GGE
Genset Pvt Ltd

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GGE POWER PVT. LTD

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About Us:

GGE Power Private Limited was founded in the **year of 2005**. An ISO 9001:2008 certified company. GGE Power is the authorized distributor and service provider for **GUASCOR** gas engines in India. We are leading technology provider's right from concept to commissioning of Biogas to Power Generation, Bio-CNG Upgradation System, Biogas Cleaning System, Biogas Digester Tanks, Biogas Dehumidifiers, Biogas Flares, Agitators and Mixing Pumps for Digesters etc. We offer total solutions and also undertake Renewable Energy Projects on Turnkey Basis.

GGE Power focuses on long term relationships its clients, providing unmatched service and technical support for fulfilling individual customer needs and ensuring the economic success of the plants. GGE Power is committed to delivering high quality installations and providing reliable, accountable, long term maintenance support for your plants and Power / Gas generation equipment.

Our products include and are not limited to Bio Gas Digesters, Membrane type gas Domes mounted on digesters, Bio Gas Storage Balloons, Gas Scrubbing System Bio Gas Gensets and Upgrading Equipment. Developed under the supervision of experienced professionals, these systems are acknowledged for their high operational competency, low maintenance cost and reliable service life.

We undertake Turnkey Projects related to the installation and commissioning of Bio Gas Based Power Plants from 10 KW to 10 MW in case power is required, and Bio-CNG up gradation systems incase high heat value Methane Gas is needed.

Glass Fused Steel Digester Tank:

Process:

In the enameling furnace the powder coated steel sheets are heated up to approx. 860 degrees Celsius. At this temperature the enamel powder melts, thus forming a corrosion resistant fusion with the surface of the metal. This glass-like, extremely resistant enamel coating permanently protects the steel surface. Glass-Fused Steel (Glass-Lined-Steel) is a unique tank finish. Two materials are fused together to achieve the best properties, strength and flexibility of both steel combined with the corrosion resistance of glass. Applied to both interior and exterior surfaces, Glass Fused Steel is able to provide many years of trouble free service in harsh environments.

Glass Fused Steel tanks are utilized for:

1. Mesophilic digesters
2. Thermophilic digesters
3. Pasteurizing digesters
4. Enhanced enzymic hydrolysis (EEH) Digesters

Applications & Market Sectors:

Glass Fused Steel (Glass-Lined-Steel) is utilized for the tank walls and also on the digester roof. Glass Fused Steel technology provide high degree of protection against toxic & corrosive gases ensuring long and maintenance free life for digester & tanks.

1. **Municipal:** In the municipal environment these tanks are used for potable water, sewage treatment, wastewater treatment and anaerobic digestion.
2. **Industrial:** Industrial applications include effluent storage, process, industrial effluent digestion, process water storage and bulk solids storage.
3. **Agricultural:** Glass Fused Steel tanks are utilized for slurry storage, biogas production and grain and forage silos.
4. **Mining:** The tough chemical and abrasion resistance of Glass Fused Steel tanks and silos make them ideal for storage and process applications.
5. **Bio fuels:** These tanks can be used within the bio fules market for vegetable oils, bio-diesel and ethanol storage.

Industrial Applications:

- Industrial effluent storage tanks
- Anaerobic digestion and biogas tanks
- Process water tanks
- Brewery and beverage waste tanks
- Leachate storage tanks
- Firewater tanks
- Mining process tanks
- Scrubber tanks

Membrane Type Gas Holders:

Membrane gas holders are the most flexible, economical, reliable and efficient biogas storage solution offered by GGE. The membrane gas holder is fundamental to the process of anaerobic digestion by ensuring a regular supply of biogas availability for the rest of the plant to operate consistently and efficiently.

The constant pressure gas holders are designed to store the biogas made from the anaerobic digestion of the organic waste and sludge. They are made with biogas resistant PVC or Polyurethane two side coated polyester fiber reinforced fabric membranes, welded with high frequency electronic machines.

