॥ न हि ज्ञानेन सदृशं पवित्रमिह विद्यते ॥

Dr. Vitthalrao Vikhe Patil Foundation's

Dr. Vithalrao Vikhe Patil College of Engineering Ahmednagar

DTE College Code: EN-5161

A

VISIT REPORT

ON

SHRI AMBALIKA SUGAR FACTORY, BARDGAON SUDRIK, KARJAT

TECHNICAL VISIT OF

B.E. CIVIL STUDENTS

ON

27TH OCTOBER 2023

UNDER THE GUIDANCE OF

PROF. (DR.) M.P. WAGH

PROFESSOR

IN CIVIL ENGINEERING DEPARTMENT

DR. VITHALRAO VIKHE PATIL COLLEGE OF ENGINEERING

AHMEDNAGAR

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Visit Report

Sugar industry is a seasonal industry operating for maximum of 4-5 months in one season. Industry uses sugarcane as their raw material along with chemical added to increase the face value of the final product. During the process a huge amount of water is also use per day and as result industry generates wastewater (effluent) on daily basis. Wastewater from the mill house is usually contaminated with oil and grease. The spillage of oil and grease on the floor of mill house from the machinery and equipment is washed away during floor washing. The wastewater, which is generated from process house mainly results from floor and equipment washing and is highly contaminated with additives and other chemicals used at different processing stages. Boiler house mainly contributes to the production of air pollution and have little share in water pollution. Sugar industry is a large water consumer and there is no stage in sugar production where water is not required. Nevertheless, water consumption can vary due to the technology applied and the nature and quality of raw material used. Mostly water is required in the sugar mills as cooling water for barometric condensers, boiler feed water, for lime preparation, for dilution in evaporators, etc. From sugar industries various pollutant are emitted from the chimney. These pollutants are highly toxic and harmful to human being. Next chapter gives the brief information about the air pollution and its effect on human life.

Shri Ambalika Sugar Private Limited (SASPL) is a technology company with a business mix that spans sugar, specialty sugars, co-generated power, alcohol (RS), Established in 2011, Ambalika sugar is Private limited sugar industry located at Karjat. Since 2011, Shri Ambalika Sugar Private Limited (SASPL) has played a key role in making life a little sweeter. SASPL is a technology company with a business mix that spans sugar, specialty sugars, co-generated power, alcohol (RS), extra neutral alcohol (ENA), Absolute Alcohol (Ethanol).

Objective of the Visit

1. To get the core knowledge about sugar industry
2. To know the Emission of various pollutant from the industry
3. To know the working principle of electrostatic precipitator
4. To learn the working of sugar wastewater treatment plant

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Various pollutant emitted from sugar industry are summarized in table 1.

Table 1. Emission of parameters from sugar Industry

Air pollutants	**Emission per MT Sugar Cane Crushed (kg)**
PM_{10}	24.0625
SO2	1.82875
NO *x	4.8125

Table 2: Emission of air pollutant in Kushtia Sugar Mill

Air pollutants	**Emission (kg/h)**
PM_{10}	24.0625
SO2	1.82875
NO *x	4.8125

*PM10- Particulate Matter, *SO2-Sulfer Dioxides, *NOx- Nitrogen Oxides

Table 3: WHO standards vs. pollution concentration in surrounding area of sugar mill

Pollutants	**WHO Standard(μg/m³) ****	**Surrounding Area of Sugar Mills(μg/m³) ***
SO_2	100	28.3957
NO_x	150	76.1779
PM_{10}	150	380.889

(Source: *Calculation based on field survey data, **WHO, 2000)

Electrostatistic Precipitation

Electrostatic precipitation (ESP) is defined as the use of electrostatic forces to remove charged solid particles or liquid droplets from gas streams in which the particles or droplets are carried in suspension. It is one of the most popular and efficient particulate control devices and accounts for about 95% of all utility particulate controls in the United States (1). The first commercial electrostatic precipitator was designed by Walker and Hutchings and installed at a lead smelter works at Baggily, North Wales in 1885. However, this first attempt was not successful owing to inadequate power supply and poor properties of lead fume for electrostatic precipitation (i.e., small particle sizes, high temperature, and high resistivity of the particles) (2). The principle of electrostatic precipitation was first

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developed by Dr. Frederick G. Cottrell, an American chemistry instructor at the University of California in Berkley. Cottrell also developed the first successful commercial electrostatic precipitator in 1906, which was installed at an acid manufacturing plant near Pinole, California (3). The first US electrostatic precipitation patent was then issued in 1908 for which the original ESP was a single-stage, cylindrical shape with a high-voltage electrode rod suspended in the center of the cylinder. Since then, electrostatic precipitators have been used extensively to remove both solid particles and liquid droplets from stationary combustion sources and a variety of industrial processes. The ESP that we are most familiar with is based on the two-stage precipitator principle and developed in the 1930s. This allowed for reduction in ozone by utilizing the very fine tungsten wires 5–10 mils in diameter with which everyone is familiar. The thin wires operated at very low voltages (12-kVionizer and 6-kVcollector) and utilized currents of positive polarity. The compact size and lower cost for the collector were achieved by using light aluminum plates spaced about 0.25 in. apart. These basic design elements were incorporated in the "Precipitation" first marketed by Westinghouse in the late 1930s. In general, the removal efficiencies of modern electrostatic precipitators can approach 99.9% or higher (4). However, if not properly designed and/or operated, small changes in the properties of particles/droplets or the gas stream can significantly affect the removal efficiency of the electrostatic precipitators.

