Waste-To-Energy Projects
By Using
Biomethanation Techniques

Presentation

By

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Mailhem Engineers Pvt. Ltd.

- Mail = waste
- Hem = gold

Converting Waste to Gold.

Our Philosophy

- The army philosophy of “Seeing is believing” -- We have plants on ground then let our clients proudly talk about it.
- Disposal of waste at its source of generation
- Quality, customer satisfaction and highly competitive prices.
- Appropriate/ Suitable Indigenous technology for developing nations

Mailhem Expertise

- DOMESTIC BIOGAS PLANTS
  - Kitchen Waste
  - Sewage Waste water
  - Combined Sewage & Kitchen Waste
- INDUSTRIAL BIOGAS PLANTS
  - Canteen Waste
  - Combined Sewage and Canteen Waste
  - Slaughter House Waste
  - Dairy Effluent
  - Leather Shavings Waste
  - Poultry Waste
  - Starch effluents
  - Food processing waste

Mailhem Expertise

- MSW BASED WASTE TO ENERGY PROJECTS

Mixed waste from:-

- Vegetable market yard
- Fruit and Flower market
- Sewage Sludge from STP
- Animal Droppings
- Large hotels and industrial canteens

Unique combined Sewage and MSW treatment plants for Municipal Bodies.

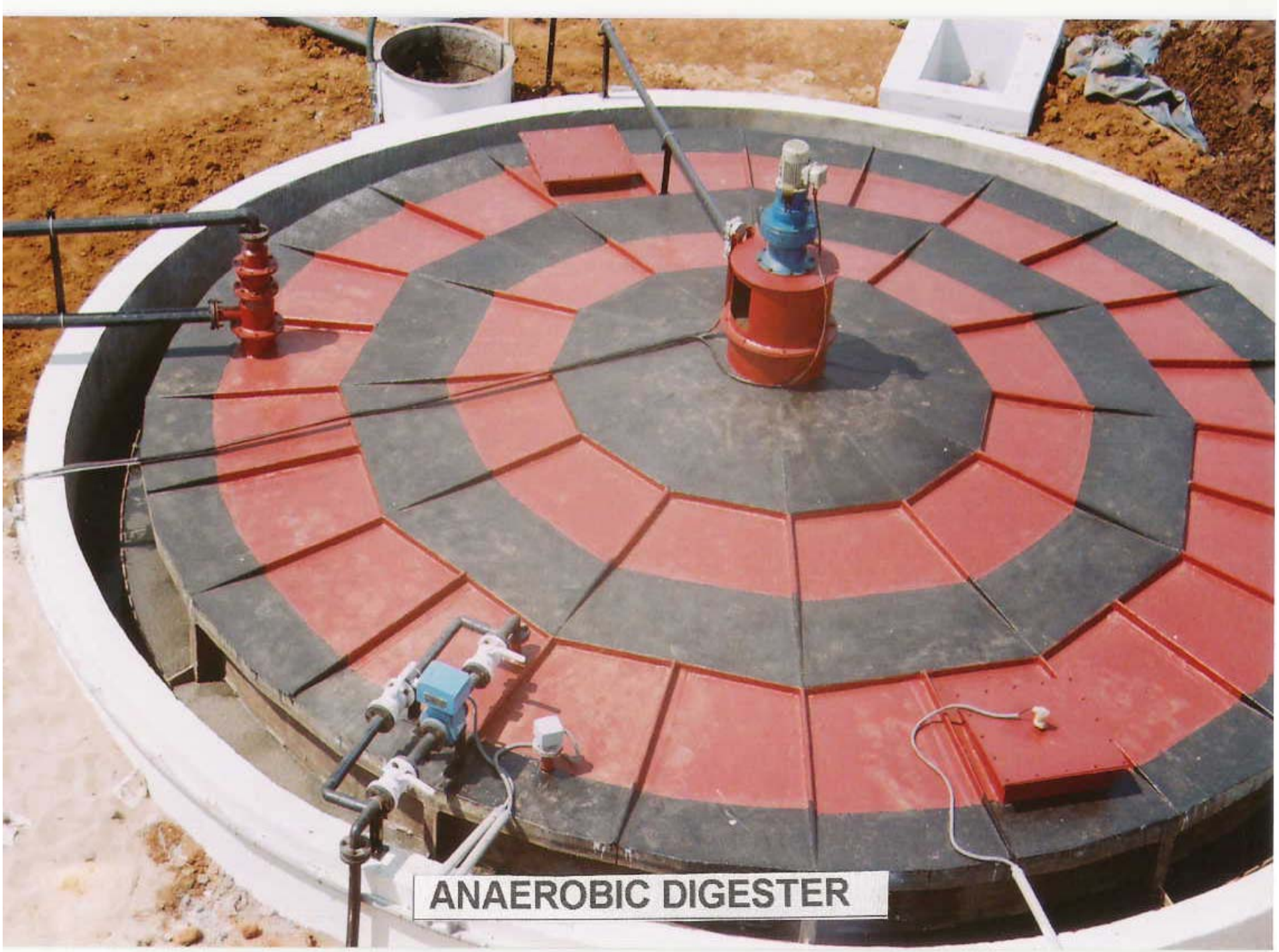
SALIENT POINTS OF SEGREGATED MSW PLANT AT VIJAYWADA MUNICIPAL CORPORATION FOR POWER GENERATION