Main Features:

- High safety levels : Our patented system with 2 chambers and 3 overlapping membranes , avoid in any case the formation of explosive mixture in the gas holder's volume , because the biogas chamber is completely divided from the air compensation chamber.
- Membrane gas holders can be manufactured significantly faster than any other biogas storage solution and in addition are resistant to the corrosive nature of H2S gas.
- Low energy consumption : The compensation air blower unit starts only when the biogas is going out from the gasholder to be used , while for the remaining time (when the gas is entering in the gasholder) is turned off.
- The blower unit , with pressure control ,coupled to the pneumatic air and gas valves on the gasholders , ensure the constant pressure of the biogas throughout all the filling emptying cycle.
- The operational pressure control system only requires the air blower to operate when biogas is being used and the gas holder will retain its pressure, shape and stability in the event of a power failure.
- **Volume Capacity: from 10 to 16,700 m3.**

Accessories:

AIR FAN PRESSURIZATION SYSTEM

Utilized in the **CUPOLA M2** and **2MASTER**systems, the air fan pressurization system ensures the stability of the air chamber and provides for continuous air recirculation. The gradual and continual replenishing of the air chamber by the air fans and air valves removes any biogas that might pass from the biogas chamber into the air chamber.

EXHAUST SAFETY VALVES

In order to control the pressure inside the gas chamber, Ecomembrane manufactures and supplies a hydraulic safety valve, Constructed of stainless steel, the exhaust valve incorporates a self-priming tank partially filled with water that helps maintain the correct level inside the valve.

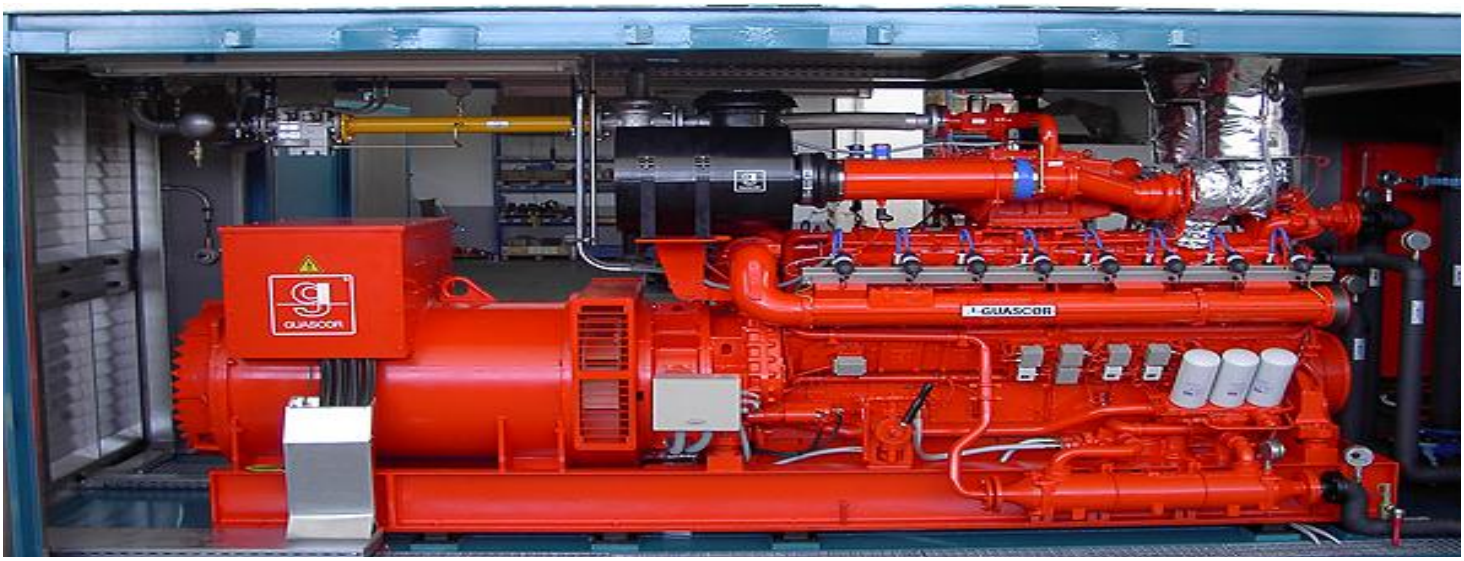
The biogas inlet pipe is installed through the top of the tank and terminates at a specific point in the exhaust valve's self-priming tank, just below the water level that determines the desired overpressure level. In the event of overpressure, the biogas exhaust is evacuated through a vertical exhaust pipe thereby avoiding potential human contact.