Principles of Operation

1. Compared to other particulate control devices, electrostatic precipitators are as elegant as they are efficient. Instead of performing work on the entire gas stream in the cleaning process, the electrostatic forces are applied directly to the suspended particles in the electrostatic fields. Current knowledge states that particles/droplets in the precipitation process are charged, transported, neutralized, and removed as briefly described below.
1. The particles/droplets are charged in passing through an ionized electrostatic field.
2. The charged particles/droplets are transported by the electrostatic force onto the surfaces of grounded collecting electrodes of opposite polarity.
3. The charged particles/droplets are neutralized while arriving at the surfaces of collecting electrodes

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4. The collected particles/droplets are removed from the surfaces of collecting electrodes by rappers, or other means, to a hopper beneath the electrostatic precipitator. Electrostatic precipitators are built in either a single stage or two stages. Single-stage precipitators are designed for the combination of discharge electrodes and collecting electrodes together in a single section and are of two basic forms. The flat surface type (also called plate–wire precipitator) consists of several grounded parallel plates that serve as collecting electrodes, together with an array of parallel high-potential wires mounted in a plane midway between each pair of plates; these wires are the corona discharge electrodes. The alternative single-stage precipitator design consists of an array of grounded cylinders or tubes that serves as collecting electrodes; coaxial to each cylinder is a high-potential wire, which is the corona discharge electrode In both forms of single-stage precipitator, the ionization and the collection of particles/droplets are achieved in a single stage; that is to say, the corona discharge and precipitating field extend over the full length of the apparatus. The two-stage precipitators differ in the sense that the ionization of particles/droplets is carried out in the first stage confined to the region around the corona discharge wires, followed by particle collection in the second stage, which provides an electrostatic field whereby the previously charged particles are migrated onto the surface of collecting electrodes (see Fig. 2C). Agas stream with suspended particles/droplets is passed between the parallel plates or through the cylinders. Assuming that a sufficient potential difference exists between the discharge and collecting electrodes, a corona will form around the wires. As a result, large numbers of negative and positive ions are formed in the corona zone near the wires. With the discharge electrodes at negative polarity, the negative ions are attracted to the wires. The particles/droplets moving with the gas stream in passing through the interelectrode space are subjected to intense bombardment by the negative ions and become highly charged in a short time (0.1 s or less). Typically, 1-µm particles/droplets will carry about 300 electron charges, whereas a 10-µm particle will carry about 30,000 electron charges (12). The charged particles/droplets, in turn, being under the influence of the high potential difference maintained between the discharge and collecting electrodes, are attracted to the

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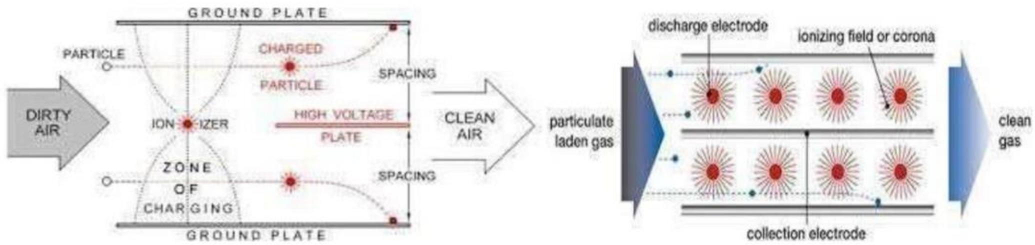
collecting electrodes and thus are separated from the gas stream. Solid particles build up a layer on the collecting surface, from which the accumulated deposit has to be periodically removed by rapping or flushing and are allowed to collect into a hopper. Liquid droplets form a film on the collecting surface, which then drips off into a sump. Single-stage precipitators have proved to be universally applicable in the cleaning of contaminated industrial gases, and two-stage precipitators are generally used for domestic and commercial indoor air cleaning, especially when low ozone generation is essential. In the following subsections, some of the fundamental aspects of precipitator operation, such as corona discharge, electrical field, particle charging, and particle collection, are analysed.



