

Public Notice by CERC Vide RA -14026(11)/1/2023-CERC dated 17.02.2024

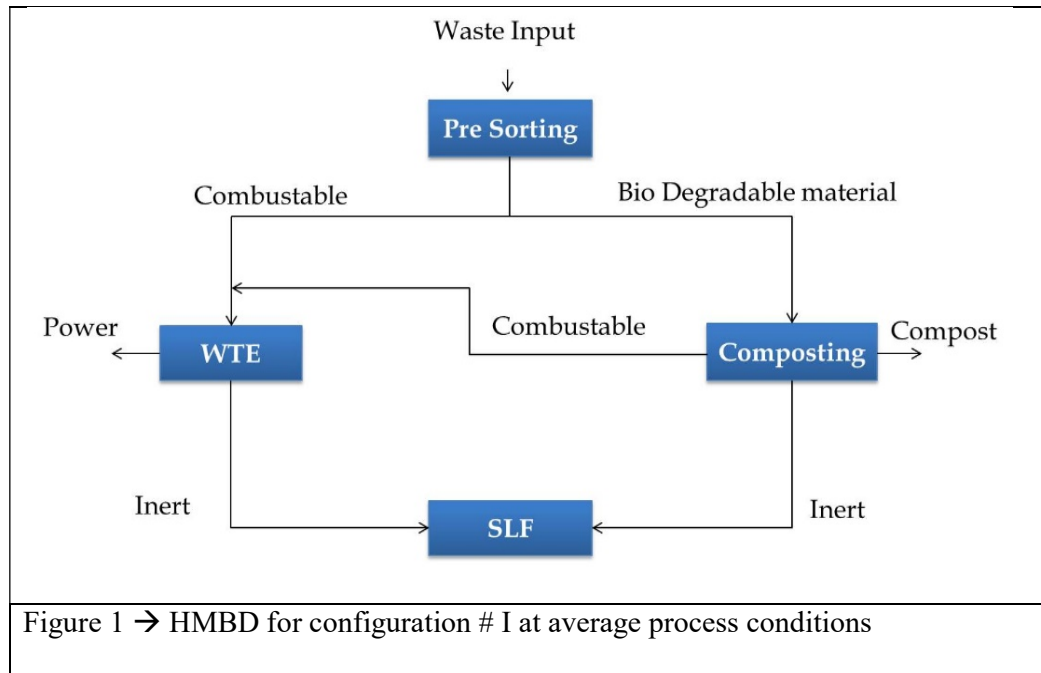
Avant-Garde Systems & Controls Pvt Ltd (Avant-Garde), Chennai has been in the filed of services pertaining to design, detailed engineering, Consultancy and O&M services for thermal power projects, with special emphasis on renewable energy projects. In regard to Waste to energy, Avant-Garde is involved in the preparation of DPR for the plant at Okhla, Pune, Hyderabad, Dundigal, Rewa and engineering services to plants at Bawana, Hyderabad, Rewa, Dundigal, Pune and under construction at Bangalore, Hyderabad & Deonar - Mumbai.

Avant-Garde submit its views are as follows:

Type of Plant : MSW or RDF

While the majority of plants in Europe, Japan, USA and China are based on mass burn process, utilizing the MSW as received and complies with the emission standards as well. For efficient and sustained combustion, below are our observations:

- The quality of mixed MSW is not amenable for sustained combustion under different circumstances. This also evident from the recommendations of OEM.
- RDF after segregation is the way with reference to sustainability, controllability and with reference to pollution control
- The SWM Rules 2016 makes it mandatory for segregation of MSW and resultant combustible fraction of waste shall be >1500 kcal/kg as the feed stock for waste to energy. The simple pictorial format of the working principle is depicted below (Refer Figure 1).



Further, the biodegradable fraction after pre-sorting/ segregation also known as Organic Fraction of MSW (OFMSW) is a feed stock for manufacturing of compost, to be used as soil conditioner through aerobic composting or for producing biogas & compost through anaerobic digestion. The Government of India, through its SATAT scheme, is promoting the generation of biogas and conversion to compressed bio gas (CBG) for augmenting the capacity of indigenous gas for transport and cooking purposes and avoiding import.

