

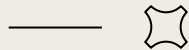
2. DME Prospect and Potential Market in India

(Vivek Dewan)



DME – A SOURCE OF ENERGY

October 2022



Venkateshwaran
Hans Industrial Corpn Ltd

Contents

India : Serious on Carbon Neutrality

Net Zero –

- ❖ *What is it?*
- ❖ *Who are the largest contributors?*
- ❖ *What is India's stand from the Prime Minister?*

Action point Challenge – develop process to manage municipal waste

Solution – Create Green Coal

Develop DME from Green Coal

Develop packaging solutions



India : Serious on Carbon Neutrality

India has announced that it will reach carbon neutrality by 2070 as part of a five-point action plan that included reducing emissions to 50% by 2030.

There is a need to analyse the decision in the interest of development needs of India.

What is Net Zero ?

Net Zero refers to a balance where emissions of greenhouse gases are offset by the absorption of an equivalent amount from the atmosphere.

Experts see net zero targets as a critical measure to successfully tackle climate change and its devastating consequences

Top Three countries – enhanced pledges for climate action

PLEDGES BY TOP THREE EMITTERS



CHINA: Beijing announced no new pledges on Monday. It previously pledged net zero by 2060.



UNITED STATES: The US touted domestic legislation to spend \$555bn to boost renewable power and electric vehicles. It has pledged net zero by 2050.



INDIA: The country's economy will become carbon neutral by the year 2070

Now - Indian pledge?

PM MAKES FIVE PLEDGES

1 India will increase its non-fossil energy capacity to 500GW by 2030

2 India will meet 50% of its energy requirements from renewable energy by 2030

3 India will reduce the total projected carbon emissions by one billion tonnes from now to 2030

4 By 2030, India will reduce the carbon intensity of its economy by 45% (from a previous target of 35%)

5 By 2070, India will achieve the target of net zero

The Challenge

Rising Level Of **CO2 Emissions** Is A Huge Concern Globally.

Macawber Beekay is striving to provide a world class solution for clean & green energy and reducing carbon footprints.



Excessive Mining Leading To Deforestation



Water Contamination Due To Industrial/Sewage Discharge



Large Amount Of Toxic Emission & Pollutants

The Solution

A Carbon **Neutral & Eco-Friendly** Way To Coal Energy Management

By applying a variety of cleaning & emission-controlling technologies, Green Coal technology seeks to decrease negative effects on the environment.



Garbage
Collection



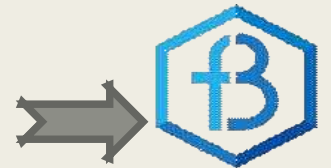
Waste
Treatment



Byproducts
Refinement



Separate
Useable Coal



BIO FRIENDS

Municipal Solid Waste



Green Coal +

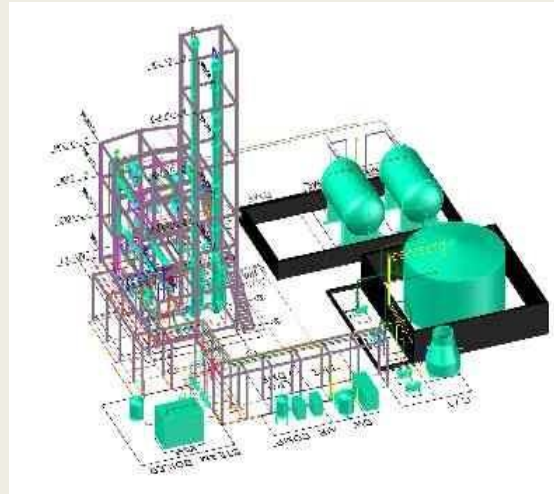


Waste to Coal

“Efficient and eco-friendly process of converting municipal solid waste to **Green Coal** which is the need of hour as the world struggles to cope up with climatic changes.”

Waste-to-Coal plants turn municipal solid waste (MSW), often called garbage or trash, into high calorific value of charcoal by means of “Torrefaction”.

