CBG BROCHURE

SsunGust Foods & Machinery Pvt. Ltd.

Bio-gas as bio-fuel.

Converting biomass to biofuel, efficiently.

About us

SsunGust Foods & Machinery Pvt. Ltd. is an ISO 9001:2015 company based in India, working in renewable and green energy. We specialise in biogas plant installations, solar solutions and biomass pellet plants. Engineering and site work are aimed at stable biogas output that supports India's renewable-energy targets.

Consultant
FEED and process

ADVANTAGES

- Proprietary technology for biogas production.
- Complete project solutions, one contract.
- Turnkey path with our own generation experience.
- Work with government offtake programmes.
- A dedicated team on each vertical.

Turnkey supplier
Steel to first gas

MILESTONES

- Years of R&D, checked on working plants.

Own generation
30 TPD class plant

APPROACH

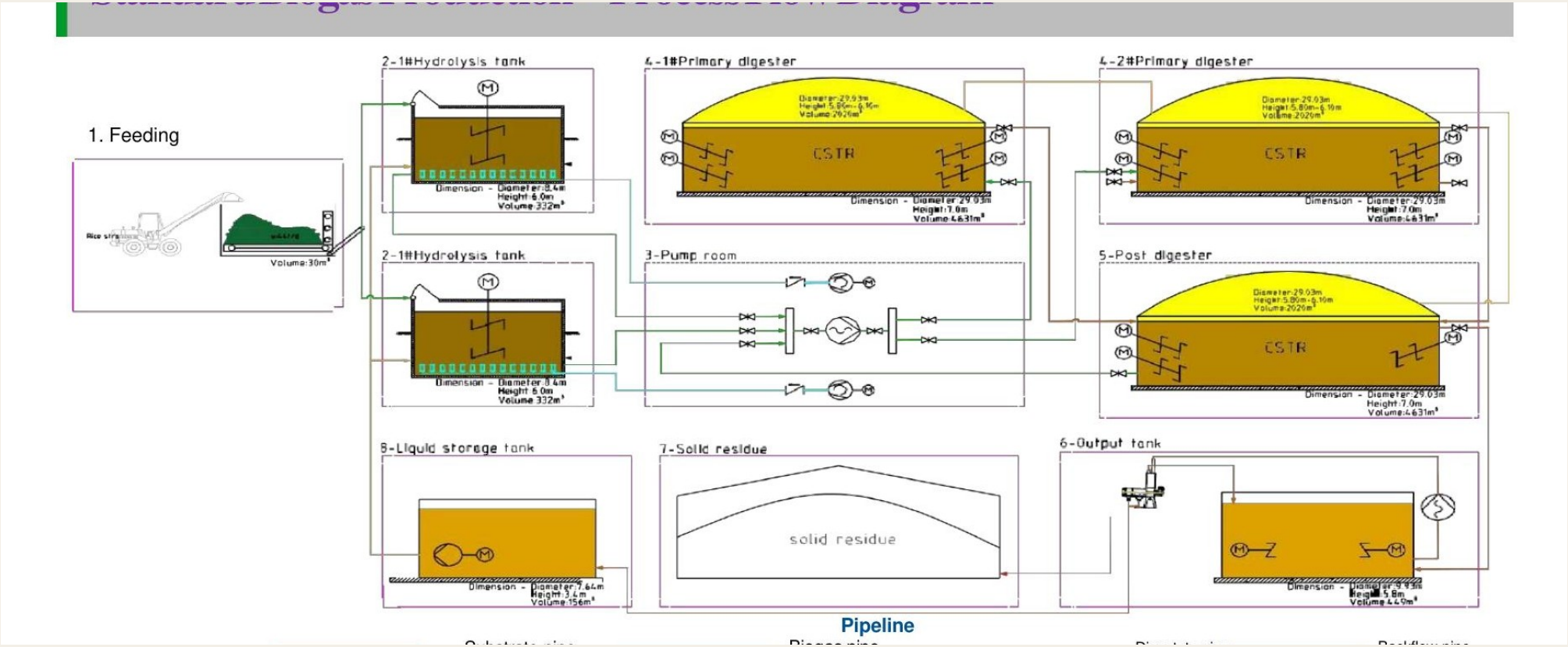
- Lean principles and a green supply chain.

