

BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL,

Principal Bench, New Delhi

Original Application No. 640/2018

In

(Earlier O. A. No. 22/2013(THC))

**In the matter of: -**

Sukhdev Vihar Residents  
Welfare Association

Applicant(s)

Versus

State Of NCT of Delhi

Respondent(s)

**Index**

Sr. No.	Particulars	Page No.
1.	<b>Compliance Report</b> of Waste to Energy Plants in Delhi in Original Application No. 640/2018 (Earlier O. A. No. 22/2013(THC)) in the matter of Sukhdev Vihar Residents Welfare Association Vs State Of NCT of Delhi in compliance to the Hon'ble NGT orders dated 09.10.2017 & 27.09.2018 respectively.	
2.	<b>Annexure-I:</b> A copy of Hon'ble NGT orders dated 09.10.2017 & 27.09.2018.	

  
(Divya Sinha)  
Scientist-E

Central Pollution Control Board,  
Parivesh Bhawan, East Arjun Nagar,  
Delhi- 110032.

Date: 22.03.2021  
Place: Delhi

# **Compliance Report of Waste to Energy Plants in Delhi**

**(Period: September-October, 2020)**

As per Hon'ble NGT Vide its Order dated 09/10/2017, in OA No. 22 of 2013 THC & dated September, 27, 2018 in OA No. 640/2018 (Earlier OA No. 22/2013)



## **CENTRAL POLLUTION CONTROL BOARD**

*(Ministry of Environment, Forest & Climate Change, Govt. of India)*

'Parivesh Bhawan' C.B.D. Cum-Office Complex,

East Arjun Nagar, Shahdara, Delhi-110032

E-mail:divsinha@yahoo.com, Website- [www.cpcb.nic.in](http://www.cpcb.nic.in)

**March, 2021**

## 1. Background

1.1. Hon'ble NGT in its order dated 09/10/2017 in OA No. 22 of 2013 T<sub>HC</sub>, directed Central Pollution Control Board to collect and analyse the samples of ambient air quality once in four months, and they shall also conduct at least two surprise inspections and analysis be made in a year from M/s. Timarpur Okhla Waste Management Company Ltd.

1.2. Further Hon'ble NGT vide its order dated September, 27, 2018 in OA No. 640/2018 (Earlier OA No. 22/2013), issued the following directions:

- i. *In pursuance of earlier order of this Tribunal dated 18.04.2018, joint inspection of Waste to Energy (WtE) Plants at Delhi has been conducted by the CPCB and the DPCC. Findings of reports are that WtE plants at Okhla, Ghazipur and Bawana are non-compliant with respect to the standards of Particulate matter.*
- ii. *"Directed CPCB to send a copy of its report to the project proponents of Okhla, Ghazipur and Bawana Waste to Energy Plant for compliance and conduct another inspection within one month in view of the fact that the earlier inspection was in February, 2018 and requirement of carrying out inspection is in every 4 months We do not find any ground to accept the prayer for reliving CPCB of its requirement in four monthly monitoring. If there is a manpower constraint, it is for the CPCB to make any other appropriate arrangement for discharging its functions. This cannot be the ground to avoid responsibility under the binding directions of this Tribunal"*
- iii. *"It is made clear that if the project proponents fail to maintain the standards, even after carrying out the deficiencies noticed in the joint inspection Report, CPCB may recommend the amount of environmental damage required to be paid by them".*

In view of above directions, monitoring was planned during September & October, 2020 of Okhla, Bawana & Gazipur WtE plants. However, due to non-working of the Waste to Energy Plant Ghazipur on 16.09.2020 monitoring could not be carried out. The remaining two plants viz. Okhla & Bawana were subsequently monitored by CPCB & DPCC joint inspection team during September, 21-22, 2020 and September 24-25, 2020 respectively. The members of joint committee i.e. representatives from MoEF & CC, expert from IIT Delhi and representative of Sukhdev Vihar RWA (For Okhla Waste to Energy Plant) were informed vide email dated September 11, 2020 regarding the inspection schedule. Representative from MoEF & CC, expert from IIT Delhi were not present during the inspection of Waste to Energy Plants Okhla & Bawana and representative of RWA Sukhdev Vihar was not present during inspection of Okhla. Further, subsequent to Ghazipur Plant becoming

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operational, joint inspection team from CPCB, DPCC and expert from IIT, Delhi monitored the plant on October 13-14, 2020. The inspection reports of the three WtE plants is given in the following sections.

PWA

A. Jay

R. L.



## Waste to Energy Plant Okhla

### CENTRAL POLLUTION CONTROL BOARD, DELHI



1	Name and address of the industry     Coordinates (Longitude & Latitude)	M/s Timarpur Okhla Waste Management Company Limited,  Old NDMC Compost Plant, Behind CRRI, Mathura Road, New Delhi-110025  Lat. 28.553672 & Long. 77.280838															
2.	Name of the occupier/contact person with   Telephone Fax E-mail	Mr. Sandeep Dutt   Mob. 09958360016  <a href="mailto:Sandip.dutt@jindalopolis.com">Sandip.dutt@jindalopolis.com</a>															
3.	Date of inspection / monitoring	September 21-22, 2020															
4.	Installed processing Capacity (as per consent)	As per DPCC Authorization letter dated 21.05.2020 the unit has capacity to process 1950 TPD MSW for subsequent generation of 23 MW power.															
5.	Production status (on date of inspection)	Operational															
6	Actual Power Generation	Details of power generation ranges during the said inspection															
	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2" style="width: 20%;">Date</th> <th colspan="3" style="text-align: center;">Power Generation (MW)</th> </tr> <tr> <th style="width: 20%;">Time</th> <th style="width: 20%;">Minimum</th> <th style="width: 20%;">Maximum</th> </tr> </thead> <tbody> <tr> <td>21.09.2020</td> <td>6 AM to 6 PM</td> <td style="text-align: center;">18.94</td> <td style="text-align: center;">21.61</td> </tr> <tr> <td>22.09.2020</td> <td>6 AM to 6 PM</td> <td style="text-align: center;">18.68</td> <td style="text-align: center;">21.11</td> </tr> </tbody> </table>	Date	Power Generation (MW)			Time	Minimum	Maximum	21.09.2020	6 AM to 6 PM	18.94	21.61	22.09.2020	6 AM to 6 PM	18.68	21.11	
Date	Power Generation (MW)																
	Time	Minimum	Maximum														
21.09.2020	6 AM to 6 PM	18.94	21.61														
22.09.2020	6 AM to 6 PM	18.68	21.11														

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7.	<p><b>Process Flow Diagram</b></p> <p>The unit has own segregation setup of MSW having two trommels with ballastic separators for segregation of MSW and production of RDF. The detailed materials flow sheet is as given below:</p> <pre> graph TD     MSW["MSW (100%)"] --&gt; INERT["INERT (15±7%)"]     MSW --&gt; RDF["RDF (80±10%)"]     MSW --&gt; Recyclables["Recyclables (~0.1%)"]     MSW --&gt; Leachate["Leachate (5±2%)"]     MSW --&gt; Compost["Compost Fraction (~0.1%)"]     INERT --&gt; Landfill["Landfill"]     RDF --&gt; Boilers["Boilers (3 Nos)"]     Recyclables --&gt; Recyclers["To Recyclers"]     Leachate --&gt; LTP["Leachate Treatment Plant (MEE)"]     Compost --&gt; Disposal[" "]     Boilers --&gt; Heat["Heat"]     LTP --&gt; Concentrate["Concentrate"]     LTP --&gt; Condensate["Condensate"]     Heat --&gt; Electricity["Electricity"]     Concentrate --&gt; Boilers     Condensate --&gt; Reused["Reused as process water"]     Electricity --&gt; Grid["Grid"] </pre>
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8. Air Pollution – Emission Sources & Control			
Sources of air pollution	Chimney Details	APC Equipment	Emission Quality
Stack of the Waste to Energy plant (Three boilers connected to one stack)	60 mtrs	Scrubber followed by bag filters	Stack Monitoring Conducted by CPCB team & results are tabulated at <b>Table - 1</b>
9.	OCEMS Status	Installed with stack & was found operational during the inspection.	
10	Ambient Air Quality (Conducted at two locations namely Sukhdev Vihar & STP Okhla)	Ambient Air Quality Status are tabulated at <b>Table-2</b>	

11.	Continuous Ambient Air Quality Station	CAAQMS not yet installed
12.	Bottom Ash & Fly Ash	Analysis results of LOI and heavy metals in Bottom ash and Fly ash are tabulated at <b>Table-3</b>

**Table 1: Analysis results of the stack emission monitoring of the WtE plant Okhla**

S. No.	Parameters	Monitor by	Standards as per Consent to Operate issued by DPCC	Standards as per Solid Waste Management Rules, 2016,	Date of Sampling	Measured values	
					21-22 September, 2020	Stack	
1.	PM	CPCB	30 mg/Nm <sup>3</sup>	50 mg/Nm <sup>3</sup>		10.7	4.4
2.	Hydrogen Chloride		50 mg/Nm <sup>3</sup>	50 mg/Nm <sup>3</sup>		198	
3.	SO <sub>2</sub>		100 mg/Nm <sup>3</sup>	200 mg/Nm <sup>3</sup>		BDL	BD L
4.	NO <sub>x</sub> (NO and NO <sub>2</sub> expressed as NO <sub>2</sub> )		350 mg/Nm <sup>3</sup>	400 mg/Nm <sup>3</sup>		90.3	85.6
5.	CO		100 mg/Nm <sup>3</sup>	100 mg/Nm <sup>3</sup>		1.8	
6.	HF		0.5 mg/Nm <sup>3</sup>	4 mg/Nm <sup>3</sup>		BDL	
7.	Sb + As + Pb + Cr+ Co+ Cu+ Mn + Ni+ V+ their compounds		0.5 mg/Nm <sup>3</sup>	0.5 mg/Nm <sup>3</sup>		0.012	
8.	Cd + Th +their compounds		0.05 mg/Nm <sup>3</sup>	0.05 mg/Nm <sup>3</sup>		-	
9.	Pb		0.1 mg/Nm <sup>3</sup>	Not prescribed		0.004	
10.	Hg		0.02 mg/Nm <sup>3</sup>	0.05 mg/Nm <sup>3</sup>		BDL	
11.	Dioxin & Furans	M/s SRI, Delhi	0.1 ngTEq/Nm <sup>3</sup>	0.1 ngTEq/Nm <sup>3</sup>	22-10.2020	0.99	
12.	Total Organic Compounds(as C) at 11%O <sub>2</sub>		20mg/Nm <sup>3</sup>	20mg/Nm <sup>3</sup>		7.2	

**Table-2. 24 hourly average values of ambient air quality monitoring**

Date of sampling	Monitored by	Parameters	Prescribed Standard* (in $\mu\text{g}/\text{m}^3$ )	Measured values	
				Sukhdev Vihar Location-I	STP Okhla Location-II
21-23 September 2020	CPCB	PM <sub>10</sub>	100	85.66	72.33
		PM <sub>2.5</sub>	60	78	39
		NO <sub>2</sub>	80	41.66	28.33
		SO <sub>2</sub>	80	8.166	39

\*National ambient air quality standards as notified on dated 16.11.2009 under the Environment Protection Act, 1986.