Bio Friends possesses the most effective technology to produce DME by bigger capacity to convert CNG to DME and smaller capacity to convert methanol to DME



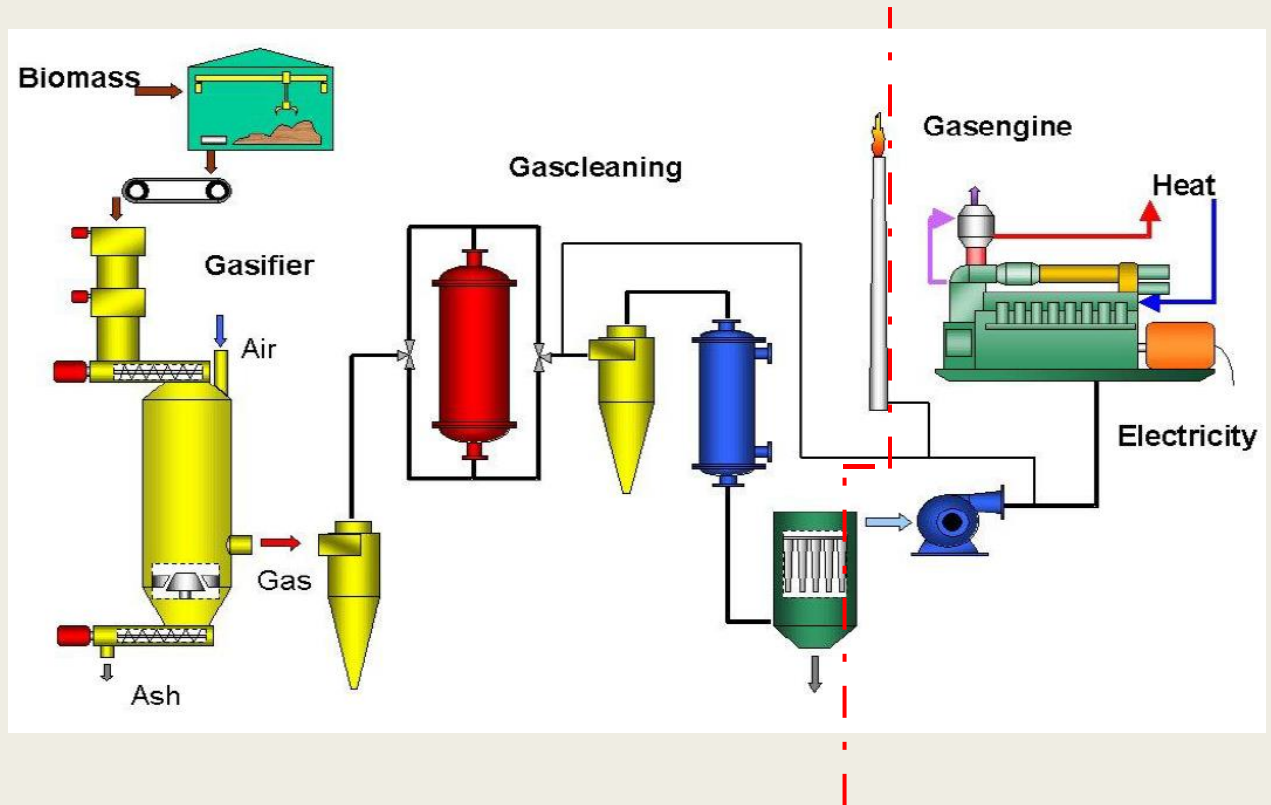
1. Bio Friends Patented Natural Gas to DME Technology

- Raw Materials; biogases, natural gases & Syn Gases
- Plant sites : Overseas Gas Fields, Waste land fill Areas...
- Economical Capacity : 50,000 tpy+
- Gas component requirement : Methane 85%+, CO₂ -10%
- CAPEX : 100 million USD+
- Usages; DME Blended LPG, Aerosol, H₂ Conversion

