



Biomass Gasification

A source of Renewable Energy



Energy from Biomass

More than 550 million tons of biomass is available every year in our country in the form of forestry, agro industrial residues and agricultural by-products and can produce 19,500 MW electrical power.

India is the second only to China in bamboo production with 3.23 million tones per year. The north – eastern Himalayan region harbors more than 66% of the Indian bamboo forests.

Background

- GP Energy, through its parent company entered into the field of Biomass Gasification in 1987 under the able guidance of Late Sri. N. D. Mukherjee, National Prize Winner in respect of conversion of rice husk into combustible gas.
- It is based on fixed grate Updraft technology.
- The basic engineering package was supplied by an expert from Power Gas Corporation, UK.

Installed more than 100 Gasifiers in India, Nepal, Thailand, Guyana (S.A) out of which following clients have placed repeat orders :-

- ITC Limited.
- Dabur Nepal Ltd.
- Britannia Industries Ltd.
- Parle Food Products Pvt. Ltd.
- Heemankshi Bakers Pvt. Ltd.
- Hulas Steel Industries Ltd.
- Kwality Diet & Food Products Pvt. Ltd.
- Mahaicony Rice Mill, Guyana.



Feedstocks for gasification

- Bamboo & wood chips
- Stalk of wheat, corn etc
- Mustard Seed Hull & Stem
- Baggasse , Corn Cob
- Rice Husk, straw etc.
- Branch, Twig, Saw Dust etc.
- MSW



Particulars of Producer Gas

Gas Composition :

CO₂ : 8 -10 %

O₂ : About 1.0 %

CO : 22 to 26%

CH₄ : 1.5 -2 %

H₂ : 9 to 12%

N₂ : 50 -54 %

CnHm : 0.4-0.6%

Calorific Value (Gross) : 1200 - 1300 K.cal/ Nm³

Sp. gravity : 0.92 (air = 1)

Yield of Gas : 1.90 - 2.30 Nm³/ kg. of biomass

Tar & Particulate in gas : < 15mg/Nm³



Cost of Energy Generation

largely depends on the following four factors -

- Capacity of the plant
- Cost of input
- Biomass used
- Plant Load Factor (PLF)