Process flow

01 Raw material	02 Mixing tank	03 Pre-treatment	04 Digester	05 Upgradation
Multi-feed. Primarily sugarcane waste. Proprietary holding for shelf life.	Jet Mix vortex. Temperature control. Better digestion, lower maintenance.	Sized to the job. Bacterial behaviour, flow, temperature, feedstock life. Chartered-engineer sign-off.	USBAR. First-in-first-out. Uniform velocity. Continuous production. Temperature control.	Cryogenic route for ROI. PSA / VPSA where the duty fits.
Best-in-industry feed solution.	**Proven mixing technology.**	**Proven pre-treatment.**	**Proven digester.**	**Industry-standard upgrade.**

Standard biogas production — process flow

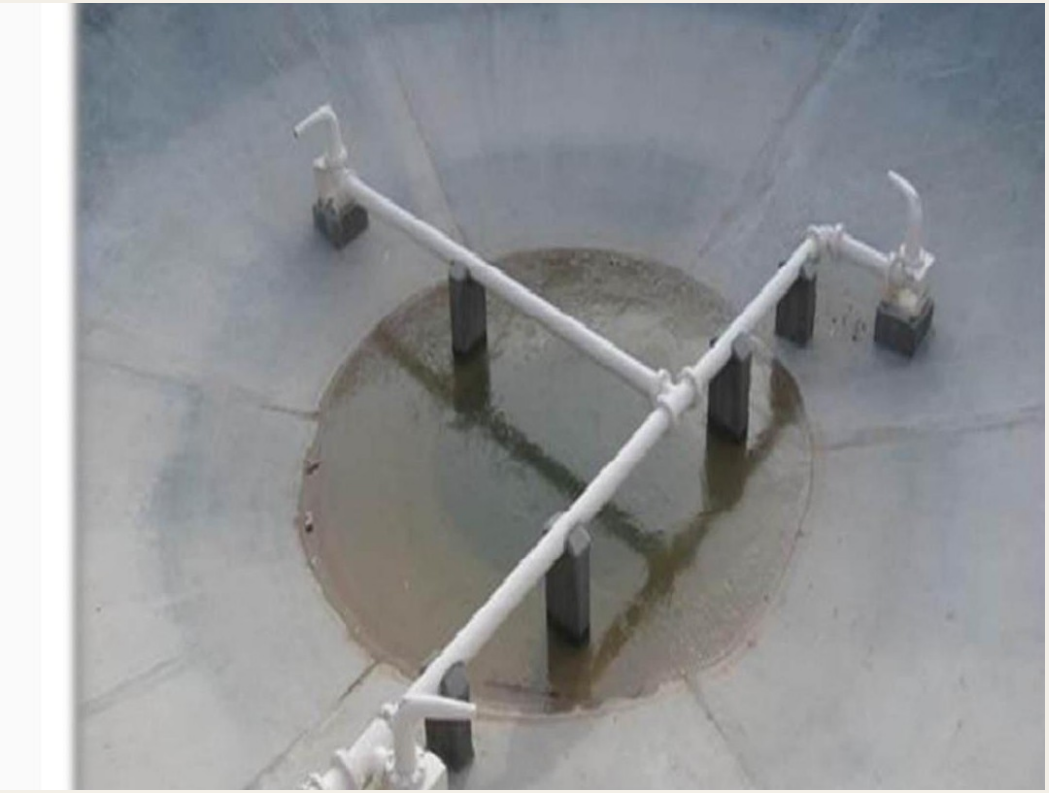
Feeding, hydrolysis tanks, primary and post digesters, pump room, liquid storage, solid residue and output tank.



Vortex mixing system

Hydraulic mixing for sludge and tank duty.

Anaerobic digestion needs no oxygen, a stable temperature (about 95°F), a steady feed and adequate mixing. Mixing raises reaction rate and biogas, holds temperature and pH, cuts the effect of toxins and keeps grit off the floor. A well-mixed tank is one where more than 90% of the volume moves faster than 0.1 m/s. Many plants only recirculate through the heating loop. The Jet Mix vortex system is an active hydraulic mix and beats that loop on volume mixed and on maintenance.



