

Design of Biogas Digestors

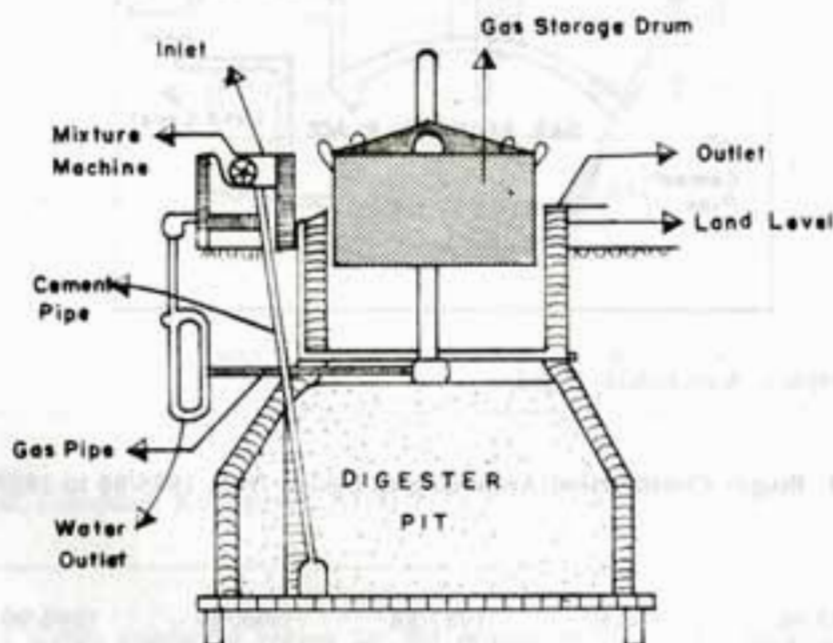
Two types of biogas digester have been promoted in Nepal. They are:

- o the Floating Steel Drum Type and
- o the Fixed Concrete Dome Type

The Floating Steel Drum Type

This design is composed of a steel drum and a masonry structure and was popular in the initial stage of development, since it was directly borrowed from India when alternative designs were not available. With the availability of the dome type biogas digester there has been a tendency to discourage the use of the drum type, except in the case of large plants. The major disadvantages of the steel drum type are that the metal corrodes easily, there is difficulty in transportation, and it is hard to insulate in winter. A sketch of the drum type *gobar* gas plant is shown in Figure 1.

Figure 1: Drum Design Gobar Gas Plant



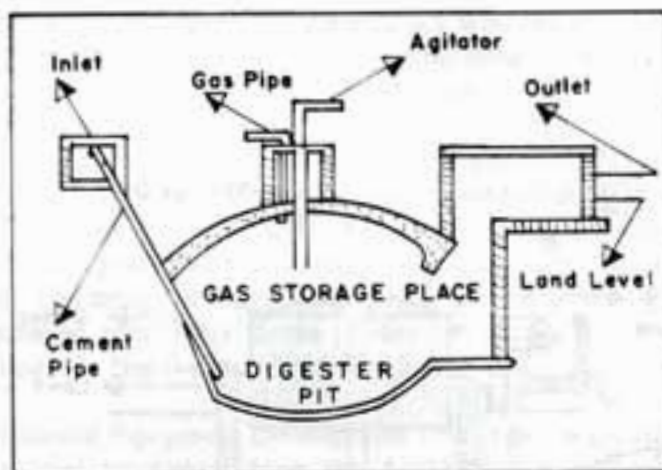
Source: Biogas Company, Kathmandu, Nepal.

Fixed Concrete Dome Design

This design (see Figure 2 below) has its masonry work mainly underground and uses mostly local materials (sand-stone, bricks, and cement). It is easier to insulate in the colder months. The maintenance cost is also minimum. The only constraint in the construction of this design is the transportation of cement to hilly areas which are not accessible by road. Therefore, the Biogas Company is experimenting with a fibre glass dome which is easy to transport to the hills. However it is relatively expensive in comparison to the concrete dome design. This design is now much more popular in Nepal.

The Biogas Company now exclusively promotes the dome type biogas plant. Table 1 indicates that over the last five years from 1985/86 to 1989/90, the Biogas Company has established only six drum types whereas 3,848 dome type biogas plants have been constructed. The floating drum design seems to have been absolutely discouraged.

Figure 2: Dome Design Gobar Gas Plant



Source: Biogas Company, Kathmandu, Nepal.

Table 1: Biogas Construction According to Design from 1985/86 to 1989/90

Design	1985/86	1986/87	1987/88	1988/89	1989/90	Total
Dome	271	401	676	1108	1391	3848
Drum	6	-	-	-	-	6
Total	277	401	676	1108	1391	3854

Source: Biogas Company, Kathmandu, Nepal.