Electrostatic Precipitators (ESPs)

- An ESP is a particle control device that uses electrical forces to move the particles out of the flowing gas stream and onto collector plates.
- The ESP places electrical charges on the particles, causing them to be attracted to oppositely charged metal plates located in the precipitator.
- The particles are removed from the plates by "rapping" and collected in a hopper located below the unit.
- The removal efficiencies for ESPs are highly variable; however, for very small particles alone, the removal efficiency is about 99 percent.

Electrostatic precipitators are not only used in utility applications but also other industries (for other exhaust gas particles) such as cement (dust), pulp & paper (salt cake & lime dust), petrochemicals (sulfuric acid mist), and steel (dust & fumes)

Electrostatic precipitation has been a reliable technology since the early 1900's. Originally developed to abate serious smoke nuisances. Zinc, copper, and lead industries found ESP a cost-efficient way to recover valuable product. Today ESP are found mainly on large power plants, incinerators, cement plants, in wood products industry, ESP preceded by

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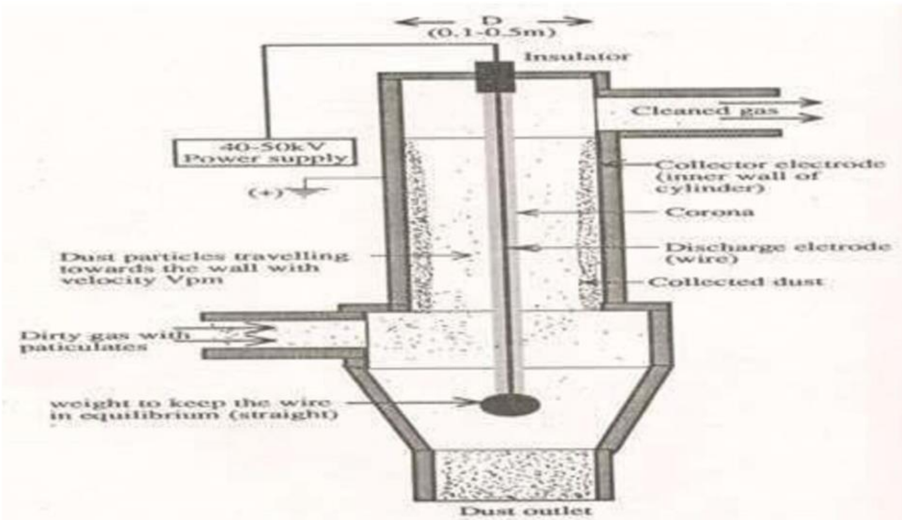
multi clones is considered the best available control technology for wood fired boiler emissions. Wet ESP have found renewed interest from particle board, and plywood veneer manufactures for controlling dryer exhaust. An ESP can consistently provide 99%+ removal reducing emissions levels to 0.002 - 0.015 grains per dry standard cubic foot of exhaust gas. Precipitators are designed to handle flow from 10,000 to 300,000 and can operate at temperatures as high as 750 degrees F. Normal gas flow through a precipitator is 2-5 feet per second, consequently, the pressure drop is only 0.5"

Electro static Precipitator



An electrostatic precipitator (ESP) is a particulate control device that uses electrical forces to move particles entrained within a waste gas stream onto collector plates. The entrained particles are given an electrical charge when they pass through a corona where gaseous ions flow. Electrodes in the centre of the flow field are maintained at high voltage and generate the electrical field that forces the particles to the collector walls. The pulsating DC voltage required is in the range of 20–100kV

Working Principle

Electrostatic precipitator is a physical process by which particles (Solid or Liquid) can be removed from the gaseous air streams. The gas stream is passed between a pair of electrodes, across which a high potential difference maintained. The electrodes are discharge electrodes at a high potential and an electrically grounded collecting electrode. Due to high potential difference, a powerful ionizing field is formed. Under

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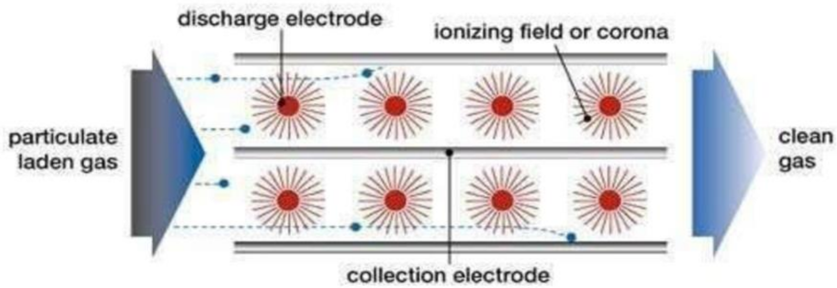
the action of electric field, gas ions formed in the corona move rapidly towards the collecting electrodes and transfer their charge to the particles by collision with them. The electrical field interacting with the charge on the particles then causes them to drift towards, and be deposited on the collecting electrode. The particles collected on collecting electrodes lose their charge and then are removed mechanically by rapping or vibration into the hopper below the electrical treatment zone and are collected for ultimate disposal. When the particles are liquid droplets coalesce on the collecting electrode and drip off the bottom of that electrode into the collecting sump.