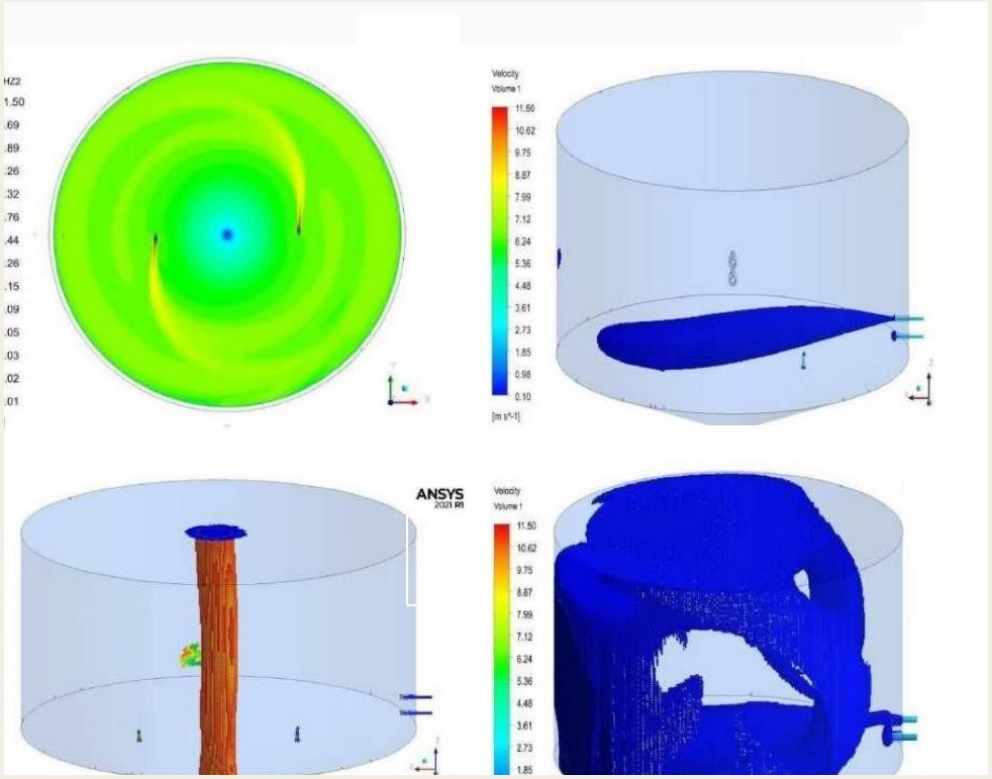
Mixing design — CFD

· Heating loop, 4-inch pipe: 1.76% of the tank well mixed — far under the 90% mark.

· Vortex mix, two nozzles at 750 gpm each: about 99% well mixed. Fits VSR and grit lift.

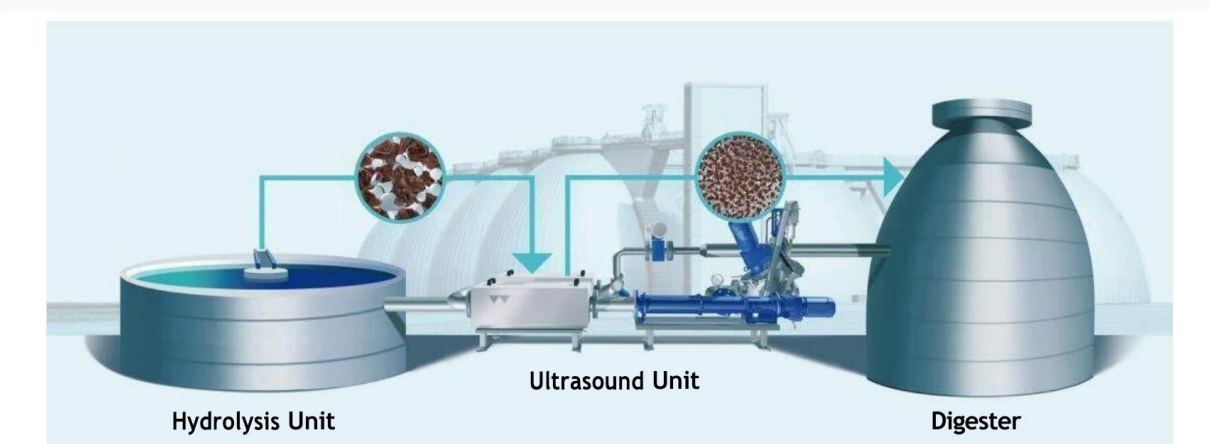
· Heating loop at the same 1,500 gpm on an 8-inch pipe: only 24% well mixed.

Upgrade to Jet Mix raises biogas and cuts maintenance.