Hence, the proposal of directly incinerating the Mixed MSW without pre-processing, regardless of its technical feasibility and it is not legally compliant with SWM Rules 2016 and this aspect also may be examined by CERC.

Plant Capacity & Seasonal Fluctuations

The following table (Table 1) reflects our experience at various operating MSW based power plant, in a nut shell:

WTE PLANT		1	2	3	4	5
		General Operating Range				
		Monsoon Season		Pre & Post Monsoon Season		
Fuel	TPH	16.67	16.67	16.67	16.67	16.67
Fuel LCV	kcal/kg	1100	1200	1300	1400	1500
Heat Input	Mkcal/h	18.34	20.00	21.67	23.34	25.00
Power Output	MW _(th)	21.3	23.3	25.2	27.1	29.1
Power Output	MW _(el)	4.75	5.15	5.7	6.2	6.85

Table 1 : Typical Power generation during seasonal variation for 400TPD plant

Hence, it is imperative to consider that use of segregated RDF as the feed stock is beneficial as under.

- Legally compliant with SWM Rules 2016
- Provides for deriving the benefit out of using the wet waste either through compost or through biogas/ CBG
- Efficient & Sustained power generation
- Enhances recycling, green waste disposal scientifically and reduces the residues to SLF foot print.

Other Parameters

Capital Cost	Rs 20- 25 Cr /MW without pre-processing plant of MSW The Engineered building enclosure to be considered. Flue gas treatment to meet the pollution requirements
Aux Consumption	12 to 16% for MSW based WTE Plant. For RDF based WTE plant, higher auxiliary power consumption, to an extent of 17 – 20% considering the pre-processing equipments.
PLF	75 to 80% on an annual average may be considered as a reasonable bench mark considering the seasonal variation in the incoming fuel.
O&M expenses	8.5% proposed by CERC is reasonable, as Waste to Energy boilers require lot of maintenance arising out of corrosion, erosion. Also, periodic retrofit for the duration of the project commencing from 6 th year after COD is to be separately factored.
Project life	20 - 25 years for a well maintained plant using segregated waste
Return on Equity	ROE is proposed as 14% with grossed up with MAT rate. This may be grossed up with income tax rate of the plant with post tax ROE of 15%.
Subsidy or incentive by the Central or the State Government	Mark up charge of 20% may be requested for adjusting the subsidies/ grants/ incentives received from any states, ie. 80% of such a amount will be adjusted against tariff bill.

WASTE TO ENERGY (WtE) PROJECT PROFILE

2 x 600 TPD MSW Based Power Plant in Delhi



(AN ISO 9001:2015 CERTIFIED ORGANISATION)