**Table 3: Analysis results of Bottom ash and Fly ash**

Date of sampling	Parameters	Standard/Limit	Measured values	
21.09.2020	Loss on Ignition (for Bottom ash only)	<5%*	2.29%	
			Bottom Ash	Fly Ash
	Arsenic	5 mg/l <sup>#</sup>	BDL	BDL
	Cadmium	1 mg/l <sup>#</sup>	BDL	BDL
	Chromium	5 mg/l <sup>#</sup>	0.05	0.26
	Manganese	10 mg/l <sup>#</sup>	BDL	BDL
	Lead	5 mg/l <sup>#</sup>	0.03	0.05
	Selenium	1 mg/l <sup>#</sup>	BDL	BDL
	Copper	25 mg/l <sup>#</sup>	0.29	BDL
	Nickel	20 mg/l <sup>#</sup>	BDL	BDL
	Zinc	250 mg/l <sup>#</sup>	0.03	0.15
	Cobalt	80 mg/l <sup>#</sup>	BDL	BDL
	Vanadium	24 mg/l <sup>#</sup>	BDL	BDL
	Antimony	15 mg/l <sup>#</sup>	BDL	BDL

\*Standards prescribed by DPCC in the Consent to Operate.

<sup>#</sup>Concentration Limit to categorise as hazardous waste as per the Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016, notified under the Environment (Protection) Act, 1986.

**13. Status of validity & compliance of consent and authorization**

	Consent/Authorization	Validity
I	Under Water Act	Valid till 24.09.2024
II	Under Air Act	Valid till 24.09.2024



**14. Observations:**

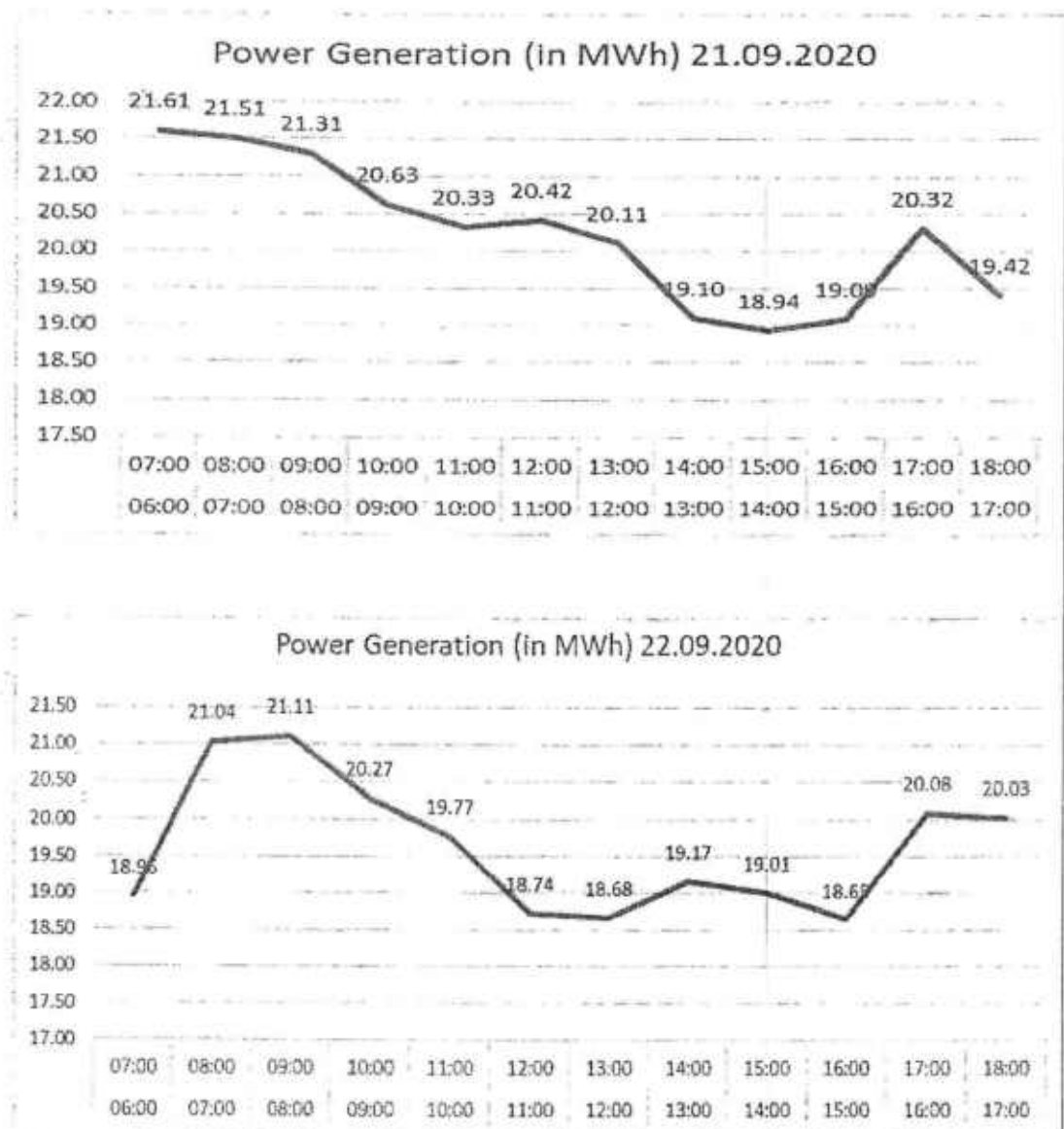
- a. The processing capacity of the plant is 1950 TPD. However as informed, the plant received only 1652.51 TPD of mixed Municipal Solid Waste (MSW) on 21.09.2020.
- b. As informed, total RDF generation in the plant is approximately 1350 TPD. As per the logbook RDF used as fuel in boilers on 21.09.2020 & 22.09.2020 is tabulated at Table 4:

**Table 4: RDF Feed Record**

RDF Feed (21-09-2020)					
S. No	Feeding Duration		Boiler 1	Boiler 2	Boiler 3
1	06:00	07:00	17.8	17.3	17.6
2	07:00	08:00	17.1	17.8	17.2
3	08:00	09:00	16.9	16.8	16.7
4	09:00	10:00	17.4	16.7	17.7
5	10:00	11:00	17.0	18.2	19.1
6	11:00	12:00	18.0	17.0	16.9
7	12:00	13:00	17.4	18.0	17.5
8	13:00	14:00	18.0	17.2	17.8
9	14:00	15:00	18.0	16.8	16.1
10	15:00	16:00	17.6	17.2	17.9
11	16:00	17:00	23.4	16.4	17.7
12	17:00	18:00	17.2	16.6	17.7
Total Feed			215.8	206.0	209.9

RDF Feed (22-09-2020)					
S. No	Feeding Duration		Boiler 1	Boiler 2	Boiler 3
1	06:00	07:00	24.8	18.2	18.5
2	07:00	08:00	17.2	18.6	18.8
3	08:00	09:00	21.6	18.0	17.7
4	09:00	10:00	17.3	18.2	22.7
5	10:00	11:00	16.6	18.6	15.5
6	11:00	12:00	18.4	20.8	18.1
7	12:00	13:00	18.7	18.6	17.8
8	13:00	14:00	19.0	18.6	22.4
9	14:00	15:00	25.2	18.2	18.2
10	15:00	16:00	18.6	23.8	18.5
11	16:00	17:00	18.1	18.3	18.6
12	17:00	18:00	18.3	18.6	18.3
Total Feed			233.8	228.5	225.1

- c. All the three boilers along with pollution control devices were found operational.
- d. The temperature of furnace was maintained between 950-1050°C.
- e. Details of power generation during the said inspection is plotted at **Figure 1**.



**Figure 1: Time vs. power generation plot dated 21 & 22<sup>nd</sup> September, 2020**

- f. It is observed that power generation during the monitoring (18.5-21.5 MW) less than the rated power generation capacity (23 MW) of the plant.

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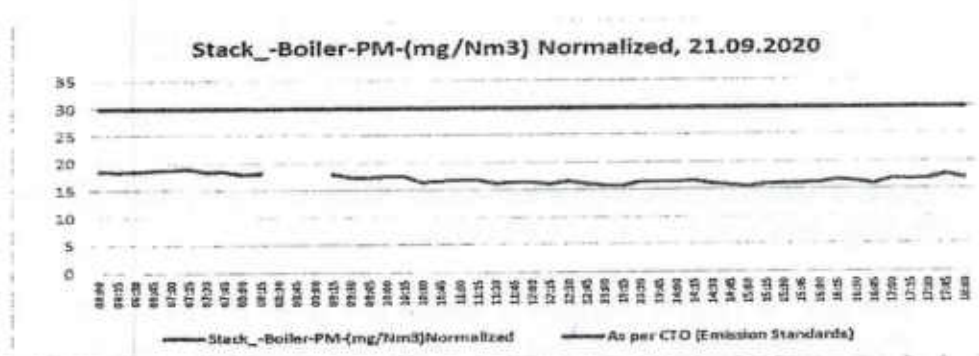
*RW*

g. Stack emission monitoring results are given in **Table 1**. Following are the observations:

- i. The Dioxin and Furans values (**0.99 ngTEq/Nm<sup>3</sup>**) of stack monitoring exceeded the permissible limit (**0.1 ngTEq/Nm<sup>3</sup>**) monitored by Shriram Institute of Industrial Research (SRI), Delhi.
  - ii. **HCL parameter (198 mg/Nm<sup>3</sup>) of stack emission monitored by CPCB exceeded the prescribed limit (50 mg/Nm<sup>3</sup>)**
  - iii. Remaining parameters were within the stipulated norms.
- h. Online Continuous Emission Monitoring System (OCEMS) for PM, SO<sub>2</sub>, NO<sub>x</sub> and HCl in the stack emission had been installed and it was found working at the time of inspection. Result obtained from OCEMS on 21.09.2020 is plotted at **Figure-2**. Comparison of OCEMS data with joint monitoring results is also tabulated in **Table 5**. Comparison of OCEMS data with joint monitoring results reveals that the OCEMS data is not matching with the actual monitoring results. HCl level as per actual monitoring is higher than that reported by OCEMS. Also levels of PM, SO<sub>2</sub> and NO<sub>x</sub> as per actual monitoring is higher than that reported by OCEMS.