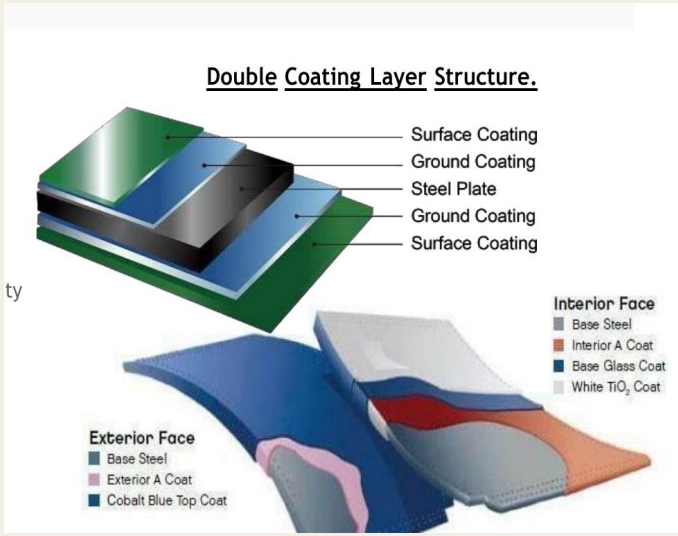
Cavitation system

Ultrasonic cavitation can raise biogas by 15% to 30%.
Hydrolysis unit → ultrasound unit → digester.



GFS tank

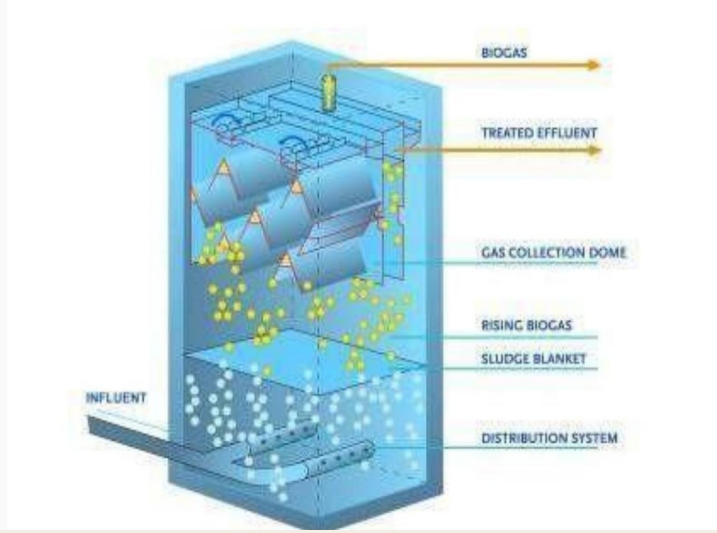
- Quick install — modular, factory-made.
- Glaze coat, corrosion resistance over 30 years.
- No post-install maintenance.
- Can be moved, extended or recycled.



Digester / reactor — USBAR

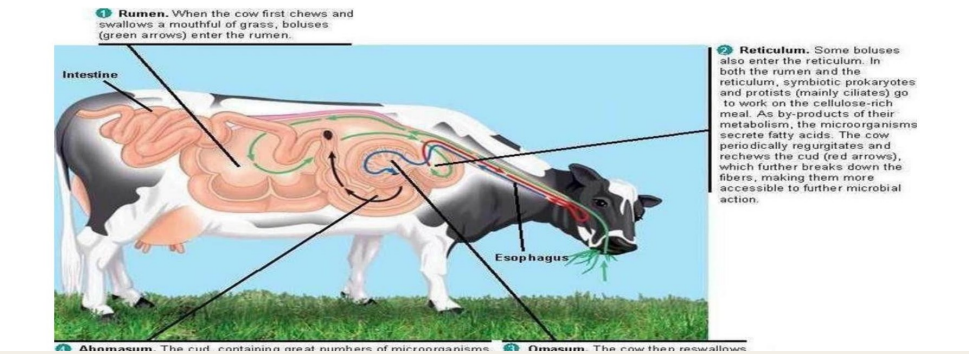
Upfront sludge-blanket anaerobic reactor.

USBAR is flow at uniform velocity and direction across a section. Suited to large plants, high conversion per volume, fast reaction, lower labour, homogeneous and heterogeneous duty, continuous production.



Design note — cow digestive system

Rumen and reticulum break cellulose with microbes. Cud is re-chewed. Omasum takes water. Abomasum digests with the animal's own enzymes. The plant copies staged breakdown, not a single tank.



