Operate under Section 26 of the Water (Prevention & Control of Pollution) Act, 1974 & under Section 21 of the Air (Prevention & Control of Pollution) Act, 1981 and Authorization under Rule 6 and Rule 18(7) of the Hazardous & Other Wastes (Management & Transboundary Movement) Rules 2016 is considered and the consent is hereby granted subject to the following terms and conditions and as detailed in the schedule I, II, III & IV annexed to this order:

1. **The Consent to Operate is granted upto: 31.07.2024**
2. **The capital investment of the industry is Rs.861.3691 (Existing Rs. 340.0961 Crs) Crs. (As per C.A Certificate submitted by industry).**
3. **Consent is valid for the manufacture of:**

Sr No	Product	Maximum Quantity	UOM
1	Sugar	69000	MT/M
2	Co-gen	82	MW
3	Molasses	24000	MT/M
4	Bagasse	168000	MT/M
5	Pressmud	24000	MT/M

A.3 Location of project activity >>

Location	
Survey. No.	Gut No. 99
Village	Alegaon
Tehsil	Daund
District	Pune
State	Maharashtra
Latitude and Longitude	Latitude- 18°25’39.74” N and Longitude – 74°37’59.44” E
Area	
Total Plot Area	141.78 acres
Existing Distillery Area	25.93 acres
Existing sugar & co-gen	53.014 Acre
Nearest village	Alegaon – 2 km (North)
Nearest Highway	SH-67; 6.5 km (Pune-Solapur)
Nearest Railway Station	Daund railway station 10 km from site
Nearest Airport	Pune International Airport-93.8 km
Nearest Water Bodies	Bhima River : 2.5 km



A.4 Technologies/measures >>

The **UCR project activity** described outlines the workings of a **grid-connected bagasse-based cogeneration power plant**, similar to what Daund Sugar Pvt. Ltd. (DSPL) operates. The cogeneration plant uses bagasse, a by-product of sugarcane processing, to generate both electricity and thermal energy. Here's how this setup works, with specific details and relevance to DSPL:

1. Technology Overview

- The project involves a **high back-pressure and Condensing cum Double extraction steam-turbine configuration** for generating electricity. This technology is commonly used in India's sugar industry, as it improves the efficiency of power generation. In DSPL, the system capitalizes on **biomass residue (bagasse)** as a renewable fuel source, turning the sugarcane by-product into energy. This process not only powers the sugar mill but also allows surplus electricity to be exported to the grid, contributing to the region's energy needs.

2. Key Elements of the Power Plant

The power plant at DSPL contains similar core elements essential for generating and distributing power, as detailed in the UCR project:

a. Boiler Unit

- **Role**: The boiler burns bagasse to convert the stored chemical energy in the fuel into thermal energy (heat). This heat is then used to produce steam at high pressure.
- **In DSPL**: The **bagasse-fired boiler** is the backbone of the plant, ensuring efficient energy utilization. The high-pressure boiler provides a significant amount of steam for electricity generation and process heating.

b. Steam Turbine Unit

- **Role**: The steam turbine transforms the thermal energy from the high-pressure steam into mechanical energy. The steam spins the turbine blades, which generate mechanical motion.
- **In DSPL**: This mechanical energy is harnessed to drive the alternator unit. The **high-pressure steam-turbine** setup ensures higher efficiency in converting thermal energy into mechanical work compared to conventional low-pressure systems.

c. Alternator Unit

- **Role**: The alternator converts the mechanical energy from the turbine into electrical energy, which is then distributed for internal use or export to the grid.

- **In DSPL**: The alternator allows for the generation of electrical power, sufficient to meet internal needs (cane crushing, distillery operations) and export surplus electricity to the state electricity grid.

3. Auxiliary Systems and Equipment

In addition to the main components, the following systems are also essential in DSPL's cogeneration power plant:

a. Fuel and Ash Handling Equipment

- **Role**: This system handles the bagasse (fuel) input and the ash output post-combustion. Efficient handling systems ensure smooth, uninterrupted power generation.
- **In DSPL**: Bagasse is continuously fed into the boiler, while ash is collected and often reused as a soil amendment in agriculture.

b. Water-Cooled Condenser System

- **Role**: After the steam passes through the turbine, it needs to be condensed back into water to be reused in the system. The water-cooled condenser system ensures that the exhaust steam is efficiently cooled and converted back into water.
- **In DSPL**: This system helps maintain the plant's efficiency by recycling water and reducing waste.

c. Demineralized (DM) Water System and Air Compressor Plant

- **Role**: The DM Water system ensures that the water used in the boiler is free from impurities, which is crucial to maintaining the boiler's longevity and efficiency. The air compressor plant supports pneumatic systems within the power plant.
- **In DSPL**: The DM Water system is critical to maintaining the plant's high operational efficiency and preventing scale or damage to equipment.

d. Electrical Systems and Automation

- **Role**: Electrical systems ensure the distribution of power, while automation systems monitor and control the entire process, ensuring smooth operations and safety.
- **In DSPL**: Automated control systems help optimize power generation, ensuring the plant runs at peak efficiency with minimal human intervention, reducing operational costs.

4. Environmental Impact

- **Renewable Energy Source**: By using bagasse, DSPL contributes to sustainable power generation. The bagasse-based cogeneration system reduces dependence on fossil fuels, decreasing carbon emissions and contributing to cleaner energy.

