

## **BRIQUETTED FUEL**

### **1. INTRODUCTION**

Briquetted fuel is produced from biomass such as agro-waste and other organic matters. This is produced by compaction of biomass after removing moisture. This process increases the calorific value of the fuel. The briquettes are made using extrusion process and then cut into required sizes. Normally, one inch diameter and six inch length briquette fuel is produced and used for generation of energy. In India, large quantity of biomass is available in rural areas and there is huge potential as fuel is required for daily cooking, for industrial purpose and for hotels & restaurants.

### **2. PRODUCTS AND ITS APPLICATION**

Briquetted fuel is high calorific product used as substitute for conventional coal or in place of firing directly agro-waste for energy generation. There are producers of briquetted fuel in India and supplying fuel to household, industries, hotels, etc. The location of the plant highly depends on the availability of abundant and cheap agro-waste in nearby areas.

### **3. DESIRED QUALIFICATION FOR PROMOTER**

There is no specific requirement as regards qualification, however, ability to collect cheap raw materials and contact with consumers will go a long way in success of such enterprise. Moreover, experience in repairs and maintenance of machines may help in easy running of the plant.

#### **4. MARKET POTENTIAL AND MARKETING ISSUES, IF ANY**

Market for briquetted fuel is all over India including rural and urban areas. The proximity to the market will reduce the cost. In the initial period, awareness in the market may be created by the promoters. Apart from household demand, entrepreneur should also look at surrounding industries using coal or firewood. Similarly, nearby hotels and restaurants may give good market for the product.

The energy shortage in India offer good potential for such products. It is also cheaper compared to the conventional fuel.

#### **5. RAW MATERIAL REQUIREMENTS**

Variety of raw materials can be used depending on the availability and price. However, preferred raw materials will be sugarcane bagasse, cotton stalk, wood dust, groundnut husk, corn cobs, etc. For the production 3000 MT per year of briquetted fuel, on an average 3600 MT of agro-waste will be required to produce briquetted fuel. The quantity will vary according to the type of biomass and moisture content. An average price of Rs.1500 per MT is taken for raw materials. It may also change from place to place and season to season.

#### **6. MANUFACTURING PROCESS**

The agro-waste is first chopped into small pieces and then sundried to reduce moisture content. It is then fed to the briquetted fuel producing plant where it is compacted and heated to form briquettes. The production end product will be in continuous length and then it is cut into required size online.

The fuel is packed in 25 kg. bags mostly used one for retail marketing. For bulk consumers like industries and hotels, it may be supplied in loose form to reduce the cost.

## 7. MANPOWER REQUIREMENT

For the production of 3000 MT per year, the unit will require Supervisor, Skilled man power unskilled manpower, Salesman, Accountant & Office boy. All general functions will be carried out by the promoters. The annual cost of manpower works out to Rs.9.06 lakhs.

### Manpower Requirement

Sr.No.	Designation of Employees	Monthly Salary ₹	Number of employees required	Value Rs. in lacs
1	Unskilled man power	4,000	10	4.80
2	Supervisor	10,000	1	1.20
3	Skilled man power	5,000	3	1.80
4	Sales Man	6,000	1	0.72
5	Accountant	6,000	1	0.72
6	Office boy	3,500	1	0.42
	<b>Total</b>		<b>17</b>	<b>9.66</b>

## 8. IMPLEMENTATION SCHEDULE

The implementation time required to complete erection, installation and commissioning of the machinery is estimated to be 8 months from the date of arranging finance and identifying building.

## 9. COST OF PROJECT

The cost of project as per market rate of factory building, machinery, miscellaneous items, working capital margin and preliminary and pre-operative expenses works out as under:

### Cost of Project

Sr.No.	Particulars	₹ in Lacs
1	Land	10.00
2	Building	15.00
3	Plant & Machinery	35.00
4	Furniture, Electrical Installations	2.50
5	Other Assets	0.50
6	Margin for Working Capital	5.49
	<b>Total</b>	<b>68.49</b>

### 10. MEANS OF FINANCE

Based on the present norms of the bank, means of finance is worked out as under.

#### Means of Finance

Sr.No.	Particulars	₹ in Lacs
1	Promoter's contribution	20,54,700.00
2	Bank Finance	47,94,300.00
	<b>Total</b>	<b>68.49</b>

### 11. WORKING CAPITAL CALCULATION

Working capital required for storage of raw materials and finished goods, monthly overheads, goods in process, receivables and trade credit is worked out based on the present norms of the bank as under.

#### Working Capital Calculations

Sr.No.	Particulars	Gross Amt.	Margin %	Margin Amt.	Bank Finance
1	Inventories	4.50	40%	1.80	2.70
2	Receivables	10.00	40%	4.00	6.00
3	Overheads	1.18	50%	0.59	0.59
4	Creditors	-2.25	40%	-0.90	-1.35
	<b>Total</b>	13.43		5.49	7.94

## 12. LIST OF MACHINERY REQUIRED

The main items of plant and machinery are briquetting press, chopping machine, conveyor, weighing scale and material handling trolleys.

## 13. PROFITABILITY CALCULATIONS

The profitability is worked out as under after taking into account all variable and fixed expenses as under.

### Profitability Calculations

Sr.No.	Particulars	Year 1	Year 2	Year 3	Year 4	Year 5
1	Sales	84	96	108	108	108
2	Raw Materials & Other direct inputs	50.162	57.328	64.494	64.494	64.494
3	Gross Margin	33.838	38.672	43.506	43.506	43.506
4	Overheads except interest	4.977	5.688	6.399	6.399	6.399
5	Interest	3.136	3.584	4.032	4.032	4.032
6	Depreciation	3.241	3.704	4.167	4.167	4.167
7	Net Profit before tax	22.484	25.696	28.908	28.908	28.908

## 14. BREAKEVEN ANALYSIS

The Break-Even point as percentage of targeted sales works out as under.

### Cash Break-Even (as % of Targeted sales)

Sr.No.	Particulars		Value
			<b>Year-1</b>
1	Sales Realization	Rs. Lacs	120.00
2	Variable costs	Rs. Lacs	71.66
3	Fixed costs incl. interest	Rs. Lacs	7.11
4	BEP = $FC/SR-VC \times 100 =$		14.70%