To

Dated January 4th, 2016

Secretary
Delhi Electricity Regulatory Commission

Dear Sir,

During the hearing held on 15th December we were instructed to submit following documents. Further we have been in touch with Mr. Abhishek to understand the details required. We are pleased to submit the enclosed documents for your consideration.

1. Feed-in-tariff Analysis based on the methodology provided in the CENTRAL ELECTRICITY REGULATORY COMMISSION (Petition No.SM/004/2015(Suo-Â-Motu) dated 31.03.2015 and 07.10.2015.

2. Detailed Project Report.

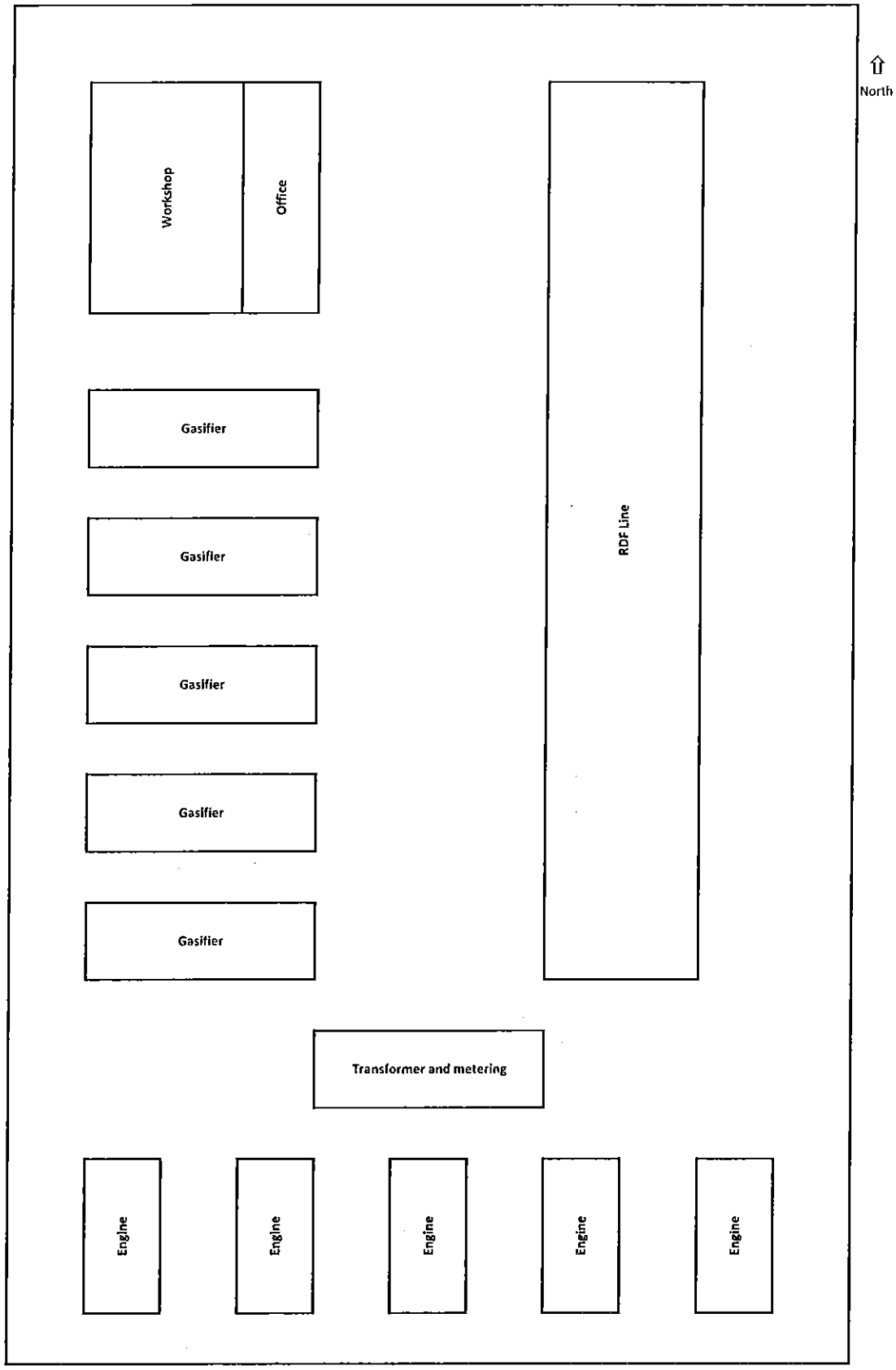
3. Plant Layout / block Diagram.