- **Energy Efficiency**: The high-pressure steam-turbine system increases the overall efficiency of electricity generation, maximizing output from the same amount of fuel.
- **Waste Minimization**: Utilizing bagasse, which would otherwise be waste, for power generation reduces environmental waste and promotes circular economy practices in sugar production.

The detailed process outlined describes the sugar manufacturing and energy cogeneration system at **Daund Sugar Pvt. Ltd. (DSPL)**. Here is a breakdown of the key aspects:

1. Sugar Manufacturing Process

Harvesting and Crushing

- **Harvesting**: Sugarcane is harvested and transported to the mill using various means (lorries, tractors, bullock carts).
- **Crushing**: The cane is prepared using choppers and fiberizers before being crushed in a series of 5 mills. Hot water (imbibition water) is added during crushing to improve juice extraction.

Juice Clarification

- **Raw Juice**: The extracted juice is heated to 70-75°C in juice heaters. Milk of lime and sulfur dioxide (SO_2) are added for sulphitation, adjusting the pH to 6.9-7.0.
- **Coagulation**: Non-sugar and color particles are coagulated, and after a second heating (100-105°C), the juice is sent to a clarifier where it settles, separating muddy juice from clear juice.
- **Filtration**: The muddy juice is filtered, with residual sugar extracted and reused, while the remaining cake is used as manure.

Evaporation and Syrup Clarification

- **Evaporation**: The clarified juice, with a brix (sugar concentration) of 15-17, is evaporated to remove water, increasing its brix to around 60.
- **Syrup Clarification**: A syrup clarification system reduces impurities and color before sending the syrup for further processing in vacuum pans.

Sugar Crystallization and Curing

- **Massecuite Boiling**: Three massecuite (sugar crystal mixture) boiling stages separate sugar from molasses.
- **Curing**: The sugar crystals are centrifuged, washed, and then dried in vibrating hoppers. The molasses is recycled for further processing.
- **Grading and Packing**: The dried sugar is sieved, graded, bagged (50 kg), and stored.

2. Falling-Film Evaporators

- DSPL utilizes **falling-film evaporators**, which enable significant steam savings and efficient heat transfer. These evaporators are designed to reduce scaling and fouling through

multi-pass designs and regular cleaning intervals. This system helps minimize specific steam consumption, improving overall efficiency in sugar production.

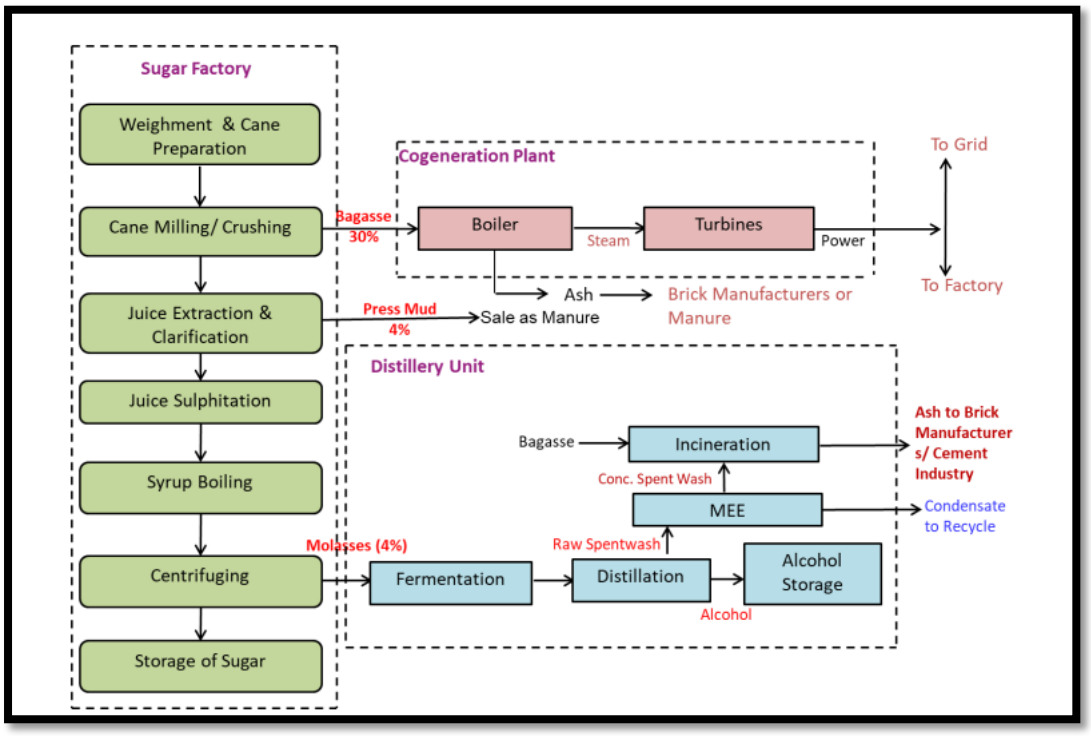
3. Co-Generation and Environmental Impact