Types of Electrostatic precipitators

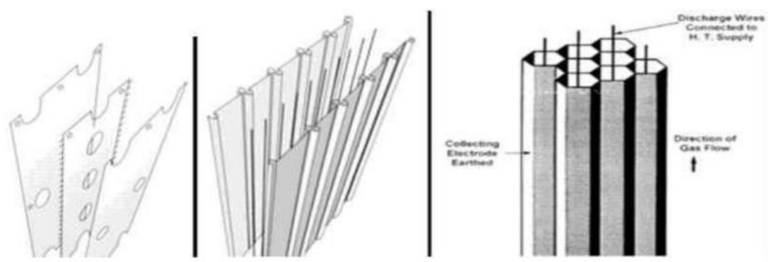


Plate-Plate Plate- Wire Tube precipitator

Operation of ESP

Dust laden gases are pushed or pulled through the box with the assistance of a fan. The air flow is channeled into lanes formed by the collection plates or tubes. Discharge electrodes are centered between each collection plate/tube to provide a negative charge to the surrounding dust particles. The collection plates/tubes are positively grounded and act as a magnet for the negatively charged dust particles. The collected dust is transported down the collection plates and electrode with the assistance of a rapper or vibrator system into the collection hopper.

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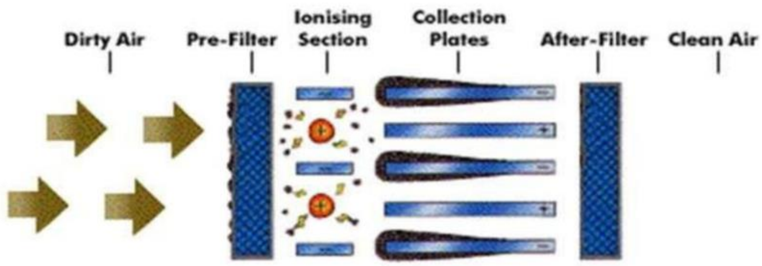

When are Electrostatic Precipitators not a suitable solution

As the size of the required precipitator increases, other technologies become more cost effective. For low sulfur utility applications, fabric filters are an attractive alternative. As part of the overall precipitator/fabric filter cost evaluation, operating costs need to be included. Typically, the pressure drops across a flange-to-flange fabric filter will be in the 6 to 8" w.c. range whereas an electrostatic precipitator will have approximately a 0.5 to 1" w.c. pressure drop. This pressure drop penalty for a fabric filter will be somewhat offset by its lower power consumption. Another benefit of a fabric filter is high acid gas, SO2, chlorides, fluorides, and Hg removal capability. When operating downstream of a spray dryer absorber, removal efficiencies of 90% or greater can be attained for some species when operating in conjunction with a fabric filter. The fabric filter dust layer acts as a fixed bed where high acid gas removal efficiency can take place. Since most of the particulate is removed from the collecting electrodes of a precipitator during normal operation, acid gas removal capability is much reduced.

ESP Advantages

They have high efficiencies (exceeds 99.9% in some applications)

- Fine dust particles are collected efficiently
- Can function at high temperatures (370 degree C – 700 degree C)
- Pressure and temperature changes are small
- Difficult material like acid and tars can be collected
- They withstand extremely corrosive material
- Low power requirement for cleaning
- Dry dust is collected making recovery of lost product easy
- Large flow rates are possible

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ESP Disadvantages

- High initial cost
- Materials with very high or low resistivity are difficult to collect
- Explosion risk with dry ESP
- Re-entrainment of dust can be a problem due to high gas resistivity
- Corrosion near the top of the wires because of air leakage and acid condensation
- High quality personal required,
- special arrangement for personal safety required
- Dry ESP is not recommended for sticky or moist particles
- Inefficiencies could arise in the system due to variable condition of airflow like flow rate, temperature, PM, gas composition (though automatic voltage control improves collector efficiency)
- They can be larger than bag houses (fabric collectors) and cartridge units, and can occupy greater space
- Material in gaseous phase cannot be removed by electrostatic method
- Dust loads may be needed to be reduced before precipitation process (pre cleaner may be needed)

Conclusion

Technical visit is essential to get the core knowledge of the subject. Following conclusion has been carried out. Sugar industry is highly polluted industry The durability of the ESP is high. It can be used for the collection of both dry and wet impurities. It has low operating costs. The collection efficiency of the device is high even for small particles. It can handle large gas volumes and heavy dust loads at low pressures. ESP Can't be used for gaseous emissions. Space requirement is more. Capital investment is high. Using ESP efficiency and productivity of the plant increase and air pollution get control Suspended particular matter (SPM) of size 2.5 particular are collected in ESP and fly ash get produce. Student gets the basic flow chart and working of sugar industry. Students gets the basic idea about the Emission of various pollutant from the industry. By the installation of Electrostatic Precipitators (ESP) suspended particular matter will be reduced up to 28.39 μg/m^3