**Table-5: Comparison of OCEMS and joint monitoring data of Stack emission**

Sl. No.	Parameters	OCEMS	Joint inspection results
1.	PM mg/Nm <sup>3</sup>	15-20	4.4-10.7
2.	HCL mg/Nm <sup>3</sup>	10-30	198
3.	NO <sub>x</sub> mg/Nm <sup>3</sup>	150-200	85-90
4.	SO <sub>2</sub> mg/Nm <sup>3</sup>	40	BDL

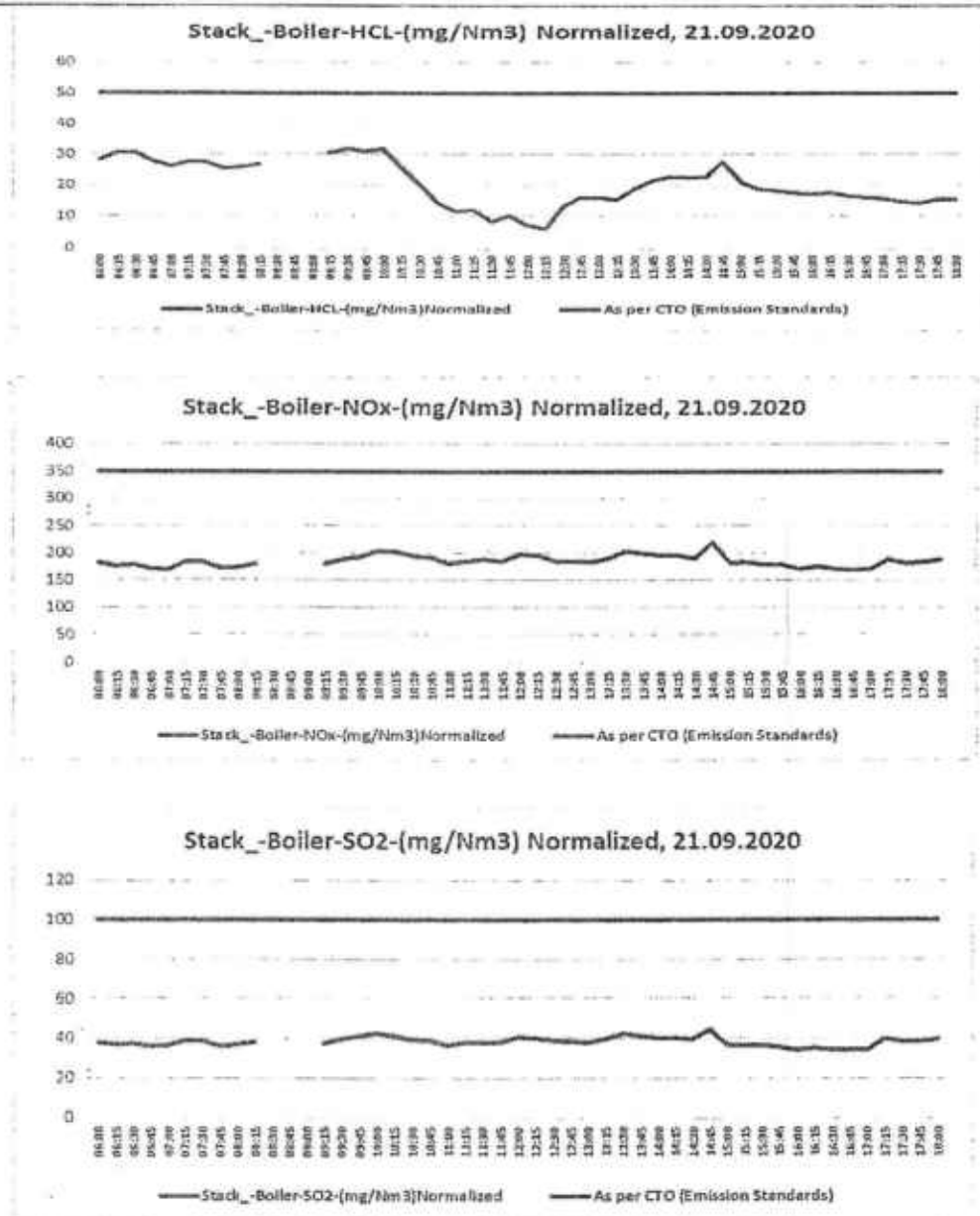


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**Figure-2: Online Continuous Emission Monitoring System (OCEMS) data for PM, SO<sub>2</sub>, NO<sub>x</sub> and HCL on 21.09.2020.**

- i. Ambient Air Quality monitoring results are given in **Table 2**. It is observed that PM<sub>2.5</sub> (**78  $\mu\text{g}/\text{m}^3$** ) exceeded the prescribed limit (60  $\mu\text{g}/\text{m}^3$ ) at Sukhdev Vihar monitoring station. Remaining parameters were found within the limit of both monitoring stations (STP Okhla & Shukdev Vihar).
- j. M/s. Timarpur Okhla Waste to Energy plant has placed order to M/s JITF ECOPOLIS for purchase of Continuous Ambient Air Quality Monitoring Station (Copy enclosed).



- k. Analysis reports of loss of ignition (LOI) and heavy metals in fly ash and bottom ash are in **Table-3**. It is observed that monitored levels of all the parameters are within the specified limit.
- l. Fly ash bricks manufacturing unit is installed but was not operational during the inspection.
- m. Plant has installed water sprinkling system for dust settlement.
- n. To control the emission of flue gas, the unit is using  $\text{Ca(OH)}_2$  and Hydrophobic Organic Carbon (HOC) as dosing and approximately 172 Kg/h and 54.2 Kg/h of  $\text{Ca(OH)}_2$  and HoC used for dosing during inspection on 21.09.20.
- o. During inspection, Multi effect evaporator (MEE) was found operational for treatment of leachate and the treated water was reused as process water.
- p. As informed average 250 MT of inerts are produced every day and disposed of at Jaitpur site.
- q. Radioactive sensors are installed at gate no. 2 of plant.
- r. Plant has maintained considerable greenery inside the premises and along boundary wall.

#### 15. Recommendations


- i. Plant to properly control production process and pollution control equipment to ensure that all parameters including Dioxin & Furans and HCl are within the stipulated norms.
- ii. Plant should implement necessary measures to improve ambient air quality (including  $\text{PM}_{2.5}$  concentration) in and around the plant.
- iii. OCEMS to be calibrated properly to ensure that OCEMS data matches with actual monitoring results.
- iv. Okhla plants should utilize 100 % Fly ash for beneficial purposes like bricks manufacturing etc. and time bound Action Plan to be submitted for the same.
- v. The plant to specify the timeframe within which the online continuous ambient air quality monitoring station shall be installed.

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**Waste to Energy Plant Bawana**

CENTRAL POLLUTION CONTROL BOARD, DELHI																	
1	Name and address of the industry   Coordinates (Longitude & Latitude)	M/s Delhi MSW Solutions Ltd. Pocket N-1, Sector-5, Bawana Industrial area, Behind Pragati Power Plant Delhi-110039 Latitude Extension: 28°47'58.36"N Longitudinal Extension: 77° 04'11.79"E															
2.	Name of the occupier/contact person with  Telephone Fax E-mail	K Vijay Kumar Reddy  Mob. 9821124350 <a href="mailto:laboratorynarela@ramky.com">laboratorynarela@ramky.com</a>															
3.	Date of inspection and monitoring	September, 24-25, 2020															
4.	Installed processing Capacity (as per consent)	2000 TPD Processing and Disposal facility with 24 MW Waste to Energy Plant															
5.	Production status (on date of inspection)	Operational															
6	Actual Power Generation	Details of power generation ranges during the said inspection <table border="1"> <thead> <tr> <th rowspan="2">Date</th> <th colspan="3">Power Generation (MW)</th> </tr> <tr> <th>Time</th> <th>Minimum</th> <th>Maximum</th> </tr> </thead> <tbody> <tr> <td>24.09.2020</td> <td>6 AM to 1 PM</td> <td>22.3</td> <td>21.1</td> </tr> <tr> <td>25.09.2020</td> <td>6 AM to 6 PM</td> <td>21.4</td> <td>20.1</td> </tr> </tbody> </table>	Date	Power Generation (MW)			Time	Minimum	Maximum	24.09.2020	6 AM to 1 PM	22.3	21.1	25.09.2020	6 AM to 6 PM	21.4	20.1
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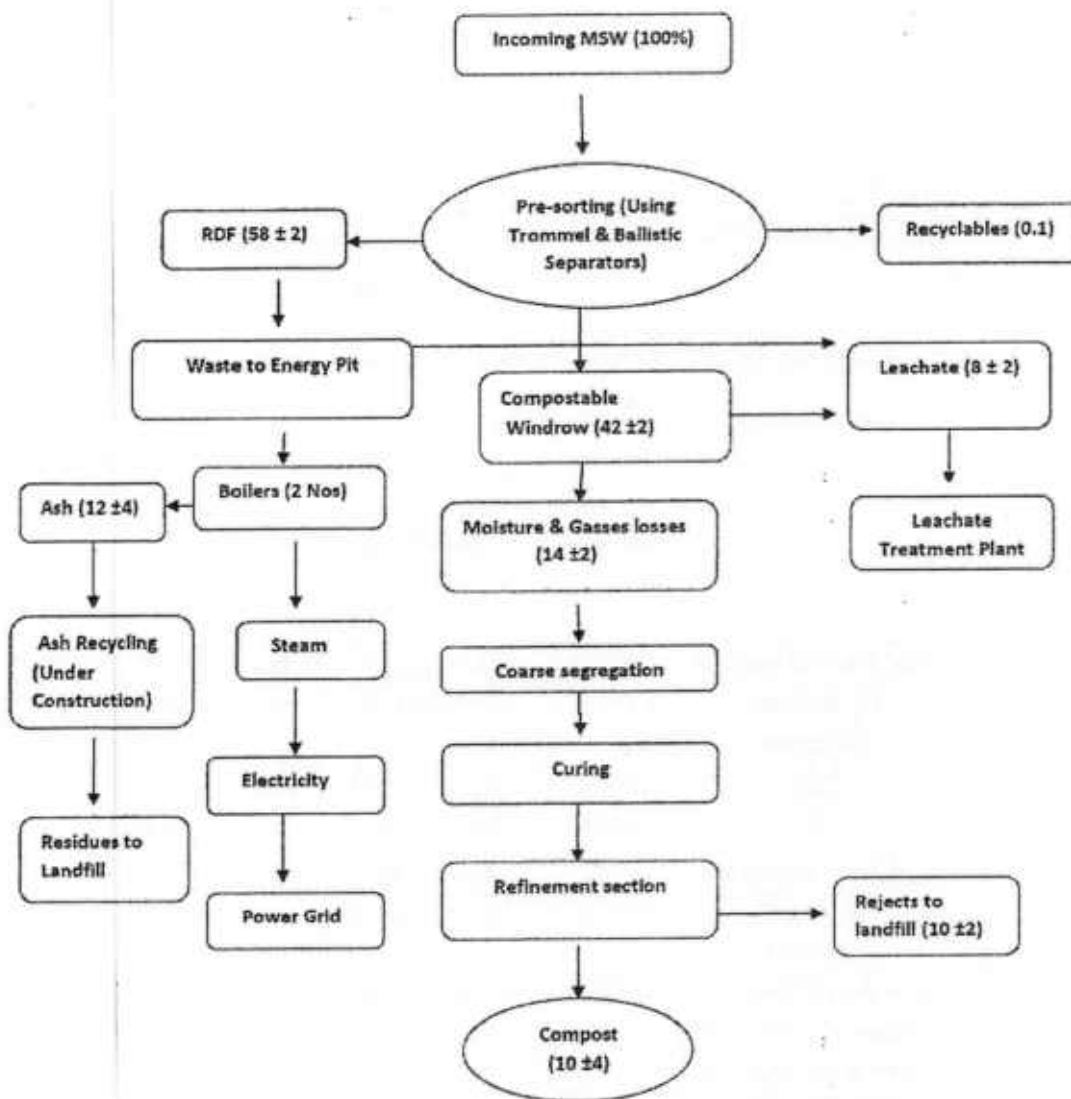
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**Process Flow Diagram:**

The unit has own segregation setup of MSW having 13 trommels with 4 ballastic separators for segregation of MSW and production of RDF. The detailed materials flow sheet is as given below:

**8. Air Pollution – Emission Sources & Control**

Sources of air pollution	Chimney Details	APC Equipment	Emission Quality
Stack of the Waste to Energy plant (Two boilers connected to one stack)	60 mtrs	Reaction Tower (lime Spray reactor), Activated Carbon Injection followed by Bag filters.	Stack Monitoring Conducted by CPCB team & Dioxin & Furans by M/s SIIR, Delhi. Results are given in Table-6