Current Status

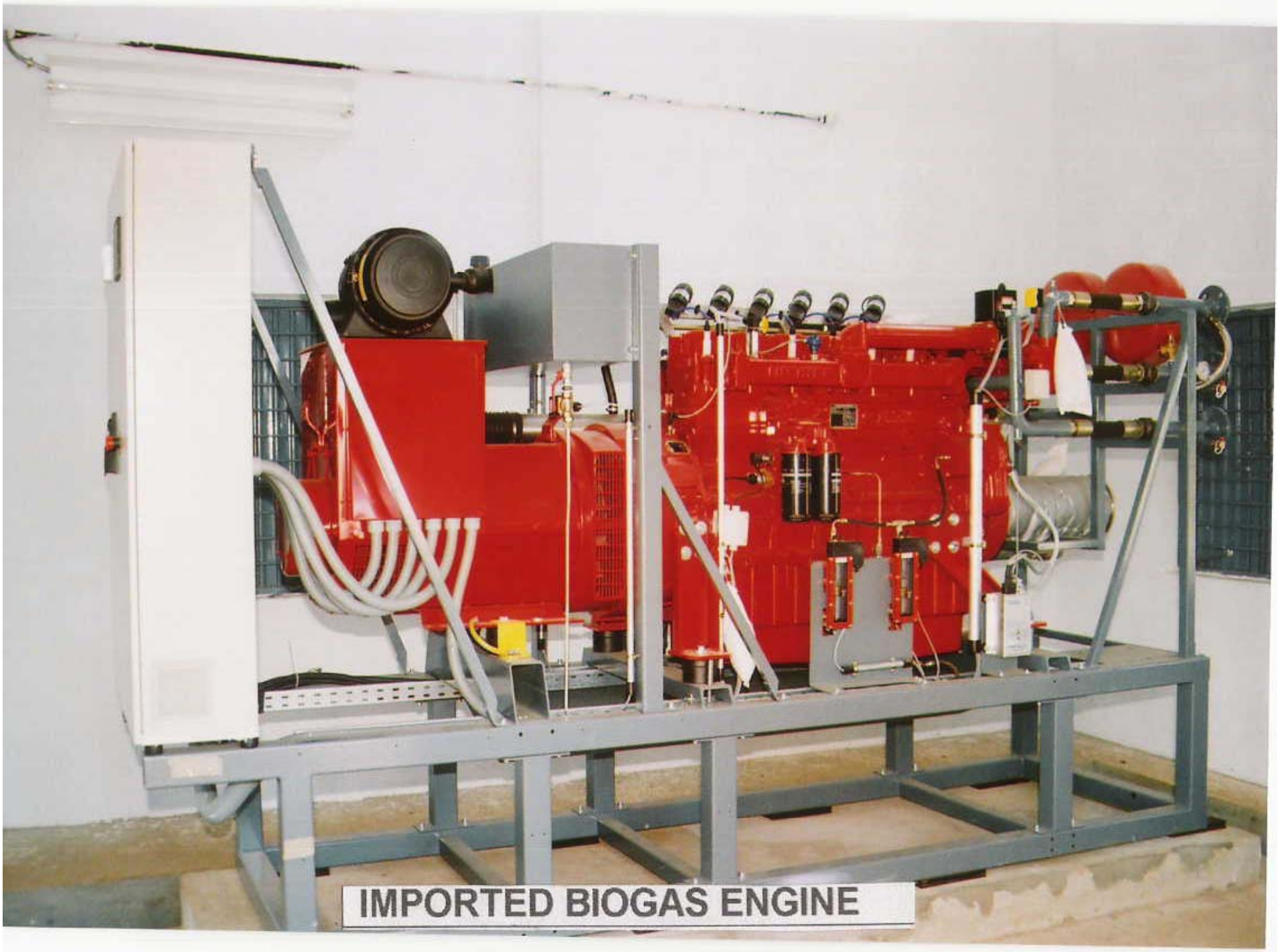
- **Segregated MSW available 16 tpd**
- **Biogas generated / day 1200– 1300 m^3**
- **Power generated / day 2100 – 2275 units**
- **Organic manure / day 1 – 1.5 MT**
- **Area required 1 acre (4000 m^2)**

