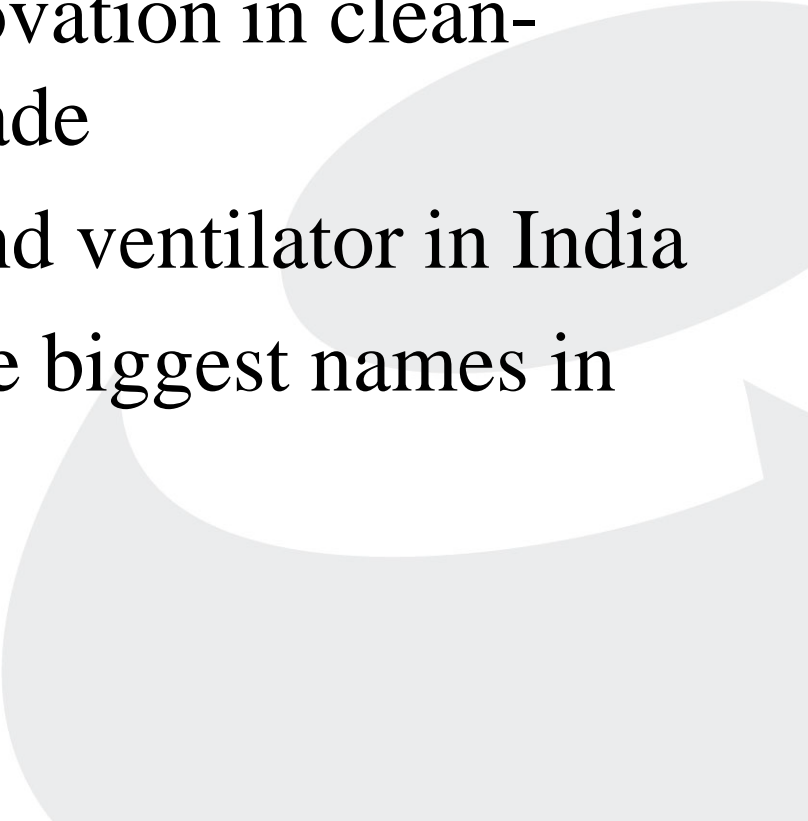


Credentials & Technology

A PRESENTATION

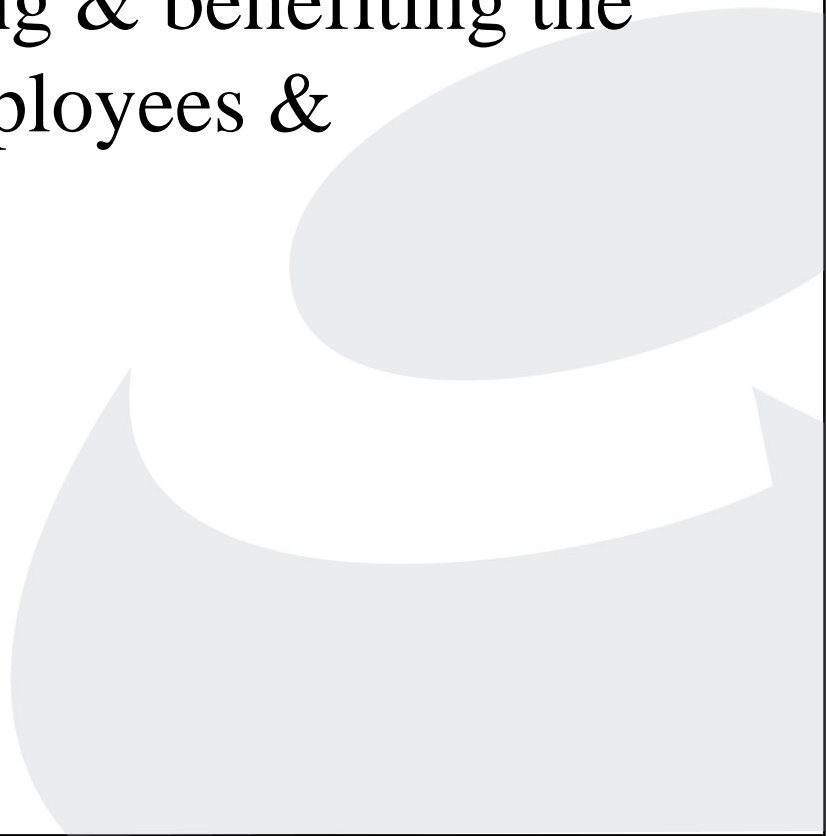


WHO ARE WE

- We are a leading player in the clean-tech energy
 - We have been leading innovation in clean-tech energy for over a decade
 - We have pioneered the wind ventilator in India
 - We have partnered with the biggest names in Indian industry
- 

WHERE DO WE SEE OURSELVES

To be the most trusted renewable energy brand across markets, offering innovative, zero emission products, profiting & benefiting the company , customers , employees & community at large.