4. Line Diagram.

5. A model prepared on spread sheet with comments has been submitted by mail.

Regards

Vinod Fotedar
Director
Elephant Energy Private Limited
9810571616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RDF Line
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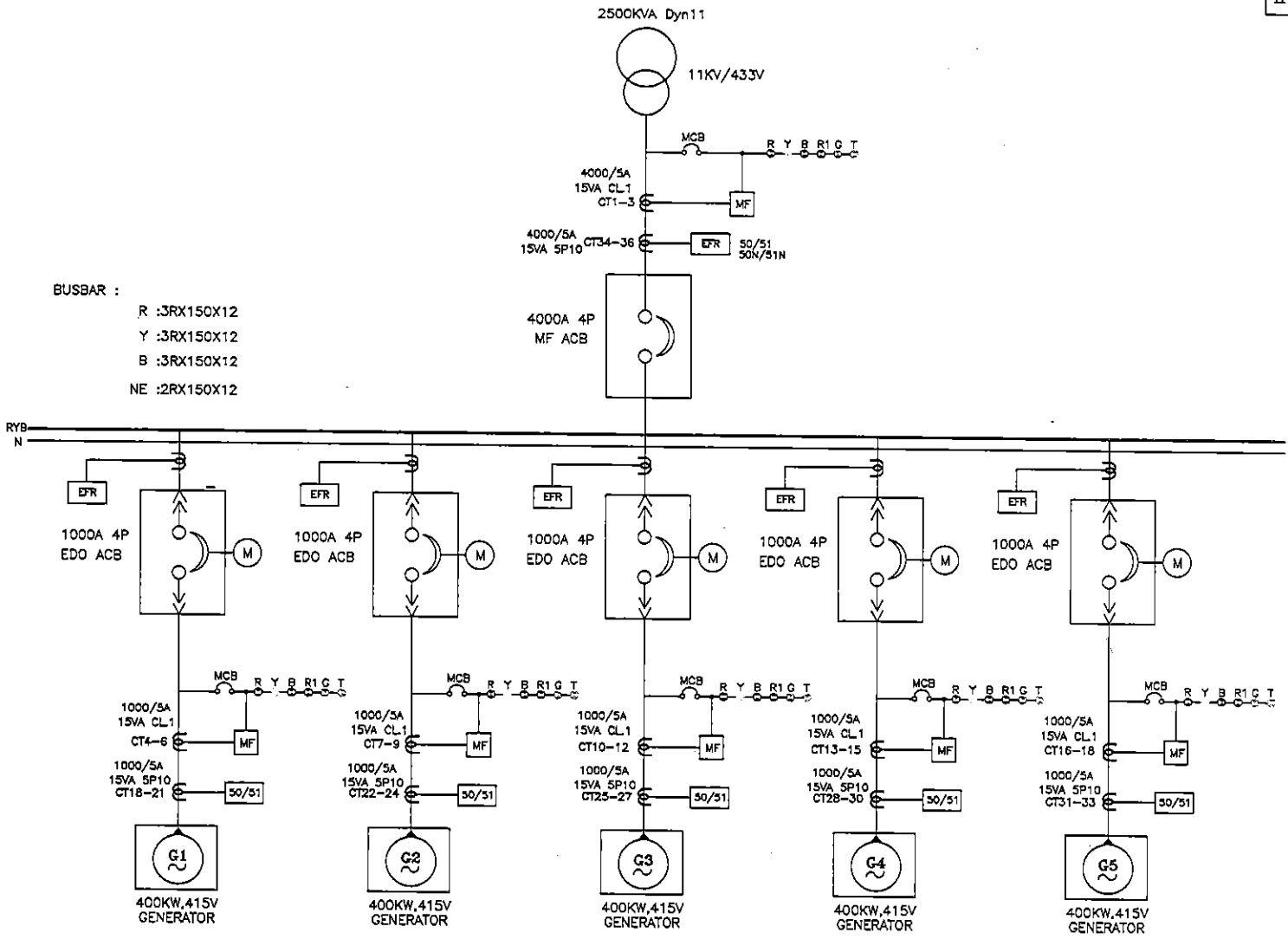
IF IN DOUBT ASK....