9.	OCEMS Status	Installed with stack & was found operational during the inspection.
10	Ambient Air Quality monitoring Conducted at two locations at near main gate of the plant and fire station Bawana	Ambient Air Quality Status given in <b>Table – 7</b>
11.	Continuous Ambient Air Quality Station	CAAQMS installed & was working
12.	Bottom Ash & Fly Ash	Analysis results of LOI and heavy metals in Bottom ash and Fly ash result in <b>Table-8</b>

**Table 6. Analysis results of the stack emission monitoring of the WTE plant Bawana**

S. No.	Parameters	Monitored & Analysed by	Standards as per Consent to Operate issued by DPCC	Standards as per Solid Waste Management Rules, 2016,	Date of Sampling	Measured values in mg/Nm <sup>3</sup>
1.	Particulate Matter	CPCB	30 mg/Nm <sup>3</sup>	50 mg/Nm <sup>3</sup>	24-25 September, 2020	16.7, 12.8
2.	Hydrogen Chloride	CPCB	50 mg/Nm <sup>3</sup>	50 mg/Nm <sup>3</sup>		3.35
3.	SO <sub>2</sub>	CPCB	100 mg/Nm <sup>3</sup>	200 mg/Nm <sup>3</sup>		BDL, BDL
4.	NO <sub>x</sub>	CPCB	350 mg/Nm <sup>3</sup>	400 mg/Nm <sup>3</sup>		17.7, 82.0
5.	Carbon Monoxide	CPCB	100 mg/Nm <sup>3</sup>	100 mg/Nm <sup>3</sup>		0
6.	Hydrogen Fluoride	CPCB	0.5 mg/Nm <sup>3</sup>	4 mg/Nm <sup>3</sup>		BDL
7.	Sb+As+Pb+Cr+Co+Cu+Mn+Ni+V+their compounds	CPCB	0.5mg/Nm <sup>3</sup>	0.5mg/Nm <sup>3</sup>		0.058
8.	Cd + Tl + their compounds	CPCB	0.05mg/Nm <sup>3</sup>	0.05mg/Nm <sup>3</sup>		-
9.	Pb	CPCB	0.1mg/Nm <sup>3</sup>	Not prescribed		0.006
10.	Hg	CPCB	0.02mg/Nm <sup>3</sup>	0.05mg/Nm <sup>3</sup>		BDL
11.	Dioxin & Furans	M/s SRI, Delhi	0.1 ngTEq/Nm <sup>3</sup>	0.1 ngTEq/Nm <sup>3</sup>	28.10.2020	0.49
12.	Total Organic Compounds(as C) at 11%O <sub>2</sub>		20mg/Nm <sup>3</sup>	20mg/Nm <sup>3</sup>		5.1

\* BDL for SO<sub>2</sub> is <1.0 mg/Nm<sup>3</sup>, BDL for HF is <1.0 mg/Nm<sup>3</sup>, BDL for Hg < 1.0 µg/Nm<sup>3</sup>

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**Table 7: 24 hourly average ambient air quality monitoring conducted by CPCB at WtE Plant Bawana**

Parameters	Date of sampling	Monitored by	Prescribed Standard* (in $\mu\text{g}/\text{m}^3$ )	Measured values	
				Fire Station Bawana Location-I	Near main gate Location-II
PM <sub>10</sub>	23-25 September, 2020	CPCB	100	131.33	89.33
PM <sub>2.5</sub>			60	84.00	40
NO <sub>2</sub>			80	36.33	17.00
SO <sub>2</sub>			80	11.66	10.66

\*National ambient air quality standards as notified on dated 16.11.2009 under the Environment Protection Act, 1986.

**Table 8: Analysis results of LOI and heavy metals in Bottom Ash and Fly Ash**

Date of sampling	Parameters	Limit	Measured Values	
24 September, 2020	Loss on Ignition (for bottom ash only)	<5%*	1.67%	
			Bottom Ash	Fly Ash
	Arsenic	5 mg/l#	BDL	BDL
	Cadmium	1 mg/l#	BDL	BDL
	Chromium	5 mg/l#	0.08	0.69
	Manganese	10 mg/l#	BDL	BDL
	Lead	5 mg/l#	BDL	BDL
	Selenium	1 mg/l#	BDL	BDL
	Copper	25 mg/l#	0.01	BDL
	Nickel	20 mg/l#	BDL	BDL
	Zinc	250 mg/l#	0.02	0.04
	Cobalt	80 mg/l#	BDL	BDL
	Vanadium	24 mg/l#	BDL	BDL
	Antimony	15 mg/l#	BDL	BDL

BDL: for Lead <0.013 ug/l, Selenium < 0.019ug/l, for Copper < 0.003 ug/l, for Nickel < 0.003 ug/l, for Cobalt < 0.002 ug/l and Vanadium < 0.16 ug/l.

#Concentration Limit to categorize as hazardous waste as per the Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016, notified under the Environment (Protection) Act, 1986.

### 13. Status of validity & compliance of consent and authorization

	Consent/Authorization	Validity
I	Under Water Act (Copy enclosed)	Valid till 05-05-2021
II	Under Air Act (Copy enclosed)	Valid till 05-05-2021

### 14. Observations

During the inspection on 24-25, September, 2020 following observations were made.

- The processing capacity of the plant is 2000 TPD. However, the plant receipts 2794 MT and 2600 MT of Municipal Solid Waste on 24.09.2020 & 25.09.2020 respectively, which is more than the consented capacity of the plant.
- The unit has own segregation setup of MSW having 6 trommels with blastic separators for segregation of MSW and production of RDF. Ferrous waste is segregated manually as well as through magnetic separator installed at conveyor belt of ballistic separators. Plant Machinery Details DMSWSL Bawana is tabulated in **table 9**:

**Table 9: Detailed machinery used during segregation of MSW**

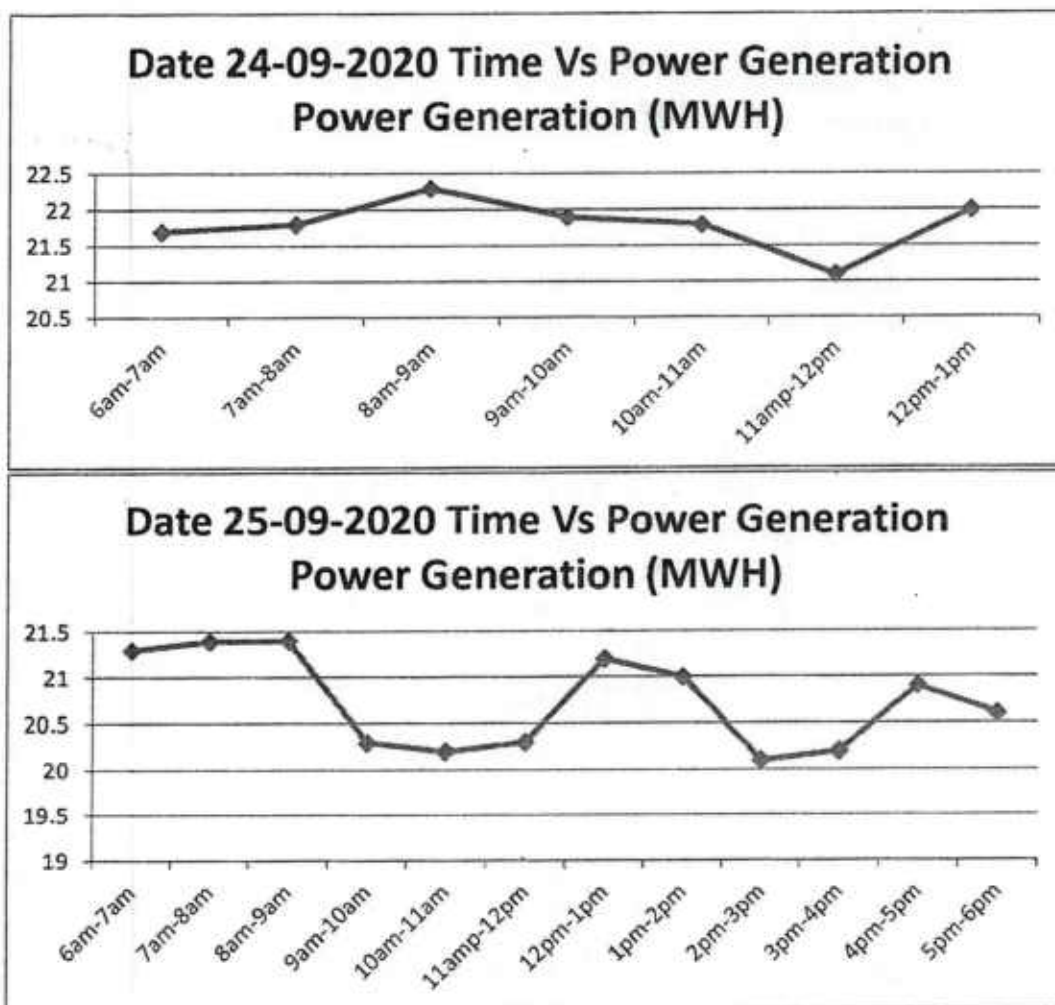
Section Wise	Equipment Name	Number of Machinery
Pre Sorting	Trommels- 50 mm	6 No's
	Ballastic Separator	4 No's
Preparatory Section	Trommels- 20 mm	4 No's
Refinement Section	Trommels- 4 mm	3 No's
Bio Mining	Puzolana	1 No's

- As informed, total RDF generation in the plant is approximately 1500 TPD. As per the logbook RDF used as fuel in boilers on 24.09.2020 is tabulated at **Table 10**:

Table 10: RDF Feed Record on 24.09.2020

Sl. No.	Time	RDF Feeding (TPH)
1.	9-10 AM	54
2.	10-11 AM	52
3.	11-12 PM	56
4.	12-1.0 PM	58
5.	1.0-2.0 PM	56
6.	2.0-3.0 PM	52

- d) Details of power generation ranges during the said inspection period is placed at **Figure 3**. It is observed that power during the monitoring was less than the (20-22.5 MW) below the rated power generation capacity (24 MW) of the plant-although the plant was processing waste at full capacity.