WHAT DO WE DO

- We are pioneers and innovators
 - in wind
 - solar
 - and bio-mass energy.



HOW WE DO IT

With our spirit of non-conventional entrepreneurship and clear processes enable us to think smarter & move faster to offer superior renewable energy solutions.



WHY WE DO IT

Because we believe in ‘change for good’ for the individual, the organization, the customer, industry & the planet.

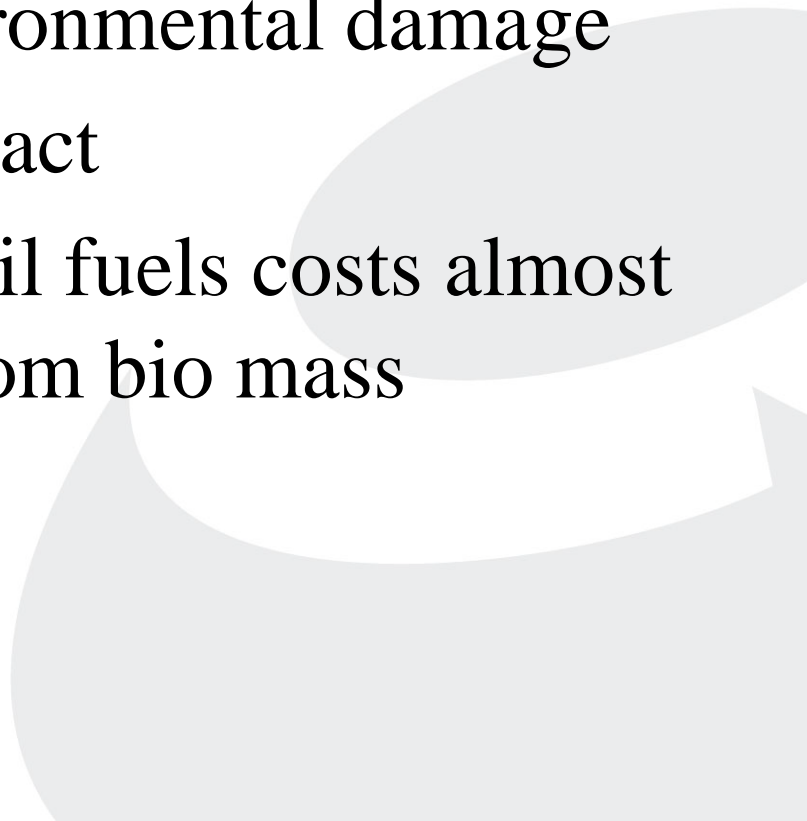


CHANGE FOR GOOD

From conventional fossil fuels to
Airier Bio-Mass Fuel



WHY CHANGE FOR GOOD

- Because fossil fuels like diesel and coal is fast dwindling
 - They cause immense environmental damage
 - They are expensive to extract
 - Power produced from fossil fuels costs almost twice of fuels produced from bio mass
- 

WHY CHANGE FOR GOOD

- The power situation in India is near critical
- The power shortage is likely to get worse
- The cost of conventional power is likely to see an upward trend
- Power distribution in India is likely to become more inefficient in the future with poor infrastructure

CHANGE FOR GOOD

- To a decentralised power and energy system
- To captive power plants run on Bio Mass
- To run in parallel with the existing centralised grid systems
- To become energy independent
- To become eco-friendly and reduce carbon emission

2 MW Bio Mass Power Plant

A PRESENTATION



HOW DOES IT WORK

- Bamboo is cut to size and dried to be fed into the reactor
- The solid bio mass inside the reactor converts to a gaseous fuel having a composition of:

CO	: 20 ± 1 %
H ₂	: 20 ± 1 %
CH ₄	: 3 ± 1 %
CO ₂	: 12 ± 1 %
N ₂	: Balance

Average lower heating value : 4.8 ± 0.2 MJ / kg

Avg. density of producer gas : 1.095 kg / Nm³ (at 0⁰ C & 760 mmHg)