DRAWN	CHECKED	APPROVED	DATE	SCALE	PO NO: 52	CUSTOMER:				
		–		NTS						
				SHEET NO	CONSULTANT : –	TITLE:–				
					CONTRACTOR : –	GA DRAWING SLD				
							DATE	REV.	DESCRIPTION	SIGN

Elephant Energy Private Limited
A1/136, third floor
Safdarjung Enclave
New Delhi INDIA 110029

PAN: AADCE9038N
CIN: U74900DL2015PTC277836.

Monday, 21 December 2015

The Chairman
Delhi Energy Regulatory Commission.
Delhi, INDIA.

Dear Sir,

In 2014, the New Delhi Municipal Council ran a global request for tenders to develop 3 x mini waste-to-energy projects in the NDMC region, with each project to process 70 tonnes of waste per day (combined total of 210 tonnes per day)

On July 17th 2014, Elephant Energy was declared the winner of the three projects and was issued with a Letter of Award to start work as soon as possible on the first project, which is located at the Arjun Das Camp waste transfer station.

Elephant Energy Accepted the project in July 2014 noting that a guaranteed electricity purchase price of 8.00 Indian rupees was required and that this was to be indexed to Indian inflation (Consumer Price Index (CPI) as announced by the, Reserve Bank of India) for the 20 -year life of the project.

For clarity, Elephant Energy is a Concessionaire and the project shall be developed on a Build Own Operate Basis (BOO Basis) whereby Elephant Energy is responsible for all aspects of funding the project and no financial subsidies have been provided to Elephant Energy to develop the project.

Elephant Energy submits this document for approval of the feed-in-tariff for the 3x project's to be completed by Elephant Energy under this tender.

In submitting this document we have included our certified capital cost and an analysis based on the methodology provided in the CENTRAL ELECTRICITY REGULATORY COMMISSION (Petition No. SM/004/2015(Suo-Motu) dated 31.03.2015 and 07.10.2015.

For & on behalf of Elephant Energy Private Limited

Andrew Skidmore
Director (DIN 07090962)

NAGAR GOEL & CHAWLA

Chartered Accountants

To,

Delhi Electricity Regulatory Commission

ViniyamakBhavan, C - Block,
Maharishi Dayanand Marg,
Jahanpanah Monument, Malviya Nagar,
New Delhi, Delhi 110016

Subject: Certification of capital cost to be incurred by Elephant Energy Private Limited for their Municipal Solid Waste (MSW) located atNDMC Khuta, Arjun Das Camp, Raj Nagar, New Delhi - 110023

We have examined the purchase agreement in between supplier of the equipment and Elephant Energy Private Limited, D-605, Satisar, Plot - 6, Sector - 7, Dwarka, Delhi - 110075 ("the Company") (vide Contract reference : EEPL(India) 00001RevI.0)

On the basis of agreement, we hereby certify that the Capital cost to be incurred by the Company would be as under:

S.No.	Component of Capital Cost	Amount in USD
1	Energy Generation Plant	1,113,000
2	Gasifier	1,735,000
3	RDF Plant	433,125
4	Building, office and workshop	341,500
5	Freight	79,850
6	Duties and taxes	999,668
7	Custom clearing charges	30,000
8	Local Content	158,000
9	Engineering, Integration and Commission	1,338,988
	Total	**6,229,131**

Above figures are based on extracts of the aforesaid contract.

