ISGEC

Sugar Plants & Distilleries

Comprehensive EPC Solutions for Compressed Bio-gas Plants

Capable of processing: Press Mud Cake / Biomass / Cane Trash / Spent wash from distillery / Napier Grass / Agri waste / Municipal Solid waste

Isgec is executing a CBG plant for a domestic client in North India on poultry waste / cow dung / paddy straw (with Sauter Germany design digestor)

Engineering, Procurement, Construction (EPC)

Isgec: Delivering Comprehensive EPC Solutions, Powered by Experience.

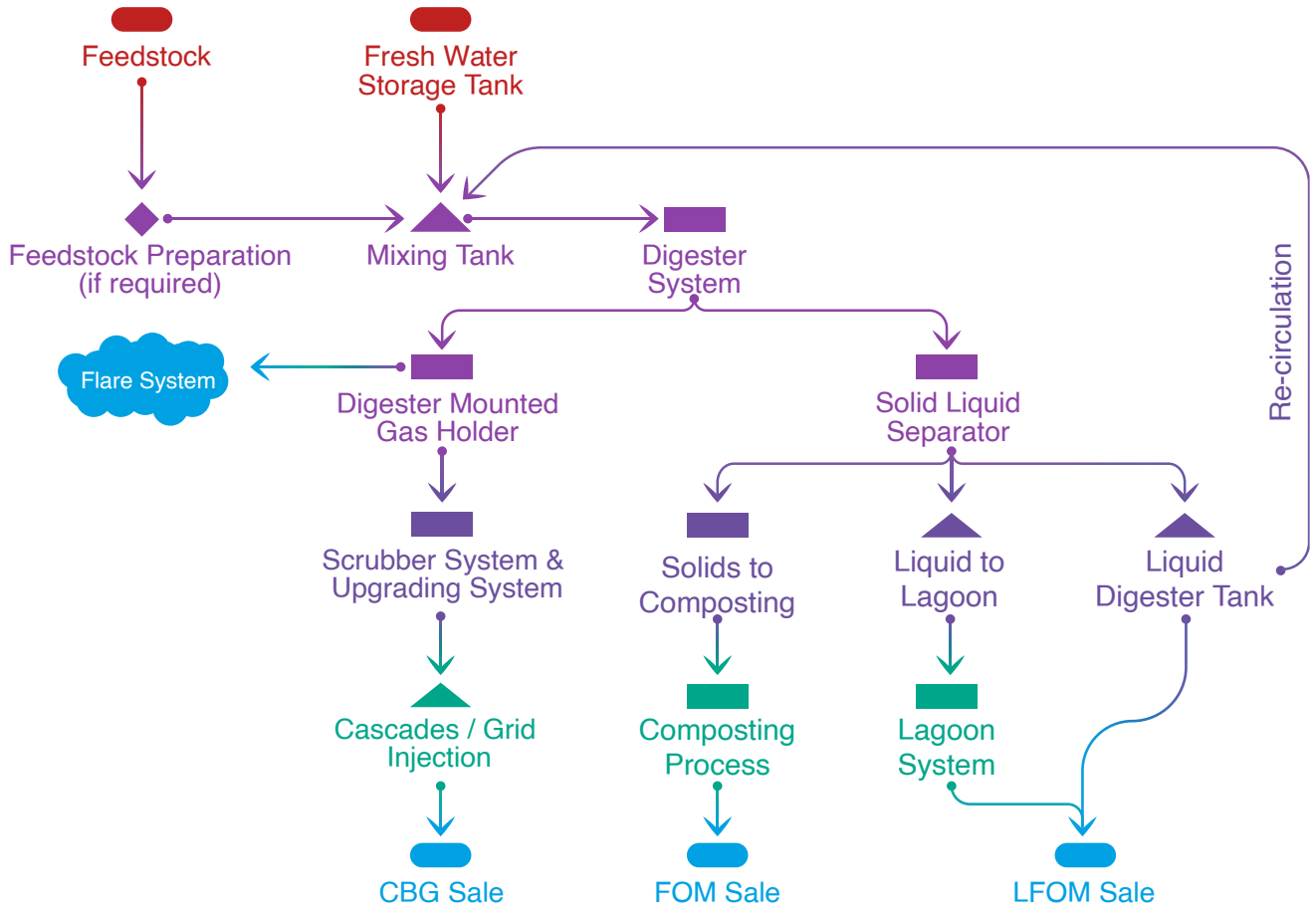
With a dedicated team of 4000+ professionals, ISGEC's extensive EPC capabilities cover a diverse range of sectors:

- **Sugar & Distillery plants:** Successfully executed over 235 projects from concept to commissioning, including sugar plants, refineries, and distilleries.
- **Power Generation:** Comprehensive power plant solutions utilizing various fuels such as Pet coke, Coal, Oil & Gas, Waste Heat Recovery, and MSW-based fuels.
- **Bulk Material Handling:** Expertise in developing efficient handling systems for ports, mines, and coal handling for utilities.
- **Heavy Engineering:** Expertise in Manufacturing over 900 high-capacity and high-pressure equipment.
- **Environmental Solutions:** Implementing advanced air pollution control technologies including ESPs, Bag Filters, DeNOx, and FGD
- **Civil Infrastructure:** Undertaking all types of civil works and projects, including essential maintenance.
- **Lifecycle Services:** Providing Residual Life Assessment and comprehensive Operational & Maintenance services for all our EPC projects

CBG Plants Tailored to Your Needs

- Complete EPC solutions for CBG plants
- Various feedstock Capability - Press Mud Cake / Biomass/ Spent wash from distillery/ Napier Grass / Paddy straw / Poultry waste / Cow Dung
- Capacity – 5 TPD to 30 TPD
- CBG with high methane purity (≤99%) for CNG and city gas networks.

Process Flow Diagram



Digestion Technologies Offered

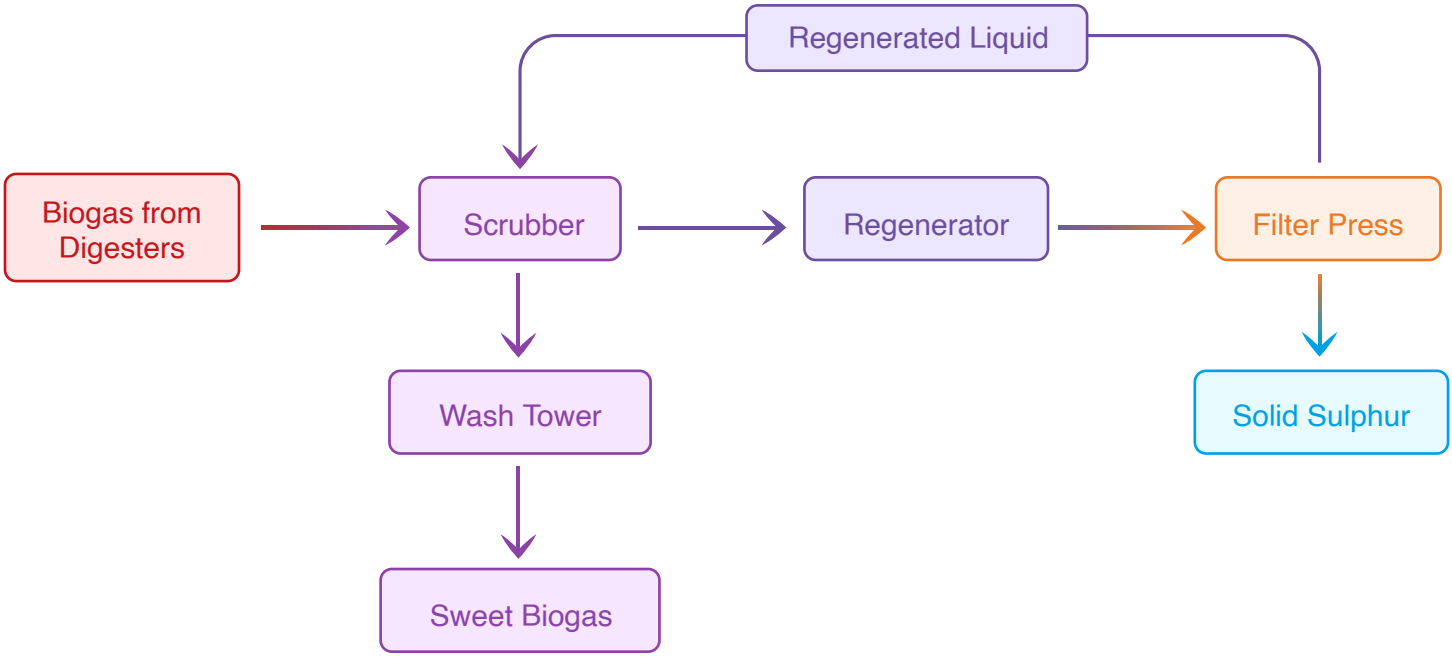
- **CSTR (Continuous Stirred Tank Reactor):** A wet type digestor widely used for Press Mud Cake (PMC) based plants.
- **Sprinkler Digestor (Semi-wet):** Sprinkling digestate removes the need for an agitator, commonly used for poultry waste, agri-waste, and cow dung.