HOW DOES IT WORK

- This gaseous fuel contains dust and tar particulates which is cleaned using water by coolers and scrubbers
- Moisture traps are used to remove the moisture
- Gas is further filtered through a sawdust and fabric filter
- The clean gas emerges out as per the engine requirements

HOW DOES IT WORK

- This gas is connected to the Engine by a pipeline
- The engine is connected to an alternator for production of electricity
- Power from the alternator is fed to the grid through panels which sync with the grid

FUEL FOR 2 MW BIO MASS POWER PLANT

Bamboo is to be used with moisture
content below 12%-15%

FUEL REQUIREMENT FOR 2 MW BIO MASS POWER PLANT

- 45-55 Tonne/Day for 24 Hr operation
- Bio mass of density 300-400 Kg/m³
- 2" – 3.5" in Dia and 3"-3.5" in length

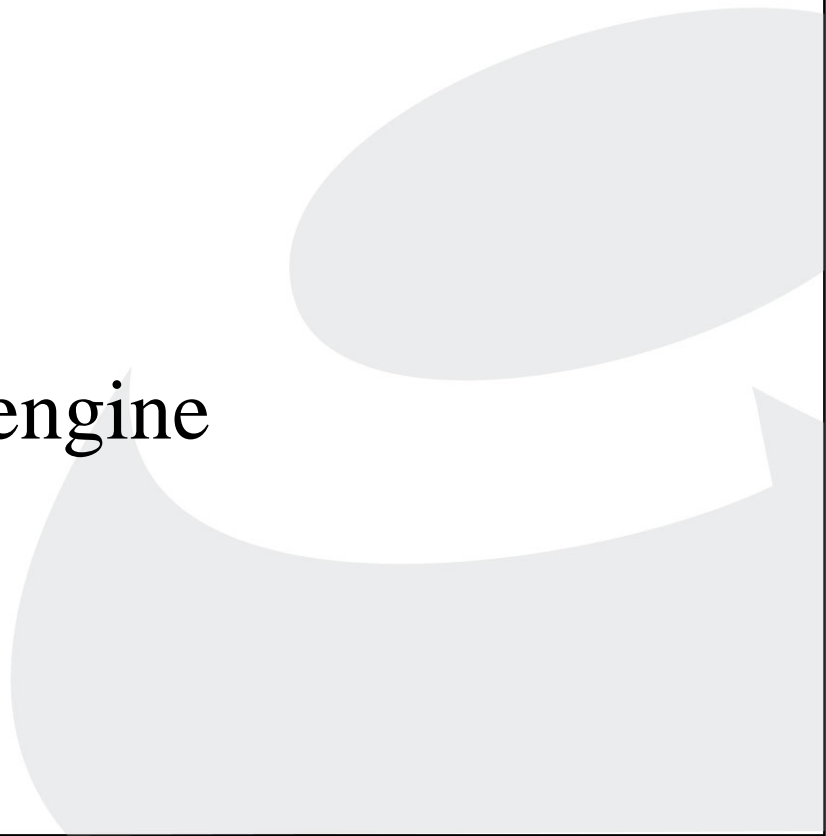
CHANGE FOR GOOD

To Airier Bio-Mass Power Plant
Save Money. Save The Future.


AIRIER BIO-MASS POWER PLANT

- During continuous operation, all filtration equipments have standby for cleaning purposes
- All pumps have standby in case of failure
- Oxygen levels monitored using Oxygen monitors for any ingress of Oxygen into the system

AIRIER BIO-MASS POWER PLANT

- Compatible with Diesel Generator Sets
 - Good quality of gas
 - Minimal maintenance for engine
- 