This certificate has been issued on request of management of the Company to be submitted to Delhi Electricity Regulatory Commission and not meant for general circulation.

For Nagar Goel & Chawla
Chartered Accountants
Firm Regn. No. - 009933N

Raman Chawla
Partner
M. No. 088805

Place: New Delhi
Date: 12.09.2015

C-23,Usha Niketan, Safdarjung Development Area, New Delhi - 110016, India
Tel : 011 - 41435260-61 Fax : 011 - 41435262
E-mail : ngcca@ngcca.com, web . www.ngcca.com

1	**Power Generation**				See Footnote
	Capacity	Installed Power Generation Capacity	MW	2.75	*
		Auxiliary Consumption During Stabilisation	%	0	
		Auxiliary Consumption During Stabilisation	%	0	**
		PLF (stabilization for 6 months)	%	67%	
		PLF (During first year after stabilization)	%	67%	
		Useful Life	Years	20	
	Net Electrical Output	Per annum	Kwh	16,206,000	
2	**Project Cost**				
	Total	Total Project Cost	Rs	347,131,754	
	Capital Cost / MW	Power Plant Cost	Rs / MW	126,229,729	
			Rs Crore / MW	12.62	***
3	**Financial Assumptions**				
	Debt:Equity	Debt	%	70%	
		Equity	%	30%	
		Total Debt Amount	Rs	242,992,227.76	
		Total Equity Amount	Rs	104,139,526	
	Debt Component	Loan Amount	Rs	242,992,228	
		Moratorium Period	years	0	
		Repayment Period	years	15	
		Interest Rate	%	13.0%	
	Equity Component	Equity Amount	Rs	104,139,526	
		Return on Equity for first 10 years	% p.a.	20%	
		Return on Equity after 10 years	% p.a.	24%	
		Weighted Average ROE	%	22%	
		Discount Rate (equivalent to WACC)	%	15.70%	
4	**Financial Assumptions**				
	Fiscal Assumptions	Income Tax	%	33.9%	
	Depreciation	Depreciation Rate (Power Plant)	%	5.83%	
		Depreciation Rate (13th year onwards)	%	2.51%	
5	**Working Capital**				
	For Fixed Charges	O&M Charges	Months	1	
		Maintenance Spare	(% of O&M Expenses)	15%	
		Receivables and debtors	Months	2	
	For Variable Charges	MSW Stock	Months	N/A	
		Interest on Working Capital	%	13.50%	
6	**Fuel Related Assumptons**				
	Heat Rate	After Stabilisation period	Kcal /Kwh	0	
		During Stabilisation period	Kcal /Kwh	0	
	MSW	MSW Price	Rs / T	0	
		GCV	Kcal / Kg	0	
		MSW Price Escalation Factor	%	0	
7	**Operation and Maintenance**				
	O&M Expenses	2015-16	Rs	55,100,948	****
	O&M Expense Escalation	%	%	As per Indian CPI	*****
8	**Tarrif Rate Determination**				
		Variable COG	Rs/ KWh	- ₹	
		O&M Expenditure	Rs/ KWh	3.40 ₹	****
		Depreciation	Rs/ KWh	1.25 ₹	
		Interest on Term loan	Rs/ KWh	1.95 ₹	
		Interest on Working Capital	Rs/ KWh	0.04 ₹	
		Return on Equity	Rs/ KWh	1.41 ₹	
		Total	Rs/ KWh	8.05 ₹	******
		Indexation of Feed in Tarrif		As per Indian CPI	*******