We provide both types of digestors, tailoring the design to the specific feedstock of your CBG plant. Digestor Material of Construction (MOC): RCC / MS with Epoxy / Glass Fused Steel

TECHNOLOGY USED FOR BIO GAS UPGRADATION

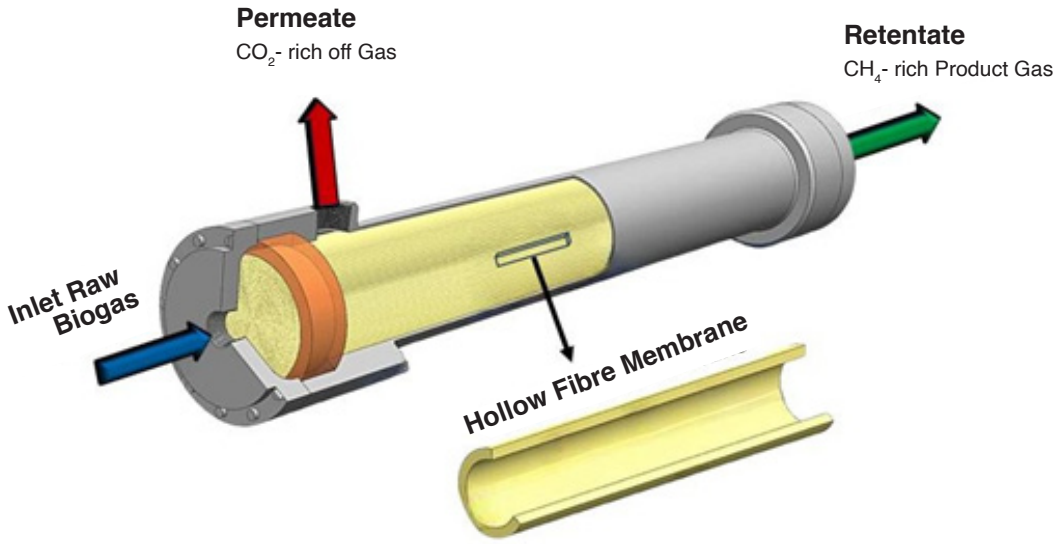
REMOVAL UNIT

The H_2S removal unit is based on the scrubbing technology from IISc Bangalore suitable to handle H_2S upto 40000 PPM



CO2 REMOVAL UNIT

Membrane-based system to upgrade biogas to a methane-rich product gas. Methane purity of up to 99.5% is achievable. Membrane technology is a simple process that separates the CH_4 from CO_2 by permeation through high-performance polyimide hollow fibre membranes. The gas is separated by means of an imposed pressure difference over the membrane.



MEMBRANE TECHNOLOGY ADVANTAGES

- **Clean Separation:** Membranes provide the cleanest way to separate CO_2 Physically.
- **Methane Losses:** Water scrubbing has high methane losses due to temperature shifts in chilled water. In VPSA the losses occur after 2 – 3 years of operation and it is gradual
- **Energy Demand:** Water scrubbing uses more energy due to its need for pressurized chilled water and complex counter-current CO_2 stripping processes.
- **Biogas Drying:** Water scrubbing depends on adsorbent beds or molecular sieves for drying.
- **Larger Footprint:** Water scrubbing setups require more space.
- **Market Trends:** In developed markets, water scrubbing is often paired with membranes downstream to achieve grid injection purity. So investing in 2 system does not make viable sense
- **India's Challenges:** Water scrubbing doesn't suit India due to inefficiency in Energy use and methane losses from ambient temperature spikes.
- **Flexibility:** we can run the membrane system to a turndown percent of 20% which gives greater flexibility to manage the running capacity due to fluctuation of CBG demand. Also reaches steady conditions within minutes so ease of operation is more.
- **No additional drying stage required**

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