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VISIT PHOTO GRAPHS

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Shri AMBALIKA SUGAR PVT LTD

Factory : Ambikanagar, At & Post : Jagdamba Factory,
Gat No 392, Ambikanagar, Baradgaon (Sudrik)
Tal : Karjat. Dist .: Ahmednagar - 414 403.
Regd. No U15429P.N. 2011 PTC 139507 Dt. 11-5-2011
Email : shriambalikasugar@gmail.com

Ref No. SASPL/ADMIN/ 239 /2023-24 Date – 20/10/2023

To,
The Principal,
Dr. Vithalrao Vikhe Patil College of Engineering,
Vilad Ghat, Vadgaon Gupta,
PO- MIDC, Ahmednagar.

Sub – Permission to visit Sugar factory.

Ref – Your letter No. CEA/Civil/2023/2791 dated 16/10/2023

R/Sir,

With reference to the above subject, We are permitted you to arrange the Industrial Visit of your BE Civil Engineering students to our sugar factory on dated 26th October 2023

Thanking you,

Your's faithfully,

CHIEF EXECUTIVE OFFICER

Shri AMBALIKA SUGAR

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ELECTROSTATIC PRECIPITATOR TO COLLECT THE SUSPENDED PARTICLES GENERATED FROM THE INDUSTRY

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FELICITATION OF ER. AMOL LOKHANDE

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ISO 9001 : 2015
ISO 45001 : 2018

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Tele : +91 22 2547 49 07 / +91 22 2547 62 17 Email : lab@ultratech.in Visit us at : www.ultratech.in

TEST REPORT

ISSUED TO: M/s. SHRI AMBALIKA SUGAR PVT.LTD.
Gat No.392.231,Ambalika Nagar, A/P Jagadamba Factory
Village BaradgaonBudruk, Taluka-Karjat, Ahmadnagar.

REPORT NO. : UT/ELS/REPORT/C-121/12-2022
ISSUE DATE : 13/12/2022
YOUR REF. : 280/2022-2023
REF. DATE : 04/07/2022

SAMPLE PARTICULARS : **STACK EMISSIONS QUALITY MONITORING**

Sampling Plan Ref. No.	: C-25/11-2022	**Analysis Starting Date**	: 14/11/2022
Sampling Procedure	: UT/LQMS/SOP/SE01A	**Analysis Completion Date**	: 15/11/2022
Sample Registration Date	: 14/11/2022	**Sample Lab Code**	: UT/EL3/183/11-2022
Date of Sampling	: 12/11/2022	**Sample Collected By**	: ULTRA-TECH
Time of Sampling	: 10:00 Hrs. to 11:00 Hrs.		

STACK DETAILS

Stack ID	: S-01	**Stack Height**	: 78 Meter from Ground Level
Stack Attached To	: Boiler (110 TPH)	**Stack Diameter**	: 3.0 Meter @ Sampling Point
Stack Shape	: Round	**Fuel Used**	: Bagasse
Stack MOC	: RCC	**Fuel Consumption**	: 2000 MT/Day

FLUE GAS CHARACTERISTICS

Flue Gas Temperature	: 415	°K	**Volumetric Flow Rate**	: 107643	Nm^3/hr
Flue Gas Velocity	: 6.6	m/sec	**Total Volume of Flue Gas**	: 1.000	Nm^3 (@ STP)

Sr. No.	Test Parameter	Test Method	Test Result	Unit
1.	Total Particulate Matter (TPM)	UT/LQMS/SOP/SE01	17	mg/Nm^3
2.	Sulphur Dioxide (SO_2)	IS 11255 (Part 02) : 1985	22	mg/Nm^3

Remark/ Statement of Conformity: *Nil.*

Sampling Equipment Details	Instrument Used	Make & Model	Calibration Status
	Stack Sampling Kit	Make - POLLTECH; Model PEM - SMS 4; Sr. No. 2613	Valid up to – 12/01/2023

Note:
1. Samples were collected by following laboratory's SOP (UT/LQMS/SOP/SE01A) based on CPCB Guidelines - On methodologies For Source Emission Monitoring – CPCB (Laboratory analysis Techniques - LATS /80/2013-14 and respective test methods.
2. This test report refers only to the sample tested.
3. This test report is valid at the time of and under the conditions specified herein
4. This test report may not be reproduced in part, without the permission of this laboratory.
5. Any correction invalidates this test report.