Footnotes

*	The waste-to-energy plant contains 5 x 550KWe internal combustion engines
**	The plant is connected to the grid in Island Mode, not in a Parallel mode. Additional energy is generated onsite to supply the auxiliary load of the plant, this separate energy generation plant operates in its own island mode and does not draw energy from the waste-to-energy plant. Therefore the auxiliary load should be considered as zero when calculating net annual output in this instance.
***	CENTRAL ELECTRICITY REGULATORY COMMISSION (Petition No. SM/004/2015(Suo-Motu) Dated 07.10.2015) nominates a benchmark of 9-15 Crore / MW. Yet, it is also noted that the data provided by Ministry of Urban Development was for an average Capital Cost / MW is 16.72 Cr per MW With respect to this EEPL also notes that the EEPL plant is a decentralised plant whilst the CERC figures consider much larger centralised plants.
****	This includes all operating and maintenance costs for overheads, labour, repairs and maintenance, management and administration and equates to Rs 3.40 per kilowatt The CENTRAL ELECTRICITY REGULATORY COMMISSION (Petition No. SM/004/2015(Suo-Motu) Dated 07.10.2015) nominates INR 3.56 / Kwh as acceptable
*****	All operational and maintenance costs (overheads, labour, repairs and maintenance, management and administration) are exclusively domestic and reflect the items considered by the Reserve Bank of India when calculating Consummer Price Index (CPI) Therefore it is to be assumed that annual costs will increase at the same rate as the CPI as announced by the Reserve Bank of India.
******	CENTRAL ELECTRICITY REGULATORY COMMISSION (Petition No. SM/004/2015(Suo-Motu) Dated 07.10.2015) nominates a price of Rs 7.90 / Kwh. With respect to this EEPL also notes that the EEPL plant is a decentralised plant whilst the CERC figures consider much larger centralised plants.
*******	If annual costs increase at a faster rate than annual income then this denotes a declining terms of trade. Therefore annual incomes must also increase at the same rate as the CPI to avoid a declining terms of trade and maintain the Return on Equity invested by EEPL.

Elephant Energy Private Limited
A1/136, third floor
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New Delhi INDIA 110029

PAN: AADCE9038N
CIN: U74900DL2015PTC277836.

Wednesday, 23 December 2015

The Chairman
Delhi Electricity Regulatory Commission.
Delhi, INDIA.

Dear Sir,

Please find attached our project report as requied by your department when considering our project.

For & on behalf of Elephant Energy Private Limited

Andrew Skidmore
Director(DIN 07090962)

1. COMPANY PROFILE

Elephant Energy Private Limited (Elephant Energy) is an Indian based infrastructure company enabling projects that combine waste disposal and electricity generation through waste-to-energy Projects using the G-Series waste to energy technology.

Elephant Energy licences the G-Series technology from swissRenergy Limited. swissRenergy Limited has validated its technology through two test plants, firstly in the Philippines and subsequently in China.

The G-Series has been independently validated by the Philippines Department of Science and Technology using the Environmental Technology Verification process (ETV).

The ETV process was developed by the US Environmental Protection Agency (EPA) to validate the claims of clean technologies through scientifically acceptable methods and testing procedures.

ETV is used and recognized in the USA, Canada, the EU, Denmark, Japan, Korea and the Philippines whilst, China, India, Singapore, Indonesia and Bangladesh are all anticipated to implement the ETV program in 2016 and beyond.

2. INTRODUCTION to Gasification Technology

2.1 Energy available in MSW.

The calorific value of MSW in India is significantly lower than other countries within the region due to the decreased presence of plastics, styrofoam and rubber and the higher concentration of moisture, dirt and rocks all of which are inert and lower the overall calorific value of the waste.

The Central Energy Regulator Commission (CERC) feels it is reasonable in assuming the Calorific Value at 2500 kcal/kg for RDF based waste to energy power projects but that the GCV for MSW is not relevant in this instance as their is no charge for the MSW as fuel to the plants.

2.2 Hybrid Gasification

The G-Series uses a unique combination of gasification techniques for advanced energy recovery. The process can be summarized as:

a) MSW to wet RDF

Upon receipt onsite, the unsorted MSW shall be subject to a preparation process that converts the MSW into "Wet Refuse Derived Fuel" (Wet RDF).

