DOMESTIC LPG STOVE

1. INTRODUCTION:

Liquefied Petroleum Gas and Natural Gas have become accepted fuels for domestic and commercial cooking mode of cooking as they offer smoke less, cleaner and efficient combustion. These factors provide very healthy environment and trouble free living.

Cooking stoves for LPG and LNG are simple in construction and can be provided with proper efficient burners and safe gas delivery piping and valves.

2. PRODUCT & ITS APPLICATION:

Gas stove uses natural gas, propane, butane, liquefied petroleum gas. In gas stoves, Gas and air gets mixed in the throat of the burner based on the principle called the venturi effect.

The gas valve has plug with orifice/nozzle. The valve with Orifice plug is critical as the hole is very small and the valve has to provide the correct gas flow and sufficient velocity. The pressurized gas escapes the nozzle hole at high velocity and enters the mixing chamber of the burner. The gas jet creates vacuum around it and sucks the surrounding air. The air and gas thus mixed comes out of burner holes evenly spread along its periphery and burns in presence of spark or flame.

The materials used for components handling gas flow, have to be fire and spark safe to prevent accidental combustion of gas. Besides all the connections and control valves are to be sealed with gaskets, rings made from compatible material to prevent leakage.

3. DESIRED QUALIFICATIONS FOR PROMOTER:

Any ITI, Diploma or Graduate with some background in manufacturing or marketing.

4. MARKET POTENTIAL AND MARKETING ISSUES. IF ANY:

LPG/ LNG Cooking stoves are now widely used in nearly all urban & semi-urban household, restaurants, fast food joints & eateries. They are also widely used in canteens, hospitals, cafeterias & laboratories. Different types of cooking stoves or Ranges with single or multiple burners are now being used for conventional use as also for larger kitchens. Products ranges from single to multi burner systems are used in residential kitchens to large commercial kitchen of Hotels, restaurant, eateries, and public facilities like canteens, hospitals etc.

With huge finds and availability of liquefied petroleum gas / LNG and safe delivery systems through bottles and piping to the point of use, the demand is burgeoning for this fuels efficient system in urban and semi urban areas is generating demand for these products.

The population growth with improved living standard fueling the demand growth of the LPG stoves in our country. Besides there are many projects coming for piped gas supply in urban areas. Also the prime ministers Ujjvala program is expanding the LPG fuel delivery to wider population that will provide huge demand potential for these products.

5. RAW MATERIAL REQUIREMENTS:

The entrepreneur can decide on the make or decision for components of stove production. Certain parts may be procured viz gas regulator sub assembly, nozzle plug, burner castings and gas pipe assembly. LPG stove body shall require, sheet metal like CR carbon steel, stainless steel, cast burners as per specified designs, vessel seat frames. Other materials are required for LPG Cooking Range are iron angles, MS Plate, cast iron/alloy burners, piping, gas cock assemblies, knobs, hardware etc.

6. MANUFACTURING PROCESS:

The project should focus on manufacture of sheet metal body, distribution pipe assembly and burners. The gas valve components are small in size and value and may be procured as per the specifications.

The main steps of production are as below:

The stove body has to be easy to clean, and must have heat and corrosion resistant. Carbon steel painted or stainless steel metal body is preferred, but unit may also consider the hard enamel coating on carbon steel or even cast body.

Sheet metal is processed in sheet metal fabrication shop as per design to get and worked to the desired shape. The body is painted or polished based on material.

Gas distribution piping is cut to size, threaded and assembled with connectors and mounting brackets.

The cast gas burner are machined to size and the burner shape and hole geometry are very important and can be designed by entrepreneur with efficiency in mind. The burner's heads are drilled with designed hole sizes at regular interval on ties periphery with help of indexing fixture.

The finished body, burners, pipe assembly, gas valve are assembled and Bakelite knobs are mounted. The gas stove is then tested for performance and quality as per BIS 4760. Finished stoves/ ranges are then packed for dispatch.

7. MANPOWER REQUIREMENT:

The unit shall require highly skilled service persons. The unit can start from 14 employees initially and increase to 34 or more depending on business volume.

Sr No	Type of Employees	Monthly Salary	No of Employees				
			Year 1	Year 2	Year 3	Year 4	Year 5
1	Skilled Operators	16000	3	6	6	8	8
2	Semi-Skilled/ Helpers	7000	9	12	16	18	20
3	Supervisor/ Manager	25000	0	1	1	1	1
4	Accounts/ Marketing	18000	1	1	2	3	3
5	Other Staff	7000	1	2	2	2	2
	TOTAL		14	22	27	32	34

8. IMPLEMENTATION SCHEDULE:

The unit can be implemented within 6 months from the serious initiation of project work.