VOLUME LEVEL SENSOR

GGE's patented level sensor ensures the optimal use of biogas stored within the gas chamber and controls the shape of the gas membrane throughout the entire filling and emptying cycle. A load sensor is placed on the top of the outer air membrane and sends a signal to a control panel where the gas volume readout is displayed on a screen for the operator to use to manage the desired level.

The electromechanical level sensor records the gas volume based on the apex of the gas membrane and ensures that the operator receives an accurate reading of the gas volume as soon as the gas enters the chamber. This is due to the volume level sensor incorporating springs that are attached to the top center of the gas membrane and expand and contract as the biogas fills the gas chamber, which results in continuous and accurate readings of the gas volume.

Natural Gas & Biogas Gensets:



GUASCOR engines have a reputation of excellent quality and reliability and have been in use in all the oceans and continents over the last 35 years. **GUASCOR** produces gas engines with outputs from **150 kW to 1240 kW** and has developed their engine range on 4 basic platforms- 6 & 8 cylinder in line, 12 & 16 cylinders Vee. Over 90% of the parts of different models are inter-changeable. This allows the customer the flexibility to add engines of different models to suit his expansion needs and yet maintain a minimum inventory of parts. **GUASCOR** has its presence in Europe, North and South America, Africa, Asia and Oceania and has expertise in Co-generation and energy recovery systems. In India **GUASCOR** SA is represented by GGE Power Pvt. Ltd. The new **GUASCOR SFGLD** series stand out for their toughness and high performance under the hardest working conditions. **GUASCOR** has applied new very resistant materials in the construction of the ***SFGLD*** engines.

Gas Engine Range:

Engines for CV of 1200 Kcal/Sm3 to 12000 Kcal/SM3.
Offers specific engines for (Natural gas, Digester gas, Sewage gas, Landfill gas, Syngas, LPG, LNG, Propane, mine gas) with a high electrical efficiency.

Guascor Engine Models & Genset Ratings:

Model	Cyl. Nos.	KW (e)	Ltrs.	Ltrs./Cyl	Bore/Stroke	Bmep	Piston Speed m/s	Wear Factor
FG -180	6	140	18	3.0	152/165	6.7	8.3	55.6
FG-240	8	190	24	3.0	152/165	6.7	8.3	55.6
FGLD-180	6	250	18	3.0	152/165	12.2	8.3	101.3
SFGLD-180	6	300	18	3.0	152/165	14	8.3	116.2
SFGLD-240	8	400	24	3.0	152/165	14	8.3	116.2
HGM-240	8	500	24	3.0	152/165	17	8.3	141.1
FGLD-360	12	525	36	3.0	152/165	12.2	8.3	101.3
SFGLD-360	12	600	36	3.0	152/165	14	8.3	116.2
FGLD-480	16	700	48	3.0	152/165	12.1	8.3	101.3
SFGLD-480	16	812	48	3.0	152/165	14	8.3	116.1
SFGLD-560	16	945	56	3.5	160/175	14	8.8	123.2
SFGM-560	16	1025	56	3.5	160/175	15	8.8	132.0
HGM-560		1200	56	3.5	160/175	18	8.8	158.4

Service & Spares Support:

Service Engineers:

- 20+ Engineers, 14+ Technicians
- Delhi, Surat, Bahadurgarh, Ahmadabad, Bhuj, Sitarganj, Ankleshwar, Kolhapur, Solapur, Hubli, Gokak, Kanpur

Workshops:

- Gurgaon, Near New Delhi.

Spares Stock Points:

Overhauling Spares:

- Delhi, Navi Mumbai, Surat, Ankleshwar

Maintenance Spares:

- All sites where GGE has O&M Contracts

Facilities for Spares & Service in India:

- GGE Engineers Trained by Guascor Power, Spain. (Training Programs are held regularly either in Spain or in India)
- Audit Visit of Engineers from Guascor Power every 3 months for review & audit of installations.
- Large Stock of Overhauling & Maintenance Spares (Rs.5 Cr. at Present).
- Workshop for repair in Gurgaon and Mumbai
- Guaranteed minimum 8000 to 8400 Hrs./yr uptime.