This process involves material size reduction, removal of the inert recyclable materials (including metals, glass, dirt, rocks and free liquids).

b) Wet RDF to syngas

The Wet RDF is converted to Synthesis Gas (syngas) through the application of hybrid gasification techniques in a tri-stage thermal conversion process.

These occur in enclosed environments that are starved of oxygen. By conducting this process in such an oxygen-starved environment, and by applying a controlled and indirect heat source, the dioxins and furans generated are negligible and well within even the toughest international limits.

The consistency and efficiency of this process enables the G-Series to produce a syngas that is free of tars and particulate matter therefore avoiding the need for extensive gas filtering infrastructure before the energy generation stage.

c) Syngas to electricity and electricity to the grid

The syngas provides the fuel source for the energy generation. Electricity is

produced from the syngas powering a modified gas engine, which in turn is connected to the grid at the nominated voltage and frequency and with the grid protection and synchronization equipment as required by the grid owner.

2.3 Standard Capacity/Ratings and Specifications

Please refer to the technical standards set out in section 4

2.4 Advantages of Hybrid Gasification

a) <u>High Net Energy Output</u>

The G-Series uses gasification techniques that require an oxygen-starved environment and the indirect application of heat to break the waste material down.

Production of syngas using such techniques results in high energy conversion efficiencies.

b) <u>Flexibility of Waste Stream</u>

The durability of the process ensures that the Waste streams are not required to be pre-sorted before delivery to the plant.

However it is noted that municipal solid waste does not include biomedical waste, construction waste and debris, industrial waste, market waste and hazardous wastes.

c) <u>Environmental Compliance</u>

The process results in a low emission levels that easily comply with the toughest global environmental standards and easily comply with the standards of India as set out in Municipal Solid Waste (Handling & Management) Rules, 2000 and the Environmental Impact Assessment Notification 2006

The following tables have been taken from the Environmental Testing and Verification Report to provide a summary of the emissions of the G-Series plant.

Measured ambient air concentrations of TSP (Total Suspended Particulate), SO_2 (Sulfur Dioxide), NO_2 (Nitrogen Dioxide), NH_3 (Ammonia), TVOC (Total Volatile Organic Carbons) in comparison with the NAAQGV standard (National Ambient Air Quality Guideline Values):

Location	Date & Time of Sampling	TSP (µg/Nm³)	NO_2 (µg/Nm³)	SO_2 (µg/Nm³)	NH_3 (µg/Nm³)	TVOC (ppm)
Near Main Gate	August 09, 2014 1120H-1220H	18.6	ND	ND	51.7	ND
In front of Production Building	August 09, 2014 1445H-1545H	6.0	ND	ND	41.6	ND
DENR Standard (NAAQGV)	**1 hr. sampling**	**300**	**260**	**340**	**200**	**N/A**

* Time reflected was based on TSP sampling run. ND= Not Detected, N/A = Not Applicable to DENR standard.

Measured Ambient Air Concentrations of Sb (Antimony), Cd (Cadmium), Cr (Chromium), Cu (Copper), Pb (Lead), Mn (Manganese), Hg (Mercury) and Ni (Nickel) in comparison with the NAAQGV standard (National Ambient Air Quality Guideline Values) **(µg/Nm³)**:

Location	Date & Time of Sampling	Sb	Cd	Cr	Cu	Pb	Mn	Hg	Ni
Near Main Gate	August 09, 2014 1120H-1220H	ND	ND	ND	ND	ND	ND	ND	ND
In front of Production Building Area	August 09, 2014 1445H-1545H	ND	ND	ND	ND	ND	ND	ND	ND
DENR Standard (NAAQGV)	**1 hr. sampling**	**20**	**10**	**N/A**	**N/A**	**20^**	**N/A**	**N/A**	**N/A**

* Time reflected was based on TSP sampling run. ND= Not Detected, ^ 30 minutes average time, N/A = Not Applicable to DENR standard

Results for total PCDD (Dioxins) and PCDF (Furans) analysis:

Location	Date & Time of Sampling	Total PCDD/PCDF	Limit[1]
Elevated Tank Area	August 10 and 11, 2014	0.00006635 ng/Nm³	0.1 ng/Nm³

[1] DENR Emission Standards for Treatment Facilities Using Non-Burn Technologies.