– END OF REPORT –

ULTRA-TECH Environmental Consultancy & Laboratory, Gazetted by Govt. of India, THANE (W) INDIA PIN-400 601

For ULTRA-TECH,

Meghan Patil
(Authorized Signatory)

H.O.: Unit No. 224,225,206, Jai Commercial Complex, Eastern Express Highway, Opp. Cadbury Factory, Khopat, Thane (W) 400 601, Maharashtra, India.
Tel : +91-22+2538 01 98 / 2545 03 72 / 2544 62 51 Fax : +91-22-2542 96 50 Email : sales@ultratech.in
Pune : +91-20-29525517 - pune@ultratech.in Kochi : +91-048-44011173 / +91-9895200526 - kochi@ultratech.in
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QCI-NABET Accredited EIA Consulting Organization
STP/ETP/WTP Project Management Consultants

ISO 9001 : 2015
ISO 45001 : 2018

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Tele : +91 22 2547 49 07 / +91 22 2547 62 17 **Email :** lab@ultratech.in **Visit us at :** www.ultratech.in

TEST REPORT

ISSUED TO: M/s. SHRI AMBALIKA SUGAR PVT.LTD.
Gat No.392.231,Ambalika Nagar, A/P Jagadamba Factory
Village BaradgaonBudruk, Taluka-Karjat, Ahmadnagar.

REPORT NO. : UT/ELS/REPORT/C-122/12-2022
ISSUE DATE : 13/12/2022
YOUR REF. : 280/2022-2023
REF. DATE : 04/07/2022

SAMPLE PARTICULARS : **STACK EMISSIONS QUALITY MONITORING**

Sampling Plan Ref. No.	: C-25/11-2022	**Analysis Starting Date**	: 14/11/2022
Sampling Procedure	: UT/LQMS/SOP/SE01A	**Analysis Completion Date**	: 15/11/2022
Sample Registration Date	: 14/11/2022	**Sample Lab Code**	: UT/ELS/186/11-2022
Date of Sampling	: 12/11/2022	**Sample Collected By**	: ULTRA-TECH
Time of Sampling	: 11:30 Hrs. to 12:30 Hrs.		

STACK DETAILS

Stack ID	: S-02	**Stack Height**	: 73 Meter from Ground Level
Stack Attached To	: Boiler (90 TPH)	**Stack Diameter**	: 3.0 Meter @ Sampling Point
Stack Shape	: Round	**Fuel Used**	: Bagasse
Stack MOC	: RCC	**Fuel Consumption**	: 200MT/Day

FLUE GAS CHARACTERISTICS

Flue Gas Temperature	: 418	^0K	**Volumetric Flow Rate**	: 99801	Nm^3/hr
Flue Gas Velocity	: 6.1	m/sec	**Total Volume of Flue Gas**	: 1.000	Nm^3 (@ STP)

Sr. No.	Test Parameter	Test Method	Test Result	Unit
1.	Total Particulate Matter (TPM)	UT/LQMS/SOP/SE01	24	mg/Nm^3
2.	Sulphur Dioxide (SO_2)	IS 11255 (Part 02) : 1985	32	mg/Nm^3

Remark/ Statement of Conformity: *Nil.*

Sampling Equipment Details	Instrument Used	Make & Model	Calibration Status
	Stack Sampling Kit	Make - POLLTECH; Model PEM - SMS 4; Sr. No. 2613	Valid up to – 12/01/2023

Note: 1. Samples were collected by following laboratory's SOP (UT/LQMS/SOP/SE01A) based on CPCB Guidelines - On methodologies For Source Emission Monitoring – CPCB (Laboratory analysis Techniques - LATS /80/2013-14 and respective test methods.
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– END OF REPORT –

For **ULTRA-TECH,**
Meghan Patil
(Authorized Signatory)

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Sign. of HOD-Civil
Head of Department
Dept & Civil Engineering
D.V.V.P..C.O.E. Ahmednagar

PRINCIPAL
Dr. Vithalrao Vikhe Patil
College of Engineering
Ahmednagar

TEST REPORT

ISSUED TO: M/s. SHRI AMBALIKA SUGAR PVT.LTD.
Gat No.392.231,Ambalika Nagar, A/P Jagadamba Factory
Village BaradgaonBudruk, Taluka-Karjat, Ahmadnagar.

REPORT NO. : UT/ELS/REPORT/C-123/12-2022
ISSUE DATE : 13/12/2022
YOUR REF. : 280/2022-2023
REF. DATE : 04/07/2022

SAMPLE PARTICULARS :

Sampling Plan Ref. No. : C-25/11-2022
Sampling Procedure : UT/LQMS/SOP/SE01A
Sample Registration Date : 14/11/2022
Date of Sampling : 12/11/2022
Time of Sampling : 13:30 Hrs. to 14:30 Hrs.