Sewage Gas Genset Installations in India:

GGE Gensets on Sewage Gas:

11 Installations in STP's

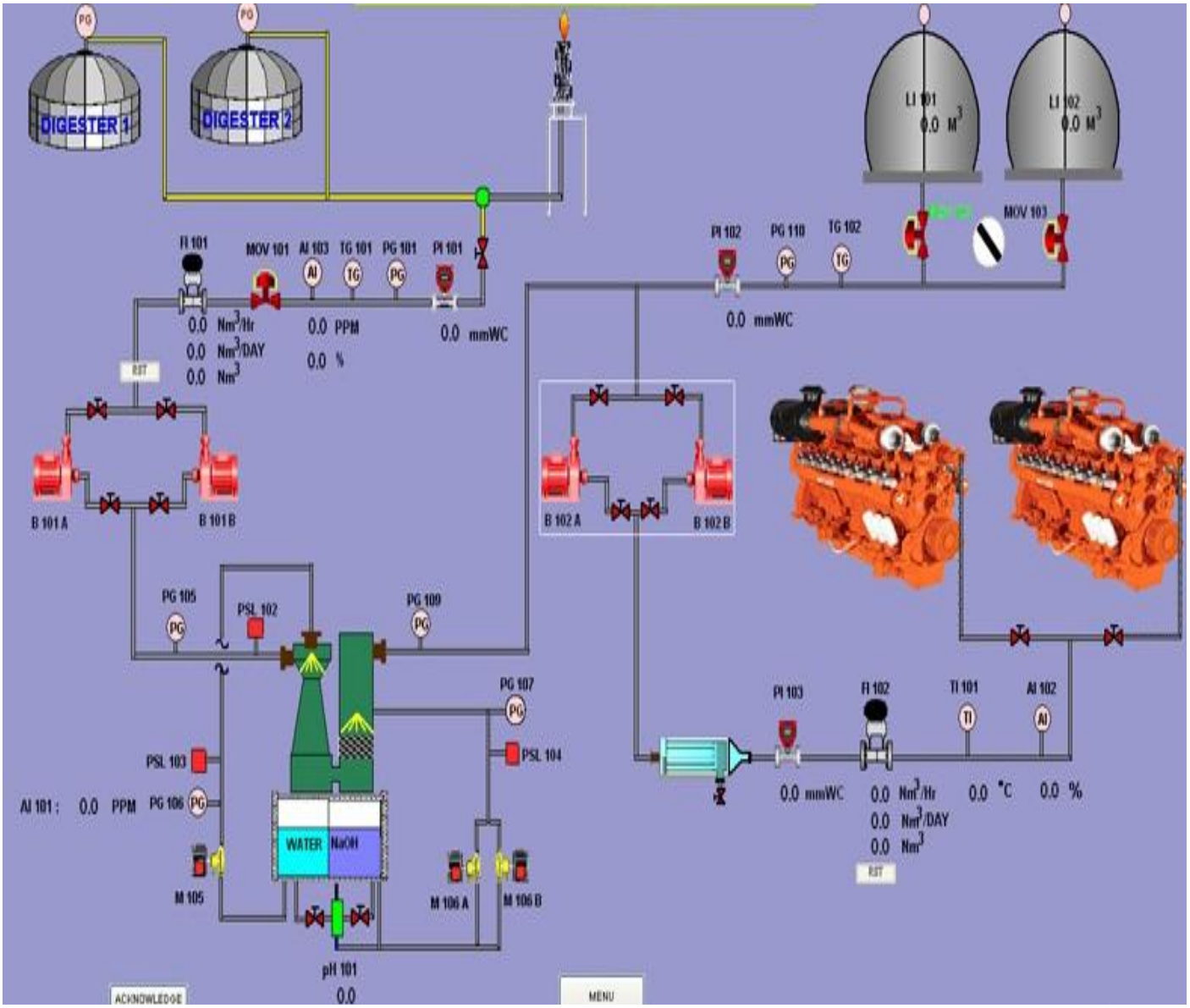
28 Installations in Industrial Waste:

4 Installations in MSW:

- **18 Installations in Industrial Waste based Biogas Plant.**
- **15 Installations in Sewage and MSW based Biogas Plant.**
- **33 CNG based Installations at different type of Industries.**

SCADA Screen of Biogas Power Plant:

GGE offers Supervisory control and data acquisition (SCADA) System: SCADA system is implemented for the precise and efficient control over plant process and to collect and store data generated from various field instruments such as digester pressure transmitter, Sewage gas flow meter, on line CH4 and online H2S analyzer, various engine generator set parameters, etc.