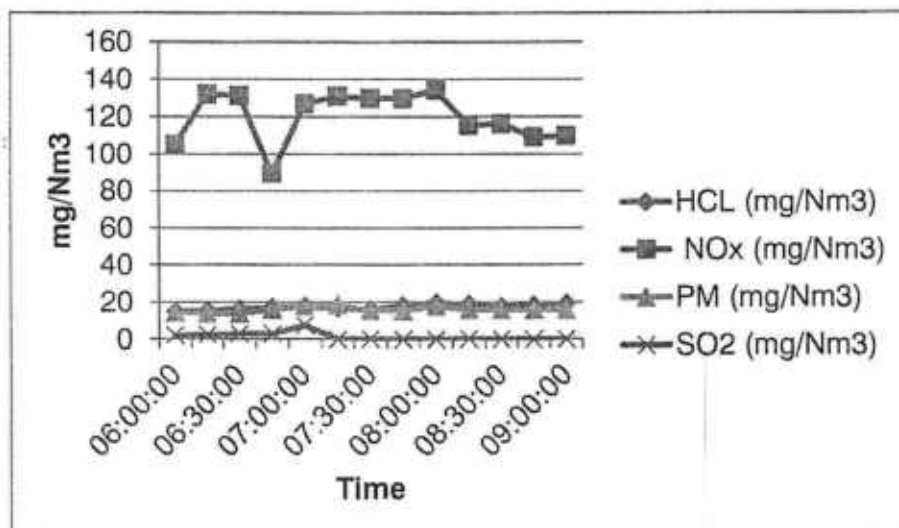
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**Figure 3: Time vs. power generation plot dated 24 & 25<sup>th</sup> September, 2020.**

- e) At the time of inspection on 24.09.2020, plant tripped due to grid fluctuation (High voltage) from 1 PM to 5.30 PM.
- f) The two boilers and attached pollution control devices were found operational during monitoring. The temperature of furnace was maintained between 1142-1162°C.
- g) Stack emission are tabulated in **Table 6**. It was observed that:
  - I. Dioxin and Furans values (**0.49 ngTEq/Nm<sup>3</sup>**) are exceeding the permissible limit (**0.1 ngTEq/Nm<sup>3</sup>**) monitored by M/s. SRI, Delhi,
  - II. Remaining parameters were within the stipulated norms.
- h) Online Continuous Emission Monitoring System (OCEMS) for PM, SO<sub>2</sub>, NO<sub>x</sub> and HCL in the stack emission had been installed and it was found working at the time of inspection. Result obtained from OCEMS on 25.09.2020 are plotted in **Figure-4**. Comparison of OCEMS data with joint monitoring results is tabulated in **Table 11**. Comparison of OCEMS data with joint monitoring results reveals that the OCEMS data is not matching with the actual monitoring results. HCL level as per actual monitoring is less than that reported by OCEMS. Also levels of PM, SO<sub>2</sub> and NO<sub>x</sub> as per actual monitoring is less than that reported by OCEMS.



**Figure 4: Online Continuous Emission Monitoring System (CEMS) data for PM, SO<sub>2</sub>, NO<sub>x</sub>, and HCL on 24.09.2020.**



**Table 11: Comparision of OCEMS data and Joint monitoring data of Stack emission**

Sl. No.	Parameters	OCEMS	Joint inspection results
1.	PM mg/Nm3	13.8-18.41	12.8-16.7
2.	HCL mg/Nm3	15.02-19.48	3.35
3.	NO <sub>x</sub> mg/Nm3	89.4-131.94	17.7-82
4.	SO <sub>2</sub> mg/Nm3	0.01-7.6	BDL

- i) Ambient Air quality monitoring results are given in **Table 7**. It is observed that PM<sub>2.5</sub> (**84 µg/m<sup>3</sup>**) & PM<sub>10</sub> (**131. 33 µg/m<sup>3</sup>**) exceeded the prescribed limit (60 µg/m<sup>3</sup> & 100 µg/m<sup>3</sup>) at Fire Station Bawana. Concentration levels of the remaining parameters are within the stipulated norms.
- j) Online Continuous Ambient air quality monitoring station (CAAQMS) has been installed at facility & data is tabulated in **Table 12** for 25.09.2020. It observed that values of PM<sub>10</sub> exceeded the standard limit at 12.00 noon (**176 µg/m<sup>3</sup>**), 2.30 PM (**166.5µg/m<sup>3</sup>**), 3.15 PM (**190.1µg/m<sup>3</sup>**) and 4.00 PM (**202.1µg/m<sup>3</sup>**) whereas the limit of PM<sub>2.5</sub> exceeded at 4.00 PM. Other parameters such as SO<sub>2</sub> (6-6.9 µg/m<sup>3</sup>), NO<sub>x</sub> (12.9-19.5µg/m<sup>3</sup>) were found well within the standard limit.

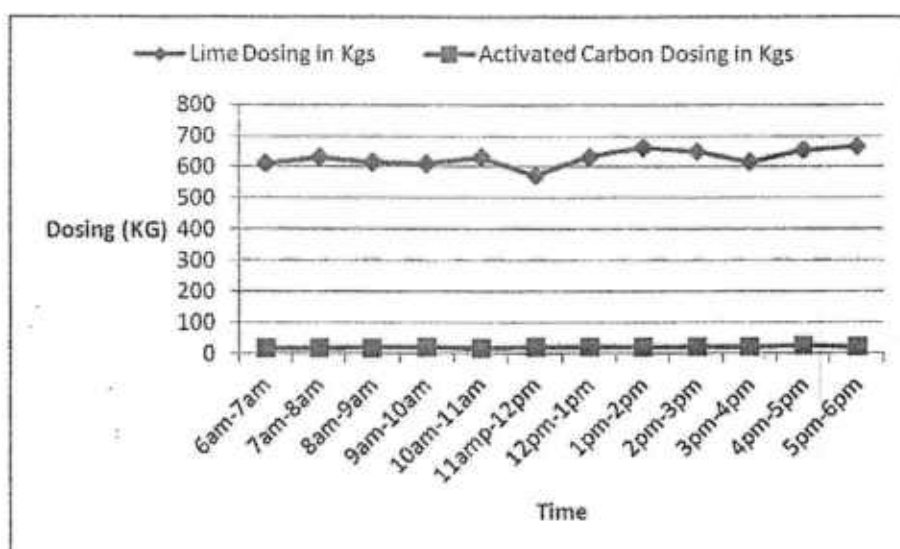
**Table 12: Online Continuous Ambient air quality monitoring (CAAQMS) data on 25-09-2020**

Time	Parameters						
	SO <sub>2</sub> µg/m <sup>3</sup>	NO µg/m <sup>3</sup>	NO <sub>2</sub> µg/m <sup>3</sup>	NO <sub>x</sub> µg/m <sup>3</sup>	PM <sub>10</sub> µg/m <sup>3</sup>	PM <sub>2.5</sub> µg/m <sup>3</sup>	CO mg/m <sup>3</sup>
12.00 noon	6.9	-1.2	15.9	14.7	<b>176</b>	56.4	-0.46
1.00 PM	6.6	-1.2	17.0	15.7	35.3	-1.0	-0.45
2.30PM	5.6	-1.1	13.9	12.9	<b>166.5</b>	-0.6	-0.42
3.15PM	6.0	-1.2	15.6	14.3	<b>190.1</b>	37.8	-0.38
4.00PM	6.9	-1.4	19.9	19.5	<b>202.1</b>	<b>68.9</b>	-0.36

- k) Analysis reports of loss of ignition (LOI) and heavy metals in fly ash and bottom ash

are in **Table-8**. It is observed that monitored levels of all the parameters are within the specified limit.

- l) Segregated rejects, bottom ash and fly ash are disposed into the sanitary landfill site existing within the facility premise at Bawana.
- m) Lime and activated carbon are used as a dosing agent in flue gas. Amount of dosing used at the said inspection is plotted as **Figure 5**. The quantity of lime and activated carbon doused is observed to be in the range of 572-667kg/h and 16-23 Kg/hr respectively.



**Figure-5:** Amount of Lime and Activated Carbon used as dosing on 25-09-2020.

- n) Leachate from Waste tipping floor, Windrows floor, sanitary landfill (within its premise) and the open pre-processed storage Area, are treated in the leachate treatment plant and treated water is being used for gardening, road wash etc.
- o) Treated leachate analysis report is tabulated in **Table 13**. It has been observed that the values of TDS & Chloride of treated leachate exceeded the standard limit on Land disposal. It is observed that treated leachate is not complying the stipulated standards with respect to TDS & Chloride

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**Table: 13: Analysis report of treated leachate of Bawana WtE plant**

S. No	Parameter	Land disposal (Standards as per SWM Rules, 2016)	Treated Leachate analysis report
1.	Suspended solids, mg/l, max	200	26
2.	Dissolved solids (inorganic) mg/l, max.	2100	6744
3.	pH value	5.5 to 9.0	
4.	Ammonical nitrogen (as N), mg/l, max.	-	1.7
5.	Total Kjeldahl nitrogen (as N), mg/l, max.	-	-
6.	Biochemical oxygen demand (3 days at 270 C) max.(mg/l)	100	25
7.	Chemical oxygen demand, mg/l, max.	-	261
8.	Arsenic (as As), mg/l, max	0.2	BDL
9.	Mercury (as Hg), mg/l, max	-	-
10.	Lead (as Pb), mg/l, max	-	BDL
11.	Cadmium (as Cd), mg/l, max	-	BDL
12.	Total Chromium (as Cr), mg/l, max.	-	0.02
13.	Copper (as Cu), mg/l, max.	-	BDL
14.	Zinc (as Zn), mg/l, max.	-	0.06
15.	Nickel (as Ni), mg/l, max	-	BDL
16.	Cyanide (as CN), mg/l, max.	0.2	-
17.	Chloride (as Cl), mg/l, max.	600	1564
18.	Fluoride (as F), mg/l, max	-	-
19.	Phenolic compounds (as C6H5OH) mg/l, max.	-	BDL

- p) As informed, M/s. Waste to Energy plant Bawana has placed order to M/s. Spray Engineering Devices Limited for purchase of 200 KLD Low Temp Evaporator with Mechanical Vapor Recompression (MVR) System.
- q) As informed, after segregation 80 MT of compost is being generated per day and sold to the market.

- r) Radioactive sensors are installed at entrance gate of the plant & was found working on the date of inspection.
- s) Storage and segregation process of MSW being done within a covered area.
- t) The facility is collecting solid waste since 2009 and legacy waste of about 0.8 Million MT is being stored in an open area of about 9 acres. This waste is also being processed in the plant.
- u) Plant has maintained considerable greenery inside the premises.

#### 15. Recommendations

- a) Plant should process the waste as per the consented capacity. The production process should be optimized so that power generated from the plant is as per the consented capacity of the plant.
- b) Plant to properly control production process and pollution control measures to ensure that all parameters including Dioxin & Furans are within the stipulated norms.
- c) Plant should implement necessary measures to improve ambient air quality (including PM<sub>2.5</sub> & PM<sub>10</sub> concentration) in and around the plant.
- d) OCEMS to be calibrated properly to ensure that OCEMS data matches with actual monitoring results.
- e) Time bound action plan to be submitted for implementation of Fly ash and inert material utilization measures.
- f) Time bound Action Plan to be submitted for installation of Mechanical Vapor Recompression (MVR) system for leachate treatment.