STACK EMISSIONS QUALITY MONITORING

Analysis Starting Date : 14/11/2022
Analysis Completion Date : 15/11/2022
Sample Lab Code : UT/ELS/187/11-2022
Sample Collected By : ULTRA-TECH

STACK DETAILS

Stack ID : S-03
Stack Attached To : DG (1000 KVA)
Stack Shape : Round
Stack MOC : MS
Stack Height : 2.5 Meter from Ground Level
Stack Diameter : 0.1016Meter @ Sampling Point
Fuel Used : Diesel
Fuel Consumption : 90Lit/Day

FLUE GAS CHARACTERISTICS

Flue Gas Temperature : 438 °K
Flue Gas Velocity : 7.3 m/sec
Volumetric Flow Rate : 129 Nm^3/hr
Total Volume of Flue Gas : 1.000 Nm^3 (@ STP)

Sr. No.	Test Parameter	Test Method	Test Result	Unit
1.	Total Particulate Matter (TPM)	UT/LQMS/SOP/SE01	16	mg/Nm^3
2.	Sulphur Dioxide (SO_2)	IS 11255 (Part 02) : 1985	11	mg/Nm^3

Remark/ Statement of Conformity: *Nil.*

Sampling Equipment Details	Instrument Used	Make & Model	Calibration Status
	Stack Sampling Kit	Make - POLLTECH; Model PEM - SMS 4; Sr. No. 2613	Valid up to – 12/01/2023

Note:
1. Samples were collected by following laboratory's SOP (UT/LQMS/SOP/SE01A) based on CPCB Guidelines - On methodologies For Source Emission Monitoring – CPCB (Laboratory analysis Techniques - LATS /80/2013-14 and respective test methods.
2. This test report refers only to the sample tested.
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ULTRA-TECH Gazetted by MoEF Govt. of India THANE (W) INDIA PIN 400 601 ENVIRONMENTAL CONSULTANCY

For **ULTRA-TECH,**

Meghan Patil
(Authorized Signatory)

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ULTRA TECH
Environmental Consultancy & Laboratory
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QCI-NABET Accredited EIA Consulting Organization
STP/ETP/WTP Project Management Consultants

ISO 9001 : 2015
ISO 45001 : 2018

Lab :Survey No. 93/A, Conformity Hissa No.2 G.V.Brothers Bldg., Bata Compound, Khopat, Near Flower Valley, Thane (West) - 400 601, Maharashtra, India.
Tele : +91 22 2547 49 07 / +91 22 2547 62 17 **Email** : lab@ultratech.in **Visit us at** : www.ultratech.in

TEST REPORT

ISSUED TO: M/s. SHRI AMBALIKA SUGAR PVT.LTD.
Gat No.392.231,Ambalika Nagar, A/P Jagadamba Factory
Village BaradgaonBudruk, Taluka-Karjat, Ahmadnagar.

REPORT NO. : UT/ELS/REPORT/C-124/12-2022
ISSUE DATE : 13/12/2022
YOUR REF. : 280/2022-2023
REF. DATE : 04/07/2022

SAMPLE PARTICULARS : **STACK EMISSIONS QUALITY MONITORING**

Sampling Plan Ref. No.	: C-25/11-2022	**Analysis Starting Date**	: 14/11/2022
Sampling Procedure	: UT/LQMS/SOP/SE01A	**Analysis Completion Date**	: 15/11/2022
Sample Registration Date	: 14/11/2022	**Sample Lab Code**	: UT/ELS/188/11-2022
Date of Sampling	: 12/11/2022	**Sample Collected By**	: ULTRA-TECH
Time of Sampling	: 15:00 Hrs. to 16:00 Hrs.		

STACK DETAILS

Stack ID	: S-04	**Stack Height**	: 2.5 Meter from Ground Level
Stack Attached To	: DG (1000 KVA)	**Stack Diameter**	: 0.1016Meter @ Sampling Point
Stack Shape	: Round	**Fuel Used**	: Diesel
Stack MOC	: MS	**Fuel Consumption**	: 90Lit/Day

FLUE GAS CHARACTERISTICS

Flue Gas Temperature	: 440	°K	**Volumetric Flow Rate**	: 133	Nm^3/hr
Flue Gas Velocity	: 7.5	m/sec	**Total Volume of Flue Gas**	: 1.000	Nm^3 (@ STP)

Sr. No.	Test Parameter	Test Method	Test Result	Unit
1.	Total Particulate Matter (TPM)	UT/LQMS/SOP/SE01	19	mg/Nm^3
2.	Sulphur Dioxide (SO_2)	IS 11255 (Part 02) : 1985	10	mg/Nm^3

Remark/ Statement of Conformity: *Nil.*

Sampling Equipment Details	Instrument Used	Make & Model	Calibration Status
	Stack Sampling Kit	Make - POLLTECH; Model PEM - SMS 4; Sr. No. 2613	Valid up to – 12/01/2023

Note:
1. Samples were collected by following laboratory's SOP (UT/LQMS/SOP/SE01A) based on CPCB Guidelines - On methodologies For Source Emission Monitoring – CPCB (Laboratory analysis Techniques - LATS /80/2013-14 and respective test methods.
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ULTRA-TECH Environmental Consultancy & Laboratory, Gazetted by MoEF Govt. of India, THANE (W) INDIA PIN-400 601