No: 67A, Porur Kundrathur High Road, Porur,
Chennai- 600116, India

Tel: + 91-44-45981200/ 2482717 22

Fax: + 91-44-24828531

Email: agsc@avantgarde.co.in

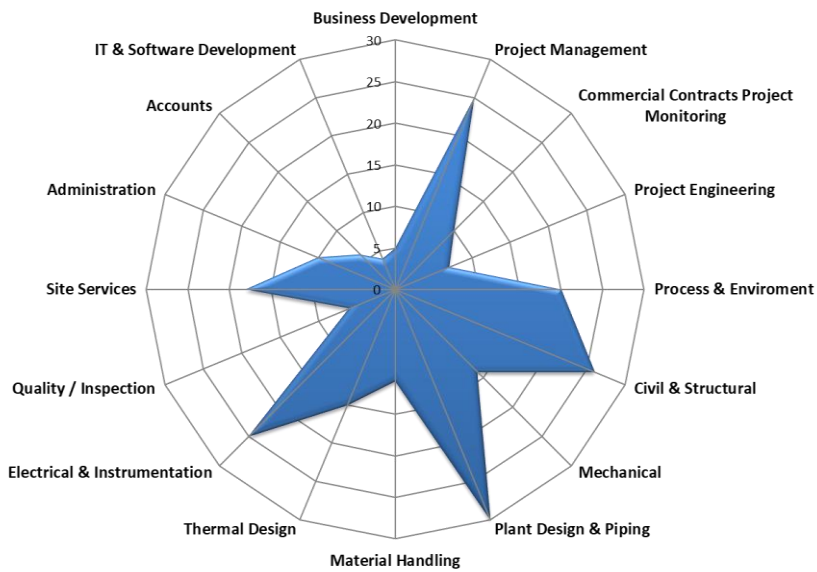
Website: <https://avantgardeindia.com>

INCEPTION

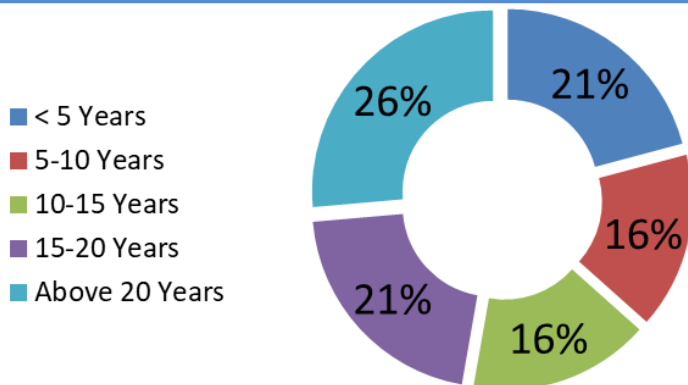
- ❖ ESTABLISHMENT - AVANT-GARDE ENGINEERS AND CONSULTANTS (P) LTD - 1990
AVANT-GARDE SYSTEMS AND CONTROLS (P) LTD - 1995

STAFFING

- ❖ MULTI DISCIPLINARY TEAM COMPRISE OF MORE THAN 200 WORKFORCE



YEARS OF EXPERIENCE



CONTACT PERSON

- ❖ P.S. SANKARANARAYANAN, MANAGING DIRECTOR

AREAS OF EXPERTISE

- Captive power plant
- Cogeneration plant
- Biomass based power plant
- Steam generator design and engineering
- Waste heat recovery systems
- Mini Hydro electric power plants
- Combined cycle power plants
- Solar Thermal & Solar PV power plants
- Sugar plant consultancy
- Distillery Plants
- Water and Waste Water treatment plants
- Industrial Effluent Treatment plants
- Process piping
- Equipment design
- Detailed engineering of electrical, mechanical, instrumentation, civil & structures
- Procurement & site supervision
- Third party inspection services
- Residual Life Assessment
- Energy Audit
- Engineering software development

SERVICES OFFERED FOR WASTE TO ENERGY (WtE) PLANTS

BASIC ENGINEERING SERVICES

- Preparation of Feasibility Reports
- Preparation of Detailed Project Reports
- Power Purchase Agreement
- Thermal Cycle Optimisation
- Plant Engineering

DETAILED ENGINEERING SERVICES

- Plant Layout
- Equipment Layout
- Piping Engineering
- Electrical Engineering
- Switchyard Design
- Instrumentation - DCS, PLC, Micro-processor
- Plant Building Design
- Civil works, civil foundation design for plant, equipment, TG, chimney etc
- Structural design and engineering

PROCUREMENT SERVICES

- Vendor rating
- Preparation of Specification for bought out items
- Evaluation of offers received.
- Preparation of Draft Purchase Order.
- Vendor Drawing Review.
- Expediting Services