VIJAYWADA MUNICIPAL CORPORATION

POWER GENERATION FROM 20 TON PER DAY OF VEGETABLE AND SLAUGHTER HOUSE WASTE.


ANAEROBIC DIGESTER


BIOLOGICAL SCRUBBER FOR REMOVAL OF H_2S


IMPORTED BIOGAS ENGINE

Al Kabeer (Slaughter House)

Vasundhara Dairy

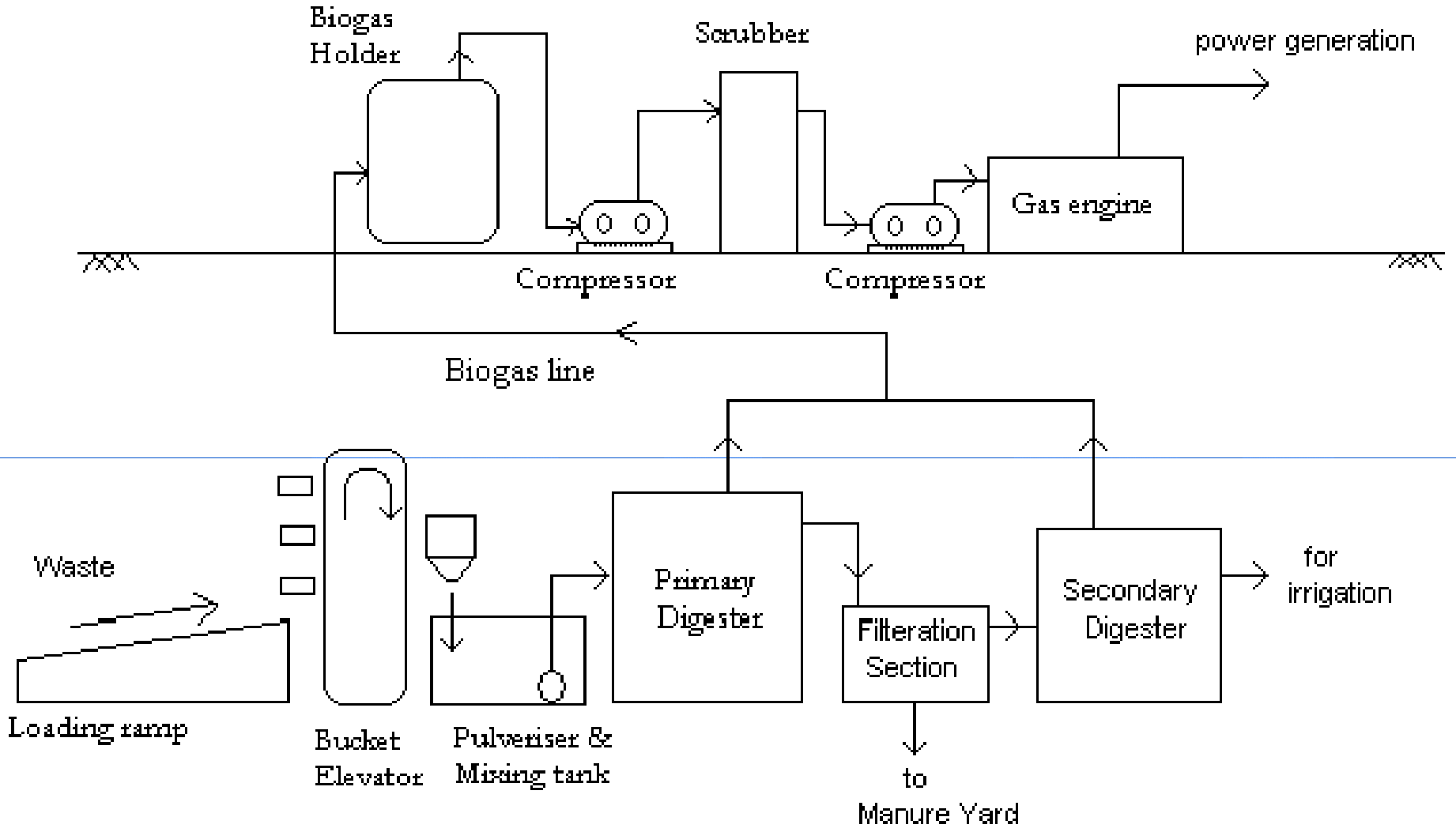
Tata International Ltd., Dewas

Wet Garbage Treatment Plant at H A L, Banglore.