Biogas Up gradation:

General:

The up gradation of biogas is done by increasing percentage of methane, and this can be done by removal of CO2 and H2S, and moisture and other composition degrading gas quality.
The most preferred methods of Gas Upgrading are:

- VPSA (Vacuum pressure swing adsorption)
- Water Scrubbing.
- Membrane separation.

What GGE prefers and Why?

VPSA(Vacuum pressure swing adsorption)
Biogas is typically composed of 60% methane and 40% CO2. It is similar to natural gas which is composed of 99% methane.
GGE provide a solution of high percentage of methane in our biogas after up gradation and this is done with VPSA method.
In VPSA At high pressure, selected molecules are trapped in an adsorbent medium and are released at low pressure. The adsorbent is zeolites (crystalline polymers), carbon molecular sieves or activated carbon. Depending on the adsorbent and operating pressure used, CO2, O2 and N2 can be adsorbed while methane passes through. After adsorbing targeted molecules the raw biogas flow is turned off for an instant, the pressure is released and the targeted molecules “let go” of the adsorbent and are evacuated as reject gas. Raw biogas flow is turned on, pressure is increased and the cycle starts again.

Why VPSA prefer and make a difference:

- Simple design & operation.
- Consistent purity of gas is achieved.
- Clean process requiring very less floor area
- Dry product gas is produced.
- Smaller and Medium capacities favor PSA systems in terms of economics.

GGE Can Provide Economical Turn Key Solutions & Equipment for the following:

- Consultancy for selection of technology and Equipment.
- VPSA Equipment.
- Compressors up to 200 bar pressure.
- Cascades suitable for 160 bar pressure for gas storage and distribution.
- O&M of the Plant and Training of your Manpower.

H2S Scrubber System:

GGE provide H2S Scrubbing solution for 50 CUM per hour onwards.

Chemical Scrubber:

Absorption is basic chemical engineering operation and is most preferred and well established gas pollution control technique. Bio gas scrubber based on Caustic (NaOH) Treatment is well popular for their advantages which are unparalleled as compared to other scrubbing methods. The Biogas is first washed in Venturi to remove the suspended particles /foam etc, further it goes in to the Chemical Treatment into the packed tower. The Scrubber is so designed that the spent Li life is used to the last possible extent resulting in very low casting consumption and estimated saving of 25-50% can be achieved depending upon Biogas Composition and H2S levels.

Main features:

- Very Effective& Selective Absorption of H2S thus a very cost effective solution.
- Quick Start Process, no time to wait.
- Scientifically reduced Chemical Consumption.
- Less than 50ppm Level can be Achieved.
- Cost effective solution for raw gas H2S level up to 20,000 ppm.
- Skid mounted modular designs with compact footprints.
- Pre-piped/Pre-wired systems fully automatic within battery limits to lower the installation time.
- Integrated unit with Gas Conditioning and Pressure Boosting also available.
- Good performance even with fluctuation in Gas flow.

Gas Blowers & compressors:

Gas Blower:

We are renowned supplier of Biogas Blowers and Compressors of premium quality. These blowers and compressors are widely used in sewage treatment plants, water treatment plant, fertilizers, grain, sugar industries, gas boosting, liquid agitation and sewage disposal etc.

Offered product is appreciated for its durability, energy conserving, stable performance, low noise and high efficiency. These blowers and compressors are in high demand nationwide.

Biogas Blowers have been specially developed for pumping of biogas. Gas is sucked from the system and delivered to the desired destination against the system pressure. These are generally used in biogas lines to boost the gas pressures to meet the system input demand. Special material of construction, lubrication and sealing arrangements make them ideal choice for biogas applications. For inflammable and toxic gases leak tightness is ensured.