Energy balance and fermentation

Aerobic composting

$C_6H_{12}O_6 + 6\ O_2 \rightarrow 6\ CO_2 + H_2O \qquad \Delta E = -3.0$ kJ/mol

Anaerobic digestion

$C_6H_{12}O_6 + 2\ H_2O \rightarrow 3\ CO_2 + 3\ CH_4 + 2\ H_2O \qquad \Delta E = -405$ kJ/mol

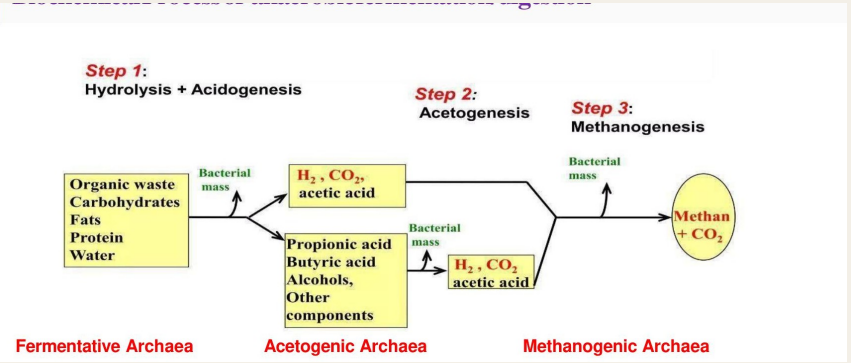
Burning of biogas

$2\ CH_4 + 6\ O_2 \rightarrow CO_2 + 6\ H_2O \qquad \Delta E = -3{,}475$ kJ/mol

Three steps in the digester

01 Hydrolysis + acidogenesis 02 Acetogenesis 03 Metha

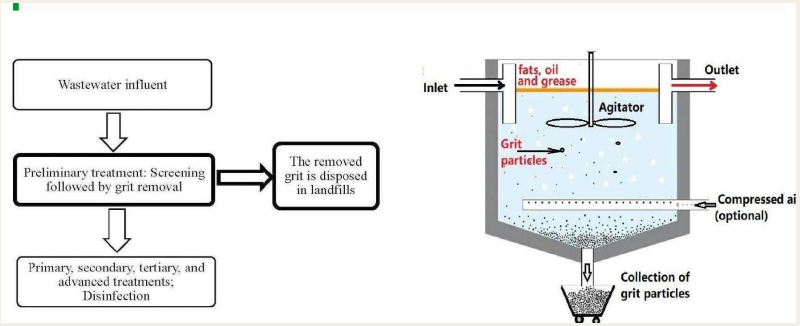
Fermentative archaea → acetogenic archaea → methanogenic a



Grit removal

Grit is organic and inorganic particles, 140–300+ microns — eggshells, sand, gravel. It is settled before the digester. A vortex unit separates it. Grit is washed, dewatered and sent off. That protects pumps and stops abrasion.

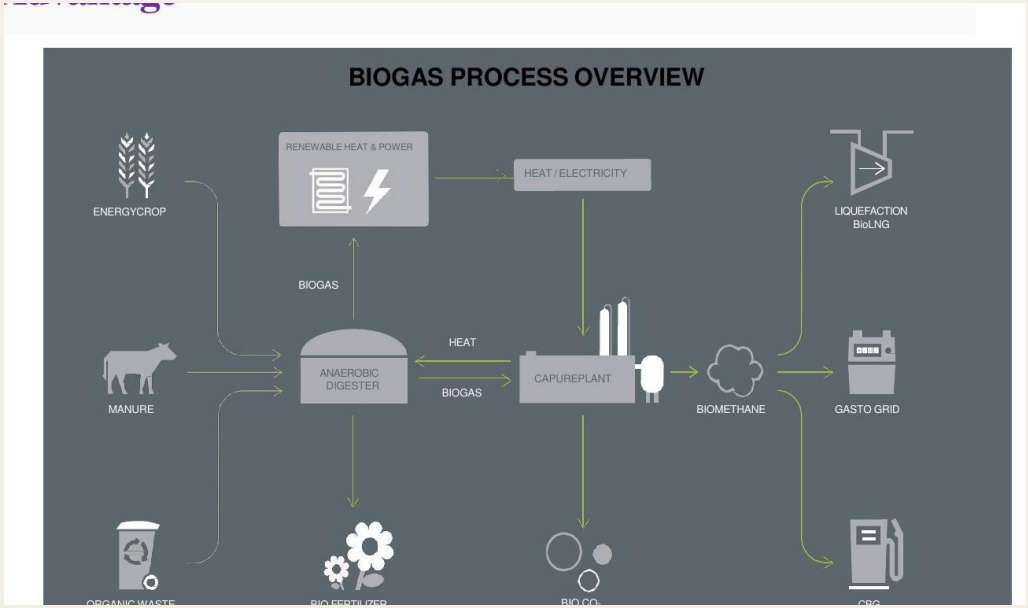
TECHNOLOGY	NOTE
Aerated grit tank	Simple. Performance hangs on the induced flow.
Detritus tank	Parts above water. Hard to keep a uniform flow.
Horizontal chamber	Easy to modify. Bottom velocity can scour.
Hydrocyclones	Efficient. High energy.
Vortex / jet vortex	Efficient. Deep unit, higher civil cost.