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## Waste to Energy Plant Ghazipur

### CENTRAL POLLUTION CONTROL BOARD, DELHI

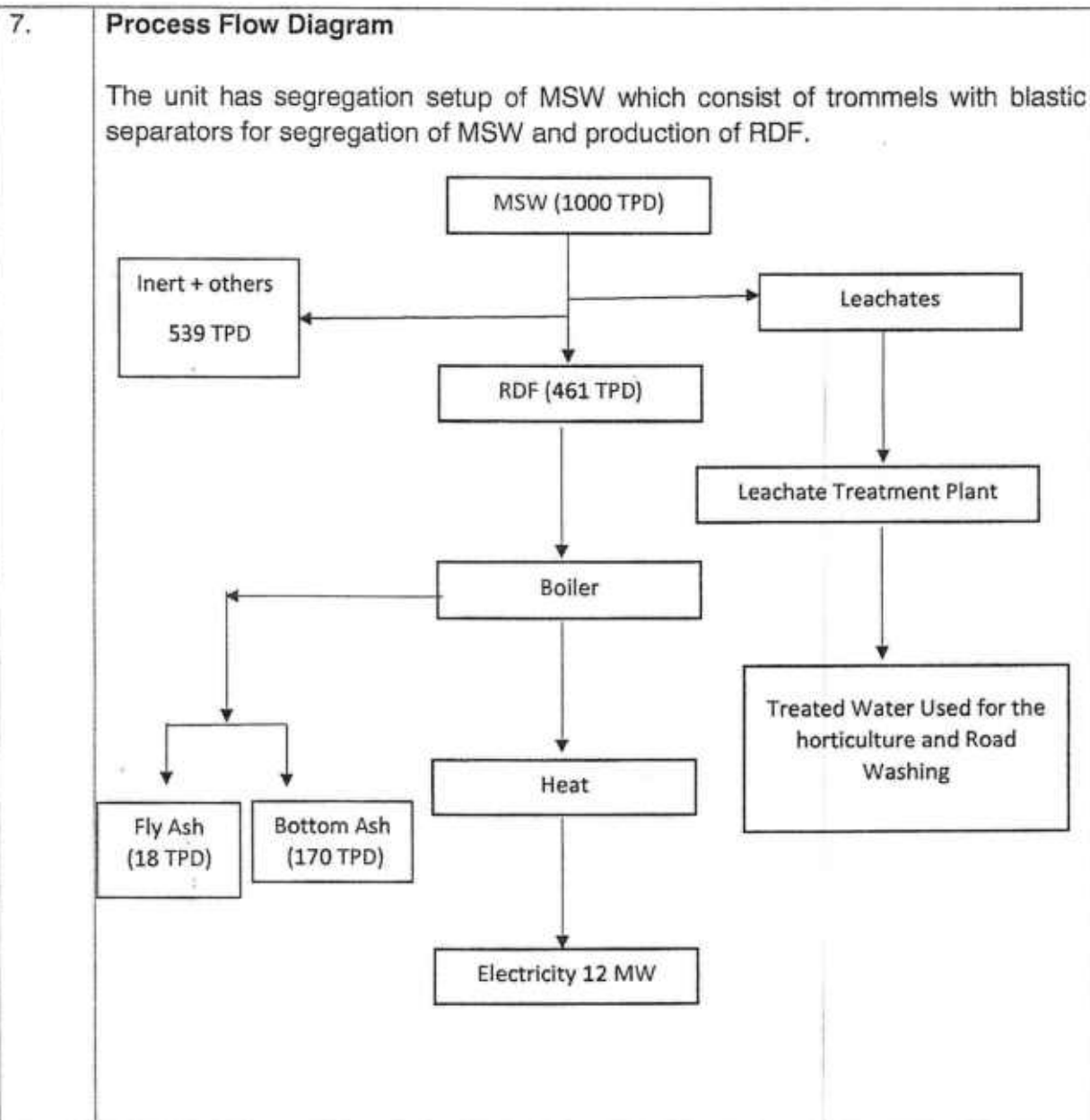


1	Name and address of the industry	M/s East Delhi Waste Processing Company Ltd. Adjacent to Veterinary Hospital Behind Ghazipur DDA Flats Ghazipur, Delhi- 110096				
	Coordinates (Longitude & Latitude)	Lat. 28.622653, Long. 77.323398				
2.	Name of the occupier/contact person with  Telephone Fax E-mail	Mr. Iype George   8448692608  <a href="mailto:Iype.George@ilfsindia.com">Iype.George@ilfsindia.com</a>				
3.	Date of inspection and monitoring	October, 13-14, 2020				
4.	Installed processing Capacity	1300MT of Municipal Solid Waste (MSW) per day for the generation of 12MW electricity.				
5.	Production status (on date of inspection)	Operational				
6a.	Power Generation Authorized	12MW				
6b	Actual Power Generation	<b>Details of power generation ranges during the said inspection</b> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th style="width: 30%;">Date</th> <th style="width: 70%;">Power Generation range (MW) 6 AM- 6 PM</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">13.10.2020</td> <td style="text-align: center;">3.45 – 8.75</td> </tr> </tbody> </table>	Date	Power Generation range (MW) 6 AM- 6 PM	13.10.2020	3.45 – 8.75
Date	Power Generation range (MW) 6 AM- 6 PM					
13.10.2020	3.45 – 8.75					

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**8. Air Pollution – Emission Sources & Control**

Sources of air pollution	Chimney Details	APC Equipment	Emission Quality
One boiler connected with one stack of the waste to energy plant	60 meters	Scrubbing system	Given in <b>Table -14</b>
9.	OCEMS Status		Installed with stack & was found operational during the inspection.
10	Ambient Air Quality Conducted at two locations (Ghazipur Police station location-1 & Delhi Transco Limited Ghazipur Location-2)		Ambient Air Quality results are given in <b>Table – 15</b>

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11.	Continuous Ambient Air Quality Station	CAAQMS installed but was not working
12.	Bottom Ash & Fly Ash	Analysis results of LOI and heavy metals in Bottom ash and Fly ash are given in <b>Table - 16</b>

**Table 14. Analysis results of the stack emission monitoring of the WTE plant, Ghazipur monitored and analyzed by CPCB.**

S. No	Parameters	Monitored by	Standard s as per consent to operate issued by DPCC	Standard as per Solid waste Management Rules, 2016	Date of Sampling	Measured Values Stack-1 (Average)
1	Particulate Matter	CPCB	30 mg/Nm <sup>3</sup>	50 mg/Nm <sup>3</sup>	13-14 October, 2020	62.7, 85.1
2	HCL	CPCB	50 mg/Nm <sup>3</sup>	50 mg/Nm <sup>3</sup>		407
3	SO <sub>2</sub>	CPCB	100 mg/Nm <sup>3</sup>	200 mg/Nm <sup>3</sup>		BDL, 3.4
4	NO <sub>x</sub> (NO and NO <sub>2</sub> expressed No <sub>2</sub> )	CPCB	350 mg/Nm <sup>3</sup>	400 mg/Nm <sup>3</sup>		869, 104.3
5	Carbon Monoxide	CPCB	100 mg/Nm <sup>3</sup>	100 mg/Nm <sup>3</sup>		0
6	Hydrogen Fluoride	CPCB	0.5 mg/Nm <sup>3</sup>	4 mg/Nm <sup>3</sup>		BDL
7	Sb+As+Pb+Cr+Co+Cu+Mn+Ni+V+their compounds	CPCB	0.5 mg/Nm <sup>3</sup>	0.5 mg/Nm <sup>3</sup>		0.164
8	Cd+Th+their compounds	CPCB	0.05 mg/Nm <sup>3</sup>	0.05 mg/Nm <sup>3</sup>		0.002
9	Pb	CPCB	0.1 mg/Nm <sup>3</sup>	Not prescribed		0.019
10	Hg	CPCB	0.02 mg/Nm <sup>3</sup>	0.05 mg/Nm <sup>3</sup>		0.21
11.	Dioxin & Furans	M/s SRI, Delhi	0.1 ngTEq/Nm <sup>3</sup>	0.1 ngTEq/Nm <sup>3</sup>	13.10.20 20	0.27
12	Total Organic Compounds(as C) at 11%O <sub>2</sub>		20mg/Nm <sup>3</sup>	20mg/Nm <sup>3</sup>		9.4

\* BDL for SO<sub>2</sub> is <1.0 mg/Nm<sup>3</sup>, BDL for HF is <1.0 mg/Nm<sup>3</sup>, BDL for Hg < 1.0 µg/Nm<sup>3</sup>

**Table 15. 24 hourly ambient air quality monitoring conducted by CPCB**

Parameters	Date of Sampling	Monitored by	Prescribed Standard*	Measured values	
				Ghazipur Police station location-1	Delhi Transco Limited Ghazipur Location-2
PM <sub>2.5</sub>	October 13-15	CPCB	60	127	215
PM <sub>10</sub>			100	273.66	404
NO <sub>2</sub>			80	42.833	31
SO <sub>2</sub>			80	BDL	15.66

BDL for SO<sub>2</sub> is < 4µg/m<sup>3</sup>

\*National ambient air quality standards as notified under the air (prevention and control of pollution) Act 1981.

**Table 16: Analysis results of LOI and heavy metals in Bottom ash and Fly ash**

Date of sampling	Parameters	Limit	Measured values in %	
13.10.2020	Loss on ignition (For bottom Ash only)	<5%*	1.89	
			Bottom ash	Fly Ash
	Arsenic	5 mg/l #	BDL	BDL
	Cadmium	1 mg/l #	0.52	0.14
	Chromium	5 mg/l #	BDL	BDL
	Manganese	10 mg/l #	3.01	3.15
	Lead	5 mg/l #	0.08	0.04
	Selenium	1 mg/l #	BDL	BDL
	Copper	25 mg/l #	1.52	0.83
	Nickel	20 mg/l #	0.42	0.20
	Zinc	250 mg/l #	10.79	11.43
	Cobalt	80mg/l #	0.12	0.11
	Vanadium	24mg/l #	BDL	BDL
	Antimony	15mg/l #	0.36	0.05



Note: BDL for arsenic <0.022 mg/l BDL for Chromium<0.002 mg/l BDL for Manganese for Lead<0.013 BDL for Nickel BDL, 0.003 mg/l for Cobalt BDL< mg/l for Vanadium BDL<0.16 mg/l

#Concentration Limit of categorise as hazardous waste as per Hazardous and Other Wastes (Management and Trans boundary Movement) Rules, 2016, notified under Environment (Protection) Act, 1986. Facility for fly ash and inert material utilization are yet to installed.

13. Status of validity & compliance of consent and authorization		
	Consent/Authorization	Validity
I	Under Water Act (Copy enclosed)	Expired on 08-12-2018, applied for renewal of the same
II	Under Air Act (Copy enclosed)	Expired on 08.12.2018, applied for renewal of the same

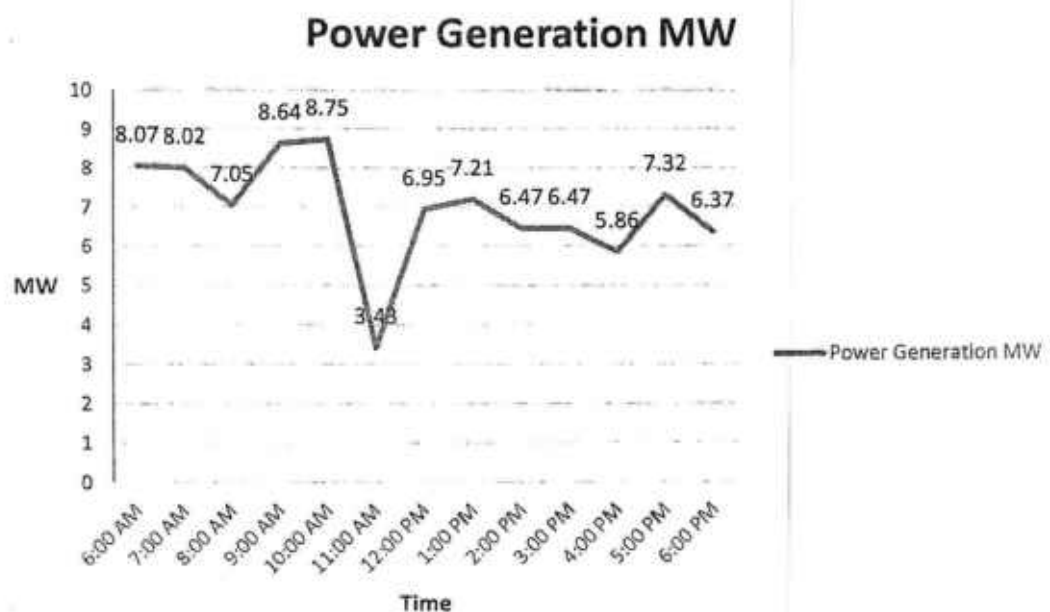
<p><b>14.0 Observations</b></p> <p>a. The plant is operating without valid consent. The plant was given Consent-to Operate which was valid upto 08.12.2018. The unit has applied for renewal of Consent.</p> <p>b. The unit has segregation setup of MSW which consist of trommels with blastic separators for segregation of MSW and production of RDF. However, the same was not operational at the time of inspection. Operator informed that the same is under maintenance.</p> <p>c. Segregation of waste was being done in partially covered area.</p> <p>d. The plant was receiving RDF from bio-remediation of waste from Ghazipur dumpsite. No MSW was received from EDMC on that day. Hence, the plant was operating at level much below as per its last consent.</p> <p>e. The plant does not have composting facility for wet waste and disposing wet waste when generated in the dumpsite.</p> <p>f. Average feed rate of the RDF to one boiler was observed at 33 MT/hr. As per the logbook total RDF used as fuel in boilers from 6 AM to 6 PM on 13.10.2020 is given in <b>Table 17</b>.</p>
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**Table 17: RDF Feed Record**