- **Bagasse-Based Power Generation**: DSPL uses bagasse (a by-product of sugarcane crushing) as a major fuel source for its **cogeneration power plant**, contributing to renewable energy generation. The plant generates both power for internal use and electricity for the grid, reducing greenhouse gas (GHG) emissions and contributing to climate-friendly practices.
- **Spent Wash Boiler**: The company has installed one of India's largest **spent wash fire boilers** (40 TPH, 44 kg/cm²) with 4 MW power generation capacity, achieving **Zero Liquid Discharge** (ZLD). Spent wash is a liquid waste from alcohol production that is incinerated in this boiler, addressing a critical environmental concern.
- **Air Pollution Control**: DSPL employs **Electrostatic Precipitators (ESP)** to control dust emissions from the boiler flue gases, ensuring air quality compliance. These systems help mitigate the environmental impact of industrial operations.
- **Air-Cooled Condenser (ACC)**: DSPL's ACC system condenses steam using air instead of water, which significantly reduces water consumption. This system is beneficial in areas where water resources are scarce, furthering the company's sustainability goals.

4. Energy Efficiency and Resource Management

- **Steam-Saving Techniques**: The falling-film evaporators allow DSPL to optimize steam usage, which in turn maximizes power generation from the cogeneration plant.
- **Manure Production**: The filter cake (residual mud) from the juice clarification process is repurposed as organic manure, contributing to sustainable agricultural practices.

The sugar manufacturing process at **DSPL** is highly efficient, utilizing bagasse for energy production, optimizing sugar extraction, and employing advanced technologies like falling-film evaporators and spent wash boilers to minimize waste. The combination of cogeneration power production and responsible waste management reflects DSPL's commitment to both economic efficiency and environmental sustainability.



Process flow diagram of DSPL.

- Some of the salient features of the project equipment can be found in the below mentioned table:

Boiler	**No. 1**	**No. 2**	**No. 3**
Name	ISGEC make boiler No MR-14741	Meru make boiler No MR-18828	Meru make boiler No MR-18785
Manufacturer	ISGEC	Meru industries	Meru industries
Capacity Kg/Hr.	100 TPH	160 TPH	160 TPH
Working pressure	87 Kg/cm2	87 Kg/cm2	87 Kg/cm2
Working Temp.	515 +- 5^0 c	540 +- 5^0 c	540 +- 5^0 c
Type	Bi-drum water tube bagasse fired travelling grates boiler	Single Drum	Single Drum
Total Heating surface	6151 m2	8557 m2	8557 m2

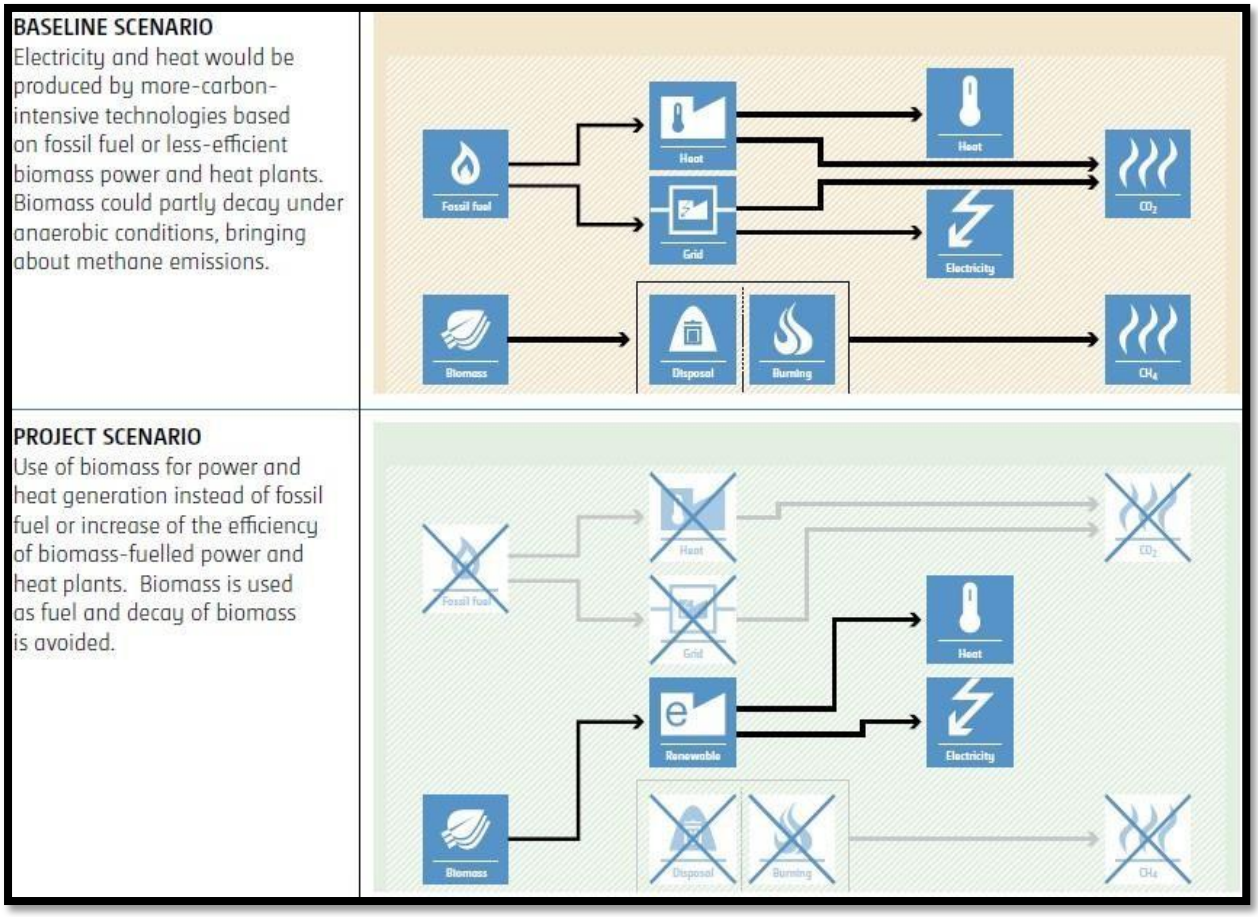
Sr. No.	Name and details
1	**18 MW Turbine Details:** Make: Siemens Ltd. (Condensing cum Double extraction Turbine) Type: SST300 VE40AL Year of Construction : 2009 Output Power: 18000 KW Speed : 6800 rpm Inlet Pressure : 84 Ata Inlet Temp : 510 ^{0}C 1 St Bleed Pressure – 10.622 Ata 1 St Bleed Temp – 255.5 ^{0}C Extraction Pressure – 3 Ata Extraction Temp: 140 ^{0}C Exhaust Pressure – 0.064 Ata Exhaust Temp – 37.08^{0}C
2	**Back Pressure Turbine : 32mw and** **Condensing cum Double extraction Turbine : 32 mw** **Make** : SNM Type –B8-R11-ER Rated Output – 32,000 kW Inlet steam pressure – 85 kg/cm2 Inlet Steam Temperature – 535^{0}C Exhaust Steam Pressure – 3.03 kg/cm2 Extraction
3	**AC Generator** Output - 22500 KVA, Type - TC172, standard - IS 4722-200, year - 2009, No of phase - 3, weight - 52200 kg, No of ploes - 4 , Enclosure - IP 54, Voltage - (AC) - 11000 V, cooling system - IC 81 W, Current (AC) 1181 A, cooling temp. - 32°C, Freq - 50 Hz, max. Temp. of st by rtd - 83, Speed -1500, class of insu. Arm. F field F , Limiting speed - 1800, Brg. DE – sleeve, NDE sleeve, P.F. - 0.8 , Type of stator connection - Star, Exc. Voltage (DC) -212 V, Exc. Current (DC) - 613 A, Altitude - <1000 MS, M/c. No - T – 2K907947-01, Make - TD power system - Toyo - Denki **AC Excitor**, System - Brushless excitation system , Output DC - 132 kw, enclosure system- IP54, voltage DC - 233 V, cooling system - IC31, Exc. Voltage DC -112 V, class of insu - F, Exc. Current - 11 A, standard - IS 4722-2001, Year of mfg - 2012, M/c. No – 2K907947 Permanent magnet Generator Frame- P-5-15, Voltage-200 (+20,-5v), M/c. No – 2K907347, KVA- 5, current-144 A, Hz-50.