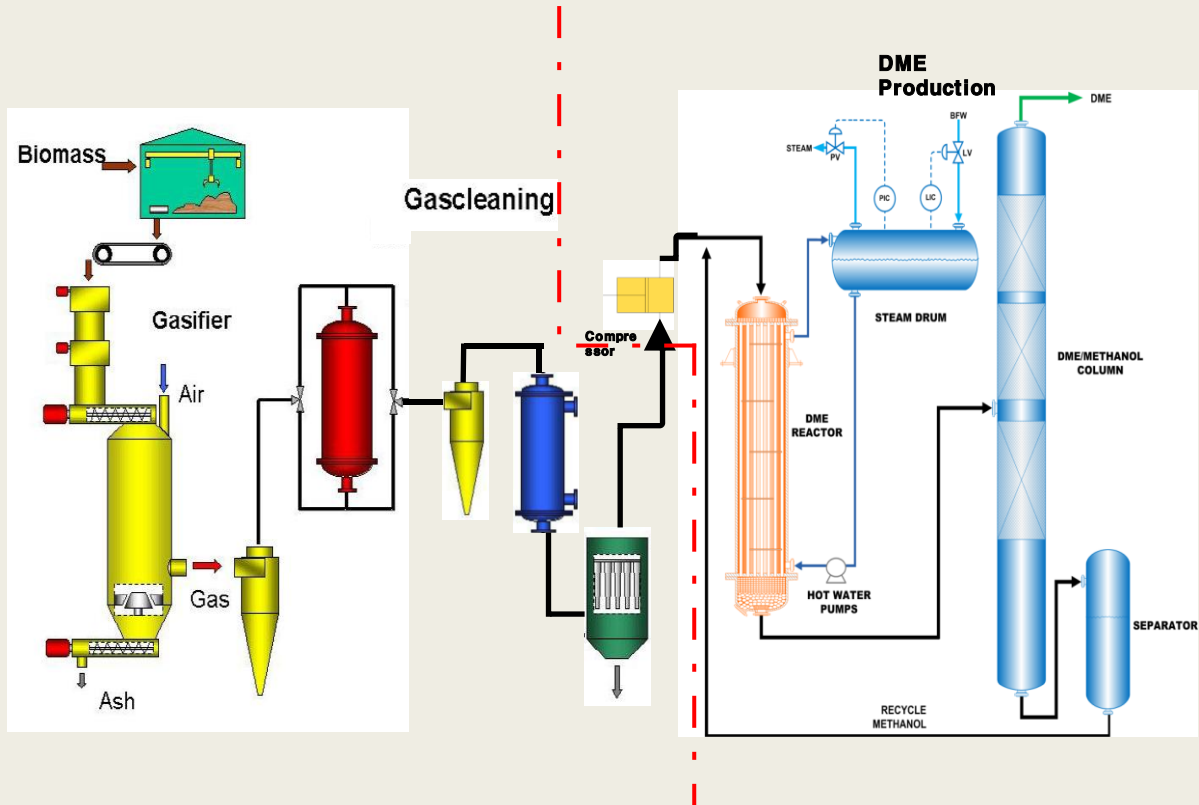
2. Licensed Technology to convert methanol to DME

- **raw materials; methanol & bio methanol**
- Plant sites : Chemical complex, Industrial Complex
- Economical Capacity : 5,000 tpy+ (Good for domestic)
- CAPEX : 5B KRW

