

Types of biogas storage systems

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Choosing the right biogas storage system is as important as any other aspect of biogas production. It has a far-reaching impact on the safety as well as the efficiency of your biogas plant. Whether you go for biogas storage for on-site use later, or after transportation to distribution plants located off-site, the importance of biogas storage goes well beyond mere storage. Doing biogas storage properly also curbs production fluctuations, consumption, and changes in volume.

Fiberglass, flexible fabric, and steel are majorly used in the construction of floating gas holders. You can also use a separate tank along with a floating gas holder for digestate storage purposes apart from the storage of raw biogas.

A flexible inflatable fabric top is the most economical and hassle-free gas holder. That's because, for one it is not an intrinsic part of the digester and secondly, it doesn't react with hydrogen sulfide present in the biogas.

Flexible membrane materials can also be seen used for these gasholders. Such materials are LDPE (Low-density polyethylene), LLDPE (Linear low-density polyethylene), and polyester covered with chlorosulfonated polyethylene.

Medium pressure biogas storage systems are used for storing biogas between 2 and 200 psi. As far as the process is concerned, the biogas is required to be cleaned and the Hydrogen sulfide is eliminated to safeguard the tank components from corrosion. Besides, it also ensures a hassle-free and safe operation.

Besides, raw biogas" composition is not in line with the minimum CNG fuel specification requirements. That's because of the presence of carbon dioxide and sulfur present in raw biogas which makes it unsuitable to be used as fuel. For this reason, biogas must be purified and upgraded. Biocng has no H₂S, CO₂, or moisture as they are removed during processing.

Choosing a right biogas digester is a very important while constructing a biogas plant. From the standpoint of fluid dynamics and structural strength, an egg-shaped vessel is about the best possible solution. This type of construction, however, is comparatively expensive, therefore, its use is usually restricted to large-scale sewage treatment plants. The Chinese fixed-dome designs are of similar shape, but less expensive. The hemispherical CAMARTEC design is optimized in structural strength, but does not make optimal use of the excavation required.

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A fixed-dome plant comprises of a closed, dome-shaped digester with an immovable, rigid gas-holder and a displacement pit, also named "compensation tank". The gas is stored in the upper part of the digester. When gas production commences, the slurry is displaced into the compensating tank. Gas pressure increases with the volume of gas stored, i.e. with the height difference between the two slurry levels. If there is little gas in the gas-holder, the gas pressure is low.

Floating-drum plants consist of an underground digester and a moving gas-holder. The gas-holder floats either directly on the fermentation slurry or in a water jacket of its own. The gas is collected in the gas drum, which rises or moves down, according to the amount of gas stored.

The Low-Cost Polyethylene Tube Digester model consist of tubular polyethylene film (two coats of 300 microns) bent at each end around a 6 inch PVC drainpipe and is wound with rubber strap of recycled tire-tubes.

A balloon plant consists of a heat-sealed plastic or rubber bag (balloon), combining digester and gas-holder. The gas is stored in the upper part of the balloon. The inlet and outlet are attached directly to the skin of the balloon. [Read more here...](#)

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