A.5 Parties and Project Participants >>

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	**Project Owner:** M/S Daund Sugar Private limited (DSPL) at post-Alegoan Tal – Daund Dist: Pune, 413 801 Maharashtra. **Project Aggregator:** Climekare sustainability Pvt. Ltd**.**

A.6 Baseline Emissions >>



The approved baseline methodology has been referred from the indicative simplified baseline and monitoring methodologies for selected large scale UNFCCC CDM project activities that involve generation of power and heat in thermal power plants, including cogeneration plants using biomass.

Typical activities under ACM0006 are new plants, capacity expansions, energy efficiency improvements or fuel switch projects.

The applicable methodology and simplified modalities and procedures for small scale CDM project activities are: "*the baseline scenario is displacement of more-GHG-intensive electricity generation in grid.*"

Emission coefficient of fuel used in the baseline scenario The CO2 emission factor for grid connected power generation in year y calculated using UCR Standard emission factor is 0.9 tCO2/MWh for the period 2013-2023

A.7 Debundling >>

This project is not a debundled component of a larger registered carbon offset project activity. There is no registered large-scale UCR project activity or a request for registration by another small-scale project activity:

- By the same project participants;
- In the same project category and technology/measure; and whose project boundary is within 1 km of the project boundary of the proposed small-scale activity at the closest point.

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- ACM0006: "Electricity and heat generation from biomass" Version 16.0

This methodology is applicable to project activities that operate biomass (co-)fired power and heat plants. The project activity includes the installation of new plants at a site where currently power or heat generation occurs. The new plant replaces or is operated next to existing plants (capacity expansion projects). Project types included under this methodology are co-generation of power and heat using biomass. Typical activities include capacity expansions, as is the current UCR project activity. UCR CoU Standard emission factors are used to determine the baseline grid emission factor for the 2013-2023 periods.

B.2 Applicability of methodologies and standardized baselines >>

This methodology is applicable to project activities that operate biomass (co-gen) fired power and heat plants.