AIRIER BIO-MASS POWER PLANT

- Stringent quality control
 - Quality standards
 - Reduced installation time
- 

AIRIER 2 MW BIO MASS PLANT

Gasifier Size: 4 x 550 Kg/Hr

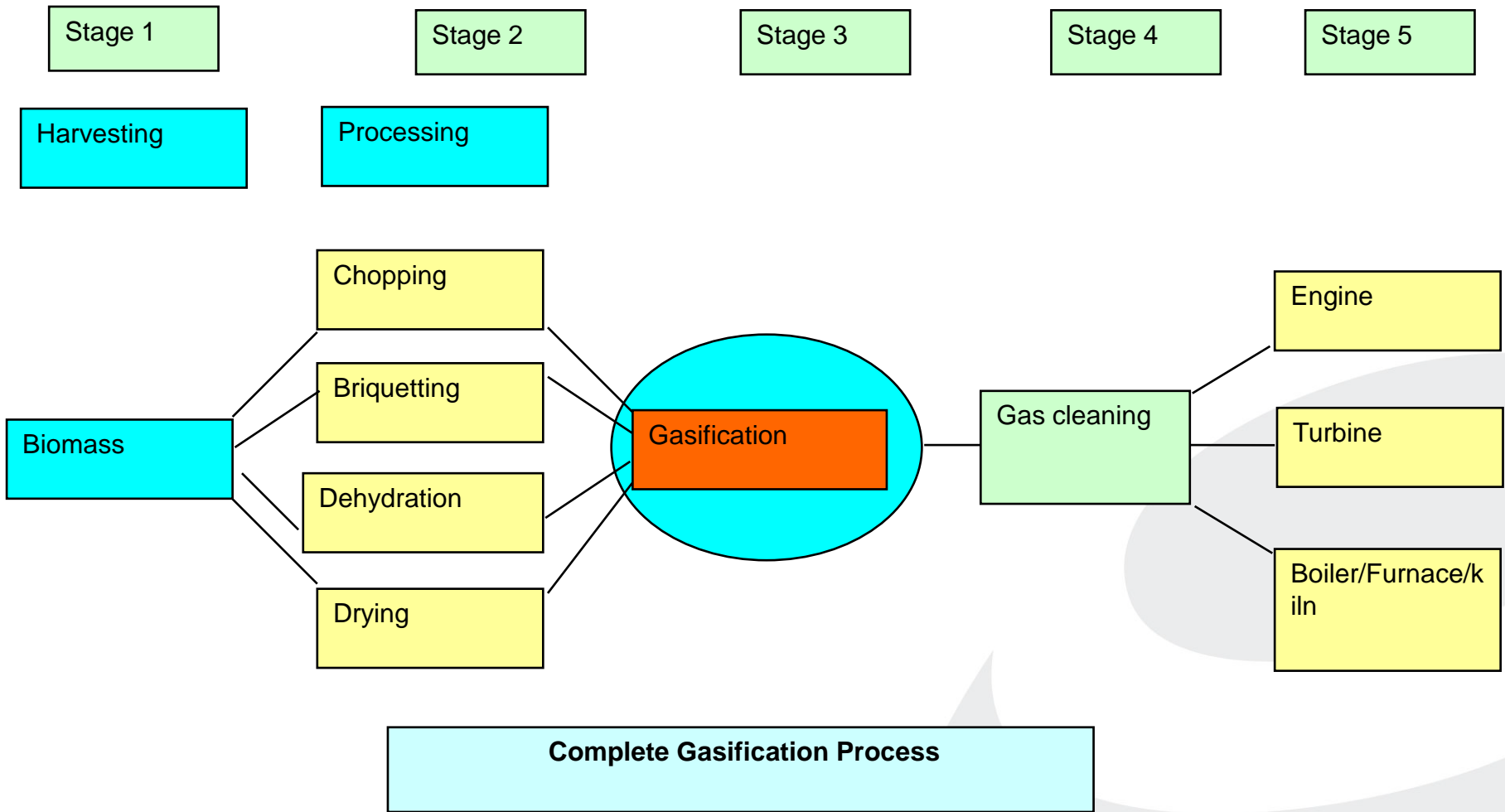
Specific fuel consumption is 1.15 Kg/Kwh
(appx.)

Continuous operation for 24 Hrs with
allowance for breakdown maintenance

2MW BIO-MASS POWER PLANT

Schematic Drawing





2MW BIO-MASS POWER PLANT

General Description



❑ Materials of construction

- IS 2062 for Reactor, flanges & fine filter
- SS316L for cyclone, reactor air nozzles, outlet pipe & reactor bottom plate
- SS304 for all other components

❑ Laser cut of materials in SS304, SS316L & flanges in IS2062

❑ Reactor top cover is a hinged cover (manually operated) & provided with a biomass feeding hopper of cap 175kg

- ❑ Wet removal of ash & charcoal separation at collection sump

- ❑ Reactor air nozzle closing using pneumatic air cylinder based with solenoid operation

- ❑ Temperature sensor at reactor outlet, cooler outlet, scrubber outlet & downstream of Mist eliminator