Gas conditioning and safety equipments for gas Line:

1) Flare System:

Biogas flares are used to safely burn biogas that is surplus to the demand of energy recovery plant or where recovery plant fails. They may also provide the only means of safely disposing of biogas produced by anaerobic bioprocesses where the economics of energy recovery have not proved viable.

GGE offers wide range of flaring system and its accessories for smooth and safe operation of flaring system.

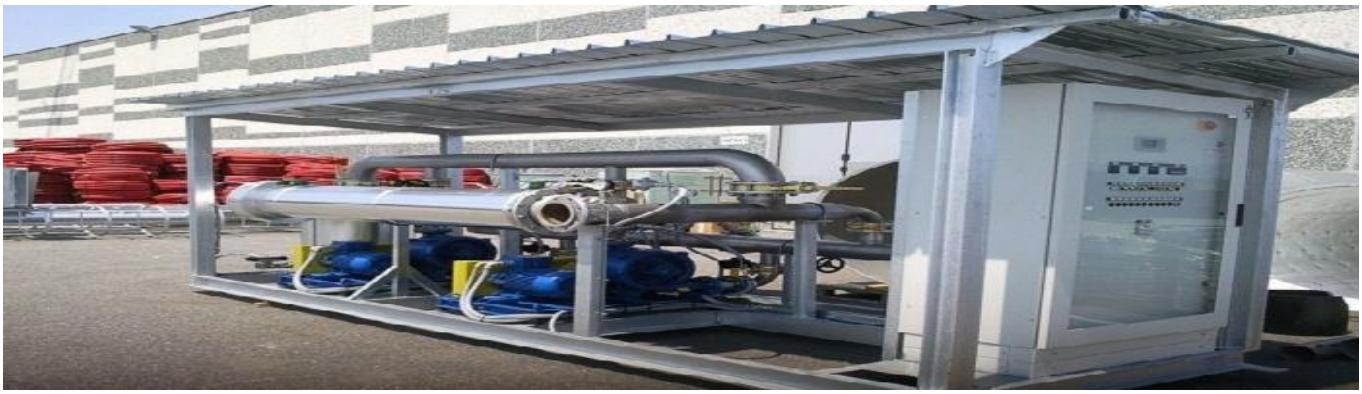
Main Features:

- Reliable Operation
- Increased destruction efficiency
- Semi & fully automatic system
- Easy maintenance
- Low operating cost

Applications:

- Sewage treatment plant
- Chemical & Petrochemical plant
- Process industries
- Biogas, landfill gas & producer gas,etc.
- Sugar mills.

2) Biogas Dehumidifier:



A standard biogas dehumidifier consists of a gas to cold water heat exchanger integrated with an industrial grade water chiller. The condensation of the water vapors in the gas is caused by temperature reduction which in turn results in a dehumidification. The condensate is separated out in a trap installed after the chiller and removed via a siphon and auto drain system.

The use of a gas dehumidification system can considerably extend the engine's service life and notably reduce the maintenance costs.

Benefits:

Removing the moisture from your biogas, using a biogas dehumidifier, will protect your CHP engine and other equipment from corrosion and minimize long term maintenance costs. Oil, which is an essential lubricant in the CHP engine, is less likely to become contaminated and require changing. Your engine will spend less time offline and will perform better, for longer, by simply adding a gas dehumidifier to your system. The biogas dehumidifier only takes up a small space and can be incorporated into an existing system or designed into a new plant. It will shut down and start up at the touch of a button to ensure engine downtime is kept to a minimum.

Applications Areas:

- Communal or industrial sewage treatment plants
- Chemical industry
- Paper industry
- Landfill sites
- Food industry
- Agriculture

3)Moisture Separator:

Water condenses in every biogas line and it is critical that this water is bled out of the system without gas loss. This is the function of the line Moisture Trap and easily incorporated into the pipe work.

When gas enter the in the Moisture Trap it impinges upon the special created surface with flow reversals, this causes coalescence resulting conversion of moisture into water droplets which in turn falls into the base of Moisture Trap. It has mechanical auto-drain system (optional) which drains out the water as it crosses a certain level in the tank.