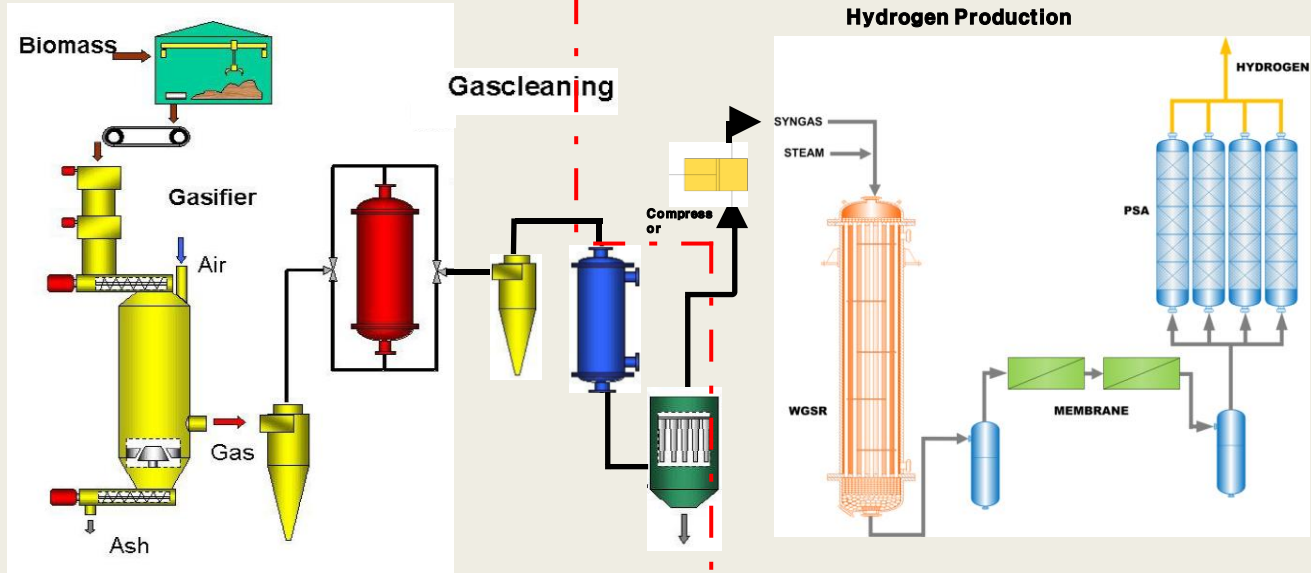
Gasification to Electricity



Gasification to DME Production



Gasification to Hydrogen Production



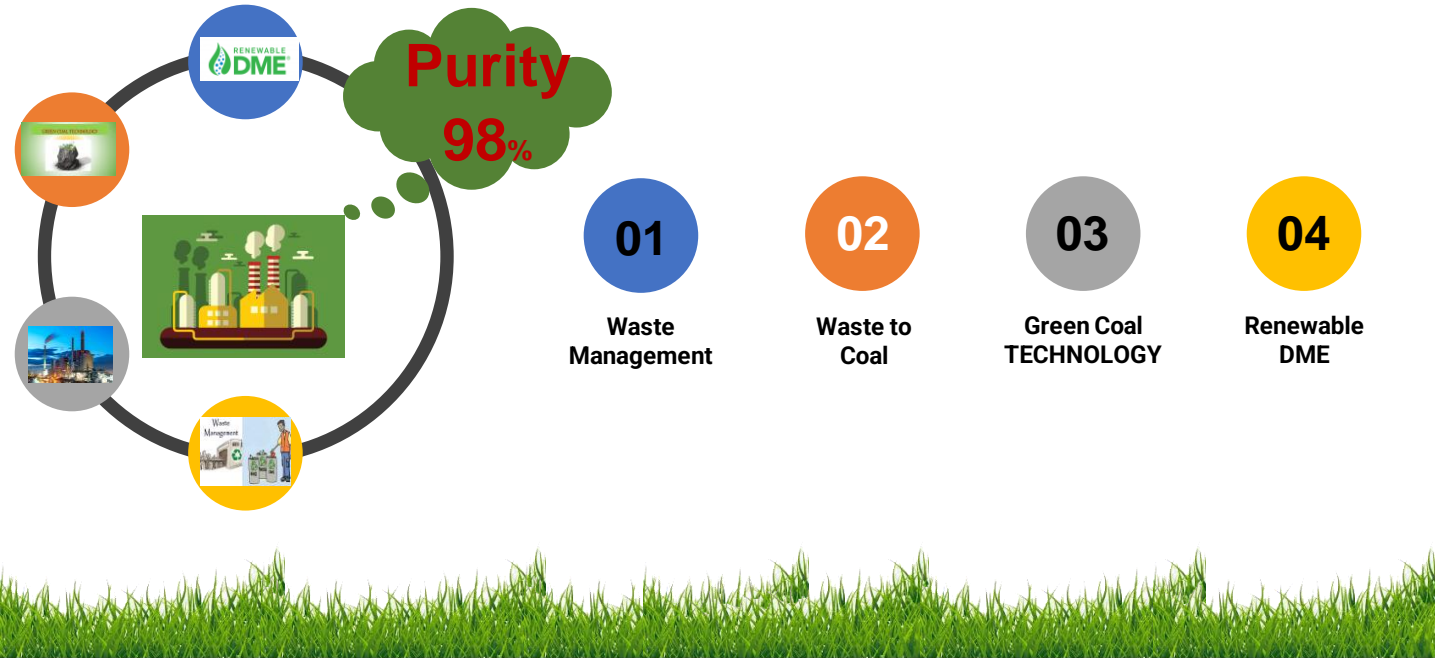
Cost Estimation

SCALE	GASIFIER + CLEAN UP	ELECTRICITY	DME	HYDROGEN
PILOT	RDF 12ton/day USD1,437,500	500kWe USD1,437,500	2ton/day USD1,556,000	0.75ton/day USD2,750,000