Biogas upgrading — Bio-LNG / CBG

Bio-LNG is liquefied biomethane. An alternative to LNG, taken from biogas.

- Nearly carbon-neutral fuel.
- Lower CO2.
- Quieter engines.
- Lower NOx.
- Less particulate.
- Can show a negative GHG balance.



CO2 MARKETS

Medical CO2 · MIG shielding · Food carbonation · R744 refrigerant · Dry ice · Battery

Government support and coal policy

Petroleum Minister announcements on the LNG network: 1,000 LNG stations in three years; expected investment of Rs 10,000 crore; 150 fuel stations in the next year; stations every 200 km on the golden quadrilateral.

Coal Minister (14 Oct 2022): import of thermal coal to stop by 2024–25. That is the policy backdrop for torrefied pellets and domestic biofuel.

Torrefied pellets

Igniting sustainable biomass transformation.

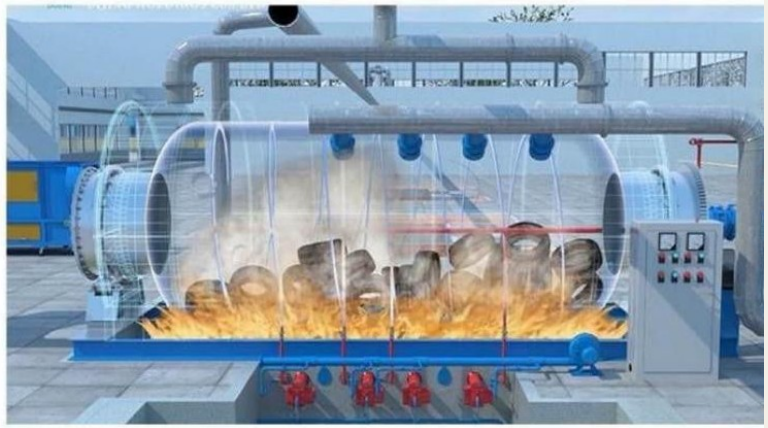
New process with CO2

Torrefaction is a thermochemical treatment under pressure, without oxygen. Water and volatiles leave. Biopolymers break. The product is torrefied biomass — biocoal. The upgrade injects hot CO2 above 500°C into the reactor at 10 bar.

Energy Hot CO2 at >500°C and 10 bar cuts energy use.

Quality Lower ash and volatiles. Higher-calorie bio-char yield.

Environment Less volatile matter, lower emissions.



We are implementing an upgrade by injecting hot CO2 at temperatures exceeding 500 degrees Celsius into the Torrefaction Reactor under an internal pressure of 10 bar.

Carbon credits · estimated yearly return at $6

Markets trade emission units. Cap-and-trade is mandatory; voluntary sits outside regulation. India works the CDM. A credit is one tonne of CO2, tradable. An offset is a verified reduction outside the cap.

Biogas	C.C / day	D.S.W	Rice straw	Cow dung	Annual return
6,000 m³/day	12	150 KLD	20 TPD	135 TPD	Rs 21 lac
12,000 m³/day	24	300 KLD	40 TPD	270 TPD	Rs 42 lac
24,000 m³/day	48	600 KLD	80 TPD	540 TPD	Rs 84 lac
48,000 m³/day	96	1,200 KLD	160 TPD	1,080 TPD	Rs 168 lac

ENQUIRY

ssungust747.sales@hotmail.com

+91 94653 63696 Engineering +91 76578 79801 Sales

House No. 226, Lala Hardyal Street, Raman Cinema Road, Nai Basti, Mansa, Punjab 151505