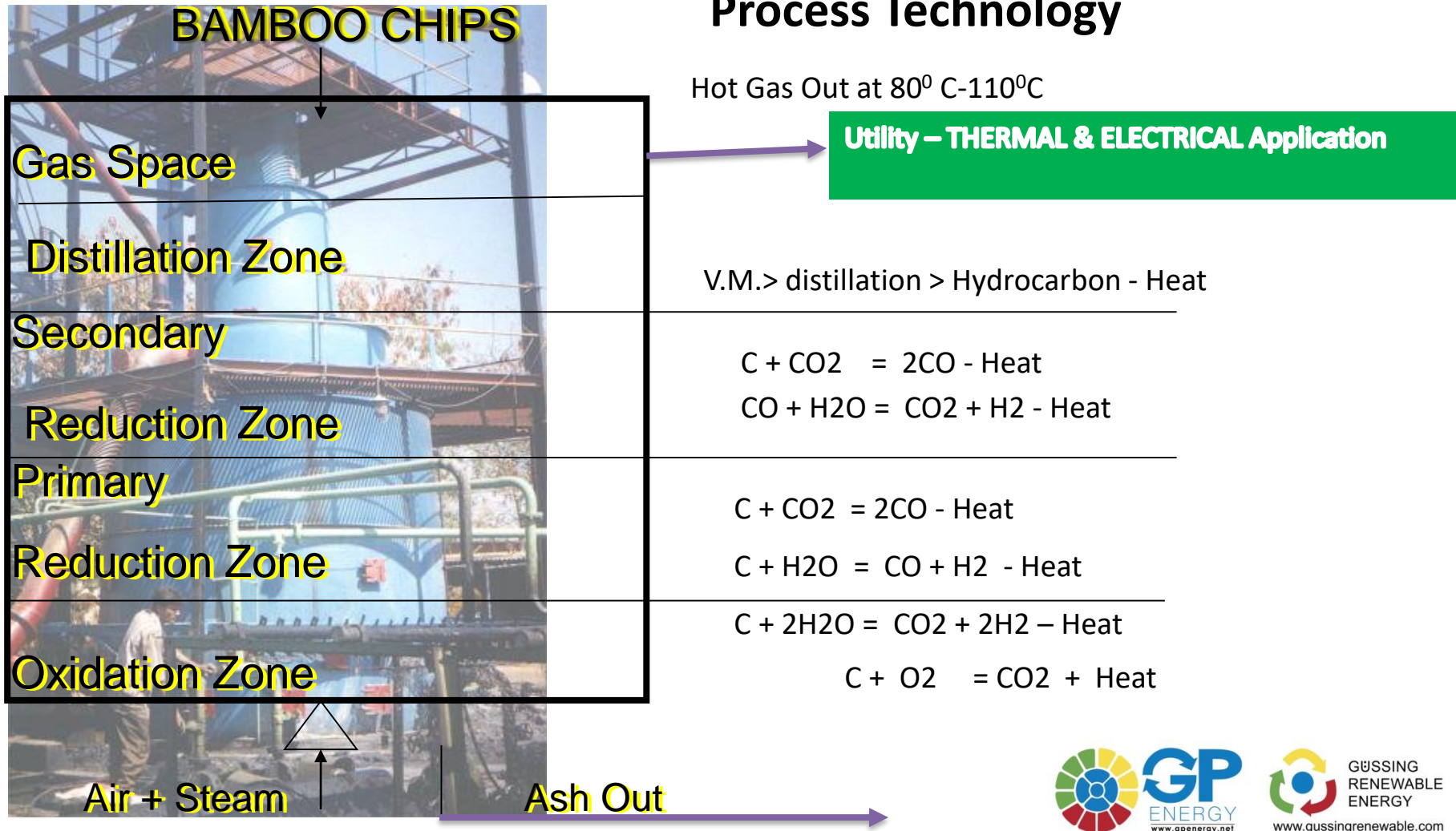


Specific Advantages of GP Gasifier

- Availability of energy anytime, anywhere
- Continuous operating system
- Multi-fuel system
- High thermal efficiency
- Virtually tar free gas
- Sturdy construction
- Attracts fiscal benefits from government



Gasification Plant Using Bamboo as biomass



Bamboo

A potential source of renewable energy in India

- Higher CV as compared to Rice Husk or other biomass (3850 – 4100 K cal / Kg)
- The estimated quantity is around 7-10 Lakhs MT per year
- Even if 1% is made available then 28×10^9 Kcal heat output or 32500 MW power output
- Ash content is very low.
- Availability throughout the year.
- North Eastern India has Ideal Climatic condition for bamboo cultivation.



Bamboo as a feedstock used in ITC/NENPL Mangaldoi, Assam



GP Gasifier at ITC, Mangaldoi



Biscuit production at ITC Mangaldoi	-	73.8 TPD
Consumption of Diesel for the same	-	4200 litre/day
Consumption of Bamboo waste / chips	-	18.5 TPD

Annual Diesel Expense (4200 x @65 x 320 days)-	-	Rs 8.73 Crore
Annual Biomass (18500x @3 x 320 days)	-	Rs 1.77 Crore
Labour	-	Rs 0.72 Crore
Others (Chemicals & Spares)	-	Rs 0.40 Crore
Aux. power (approx)	-	Rs 0.23 Crore

Annual Saving	-	Rs 5.61 Crore
Annual Diesel saving	-	13.44 lac Litres
Cost Of the plant including ETP-		5.50- 6.00 Crore
Payback Period	-	1 year



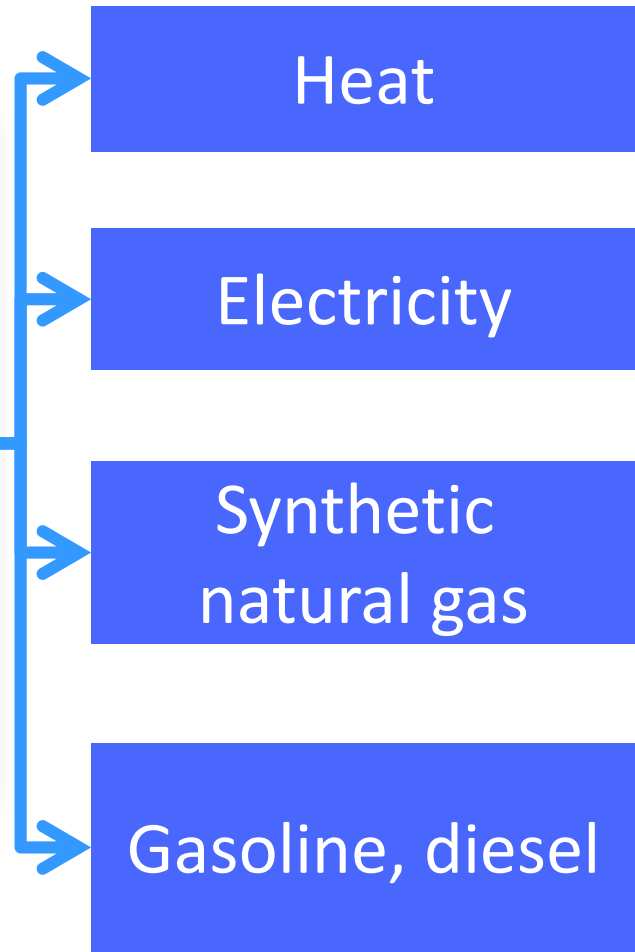
Partnership



Gussing Renewable GmbH joined as a partner for equity & technology on 30-01-2012



Gussing Gasifier



Dual fluidized bed steam gasification developed by Gussing Renewable

Energy supply to community



A 5 MW Güssing Plant energizing a township since 2001





**Thank you
for your kind attention**