The project activity is a power generation project using a biomass (bagasse) and displaces CO2 emissions from electricity generation in power plants that are displaced due to the project activity. Since the project activity utilizes biomass (bagasse) for the generation of power and supplies it to the local grid, it displaces fossil fuel (coal), and hence it meets the primary applicability criteria of the methodology.
The project activity is a power-and-heat plant that encompasses cogeneration plants, i.e. power-and-heat plant in which at least one heat engine simultaneously generates both process heat and power. The total installed capacity of project activity is **82 MW** which is acceptable as per the applied large scale methodology.
The installation of a new biomass residue fired power generation unit, which are places existing power generation capacity fired with fossil fuel as in the project plant (power capacity expansion projects) is also included in this methodology.
For the purposes of this methodology, heat does not include waste heat, i.e. heat that is transferred to the environment without utilization, for example, heating flue gas, heat transferred to cooling towers or any other heat losses.
The biomass used by the project plant is not stored for more than one year. The biomass used by the project plant is not processed chemically or biologically (e.g. through esterification, fermentation, hydrolysis, pyrolysis, bio-or chemical degradation, etc.) prior to combustion.
The Project Activity uses biomass residues from a production process (e.g. production of sugar), and the implementation of the project does not result in an increase of the processing capacity of (the industrial facility generating the residues) raw input (e.g. sugar) or in other substantial changes (e.g. product change) in this process.
The project activity unit does not co-fire fossil fuel and/or does not exceed the limit of 25%co-firing fossil fuel criteria as per the UCR Protocol for such projects.
Bio-mass generated power is used for direct grid supply and for meeting the captive need facility. The project activity is involves the grid-connected bagasse based electricity generation capacity involving the installation of facilities for all owing the export of electricity to the regional grid.
Bio-mass is not sourced from dedicated plantations. The existing installed turbo-generators are fired by bagasse, a by-product of the sugarcane processing and a biomass residue

	Bagasse is burnt in boilers as generated from the sugar mill and does not require any specific technology for its preparation before combustion. No fuel preparation equipment has been installed at site for preparation of bagasse. Hence no significant energy quantities are required to prepare the biomass residues for fuel combustion.
	The project activity also does not include any GHG emissions related to the decomposition or burning of biomass. The baseline heat emissions for the project activity are not included in the project boundary nor does it claim for emission reductions from heat.

B.3 Applicability of double counting emission reductions >>

The biomass boilers and turbines are constructed by the project proponent within the project boundary. The biomass boilers, turbine and energy meters have unique IDs, which is visible on the units. The Monitoring Report has the details of the same and will be provided to the UCR verifier during the verification process.

There is no double accounting of emission reductions in the project activity due to the following reasons:

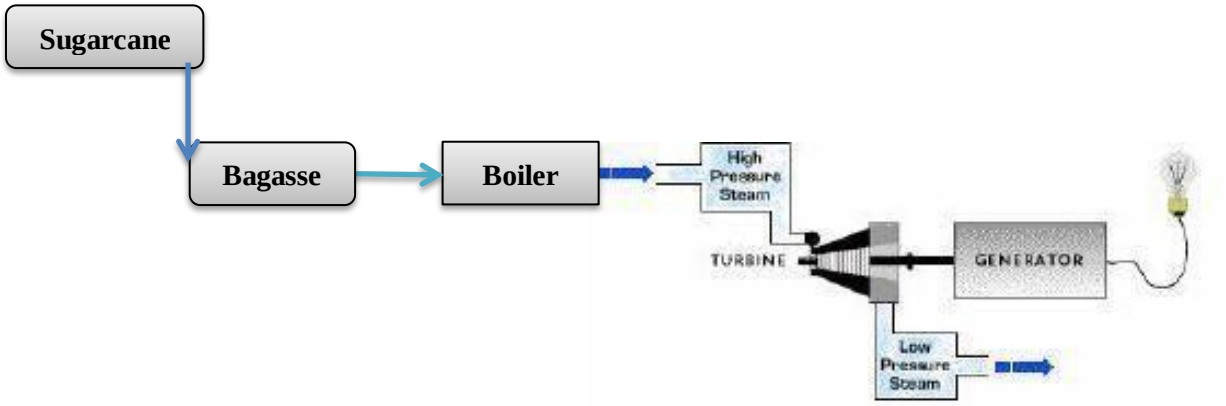
- Project is uniquely identifiable based on its location coordinates,
- Project has dedicated commissioning certificate and connection point,
- Project is associated with energy meters which are dedicated to the generation/feeding pointwith the grid.

Hence the UCR project activity has never been issued voluntary carbon credits for the current 2013- 2023 vintage years and there is no double counting of the credits envisioned. Additionally, the same has been stated in the undertaking provided in the Double Counting Avoidance Assurance Document (DAA) by M/s Daund sugar private Ltd.(DSPL)

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

The spatial extent of the project boundary encompasses:
All plants generating power and/or heat located at the project site, whether fired with biomass, fossil fuels or a combination of both.
All power plants connected physically to the electricity system (grid) that he project plant is connected to.

The means of transportation of biomass to the project site if the feedstock is biomass residues, the site where the biomass residues would have been left for or dumped.