Testing of the solid ash was also conducted using the Toxicity Characteristics Leaching Procedure (TCLP) for comparison with DENR maximum limits for inorganic pollutants.

Parameter	Results	DAO 2004-36 Standard
Arsenic (As), mg/L	ND	5.00
Barium (Ba), mg/L	ND	100.00
Cadmium (Cd), mg/L	ND	1.00
Chromium (Cr), mg/L	ND	5.00
Lead (Pb), mg/L	ND	5.00
Selenium (Se), mg/L	ND	1.00
Silver (Ag), mg/L	ND	0.20
Mercury (Hg), mg/L	ND	5.00

ND = Not Detected

d) Small operating footprint

Each G-Series plant is 1,000 square meters, being 50m long x 20m wide x 14.2m high.

However, it is noted that this does not include the vehicular access or site-specific allowances for local building codes. As such, the actual space requirement will be subject to the final site plan and local building codes.

3. PROJECT TECHNICAL DETAILS

3.1 Equipment Used

The G-Series is a turn-key operation that is an end-to-end solution from the receipt of unsorted municipal solid waste (MSW) through to the delivery of electricity into the public grid.

Elephant Energy licences the G-Series technology from swissRenergy Limited.

3.2 Capacity of Project

This plant shall receive 70 tonnes per day of unsorted municipal solid waste.

The plant shall have a standing capacity of 2.75 MW.

Power is delivered into the substation as three phase, 11KV, 50 Hz.

The plant shall have net electrical out put in the range of 1.4 to 1.85 Mw.

3.3 Annual Availability

The plant will produce electricity 24/7/365. The CERC has deemed that The Municipal Solid Waste and Refuse Derived Fuel based power projects shall be treated as "MUST RUN" power plants and shall not be subjected to merit order dispatch" principles.

3.4 Annual Energy Output (Expected)

Annual electrical output will be in the range of 12,264 to 16,206 Mwh.

3.5 Plant design and drawings

Single line drawing contained in Appendix A.

3.6 Overload Capacity

The engines are not designed for over load (not more than 100%)

Synchronization panel busbars are designed to 115% for overload and short circuit capacity at ambient temperature of 45 deg C.

3.7 Fault Tolerant Limit

The fault tolerance limit will be programmed in the HT GC 500 panel as required by the grid owner.

3.8 Quality of Output Power

The HT GC 500 plus synchronization module regulates the quality of output power and this module has an inbuilt programming function to maintaining following.

1. Voltage and speed before synchronization with Grid.
2. Power export and power factor control on load connected with grid.
3. Protection against the set point value.

3.9 Protective Methods/Equipment

The HT GC 500 plus provides the necessary protection logic and controls

Whilst the breaker panel provides additional protection devices (over load, earth faults and over current relays are installed parallel to avoid major faults)

3.10 Details of Metering, Indication, Data Logging Operation

The breaker panel has the indication devices included.

Data logging of the operation is done by an additional PLC device.

We have assumed a Multifunctional Digital Meter, however we are open to install meter as per the standard specifications to be provided by NDMC

4. PROJECT COSTING

The project shall cost approximately INR 35 Crore (exclusive of duties and taxes).

The cost of the project has been audited by Nagar Goel and Chawla CA of New Delhi. This has been submitted as part of pitition.

5. PROJECT IMPLEMENTATION SCHEDULE

Following this detailed equipment validation and the award of the first project in Raj Nagar, New Delhi, Elephant Energy has since constructed a plant in New Delhi that is currently awaiting final sign off from the various Government agencies.

In August 2015 the plant at Raj Nagar, New Delhi, was commissioned. The plant can currently generate electricity, although it is still awaiting connection to the New Delhi Municipal Council Electricity Grid.