Features:

- Low pressure drop.
- High efficiency.
- With mechanical Auto-drain systems.
- Customized material Selection.
- Sizes ranges from 2" to 24".
- Standalone system.
- No Electricity required.
- Innovative design.

4) PRV ,PVRV:

Direct acting Pressure/ Vacuum relief valves, or Breather valves are special designed for tank protection. The range includes pressure only, vacuum only and combined pressure/ vacuum valves, all available with flanged outlets or vented to atmosphere. Pressure/vacuum relief valves are used extensively on bulk storage tanks, including fixed roof with floating covers, to minimize evaporation loss. The valves prevent the buildup of excessive pressure or vacuum which can unbalance the system or damage the storage vessel.

Main Features:

- Weather hood protects against environmental impact (e.g. weather, Bird nest etc.)
- Easy maintenance.
- Low operating and lifestyle cost.
- High flow capacity maximizes cost effectiveness.
- Fully field replaceable pallets and seat assemblies without need for special tools and complex procedures.
- Size ranges from 25 NB to 300 NB and higher sizes available on request.
- Compatible Material of construction.
- Valve disk is guided within the housing to protect against harsh weather conditions.
- Additional special devices available upon request.

Applications:

- Digesters & Gas holders.
- Oil / Petrochemical Refineries.
- Flare Stakes Pulp & Paper Nag.,
- Chemical Processing Plants.
- Vapor Recovery Systems.
- Sewage Treatment Vapor

5) Flame Arrestor:

Flame arrestors block the propagation of flame passing through it. The heat of flame is absorbed by the flame element where very high surface area is provided for immediate heat transfer.

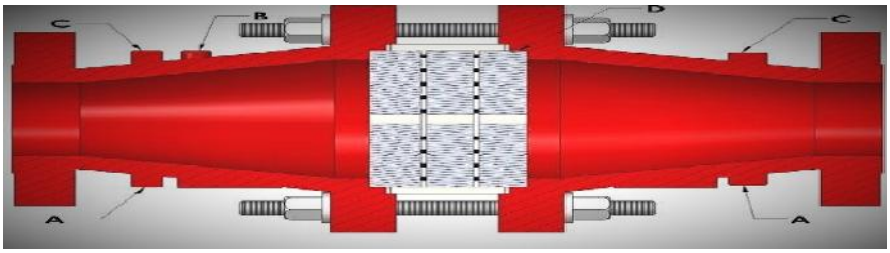
Flame arrestors are passive devices with no moving parts. They prevent the propagation of flame from both the exposed side of the unit to the protected side by the use of wound crimped metal ribbon type flame cell element. This Construction produces a matrix of uniform openings that are carefully constructed to quench the flame by absorbing the heat of the flame. This provides an extinguishing barrier to the ignited vapor mixture.

Main Features:

- Fully Customized & Cost effective Solutions as per Project requirements.
- Covering long life and least maintenance.
- Suitable for application in gas groups I,IIA and IIB.
- Provision for Temperature Sensor, Drain and Cleaning Ports.
- Minimum pressure drop.
- High flow capacity and Quick Quenching of flame.
- Wide choice of Materials and Customized Design also available.
- Easy Maintenance.
- Simple and rigid design.

Applications:

- Flammable Gas/ Liquid Storage Tank Vents.
- Vapor Inclination Systems
- Feed to Burners.
- Chemical and Petrochemical Process Plant.
- Gas pressure regulators.
- Sewage Digester plant.
- Vapor Recovery Systems.
- Sewage and Waste water Treatment



Agitators, Pumps & Separators:

1) Agitators:

Agitators/Mixers are used in digesters to mix and to make substrate alike, thus increasing the output of the plant and prevent solids setting down which in the long run might reduce the efficiency of the plant, for instance by clogging its pipes.

Main Features:

- GGE supplies agitators/mixers of various models and specification.
- Three types of agitators/mixers are supplied by GGE i.e. (a) Horizontal and Submersible. (b) Vertical and External (c) Lateral and External.
- Agitators/mixers with automatic lubricator.
- High efficiency agitators/mixers.
- Agitators/mixers with adjustable propeller.
- Agitators/Mixers for high temperature Conditions

GGE also supplied accessories for Agitators/Mixers for their best operation.

1. Service Box
2. Biogas Bracket
3. Service Balcony

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