	Source	**GHG**	**Included?**	**Justification/Explanation**
Baseline	GHG Emissions from fossil fuel in Grid Baseline Power Generation Uncontrolled burning or decay of surplus biomass residue	CO2	**Included**	Major source of GHG emissions
		CH4	Excluded	Excluded for simplification. This is conservative
		NO2	Excluded	Excluded for simplification. This is conservative
		CO2	Excluded	Excluded for simplification. This is conservative
		CH4	Excluded	Excluded for simplification. This is conservative
		No2	Excluded	Excluded for simplification. This is conservative
Project Activity	Emissions from Biomass Project Activity On-site fossil fuel and electricity consumption due to the project activity (stationary or mobile) Off-site transportation	CO2	**Included**	Beginning of the sugarcane season the small amount of fossil fuel / electricity are consumed at the project site due to the project activity. No biomass residue from off-site will be used for the project activity. Excluded for simplification. This is conservative

	of biomass residue Combustion of biomass residue for electricity and / or heat generation	CH4	Excluded	No fossil fuel / electricity is consumed at the project site due to the project activity. No biomass residue from off-site will be used for the project activity Excluded for simplification. This is conservative.
	Storage of biomass residue	NO2	Excluded	Excluded for simplification. This is conservative

B.5 Establishment and description of baseline scenario >>

❖ Emission reductions are calculated as follows:

$ERy = BEy - PEy - LEy$ (Eq.1) Where,

ERy = Emissions reductions in year y (tCO2)

BEy = Baseline emissions in year y (tCO2)

PEy = Project emissions in year y (tCO2)

LEy = Leakage emissions in year y (tCO2)

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. The baseline emissions due to displacement of electricity are determined by net quantity of electricity generation as a result of the project activity (incremental to baseline generation) during the year y in MWh times the CO_2 emission factor for the electricity displaced due to the project activity during the year y in tons CO_2/MWh Given that steam and electric power generation for internal consumption is part of the present project activity, emission reductions are only claimed from on-site incremental power generation that is injected to the grid. Therefore, the base line scenario is the emission of GHG from the present energy grid.

Emission Reductions (ERy) 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:

ERy = BEy - (PEy + LEy) Equation-(1)

BE_y = Baseline emissions in year y (tCO2e)

As mentioned in the methodology the baseline emissions are calculated as follows:

BE_y= EGpj, y*EF grid, y Equation (2)

BE_y = 57072 * 0.9 = 51,364 (tCO2e/yr)

Where:

$EG_{grid,y}$=Quantity of net electricity generation that is fed into the local grid as a result of the implementation of the project activity in year y (MWh)

$EF_{grid,y}$=The CO2 emission factor for grid connected power generation in year y calculated using UCR Standard emission factor (0.9 tCO2/MWh).

Project Emission:

❖ Project Emissions is calculated as follow:

$$PE_y = PE_{Biomass,y} + PE_{FF,y} + PE_{GR1,y} + PE_{GR2,y} + PE_{CBR,y} + PE_{BG}$$

Where,

PE_y	=	Project emissions in year *y* (tCO_2)
$PE_{Biomass,y}$	=	Project emissions associated with the biomass and biomass residues inyear *y* ($t CO_2$)
$PE_{FF,y}$	=	Emissions during the year *y* due to fossil fuel consumption at the project site ($t CO_2$)
$PE_{GR1,y}$	=	Emissions during the year *y* due to grid electricity imports to the projectsite ($t CO_2$)
$PE_{GR2,y}$	=	Emissions due to are reduction in electricity generation at the project site in year *y* ($t CO_2$)
$PE_{CBR,y}$	=	Emissions from the combustion of biomass during the year *y*($t CO_2e$)
$PE_{BG2,y}$	=	Emissions from the production of biogas in year *y* (tCO_2e)

In this project activity electricity is imported from the grid ($PE_{GR1, y}$) which will count as project emissions. This amount will be deducted from the total value of emission reduction post-ante.

For large-scale project activities**, a net-to-gross adjustment of** 10%**, i.e. the emission reductions determined based on the applied methodology by** 0.9 **to determine the final amount of emission reductions that can be claimed per vintage.**

Therefore,

PE_y = 51,356 * 10% Equation (3)

PEy = 5136 (tCO_2e/yr)

$\boldsymbol{PE_{FF,y}}$**=** Emissions during the year *y* due to fossil fuel consumption at the project site (t CO_2)

CO2 emissions from fossil fuel combustion in process j are calculated based on the quantity of fuels combusted and the CO2 emission coefficient of those fuels, as follows:

$\boldsymbol{PEFC,j,y} = \sum FCi,j,y \times COEFi,y\ i$

Where:

$PEFC,,$ = Are the CO2 emissions from fossil fuel combustion in process j during the year y (tCO2/yr)

$FCi,,$ = Is the quantity of fuel type i combusted in process j during the year y (mass or volume unit/yr)

$COEFi,$ = Is the CO2 emission coefficient of fuel type i in year y (tCO2/mass or volume unit)

i = Are the fuel types combusted in process j during the year y

$\boldsymbol{COEFi, = NCVi, \times EFCO2,}$

Where:

$\boldsymbol{COEFi,}$ = Is the CO2 emission coefficient of fuel type i in year y (tCO2/mass or volume unit)

$\boldsymbol{NCVi,}$ = Is the weighted average net calorific value of the fuel type i in year y (GJ/mass or volume unit)

= NCV of wood is 15.5 TJ/kg (15.5 GJ/ton)

$\boldsymbol{EFCO2,}$ = Is the weighted average CO2 emission factor of fuel type i in year y (tCO2/GJ)

= Co2 emission coefficient For wood is 100500 kg/TJ (0.1005 ton/GJ)

(Confirmed from IPCC default values at the upper limit of the uncertainty at a 95% confidence interval as provided in table 1.4 of Chapter1 of Vol. 2 (Energy) of the 2006 IPCC Guidelines on National GHG)

i = Are the fuel types combusted in process j during the year y

= fuel type combusted in process is wood.