- **PROJECT ENGINEERING AND CO-ORDINATION SERVICES**

- **INSPECTION SERVICES**

- **SUPERVISION OF ERECTION AND COMMISSIONING**

- **PERFORMANCE TESTING SERVICES**

A. WASTE TO ENERGY (WTE) PLANTS EXPERIENCE

I. LIST OF COMMISSIONED PROJECTS

S.No	Project	Capacity (MW)
1.	Shriram Energy Systems Ltd, Andhra Pradesh - 650 TPD MSW & 250 TPD RDF - commissioned in 2003	6.00
2.	Delhi MSW Solutions Ltd, Delhi - 1200 TPD RDF based WtE Plant - Commissioned in the year 2016	24.00
3.	Hyderabad Integrated MSW Ltd, Jawahar Nagar, Hyderabad - Phase I - 1200 TPD WtE Plant commissioned in the year 2020	19.80
4.	Hyderabad MSW Energy Solution Pvt Ltd, Gachibowli, Hyderabad - Landfill Gas (LFG) Project LFG Extraction and Compressed Bio Gas (CBG) Plant - 750 cum/hr Landfill Gas into CBG of 337.5 cum/hr bottling capacity - Commissioned in the year 2021	-
5.	Providing Design and Detailed Engineering Services for Flue Gas Ducting for RDF fired boiler and Stack - on account of M/s. Jurong Engineering Limited - 10 MW WtE in Thailand	-
6.	Tuff Offshore, Singapore - Providing Pre-Bid Engineering Services for 2 x 600 TPD WtE project / 35.2 MW	-
7.	Abellon CleanEnergy Limited - Due Diligence Study for the Existing 7.5 MW (with 45 TPH Boiler) RDF based WtE Plant at Jamnagar, Gujarat	-
8.	Rewa MSW Holding Limited, Rewa - 350 TPD (Ramky Group)	6.00

S.No	Project	Capacity (MW)
9.	1 x 800 TPD MSW based Power Plant at Dundigal - Phase III (Ramky Group)	15.00
Total		70.80

II. LIST OF PROJECTS UNDER VARIOUS STAGES OF IMPLEMENTATION

S.No	Project	Capacity (MW)
1.	Pallavapuram Tambaram MSW Private Limited, Chennai (Essel Infra - RDF based Power Plant) - 300 TPD	5.00
2.	Pune Bio-Energy Systems Private Limited, Pune - 1x 800 TPD	14.00
3.	2 x 600 TPD MSW based Power Plant at HI MSW (Ramky Group) Jawaharnagar - Phase II	24.00
4.	Chennai MSW (P) Limited, Deonar - 350 TPD RDF based WtE Plant (Waste Handling Capacity is 600 TPD)	6.4
5.	KPC Gas Power Corporation Ltd - Review Engineering Services for the proposed 11.5MW WtE Project at Bidadi, Ramanagara Dist, Karnataka	11.5
6.	Uttam energy Limited - Design of 350 TPD WtE boiler, design and detailed engineering of BOP and detailed engineering of E & I	6.4
7.	Kalpataru Power Transmission Ltd - Evaluating the Techno-Commercial aspects of the Contract Document for the implementation of 500 TPD WtE Project in Maldives	-
8.	Abellon CleanEnergy Limited - Detailed Engineering Services for the Existing 7.5 MW (with 40 THP Boiler) RDF based WtE Plant at Jamnagar, Gujarat	7.5
9.	Abellon CleanEnergy Limited - Design Review of Goodwatts' 15 MW (with 2x 40 TPH Boiler) MSW based WtE Plant at Rajkot, Gujarat	15
10.	Abellon CleanEnergy Limited - Due Diligence Study for the 15 MW (with 80TPH Boiler) MSW based WtE Plant at Ahmedabad, Gujarat	-
11.	Antony Lara Renewable Energy Pvt. Limited, Pimpri-Chinchwad - witnessing the Performance of WtE Plant	14
12.	East Delhi Waste Processing Co. Pvt. Ltd., Ghazipur - Man Power Optimization Study	12
Total		122.80

