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Towards sustainable growth

COMPRESSED BIO GAS PLANT

AT HIMSW, JAWAHARNAGAR, HYDERABAD

(A wholly owned subsidiary of REEL)

himsw
A CENTRE OF EXCELLENCE FOR MSW

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COMPRESSED BIO GAS PLANT

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- Landfill gas is generated due to the degradation of organic matter deposited in the landfill due to anaerobic conditions.
- Landfill gas generated within the capped landfill is regularly extracted out of the landfill through strategically placed gas wells. These gas wells are connected through a piping network to a flaring station.
- Total volume of landfill gas generated is estimated at **755 Nm3/hr.**
- This gas has methane content of around 45%. In addition, landfill gas also contains moisture, hydrogen Sulphide and other impurities.
- For purification of impurities and unwanted gases, pressure swing analysis technology is used.
- The purified gas will contain more than 92% methane and will be as per **IS 16087:2016** standards.
- The total capacity of the CBG purification unit is **755Nm3/ hr.**
- This product will be supplied to Bhagyanagar Gas Limited (BGL) and then distributed through its retail outlets all over the city of Hyderabad.

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Trigger of the Project :

- Landfill gas has the potential for conversion into automotive gas.
- This alternate fuel can replace the fossil fuel 'Diesel' that is being used to transport municipal solid waste from source to the disposal facility.
- This project has the potential of 'backward integration' to make the business sustainable.

Uniqueness :

- Landfill gas is flared to atmosphere. This plant will convert waste gas into compressed biogas (Renewable Natural Gas).

New Concept: Yes.

- This is the first project in the country where landfill gas is being purified and converted into automotive fuel.
- The purified gas is proposed to be sold to the vehicles running on CNG through OMC under SATAT scheme of the GAIL.

Commencement Date :

15 Sep 2021.

Major Milestones:

- Piping network establishment.
- Commercial agreement with the BGL.

CHALLENGES FACED

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- Sustainable harnessing of energy content in the landfill gas
- Selection of suitable design for the piping network
- Establishment of huge collection piping network
- Supply of raw materials by vendors in the emergency situation
- Operating gas extraction blowers in desired pressure conditions
- O_2 Avoiding O_2 in collection by means of leakages in the huge piping network
- Workman shortage in completion of work during Covid emergency
- LFG ⟶ CBG Selection of Technology for LFG to CBG
- Availability of Cascades

TANGIBLE BENEFITS

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Energy :

Rs 1.74Cr/year

Carbon :

(-)9604 Tons / year

Note : - Sign indicates reduction

Gains on productivity/cycle time reduction :

- The total quality of waste gets reduced substantially.
- The quality of leftover waste from the point of review of causing environmental degradation is improved.
- Demand for land for waste disposal is reduced.
- Carriage cost is reduced as garbage need not be carried to a faraway place for dumping.
- Proceeds from the sale of energy / products (e.g. Pellets) improve the commercial viability of a waste disposal project.

INTANGIBLE BENEFITS

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Reduction of
Air Pollution

Reduction of
Green House Effect

Conserving
Natural Resources

Reduction of
Ground Pollution

Motivation

- Business uncertainty around the pricing of diesel is very challenging.
- The company is exploring conversion of few diesel engines into CNG engines for trials.
- The alternate fuel can replace the fossil fuel ‘Diesel’ that is being used to transport municipal solid waste.

REPLICATION POTENTIAL

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In every city and village we can establish the Integrated MSW project.

Spreading Benefits:

- By this project, we can avoid air pollution. We can reduce the green house gases and balance the life cycle.
- We can reduce the usage of fossil fuels and increase the conversion of alternative energy.

Achievement sharing mode:

- By means of inviting people from different organizations as well as government institutions from various cities and countries, we are sharing the best achievement methods.

Other Knowledge sharing platforms:

- By placing of useful information in the company website and conducting street shows.