Combined Sewage and Canteen Waste Treatment.

Canteen Waste Treatment

Wet Garbage for Residential Society



Typical Flowsheet for MSW based Biomethanation Plant

Mailhem Engineers Pvt. Ltd.

Salient features of Segregated Waste to Energy Projects

Segregated MSW	20 TPD	30 TPD	50 TPD
Biogas in cum / day	1100-1200	1650-1800	2750-3000
Equivalent LPG kg/day	500 - 550	750 - 800	1250-1350
Power in kW / day	80 – 87	120 - 130	200 - 215
Bio manure Ton / day	3 – 3.5	4.5 – 5	7.5 – 8
Area Required acre	1.0	1.5	2 - 3

Budgetary Estimates of Segregated Waste to Energy Projects

Project capacity	20 TPD	30 TPD	50 TPD
Budgetary cost Lac	**230-280**	**280 - 330**	**380 - 420**
Revenue from power / year	24.12	36.03	59.60
Revenue from manure / year	13.50	20.25	33.75
Operation and Maintenance /year	12.00	12.00	20.00
Net Savings	25.62	44.28	73.35

Salient features of Segregated Waste to Energy Projects

Segregated MSW	100 TPD	200 TPD
Biogas in cum / day	5500 – 6000	11000-12000
Equivalent LPG kg/day	2450 – 2700	5000 – 5400
Power in MW / day	0.5	1
Bio manure Ton / day	10 - 12	20 -22
Area Required acre	4 - 5	6 - 7

Budgetary Estimates of Segregated Waste to Energy Projects

Project capacity	100 TPD	200 TPD
Budgetary cost (Rs. Lac)	**650 - 700**	**950 - 1000**
Revenue from power / year	138.60	237.6
Revenue from manure / year	30	60
Operation and Maintenance /year	70	120
Net Savings	98.6	177.6

New Trends in Waste to Energy Projects

Combination of Sewage Treatment, Biomethanation of Segregated Organic Waste & RDF from MSW for Timarpur Project by Infrastructure Leasing & Financial Services (IL&FS), New Delhi

Capacity	Technology Adopted
500 TPD MSW	Refuse Derived Fuel (RDF)
100 TPD Segregated Organic Waste & 25 MLD Sewage	Biomethanation
Total Power Generation = 6 MW per day	

Combination of Sewage Treatment & Segregated Biodegradable Organic Waste By Kolhapur Municipal Corporation

- Capacity : 25 TPD Segregated Organic
- Waste & 25 MLD Sewage
- Power Generation : 250 KW per day

Combination of Sewage Treatment & Segregated Biodegradable Organic Waste By Guntur Municipal Corporation

- Capacity : 20 TPD Segregated Organic Waste & 10 MLD Sewage
- Power Generation : 130 KW per day

Financial Incentives

- Depreciation
- MNES Subsidy
- Soft Loans
- Custom Duty Exemption On Engines

Promoters expectations from ULB's

- Continuity
- Agreement – not a bond
  - Supply of segregated waste
  - Rejects – additional reloading & transportation cost
  - Purchase of power
  - Suitable location of the project.

Promoters expectations from FI

- Financial Institutions must consider Project Financing – not Balance Sheet Financing
- Promoters equity to be 20 : 80
- Concessional rate of Interest
- 2 year moratorium on principal repayment.

Promoters expectations from State/Central Govt. Authorities

- To form autonomous body to co-ordinate between Promoter, FI and ULB
- Uniformity in policy on tax benefits – particularly in the new VAT regime.
- Assistance in obtaining Carbon Credits by clubbing smaller biomethanation projects together.
- Policies to be market oriented – like solar water heating systems
- Pollution Control Boards to be informed about location of such projects close to utility centres and not dump sites.

CONCLUSION

With the Supreme Court breathing down the neck of Urban Local Bodies, it is imperative to manage the mixed waste by the “Integrated approach” using a combination of available technologies.

With Waste to Energy (WTE) projects becoming economically viable Public-Private- Partnership (PPP) seems to be the only way out.

Thank You