

# CHAPTER FOUR

## Results and Discussion

### 4.1 Results

To erect a biogas plant at cow farm at assalaya sugar factory with capacity 960 kg/day of dung and 38.4m<sup>3</sup>/day gas production rate it required:

- 7.362 m<sup>3</sup> of cement (220.61 bags = 11.03 ton).
- 18.8 m<sup>3</sup> of sand (coarse).
- 11.81 m<sup>3</sup> of stone ballast (25mm).
- 536.80 kg of steel (8mm).
- 1.34 kg of binding wire.
- 26058 Numbers of bricks (0.23m × 0.115m × 0.075m).
- 1522 Numbers of tiles.
- 4.74 m<sup>3</sup> of sand (fine).
- 47.88 m<sup>2</sup> of chicken wire mesh.
- 42.47 m of steel rings around the base of the dome.
- 0.45 m of GI pipe for gas outlet.

Quantities of gas consumed for different applications are shown in table 4.1

**Table 4.1 Quantities of Gas Consumed for Different Applications**

<b>Application</b>	<b>Specification</b>	<b>Quantity of gas consumed (m<sup>3</sup>/hr)</b>
Cooking	2 burner	0.33

	4 burner 6 burner Per person per day	0.47 0.64 0.24 m <sup>3</sup> /day
Gas lighting mantle lamp	100 candle power	0.13
Duel fuel engine	75-80% replacement of diesel oil per B.H.P	0.50
Electricity	1 KWh	0.21

[1]

## 4.2 Discussion

The design can be improved by adding a biomass handling unit, and fertilizer collection and distribution unit which contain:-

1. Screw conveyer which receiving dry dung and delivered it to mixing tank.
2. Mixing tank with stirrer and screw pump: tank with stirrer to mix dung with water as per recommended ratio then pumped to inlet chamber.
3. Fertilizer collecting tank with centrifugal pump.