$\boldsymbol{COEFi,} = NCVi, \times EFCO2,,$

= 15.5 * 0.1005

= 1.557

$\boldsymbol{PEFC,j,y} = \sum FCi,j,y \times COEFi,y\ i$

= 127 * 1.557

= 198 tCO2/yr

Leakage Emission:

It is an integrated Co-gen plant. The biomass is the output of the sugar mill, which is being consumed by the power plant as a source of fuel. Therefore, there is no leakage due to cultivation of biomass in a dedicated plantation. As it is integrated Co-gen power plant, there is no leakage due to transportation of biomass from outside of project activity.
Also, biomass is not processed outside of project boundary hence there are no leakage emissions being generated.

LEy = 0 Equation (4)

ERy = BEy - (PEy + LEy)

= 51,356 – (5136+198+0)

ERy **= 46,022 tCO2/Yr**

Prior History >>

The UCR project activity had been Applied as a CDM project activity under the title: 18 MW bagasse project by Daund Sugar Limited by the PP.

CDM Application Date 21/04/2009.
CDM Crediting Period from 1 Jan 2011 for 10 Years.
Project was not registered in CDM.

B.6 Changes to start date of crediting period >>

The start date of crediting period is 01-01-2013.

B.7 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.8 Monitoring period number and duration >>

First Issuance Period	:	11 Years.
Crediting Period	:	01-01-2013 to 31-12-2023
Monitoring Period	:	01-01-2013 to 31-12-2023

Monitoring Plan

Data and Parameters to be monitored

The monitoring of electricity data revolves around the power generation from the turbine generators and the auxiliary consumption of the power plant. All auxiliary units at the power plant are metered and there are also main meters attached to each turbine generator to determine their total generation.

Operational records and other evidences have been documented, collected and archived in either hard-copies or electronic manners. The energy generation is metered by calibrated meters. The biomass consumption is measured by Weigh Bridge calibrated. Steam quantity, temperature and pressure are measured by calibrated meters. The date of calibration and next due date of calibration can be checked against the calibration certificates. All the values can be checked from the source data i.e. plant records. The calorific value of biomass can be checked in the internal lab of DSPL.

The total amount of bagasse generated by the sugar plant can be calculated from the amount of cane crushed in the season (monitored variable), which is obtained from the in house records. Therefore, bagasse can be calculated using the formula:

Bagasse = Cane + Added water – Juice

This quantity will be cross-checked using an annual energy balance using the monitored steam values. The total heat generated as well as the heat generated by the project activity is monitored using the temperature and pressure values and calculating the enthalpies of the steam generated and the feed water.

The management of the plant has designated one person to be responsible for the collation of data as per the monitoring methodology. The designated person collects all data to be monitored as mentioned in this project concept note document (PCN) and reports to the head of the plant. The overall project management responsibility remains with the Plant Head. The electricity generation from turbines and auxiliary consumption is recorded continuously on an hourly basis by the operators in the shift. At the end of the day this data is collated by the engineer in charge and signed off by the power plant manager. The data is recorded in logbooks by the operators and the engineer in charge collates the data from these log books and stores them electronically. This data is used by engineer in charge to prepare a monthly report and send it to Plant Head for verification. The monthly reports become a part of the Management Information System (MIS) and are reviewed by the management during the quarterly review meeting.

The monthly reports can be made available during the verification of the project activity, to estimate the monthly emission reductions, which are also, included in the MIS. The monitoring personnel are familiar with the process of monitoring and documentation. They have been maintaining and reviewing the factory records pertaining to the sugar manufacturing.

All the meters are checked and calibrated each year by an independent agency i.e. (MSEDCL). Hence there are no uncertainties or adjustments associated with data to be monitored. An internal audit team, comprising of personnel from the factory but from a department other than utility, reviews the daily reports, monthly reports, procedure for data recording and maintenance reports of the meters. This team checks whether all records are being maintained as per the details provided in the PCN. The audit team also enlists the modifications/corrective actions required, if any, in more accurate monitoring and reporting. All the data and reports will be kept at the offices of the sugar mill until 2 years after the end of the crediting period or the last issuance of CoUs for the project activity, whichever occurs later.

Emergency preparedness plans have been laid out to meet with situations leading to unintended emissions. These emergency situations have been identified as:

1. Fire in the fuel yard
2. Fuel spoilage due to water. These emergency situations haven been taken care by putting up a fire safety system and a water drainage system in the fuel yard.

