

# OPTION ENERGY PVT LTD.

HANSI, Hissar, Haryana

A PRESENTATION ON

**“Experience in Biogas Upgrading and Bottling at Hansi Plant.”**

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# INTRODUCTION

- 1000 cubic m/day plant started in Dec 2012.
- At Gaushala with about 3000 cattle
- Dry cows with about 20 tons of dung/day
- Selection of this Gaushala – based on business minded trustees.
- Plant on BOO (Build, own and operate) basis.
- Land leased by Gaushala for 20 years.
- Dung @ Rs 125 per ton.
- 10% of revenue from Bio CNG to Gaushala.

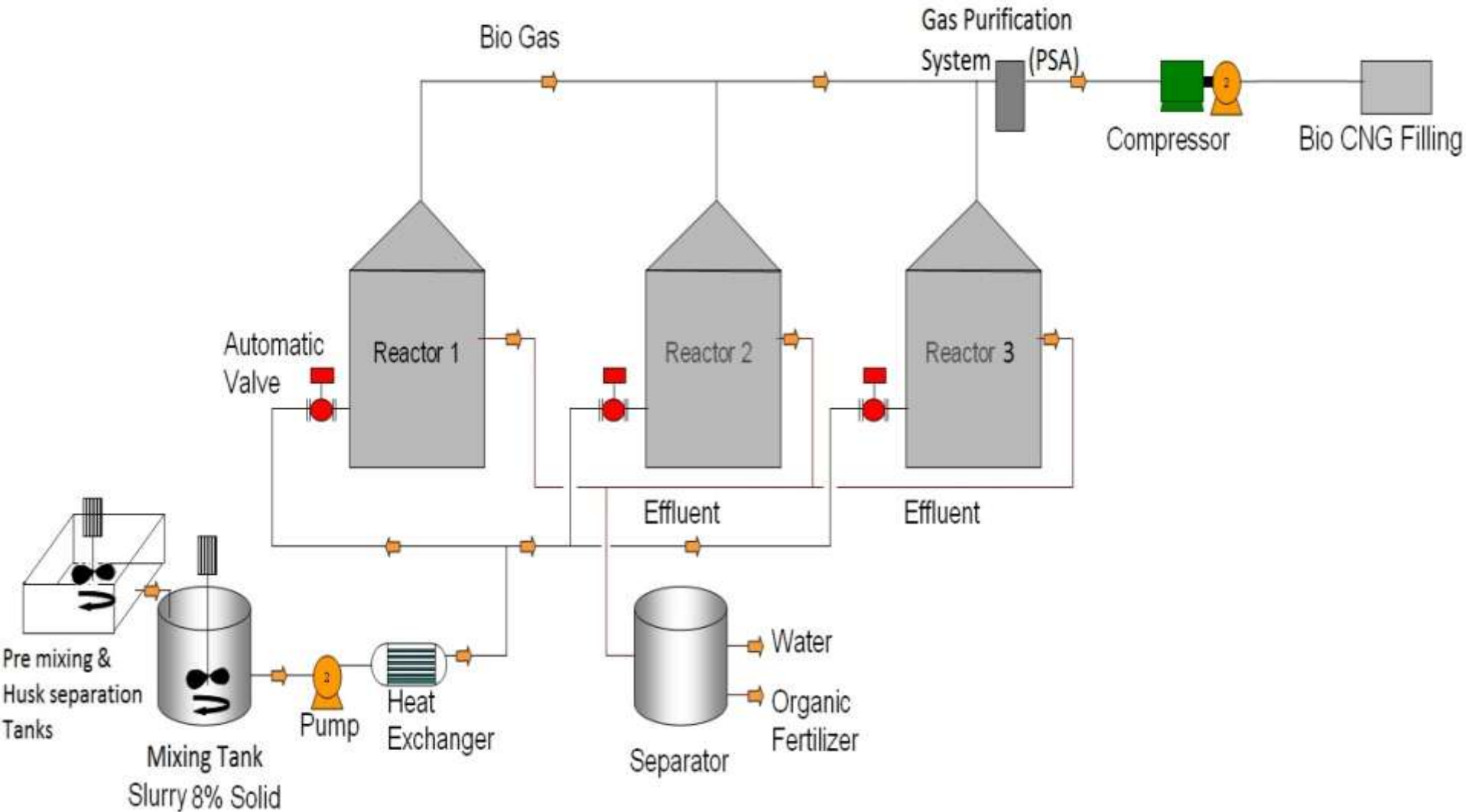
# Technology

- Retention Time = 5 days
- Continuous Flow (24x7 operation)
- 70% methane
- Pre-engineered, modular, scalable design
- Computerized and automated operation
- Low maintenance as few moving parts.
- Consistent fibre quality of the organic manure

# Technology

- PSA for purification
- 95.8 % methane, ( $\text{CO}_2 = 3.8\%$ ,  $\text{O}_2 = 0.1\%$ ,  $\text{H}_2\text{S}$  below 2 ppm,  $\text{N}_2 = 0.3\%$ )
- Scrub through water could have been cheaper solution.
- Compressed to 150 bars
- Filled into cylinders/bottles through manifold.

# Process Diagram



# Organic Manure

- Organic Manure is also having very fibrous & very rich in “total organic carbon matter (32.7%)” which helps plants in nitrogen fixation and improving the soil - Confirmed by Shriram Institute for Industrial Research.
- Farmers of local area are using our bio manure repeatedly in their farms.
- Kribhco has agreed to purchase from us

# Economics

- Revenue: Bio CNG = 400-500 kg/day @ Rs 50/kg.
- Revenue: Bio-Fertilizer = 5-6 tons/day @ Rs 2- 4 per kg.
- A new plant of this size = Rs1.75 Crores
- PBP for a new plant = 3 years
- First Plant = Rs 3 Crores as lots of learning cost

# Challenges Faced

- A large number of clearance – takes away time, energy, money and kills enthusiasm – not commensurate with the size of the plant. MNRE could become a single window clearance agency.
- Contamination in form of husk – choked pumps, heat exchanger, valves and pipe lines. Solution – new two additional mixing tanks and alternative decantation processes.
- Separation of water from the slurry for fibrous manure – we developed our own design.
- Disposal of separated water – recycled for making slurry. Also, separated water has been sold to the farmers free of charge.



# Challenges Faced

- Corrosion due to dung – use of stainless steel and PVC materials.
- Weight of cylinders – the cylinders approved for filling Bio CNG by PESO is about 100 kg – imagine for storage of 10 kg of Bio CNG, we have to use 100 kg cylinders – MNRE should make a guidelines for PESO.
- Selling manure in Haryana – requires license – MNRE may please take it up with the state govt.
- Selling Bio CNG – had to market, prove to users, trial and test. This is finally accepted by the market – final users : metal cutting industries, metal coating industries, commercial kitchen.
- Sourcing of cow dung – gaushala has difficulty in supplying dung – procure dung from different gaushalas.

# FAQ

- Can this technology be used on other organic wastes? – Yes, food waste, fruit and Veggie mrkt waste, poultry, etc
- Is purification and compressing to make Bio CNG for such plant's capacity an attractive proposition? – Commercially not advisable but for I would still do it!
- Should Government support energy generation through Bio methanation – Yes. Look at the German model ( 21 Euro cents per unit!)
- Should there be a collaboration between different technologies available? Yes, IIT Delhi may take a lead.

# Contact us:

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# Some photos.....















Gas Compressor