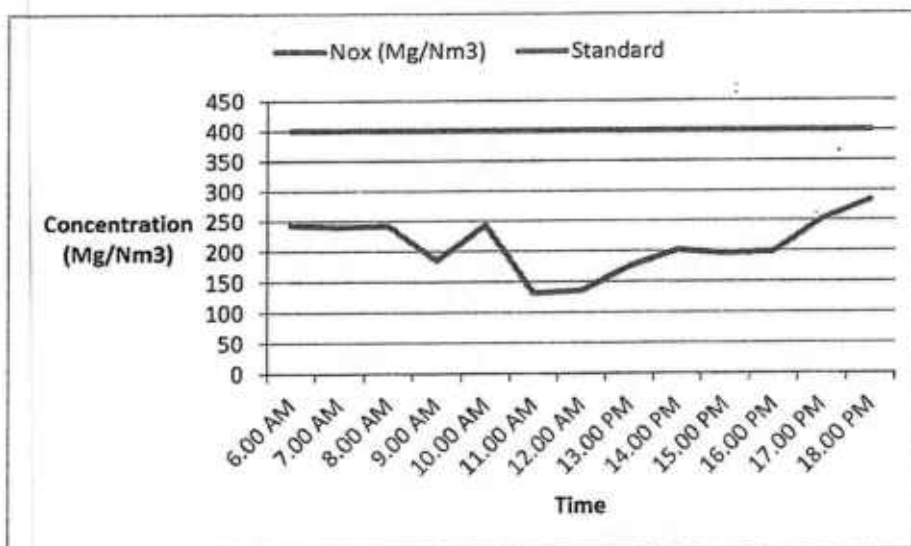
Time	Fuel Feed to Boiler MT
6:00 AM	35.28
7:00 AM	35.1
8:00 AM	33.25
9:00 AM	35.89
10:00 AM	36.25
11:00 AM	28.95
12:00 PM	31.25
1:00 PM	32.25
2:00 PM	32.65
3:00 PM	33.25
4:00 PM	31.58
5:00 PM	32.58
6:00 PM	31.58
<b>Total Feed</b>	<b>429.86</b>

- g. Details of power generation ranges during the said inspection period is given in **Figure 6**. The power generation on 13.10.2020 was in the range of 3.45-8.75 MW which is much less than the rated power generation capacity of 12 MW. Captive power utilization of the plant is about 2 to 2.5 MW.



**Figure 6: Time vs. power generation plot dated 13<sup>th</sup> October, 2020.**

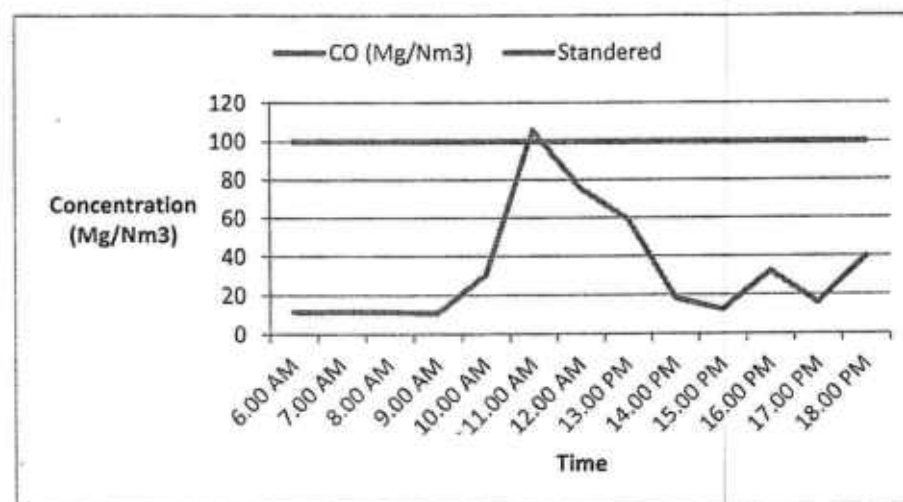
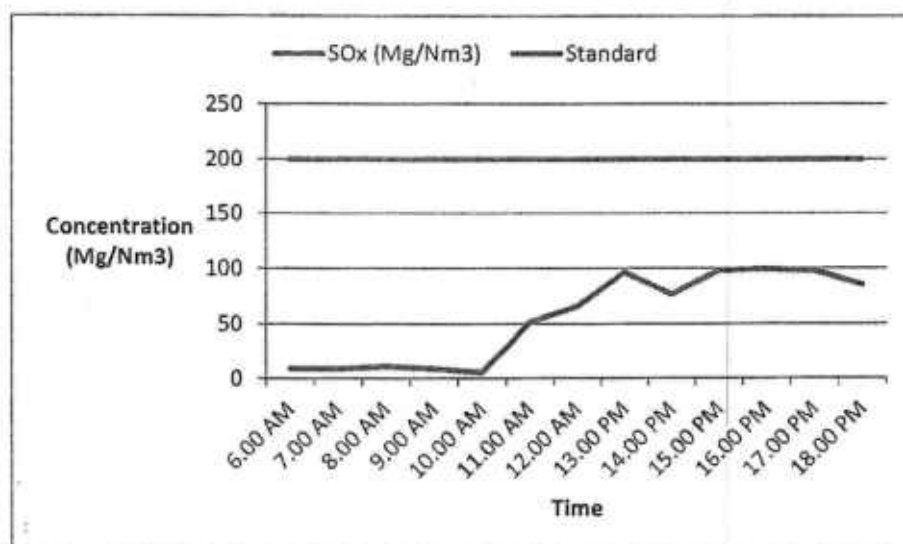
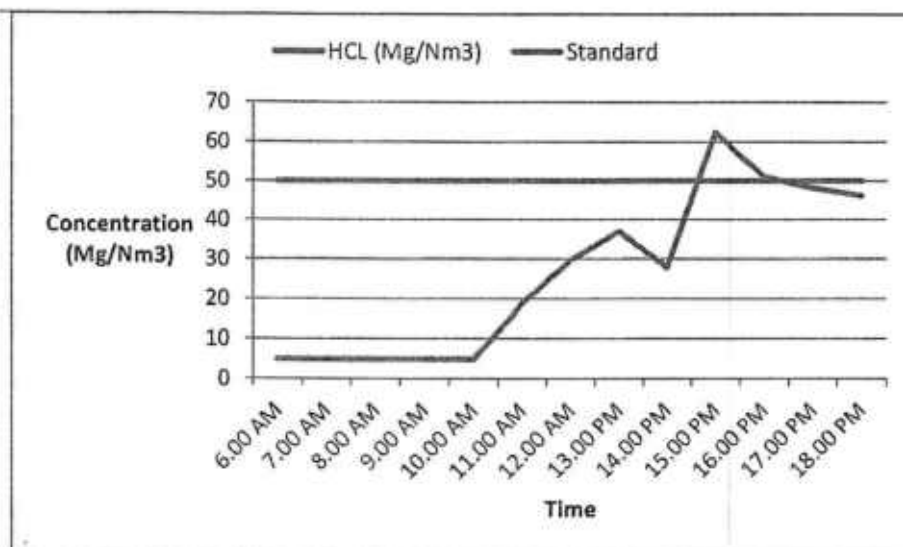
- h. One boiler along with pollution control devices was found operational. The average temperature of furnace was maintained most of the time was 950° C.
- i. Stack emission results are given in **Table 14**. The following are the observations.
- Dioxin and Furans** values (**0.27ngTEq/Nm<sup>3</sup>**) of stack monitoring exceeded the permissible limit (**0.1 ngTEq/Nm<sup>3</sup>**) monitored by M/s. SRI, Delhi.
  - PM (62.7 & 85.1 mg/Nm<sup>3</sup>)**, **NO<sub>x</sub> (869 mg/Nm<sup>3</sup>)** and **HCl (407 mg/Nm<sup>3</sup>)** concentrations were exceeding the permissible limits (30, 350 & 50 mg/Nm<sup>3</sup> respectively)
  - Remaining parameters were well within the limit.
- j. Online Continuous Emission Monitoring System (OCEMS) for PM, SO<sub>2</sub>, NO<sub>x</sub> and HCl in the stack emission had been installed and it was found working at the time of inspection except for monitoring PM. Results obtained from OCEMS on 13.10.2020 are plotted in **Figure-7**. Comparison of OCEMS data with joint monitoring results is tabulated in **Table-18**. Comparison of OCEMS data with joint monitoring results reveals that the OCEMS data is not matching with the actual monitoring results. HCl & NO<sub>x</sub> level as per actual monitoring was more than that reported by OCEMS. Whereas, SO<sub>x</sub> as per joint monitoring is lower than the OCEMS result.



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**Figure 7: Online Continuous Emission Monitoring System (OCEMS) data for NOx HCL, SOx, and CO on 13.10.2020.**

**Table 18: Comparison of OCEMS & Joint Monitoring data of the stack emission**

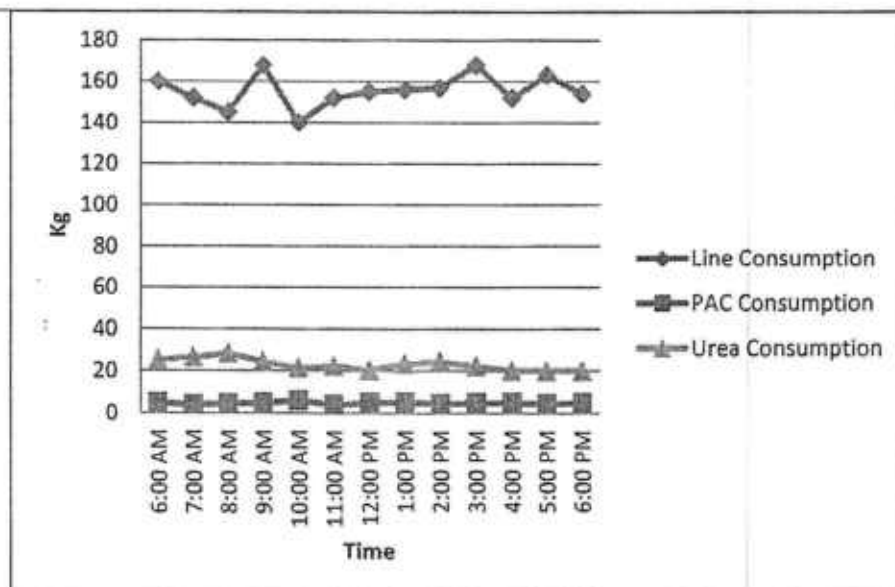
Sl. No.	Parameters	OCEMS	Joint inspection results
1.	PM mg/Nm3	Not working	62.7-85.1
2.	HCL mg/Nm3	4.86-51.13	407
3.	NOx mg/Nm3	132.4-251.71	869-104.3
4.	SO2 mg/Nm3	5.79-98.25	BDL
5.	CO	11.35-105.61	Not monitored

- j. Ambient Air quality monitoring results are given in **Table-15**. It is observed that PM<sub>2.5</sub> & PM<sub>10</sub> at Ghazipur Police station & Delhi Transco Ltd. (**127 µg/m<sup>3</sup> & 215 µg/m<sup>3</sup> and 273 µg/m<sup>3</sup> & 404 µg/m<sup>3</sup> respectively**) exceeded the standard of prescribed limit (PM<sub>2.5</sub> : 60 µg/m<sup>3</sup> & PM<sub>10</sub> 100 µg/m<sup>3</sup>). Concentration levels of the remaining parameters are within the stipulated norms.
- k. Continuous Ambient Air Quality Monitoring Station (CAAQMS) was not operational during the inspection.
- l. Lime, Powered Activated Carbon (PAC) and Urea are used as dosing agents in Flue gas. A graph has been plotted for Lime, Powered Activated Carbon (PAC) and Urea used on 13.10.2020 during 6.00AM to 6PM as shown in **Figure 8**. The quantity of Lime, activated carbon and urea doused is observed to be in the range of 140-168kg/h, 4-6 kg/h and 20-28.32 Kg/hr respectively.