SEMI-COMMERCIAL	RDF 50ton/day USD3,967,500	2MWe USD3,967,500	8ton/day USD3,600,000	3.1ton/day USD6,429,000
COMMERCIAL	RDF 125ton/day USD8,740,000	5MWe USD8,740,000	20ton/day USD6,200,000	7.5ton/day USD11,000,000

* BASE ON FOB, ISBL

Hans Industrial Corpn Ltd – Role


Bringing together technology



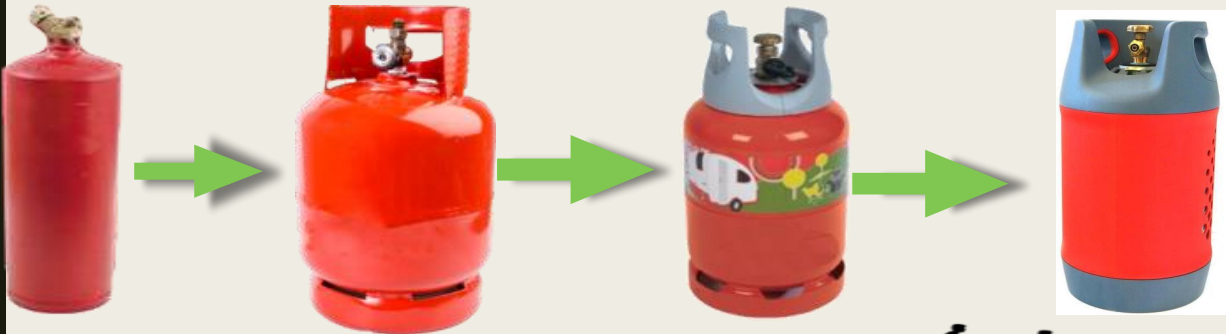


Gas so developed
need packaging !