III. LIST OF BANKABLE DETAILED PROJECT REPORTS

S.No	Project	Capacity (TPD)
1.	RDF Power Projects Limited, Nalagonda	2 X 600
2.	Timarpur-Okhla Waste Managemet Co. Pvt. Ltd, New Delhi (C/o.IL & FS, New Delhi) MSW and Biomethanisation Plant.	1 X 1300 & 100
3.	East Delhi Waste Processing Co. Pvt. Ltd., Ghazipur - for IL & FS	1 X 1300
4.	Delhi MSW Solutions Ltd, (Ramky Energy, Delhi)	2 X 600
5.	Hi MSW Ltd, (Group of Ramky Energy, Hyderabad)	2 X 600
6.	Guwahati Waste Management Company Pvt.Ltd, (Group of Ramky), Guwahati	1 X 600
7.	Ramky Energy & Environment Ltd, Bangalore	1 X 600
8.	Ramky Enviro Engineers Ltd, Pimpri	1 X 600
9.	IL&FS Energy Development Company Limited, Gurgaon (Puducherry Project)	1 X 600
10.	Pune Bio-Energy Systems Private Limited, Pune	2 X 375
11.	Rewa MSW Holding Limited, Rewa	1 X 310
12.	Dehradun Waste Management Private Limited, Dehradun	1 X 200
13.	Siemens Limited, Chennai	2 x 600
14.	Hyderabad MSW Energy Solutions Private Limited, Jawaharnagar - Phase II	2 x 600
15.	Hyderabad MSW Energy Solutions Private Limited, Dundigal - Phase III	2 x 500
16.	Thane Clean Environment Private Limited, Thane	1 x 800
17.	Bharuch Enviro Infrastructure Limited, Coimbatore - Preparation of Concept Note for the implementation of RDF to Energy Plant	1 x 450
18.	KPC Gas Power Corporation Ltd - preparation of Concept Note on Legacy Waste Management WtE Plant at Mangalore	—
19.	KPC Gas Power Corporation Ltd - preparation of Pre-feasibility report for establishment of Waste to energy comparing incineration Vs Bio-methanisation project at Pachachanadi, Mangaluru	—
20.	KPC Gas Power Corporation Ltd - Preparation of DPR for establishment of WtE project at Mavallipura Waste Processing Plant of BBMP, Yelahanka, Bengaluru, Karnataka	—
21.	Engineering assessment for existing 12MW RDF based WtE plant to improve plant performance & PLF of IL&FS A/c. East Delhi Waste Processing Company Ltd	12MW

S.No	Project	Capacity (TPD)
22.	Siddivinayak Tradelinks - DPR for 2x1000 TPD MSW Plant	2x1000
23.	M/s. ZIGMA Global Environ Solutions Pvt. Ltd., Erode, Tamilnadu - Preparation of Feasibility Report for 500, 750 & 1000 TPD WtE Project and Preparation of Detailed Project Report for 750 TPD WtE Plant - for various Locations	1 x 500 1 x 750 1 x 1000

B. FUELS THAT HAVE BEEN USED IN VARIOUS BOILERS INSTALLED IN THE WASTE TO ENERGY PLANTS FOR WHICH AVANT-GARDE HAVE PROVIDED ENGINEERING SERVICES

- Municipal Solid Waste (MSW)
- Refuse Derived Fuel (RDF)
- Poultry litter

GROUP COMPANY

- Avant-Garde Engineers and Consultants (P) Ltd, Chennai
- Avant-Garde Engineers & Consultants FZC, Sharjah, U.A.E

AFFILIATIONS & MEMBERSHIP

- CEAI - Consulting Engineers Association of India (CEAI is member of **FIDIC International Federation of Consulting Engineers**)
- Consultancy Development Centre (CDC)
- Registered with Indian Renewable Energy Development Agency (IREDA)
- Enlisted with Power Finance Corporation of India and Asian Development Bank
- IIT, Chennai - Industrial Associate ship Scheme (IAS) Membership and Library Membership
- Anna University - Industrial Associate ship Scheme (IAS) Membership and Library Membership
- BIS - Bureau of Indian Standards Library Membership
- Institute of Engineers Fellow Membership - Directors (Chartered Engineers)
- Indian Chamber of Commerce and Industry (ICCI)
- Madras Chamber of Commerce and Industry (MCCI)
- Indian Wind Power Association
- Indian Welding Society
- Institute of Fire Engineers
- Bureau of Energy Efficiency (BEE)
- Maharashtra Energy Development Agency (MEDA)
- South Indian Sugarcane and Sugar Technologists Association (SISSTA)
- Sugar Technologist Association of India (STAI)
- Engineering Export Promotion Council (EEPC)
- Lifetime Achievement Award from WTERT (WtE Research and Technology Council)

* * * *