Sr No	Activities	Time Required in Months
1	Acquisition of Premises	2
2	Construction (if Applicable)	2
3	Procurement and Installation of Plant and Machinery	2
4	Arrangement of Finance	2
5	Manpower Recruitment and start up	2
	Total Time Required (Some Activities run concurrently)	6

9. COST OF PROJECT:

The unit will require total project cost of Rs 90.42 lakhs as shown below:

Sr No	Particulars	In Lakhs
1	Land	15.00
2	Building	30.00
3	Plant and Machinery	29.70
4	Fixtures and Electrical Installation	2.50
5	Other Assets/ Preliminary and Preoperative Expenses	1.50
6	Margin for working Capital	11.72
	TOTAL PROJECT COST	90.42

10. MEANS OF FINANCE:

The project will require promoter to invest about Rs 12.12 lakhs and seek bank loans of Rs 15.90 lakhs based on 70% loan on fixed assets.

Sr No	Particulars	In Lakhs
1	Promoters Contribution	31.40
2	Loan Finance	59.02
	TOTAL:	90.42

11. WORKING CAPITAL REQUIREMENTS:

Working capital requirements are calculated as below:

Sr No	Particulars	Gross Amount	Margin %	Margin Amount	Bank Finance
1	Inventories	5.84	40	2.34	3.50
2	Receivables	6.00	40	2.40	3.60
3	Overheads	3.39	100	3.39	0.00
4	Creditors	8.99	40	3.60	5.40
	TOTAL	24.22		11.72	12.50

12. LIST OF MACHINERY REQUIRED:

The layout of unit suitable for different activities are planned to ensure smooth material and product flow.

Sr No	Particulars	UOM	Quantity	Rate	Total Value
	Main Machines/ Equipment				
1	Sheet Shearing Machine	Nos	1	150000	150000
2	Profile cutting machine	Nos	1	170000	170000
2	Press brake	Nos	1	250000	250000
3	Hydraulic Press	Nos	1	700000	700000
4	Mech Power Press	Nos	1	250000	250000
5	Manual Shearing Press	Nos	1	40000	40000
6	Manual Sheet Folding Machines	Nos	2	45000	90000
7	Fly Press	Nos	2	35000	70000
8	Spot Seam etc. Welding M/c	Nos	2	80000	160000
10	Beading Curling Machine	Nos	1	120000	120000
11	Pillar Drill	Nos	1	50000	50000
12	Lathe	Nos	2	60000	120000
13	Sand Blasting Machine	Nos	1	150000	150000
14	Pickling and Surface treatment	Nos	1	200000	200000
15	Spray/ Powder Paint Shop	Nos	1	130000	130000
16	Paint Baking oven	Nos	1	200000	200000
	Subtotal:				2850000
	Tools and Ancillaries				
1	Misc. equipment Dies tools etc.	LS	1	80000	80000
2	Hand Tools and gauges	LS	1	40000	40000
	Subtotal:				120000
	Fixtures and Elect Installation				
	Storage and transport bins	LS	1	30000	30000
	Office Furniture	LS	1	20000	20000

Sr No	Particulars	UOM	Quantity	Rate	Total Value
	Telephones/ Computer	LS	1	50000	50000
	Electrical Installation	LS	1	150000	150000
	Subtotal:				250000
	Other Assets/ Preliminary and Preoperative Expenses	LS	1	150000	150000
	TOTAL PLANT MACHINERY COST				3370000

13. PROFITABILITY CALCULATIONS:

Sr No	Particulars	UOM	Year Wise estimates				
			Year 1	Year 2	Year 3	Year 4	Year 5
1	Capacity Utilization	%	40	50	60	70	80
2	Sales	Rs. Lakhs	71.94	89.93	107.92	125.90	143.89
3	Raw Materials & Other Direct Inputs	Rs. Lakhs	46.71	58.38	70.06	81.74	93.41
4	Gross Margin	Rs. Lakhs	25.24	31.55	37.86	44.17	50.48
5	Overheads Except Interest	Rs. Lakhs	12.10	12.10	12.10	12.10	12.10
6	Interest	Rs. Lakhs	8.26	8.26	8.26	8.26	8.26
7	Depreciation	Rs. Lakhs	6.37	6.37	6.37	6.37	6.37
8	Net Profit Before Tax	Rs. Lakhs	-1.49	4.82	11.13	17.44	23.75

14. BREAK EVEN ANALYSIS

The project is can reach break-even capacity at 42.36 % of the installed capacity as depicted here below:

Sr No	Particulars	UOM	Value
1	Sales at Full Capacity	Rs. Lakhs	179.86
2	Variable Costs	Rs. Lakhs	116.77
3	Fixed Cost incl. Interest	Rs. Lakhs	26.73
4	Break Even Capacity	% of Inst Capacity	42.36