Cylinders for Packaging

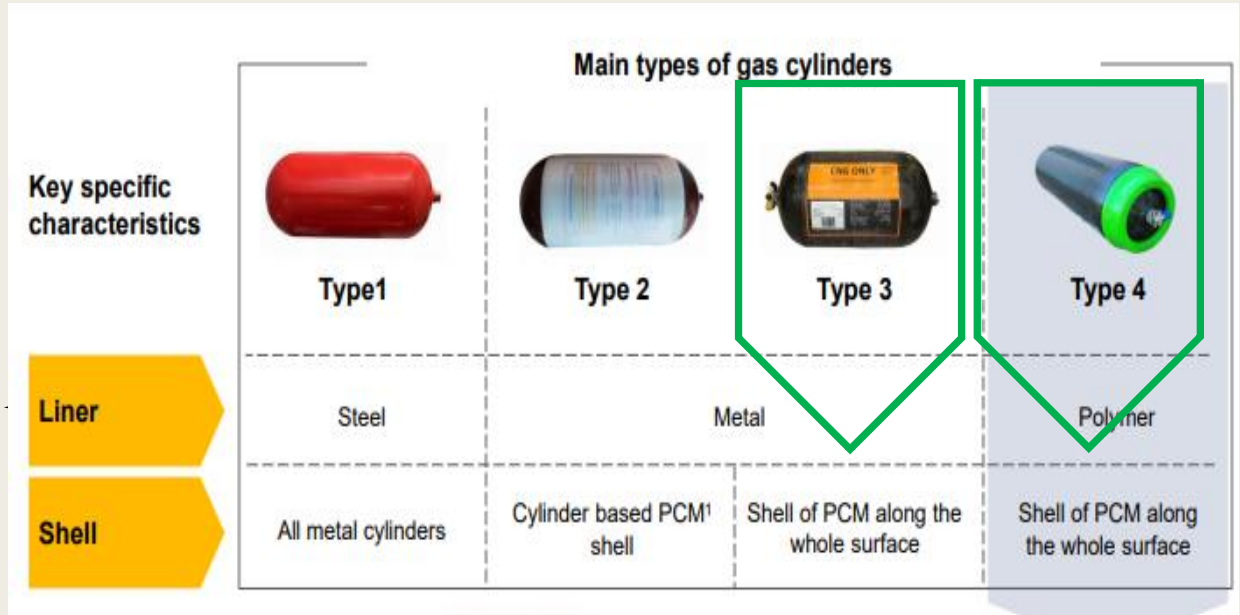


CYLINDERS - a generational evolution



7 - 9 decades

What is the design on offer now...



CYLINDER



SIZE AND SALES

A look at the popular sizes of Metal cylinders in various geographies:

- India and its neighbouring countries : 5kg 11 kg, 12 kg, 14.2 kg, 15 kg, 19 kg, 48 kg
- African and Latin American nations: 5kg , 6 kg, 9 kg, 11 kg, 12 kg, 15 kg, 19 kg, 48 kg
- ASEAN Region: 2.7 kg, 4 kg, 6 kg, 11 kg, 12 kg, 15 kg, 19 kg, 47.5 kg
- Developed – North American and European markets: 3 kg to 48 kg

Our preferred Range of universal sizes:

- Composites are most preferred in 6kg; 11kg; 12kg 15kg; and 20kg
- 5 kg meets the smallest domestic requirement
- 20 kg meets the larger restaurant and street cooking requirements



Type III cylinder specs...

Aluminium cylinders for operating pressure **3.9 Mpa**

Fluids: water, aqueous solutions, carbon dioxides, sulphur dioxide, nitrogen and their mixtures as well as refrigerants and their substitutes

Operating temperature range: -45°C to +65°C

Cylinder designation	V, litres	D, mm	Length, mm	Weight, kg
B60-40	60	370	774	19.0
B70-40	70	370	874	21.0
B80-40	80	370	974	23.0
B100-40	100	370	1174	28.0
B130-40	130	370	1474	32.5
B160-40	160	370	1774	39.0
Composite-to-metal cylinders for operating pressure 5.9 MPa				
B60-60	60	380	826	24.2
B70-60	70	380	926	27.1
B80-60	80	380	1026	30.0
B100-60	100	380	1226	38.5
B130-60	130	380	1526	46.4
B160-60	160	380	1826	55.8

Cylinder of smaller sizes possible and
Cylinders of Type IV also possible

De-Risking Plan

Equipment suited for multi-size capability for all cylinders

Equipment selection considers other applications like CNG, Medical etc. for alternate markets

Technology and patent support existing for specific process applications

De-risking with non Oil & Gas industry by developing products for the Automotive Applications (e.g. fuel tanks, urea tanks, filler tanks etc.).

Patents support Type 3 metal based applications, which is a global market

Higher export planned initially to de-risk Indian market uncertainties and approval processes



Composite cylinders...

Type III and IV in use





*Thank
you!*

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