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**Figure-8: Amount of Lime, Activated Carbon and urea used as dosing on 13.10.2020.**

- m. Analysis reports of loss of ignition (LOI) and heavy metals in fly ash and bottom ash are given in **Table-16**. It is observed that monitored levels of all the parameters are within the specified limit.
- n. The plant is dumping Bottom Ash, Fly Ash & inerts at Ghazipur Dumpsite. WtE plant Ghazipur is not utilizing Fly ash for beneficial purposes like bricks manufacturing etc.
- o. Leachate Treatment plant has been installed and treated leachate is being used for gardening, road waste etc.
- p. During inspection, Treated Leachate Treatment plant was found operational. Treated leachate analysis report is tabulated in **Table-19**. It has been observed that the value of TDS of treated leachate exceeded the standard limit on Land disposal.



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**Table 19: Analysis report of treated leachate**

S. No	Parameter	Land disposal (Standards)	Treated Leachate analysis report
	Suspended solids, mg/l, max	200	47
	Dissolved solids (inorganic) mg/l, max.	2100	2532
	pH value	5.5 to 9.0	-
	Ammonical nitrogen (as N), mg/l, max.	-	3.0
	Total Kjeldahl nitrogen (as N), mg/l, max.	-	-
	Biochemical oxygen demand (3 days at 270 C) max.(mg/l)	100	18.2
	Chemical oxygen demand, mg/l, max.	-	92
	Arsenic (as As), mg/l, max	0.2	BDL
	Mercury (as Hg), mg/l, max	-	-
	Lead (as Pb), mg/l, max	-	BDL
	Cadmium (as Cd), mg/l, max	-	BDL
	Total Chromium (as Cr), mg/l, max.	-	BDL
	Copper (as Cu), mg/l, max.	-	0.03
	Zinc (as Zn), mg/l, max.	-	1.25
	Nickel (as Ni), mg/l, max	-	BDL
	Cyanide (as CN), mg/l, max.	0.2	-
	Chloride (as Cl), mg/l, max.	600	-
	Fluoride (as F), mg/l, max	-	-
	Phenolic compounds (as C6H5OH) mg/l, max.	-	BDL

*Am*

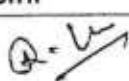

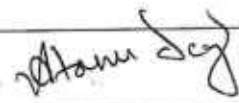
*A. Jey*

*R. W*

- q. Unit has not fixed radioactive sensors on the way of MSW loaded truck.
- r. During inspection all drains within the premises were found choked & MSW found scattered on roads inside the plant.
- s. Plant has not maintained considerable greenery inside the premises.

#### 15. Recommendations

- i. The plant has to upgrade its production process and emission control measures to ensure that the emission levels of all parameters including (PM, HCL, NOx, Dioxin & Furans) are within the stipulated limits.
- ii. Plant should implement necessary measures to improve air quality (PM2.5 & PM10) in and around the plant.
- iii. OCEMS installed in the plant to be calibrated to ensure that OCEMS data matches with the actual monitoring results.
- iv. The plant has to ensure that CAAQMS installed in their premises is operational at all times and the display board for the same should be made functional.
- v. The plant should upgrade leachate treatment procedure so as to improve the treated leachate quality before spreading over land.
- vi. The plant has to provide facility for treatment of wet waste.
- vii. The segregation process of MSW of the plant has to be made operational to improve efficiency of the plant.
- viii. The plant has to be obtained valid consent to operate from DPCC.
- ix. The plant has to ensure that it is operational at full capacity when the joint inspection of the unit is carried out so that the monitoring results are conclusive.
- x. Time bound Action Plan to be submitted for utilization of fly ash and inert material.
- xi. Green Belt has to be developed around the plant as per Buffer zone Guidelines for waste processing processing facilities issued by CPCB.
- xii. Unit has to fix radioactive sensors at suitable places to effectively monitor the entering in the plant.
- xiii. House Keeping needs to be improved.

Name & designation of inspecting officer(s)	(Ratnesh Kumar), Sc.'B', CPCB Delhi	(Ramesh Chandra) EE, DPCC Delhi	Atanu Dey, RA-I, CPCB
Signature			

**BEFORE THE NATIONAL GREEN TRIBUNAL,  
PRINCIPAL BENCH, NEW DELHI**

M.A. No. 1168 of 2017

In

Original Application No. 22 of 2013 T<sub>HC</sub>

**Sukhdev Vihar Residents Welfare Association & Ors.**

Vs.

**State of NCT of Delhi & Ors.**

**CORAM :** HON'BLE MR. JUSTICE SWATANTER KUMAR, CHAIRPERSON  
HON'BLE DR. JUSTICE JAWAD RAHIM, JUDICIAL MEMBER  
HON'BLE MR. JUSTICE RAGHUVENDRA S. RATHORE, JUDICIAL MEMBER  
HON'BLE MR. BIKRAM SINGH SAJWAN, EXPERT MEMBER

**Present:** Applicant:

Ms. Alpana Podder, Adv. with Mr. Bhupender Kumar, LA, Central Pollution Control Board, Applicant in M.A.

Respondent. :

Mr. Tarunvir Singh and Ms. Guneet Khehar, Advs.

Ms. Sakshi Popli, Adv. for Delhi Jal Board  
Mr. Krishna Kumar Singh, Adv. for Ministry of Environment, Forest and Climate Change

Ms. Priyanka Swami, Adv. for Nagar Nigam Ghaziabad

Mr. Biraja Mahapatra, Adv. and Mr. Dinesh Jindal, LO for Delhi Pollution Control Committee

	Date and Remarks	Orders of the Tribunal
	<p><b>Item No. 12</b></p> <p><b>October 09, 2017</b></p> <p>SS &amp; SN</p>	<p><b><u>M.A. No. 1168 of 2017</u></b></p> <p>It is contended that keeping in view of the expenses involved, the fact is that the Central Pollution Control Board does not have in-house mechanism in their laboratories to analyse Dioxin and Ferrons.</p> <p>The prayer is that instead of monthly it may be made once in four months. We allow this prayer. The Central Pollution Control Board is permitted to collect and analyse the samples of ambient air quality once in four months, they shall also conduct at lease two surprise inspections and analysis be made in a year.</p> <p>With the above directions M.A. No. 1168 of 2017 stands disposed of. No order as to cost.</p> <p style="text-align: right;">.....CP (Swatanter Kumar)</p>

	<p><b>Item No.</b> <b>12</b></p> <p><b>October</b> <b>09, 2017</b></p> <p><b>SS &amp; SN</b></p>	<p>.....,JM (Dr. Jawad Rahim)</p> <p>.....,JM (Raghuvendra S. Rathore)</p> <p>.....,EM (Bikram Singh Sajwan)</p>
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**BEFORE THE NATIONAL GREEN TRIBUNAL  
PRINCIPAL BENCH, NEW DELHI**

**Original Application No. 640/2018  
(Earlier O.A. No. 22/2013)**

**Sukhdev Vihar Resident's Welfare Association  
Vs.  
State of Delhi & Ors.**

**CORAM : HON'BLE MR. JUSTICE ADARSH KUMAR GOEL, CHAIRPERSON  
HON'BLE MR. JUSTICE S.P. WANGDI, JUDICIAL MEMBER  
HON'BLE DR. NAGIN NANDA, EXPERT MEMBER**

**Present: Respondent:**

**Mr. Nilava Bandyopadhyay, Adv. for  
Project Proponent, Okhla Project**

Date and Remarks	Orders of the Tribunal
<p><b>Item No. 6</b></p> <p><b>September 27, 2018</b></p> <p><b>R</b></p>	<p>1. In pursuance of earlier order of this Tribunal dated 18.04.2018, joint inspection has been conducted by the Central Pollution Control Board and the Delhi Pollution Control Committee. Findings in the report are that the Waste-to-Energy Plants at Okhla, Ghazipur and Bawana are non-compliant with respect to the standards of the particulate matter. Following recommendations have been made:</p> <p style="text-align: center;"><b>"Recommendations:</b></p> <ol style="list-style-type: none"> <li>1. <i>To ensure better efficiency of the Plant and Power generation the unit should feed segregated wastes.</i></li> <li>2. <i>Plant should adopt technologies to reduce Moisture Content in RDF.</i></li> <li>3. <i>Fly ash utilization should be done rather than dumping it on landfill site.</i></li> <li>4. <i>Unit shall install Fly ash bricks manufacturing unit.</i></li> <li>5. <i>Flow meters shall be installed at inlet and outlet of Leachate treatment plant.</i></li> <li>6. <i>Plant should adopt technologies to improve calorific value of RDF.</i></li> <li>7. <i>Plant shall be designed for 30-35 years."</i></li> </ol> <p>2. The Central Pollution Control Board may send a copy of its report to the project proponents of Okhla, Ghazipur and Bawana Waste-to-Energy Plant for compliance and conduct another inspection within one</p>



	<p><b>Item No. 6</b></p> <p><b>September</b></p> <p><b>27, 2018</b></p> <p><b>R</b></p>	<p>month in view of the fact that the earlier inspection was in February, 2018 and requirement of carrying out inspection is in every 4 months. We do not find any ground to accept the prayer for relieving Central Pollution Control Board of its requirement in four monthly monitoring. If there is a manpower constraint, it is for the Central Pollution Control Board to make any other appropriate arrangement for discharging its functions. This cannot be a ground to avoid responsibility under the binding directions of this Tribunal.</p> <p>3. It is made clear that if the project proponents fail to maintain the standards, even after carrying out the deficiencies noticed in the joint inspection Report, Central Pollution Control Board may recommend the amount of environmental damage required to be paid by them.</p> <p>The application is disposed of.</p> <p>....., CP (Adarsh Kumar Goel)</p> <p>....., JM (S.P. Wangdi)</p> <p>....., EM (Dr. Nagin Nanda)</p> <p>27.09.2018</p>
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