Parameters	Description
$Q_{S,y}$	Quantity of steam supplied per year measured at recipient's end
$T_{steam,y}$	Temperature of steam at the recipient's end
$P_{steam,y}$	Pressure of steam
$E_{steam,y}$	Enthalpy of the saturated steam supplied to the recipient
$T_{Feedwater}$	Temperature of boiler feed water
$E_{Feedwater}$	Enthalpy of feed water
$EG_{thermal,y}$	Net quantity of thermal energy supplied by the project activityduring the year y
$B_{Biomass,y}$	Net quantity of biomass consumed in year y (on dry basis)
$MC_{biomass}$	Moisture content of the biomass

Monthly joint meter reading of main meters installed at interconnection points are taken and signed by authorized officials of and MSETCL on the first five day of every month. Records of this joint meter reading are maintained by M/s. Daund sugar private limited and MSETCL. Daily and monthly reports stating the net powerexport is prepared by the shift in-charge and verified by the plant manager. Power Purchase Agreement (PPA) with MSETCL has been signed. Reliability of energy data is maintained as per PPA. M/s. DSPL archives and preserves all the monthly invoices raised against net saleable energy and also archives the complete metering data at generation electronically. All the records are maintained at site. Maharashtra Pollution Control Board (MPCB) and Environment Department of Maharashtra have prescribed standards of environmental compliance and monitor the adherence to the standards M/s. Daund sugar private Limited has received the 'Consent to Operate' the plant. State's regulatory body of power is Maharashtra State Electricity Transmission Company Limited (MSEDCL) and they have issued consent for the installation of co-generation power plant of 82 MW capacity. As a buyer of the power, the MSEDCL is a major stakeholder in the project and hold the key to the commercial success of the project.

Data/Parameter	**EF grid,y**
Data unit	Grid Emission Factor
Description	tCO_2/MW_h
Source of data Value(s) applied	UCR CoU Standard Default for Indian grid 0.9 tCO_2/MW_h for the period 2013-2023
Measurement methods and procedures	NA
Monitoring frequency	NA

QA/QC	The parameter is conservative.
Purpose of data	To estimate baseline emissions

Data/Parameter	**EG project plant, y**
Data unit	MWh
Description	Net quantity of electricity generated in the project plant during the year y
Source	M/s Daund sugar private limited Ltd.-factory records (JMR / Credit notes)
Measurement methods and procedures	This value will be determined annually from the records maintained at the factory. All auxiliary units at the power plantare metered and there is also a main meters attached to each turbine generator to determine their total generation.
Monitoring frequency	The hourly recordings of data are to be taken from energy meters located at the project activity site. This data is to be recorded hourly by the shift attendant and entered into logbooks on site. This hourly data is to be signed off at the end of every shift by anengineer in charge of the shift and again at the end of each day and signed off by the power plant manager. The energy meters are calibrated annually by an independent third party Net electricity production has been calculated by deducting auxiliary consumption from gross generation of the plant. Digitalmeters calibration procedures are planned. Daily productions details are kept in log books and electronic data base. Energy meters are of class 0.2 with tolerance of 0.5%. All Meters are calibrated by accredited external third party, as per standard procedures, periodically.
QA/QC	The parameter is monitored and logged in log sheets.

Data/Parameter	**NCV_k**
Data unit	GJ/t
Description	Net Calorific Value of Biomass Residue Type *K*
Source of data Value(s) applied	Measurements will be carried out by reputed labs and reported indry biomass basis.
Measurement methods and procedures	On site and in labs
Monitoring frequency	Every month
Purpose of data	Quality control

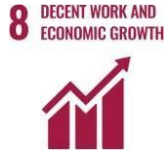
Data/Parameter	Q biomass,yr
Data unit	MT/yr
Description	The quantity of bagasse used to generate steam in the boilers each year
Source of data Value(s) applied	Plant records and log books receipts
Measurement methods and procedures	Monitoring: The quantity of biomass fed into the boiler is controlled. Data type: Measured Responsibility: Boiler Operator
Monitoring frequency	Daily / Monthly
QA/QC	The amount of biomass used can be cross checked by the Logbooks and stock inventory. Quantity of biomass / bagasse has been monitored. Biomass measuring device has an accuracy level of +/- 0.5% of full scale.

United Nations Sustainable Development Goals:

The project activity generates electrical power using Biomass, there by displacing non-renewable fossil resources resulting to sustainable, economic and environmental development. In the absence of the project activity equivalent amount of power generation would have taken place through fossil fuel dominated power generating stations. Thus, the renewable energy generation from project activity will result in reduction of the greenhouse gas emissions.

Positive contribution of the project to the following Sustainable Development Goals:

Development GoalsTargeted	**SDG Target**	**Indicator (SDG Indicator)**
SDG 7: Affordableand Clean Energy 	**7.2:** By 2030, increase substantially the share of renewable energy in the global energy mix **Target: Renewable Power in 57,072 MWh/yr**	**7.2.1**: Renewable energy share in the total final energy consumption

SDG 8: Decent Work and EconomicGrowth 	**8.5** By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value. **Target:** • Training staff annually • Employment of staff	**8.5.1**: Average hourly earnings of female and male employees, by occupation, age and persons with disabilities.
SDG 09: Industries, Infrastructure and Innovation 	**9.2:** Promote inclusive and sustainable industrialization and, by 2030, significantly raise industry's share of employment and gross domestic product, in line with national circumstances, and double its share in least developed countries	The project activity provides employment to people 115 villages in the area. **9.1.1:** It measures the proportion of the rural population who live within 2 km of an all-season road. This indicator helps assess access to infrastructure and connectivity.
SDG 13: Climate Action 	**13.2**: Integrate climate change measures into national policies, strategies and planning **Target: 46,022 quantity of tCO2 reduced /yr**	**13.2.1**: Number of countries that have communicated the establishment or Operationalization of an integrated policy/ strategy