EVIDENCE

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LFG Flare

CBG Plant

NATIONAL BENCHMARKS

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COMPANY/ PARAMETER	Energy	Water	Carbon	Toxicity	Emission
HIMSW LTD	110KW/Hr	50Lt per Day	(-)3891 MT of CH4 per year	-	(-)9604 MT of CO2 per year
COMPETITOR	No Preferred competitor	No Preferred competitor	No Preferred competitor	No Preferred competitor	No Preferred competitor

COMPANY/ PARAMETER		HIMSW LTD	COMPETITOR
Man Power		10 No's	No Preferred competitor
Material	Diesel	30 Lt per Day	No Preferred competitor
	Water	50 Lt per Day	No Preferred competitor

Note : -ve sign indicates the reduction

PRIORITY PLANS

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+1 YEAR

- Compressed Bio Gas (CBG) production of 1 Ton per day.
- Marketing the CBG of 1 Ton per day.

+2 YEAR

- Compressed Bio Gas (CBG) production of 4 Ton per day.
- Marketing the CBG of 3 Ton per day.
- Establishment of Bio Gas engine.

MAJOR LEARNINGS

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LFG ⟶ CBG

LFG to CBG is the first project in the country and indigenous technology is not readily available.

Data collection over extended period was required for fixing basic design of the plant.

ENVIRONMETAL PERFORMANCE EVALUATION (EPE)

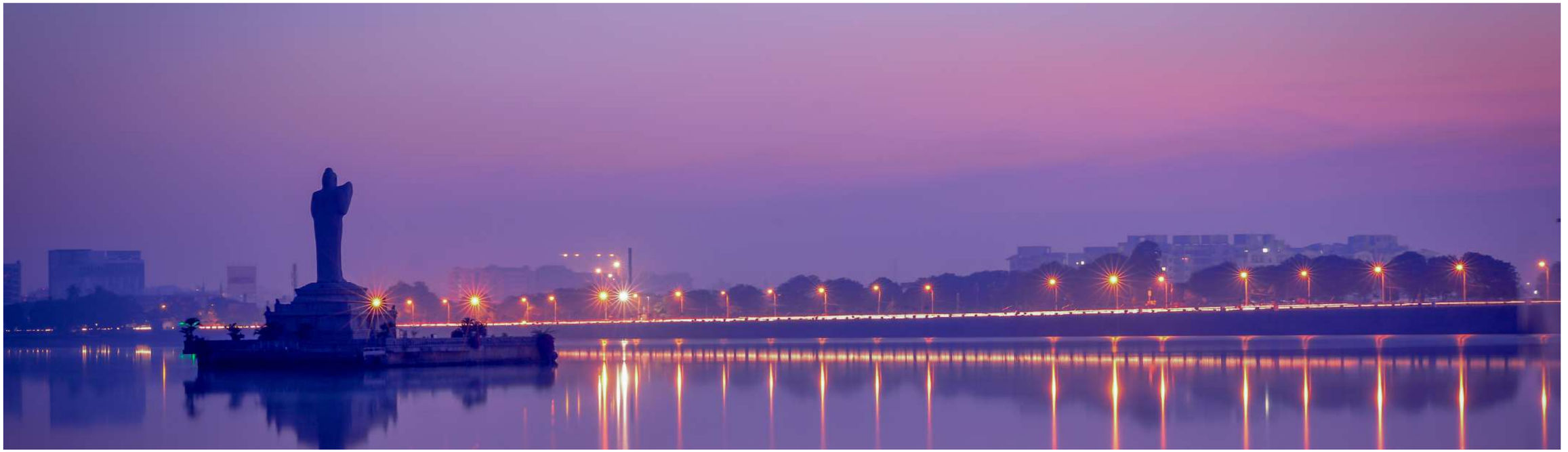
Raw Materials:

- Diesel consumption is ***0.71 Lt / MT*** of MSW will reduce after usage of CBG in plant vehicles.
- Energy used annually per MT of MSW segregation is ***4.80MJ*** which will be compensated by the bio gas engine.

Environmental condition indicator:

- By the project operations, ***3891 Tons*** of methane emission will be avoided per year.
- By this project, ***9604 Tons*** of Carbon dioxide avoiding the use of fossil fuel.

SWACHH TELANGANA - SWACHH HYDERABAD



With

INTEGRATED MUNICIPAL SOLID WASTE MANAGEMENT PROJECT

THANK YOU