❑ Gasifier cooling towers 3x100TR with induced draft

❑ Solenoid activated valves in ash & charcoal discharge waterline

❑ Cooling water pump 4+2

❑ Gas suction blowers Static pressure 1250 mmwc and flow rate of 1775 m³/hr each

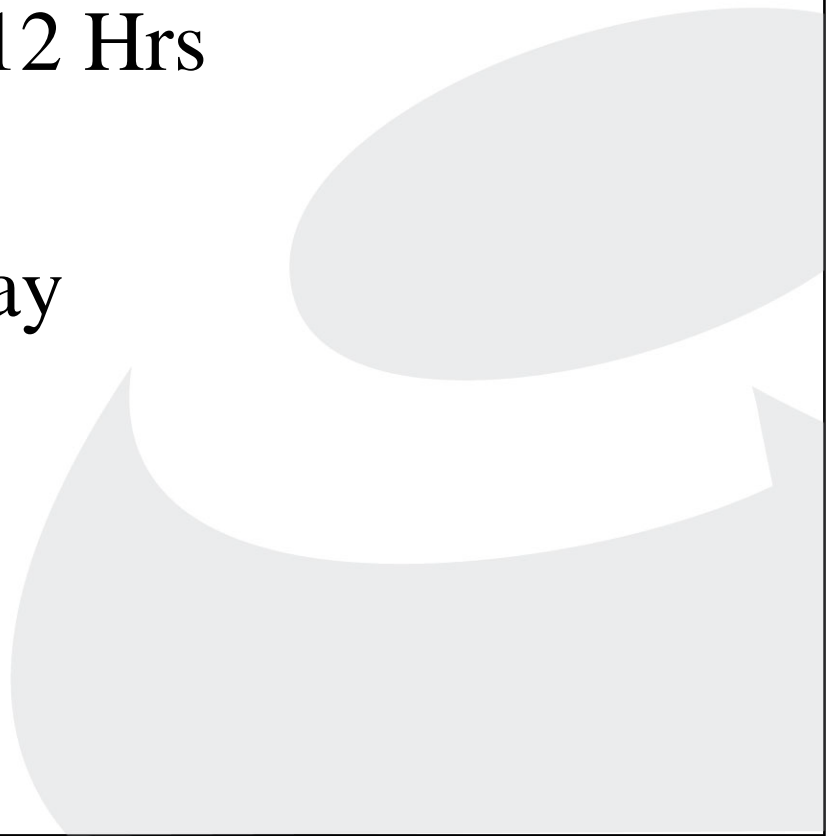
- ❑ Structural's: 2 level for all equipments with provision of platform for service & refill

- ❑ Pressure transducer for reactor pressure drop measurement & operation of Screw conveyer in parallel with timed operation of conveyer
 - ❑ Skip charger 2x160kg for each reactor

ECONOMICS



Power & Heat purchase agreement

- Rs. 6.50/ unit for 12 hrs/Day
 - Rs. 4 / unit for remaining 12 Hrs
 - Heat- Rs. 2/Kw @ 8 hrs/day
- 

Assumptions

- 55 Tonne of fuel per day is available @ Rs.3/Kg
- Plant is connected to the grid
- Charcoal is sold at Rs. 20/Kg
- 600 Kw of thermal energy is continuously utilized

Approximate project cost Rs. 16,00,00,000

Expenditure: Plant running expenses (Per day) Rs. / Day

Input fuel/ Day 165000

(55 Tonnes @ Rs.3000/Tonne)

Processing 27500

(Appx. Rs. 0.50/Kg)

Generation/Labor Charges 15000

(30 members @ Rs.10,000 each per month)

Maintenance 10000

(Engine & Gasifier Maintenance)

Water treatment charges 5000

Dryer charges 10000

Others 10000

Total running cost per day Rs. 2,42,500

Income	Rs / Day
Power1 (Rs. 6.50/Kwh)	128000
Power2 (Rs. 4/Kwh)	78720
(Considering 18% power for gasifier operation)	
Heat	28800
(Rs.2/Kw @ 600 Kw)	
Charcoal	66000
(6% of fuel input @ Rs.20/Kg)	
Carbon Credits @ Rs.0.70/Unit	33600
	335120
Profit/Day	Rs.92,620
Appx. ROI	5 Years

OUR RELATIONSHIPS

- L&T
- L&T ECC
- Toyota
- Volvo
- Asahi Glass



THANK YOU