For ULTRA-TECH,
Meghan Patil
(Authorized Signatory)

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TEST REPORT

ISSUED TO: M/s. SHRI AMBALIKA SUGAR PVT.LTD. Gat No.392.231,Ambalika Nagar, A/P Jagadamba Factory Village BaradgaonBudruk, Taluka-Karjat, Ahmadnagar.		**REPORT NO.** **ISSUE DATE** **YOUR REF.** **REF. DATE**	: UT/ELS/REPORT/C-125/12-2022 : 13/12/2022 : 280/2022-2023 : 04/07/2022

SAMPLE PARTICULARS : **STACK EMISSIONS QUALITY MONITORING**

Sampling Plan Ref. No.	: C-25/11-2022	**Analysis Starting Date**	: 14/11/2022
Sampling Procedure	: UT/LQMS/SOP/SE01A	**Analysis Completion Date**	: 15/11/2022
Sample Registration Date	: 14/11/2022	**Sample Lab Code**	: UT/ELS/189/11-2022
Date of Sampling	: 13/11/2022	**Sample Collected By**	: ULTRA-TECH
Time of Sampling	: 10:30 Hrs. to 11:30 Hrs.		

STACK DETAILS

Stack ID	: S-05	**Stack Height**	: 73 Meter from Ground Level
Stack Attached To	: Boiler(30TPH)	**Stack Diameter**	: 3.0 Meter @ Sampling Point
Stack Shape	: Round	**Fuel Used**	: Coal
Stack MOC	: RCC	**Fuel Consumption**	: 65 MT/Day

FLUE GAS CHARACTERISTICS

Flue Gas Temperature	: 407	°K	**Volumetric Flow Rate**	: 116411	Nm^3/hr
Flue Gas Velocity	: 7.0	m/sec	**Total Volume of Flue Gas**	: 1.000	Nm^3 (@ STP)

Sr. No.	Test Parameter	Test Method	Test Result	Unit
1.	Total Particulate Matter (TPM)	UT/LQMS/SOP/SE01	14	mg/Nm^3
2.	Sulphur Dioxide (SO_2)	IS 11255 (Part 02) : 1985	22	mg/Nm^3

Remark/ Statement of Conformity: *Nil.*

Sampling Equipment Details	Instrument Used	Make & Model	Calibration Status
	Stack Sampling Kit	Make - POLLTECH; Model PEM - SMS 4; Sr. No. 2613	Valid up to – 12/01/2023

Note:
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For ULTRA-TECH,
[signature]
Meghan Patil
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TEST REPORT

ISSUED TO: M/s. SHRI AMBALIKA SUGAR PVT.LTD. Gat No.392.231,Ambalika Nagar, A/P Jagadamba Factory Village BaradgaonBudruk, Taluka-Karjat, Ahmadnagar.		**REPORT NO.** **ISSUE DATE** **YOUR REF.** **REF. DATE**	: UT/ELS/REPORT/C-126/12-2022 : 13/12/2022 : 280/2022-2023 : 04/07/2022

SAMPLE PARTICULARS : **STACK EMISSIONS QUALITY MONITORING**

Sampling Plan Ref. No.	: C-25/11-2022	**Analysis Starting Date**	: 14/11/2022
Sampling Procedure	: UT/LQMS/SOP/SE01A	**Analysis Completion Date**	: 15/11/2022
Sample Registration Date	: 14/11/2022	**Sample Lab Code**	: UT/ELS/190/11-2022
Date of Sampling	: 13/11/2022	**Sample Collected By**	: ULTRA-TECH
Time of Sampling	: 12:00 Hrs. to 13:00 Hrs.		

STACK DETAILS

Stack ID	: S-06	**Stack Height**	: 1.5 Meter from Ground Level
Stack Attached To	: DG Set (250 KVA)	**Stack Diameter**	: 0.1016Meter @ Sampling Point
Stack Shape	: Round	**Fuel Used**	: Diesel
Stack MOC	: MS	**Fuel Consumption**	: 30lit/day

FLUE GAS CHARACTERISTICS

Flue Gas Temperature	: 428	°K	**Volumetric Flow Rate**	: 121	Nm^3/hr
Flue Gas Velocity	: 6.7	m/sec	**Total Volume of Flue Gas**	: 1.000	Nm^3 (@ STP)

Sr. No.	Test Parameter	Test Method	Test Result	Unit
1.	Total Particulate Matter (TPM)	UT/LQMS/SOP/SE01	12	mg/Nm^3
2.	Sulphur Dioxide (SO_2)	IS 11255 (Part 02) : 1985	6	mg/Nm^3

Remark/ Statement of Conformity: *Nil.*

Sampling Equipment Details	Instrument Used	Make & Model	Calibration Status
	Stack Sampling Kit	Make - POLLTECH; Model PEM - SMS 4; Sr. No. 2613	Valid up to – 12/01/2023

Note:
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