

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. INDUSTRY OUTLOOK/TREND

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 these fuels efficient system in urban and semi urban areas is generating demand for these products.

India has become the second-largest domestic LPG (liquefied petroleum gas) consumer in the world due to government's focus of clean fuel plan for poor households and fuel subsidy reforms. There are 25.38 crore LPG gas consumers registered with public sector oil marketing companies (OMC) in the country consuming nearly 9.8 Million Metric Tonnes (MMT) of bottled domestic LPG during April- September 2017. Nearly 44.7% of total registered domestic customers have double bottle connections (DBC). The LPG coverage of the country estimated of household coverage is estimated to be around 77.8%. Approximately 168.2 lakh new domestic customers have been enrolled by PSU OMCs during April-September 2017 out of which 96.7 lakh were enrolled under Pradhan Mantri Ujjwala Yojana (PMUY). The PMUY has led to growth rate of 16% in no of consumers in 2016-17.

The gas stove market in India is estimated at 20 million units annually with the top-end models accounting for about 6 per cent. Cooking stove industry was mainly served by 50 units in Small and medium sector with major units in North and West India. The leading units were viz BlueFlame, Superflame, Navjyot etc. Stoves that used to be sold without fuss through gas dealers are now a thing of the past. Heavy cast-iron frame bodies have given way to lighter steel sheets, stainless steel frames with redesigned burner knobs have emerged.

5. MARKET POTENTIAL AND MARKETING ISSUES. IF ANY:

The Ujjwala scheme of Prime Minister has turned India into an example for energy experts from other emerging economies still struggling to provide clean fuel to their rural population. LPG consumption by households has registered an annual growth rate of 10%. and it is expected to rise to 20 million tonne. LPG consumption in India is forecast to surpass 35 MMT by 2026. There are many projects proposed for piped gas supply in Metro cities and urban areas. The efforts for improved living standard is fueling demand LPG and efficient and better designs of LPG stoves in our country.

The new trend is of a better kitchen with better stoves and new-generation cooking appliances offered by new up coming manufacturers. The vast market opportunities have opened up due this new trend and are on way to transforming the sluggish, traditional small-scale industry. Many new entrepreneurs are into a fierce battleground taking on the products of established firms by introducing new attractive and utilitarian design, offering fierce competition for control of the burgeoning market.

More than 30 new Brands have emerged in last few years from new and existing cooking appliance manufacturers in organized sector viz Niky-Tasha, Sunflame, etc. These new companies offer models with several new features viz self-ignition, better sliding Knobs with enhanced safety and modern aesthetic designs with

striking cosmetic changes that makes their final product far different from the old basic stoves. Besides marketing practices is under going given a change with advertising, study of understanding of consumer aspirations and needs, etc in addition to designs that look more attractive.

With LPG consumption growth scope for the cooking appliances especially the LPG gas Stoves is likely to be steadily hover over 10% from domestic market. Export potential is also substantial from all the developed and developing countries in view of India emerging as cost competitive hub for these countries. In addition to new consumers, there is huge replacement market for stoves with emergence of efficient and decorative cooking ranges for middle and upper class markets.

6. 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.

7. 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 stove body has to be easy to clean, and must have heat and corrosion resistant. Carbon steel oven baked painting or polished stainless steel metal body

is preferred. New designs use the hard enamel and ceramic coating on carbon steel or heat resistant glass tops that fit on to cooking platforms in Kitchen.

The main steps of production are as below:

- 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 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.

8. 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	Month	No of Employees
		y	

		Salary					
			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

9. IMPLEMENTATION SCHEDULE:

The unit can be implemented within 7 months from the serious initiation of project.

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	3
4	Arrangement of Finance	3
5	Manpower Recruitment and start up	2
	Total Time Required (Some Activities run concurrently)	7

10. 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

11. MEANS OF FINANCE:

The project will require promoter to invest about Rs 31.42 lakhs and seek bank loans of Rs 59.02 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

12. 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

13. LIST OF MACHINERY REQUIRED:

Sr No	Particulars	UOM	Quantity	Rate	Total Value
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	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
Sr No	Particulars	UOM	Quantity	Rate	Total Value
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
	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

All the machines and equipments are available from local manufacturers. The entrepreneur needs to ensure proper selection of product mix and proper type of

dies. It may be worthwhile to look at reconditioned imported machines, dies and toolings. Some of the machinery and dies and toolings suppliers are listed here below:

1. Yashwant Industries
440/7-A, G.I.D.C.,
Nr.Neptune Textile, Odhav, Ahmedabad - 382 415.
2. Amritsar Machine Tools
Plot No. 542, Part - A, M. I. E.,
Bahadurgarh-124507, Haryana, India
3. Arpan Machine Tools
No. 12/3, Atika Industrial Area, Near Jaydev Foundry
Atika Industrial Area, Rajkot- 360002 Gujarat, India
4. RAJESH MACHINE TOOLS PVT. LTD.
New Nehrunagar Main Road, 2 - Kailashpati Society, Plot No. 7,
Dhebar Road (South), "ATIKA" Industrial Area,, Rajkot, Gujarat, India
<http://www.rajeshpowerpressindia.com>
5. ATLAS MACHINES (INDIA)
20, AMBALAL DOHI MARG, (HAMMAM ST.),
FORT, MUMBAI, Maharashtra, India
<http://www.atlasmachinesindia.com>
6. Pacific Engineering Corporation
A-297, MIDC-Mahape, Near Mahape Bus Depot,
Anthony Garage, Thane-Belapur Road, Mahape Midc,
Navi Mumbai-400710, Maharashtra, India

The above list of machine supplier is illustrative. There are many machinery, dies and tools suppliers and consultants at several industrial clusters all over India where you may find suppliers of services and machinery for a chosen product mix.

14. 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

The basis of profitability calculation:

The Unit will have capacity of 20000 nos Cooking stoves per year with product mix consisting of simple one/ two burners and high-end designs having 4 or more burners. Some of the bulk sales of simple single/ double cooking stoves designs will also be selected. The bulk /Distributor sales prices range from Rs 900 to Rs 1200 per unit for lower range, while the modern designs are sold from Rs 3000 to Rs 7000 per unit. The carbon steel sheets prices range from Rs 55 to 60 per Kg, and SS sheets prices range from Rs 175 to Rs 240 per Kg. Bought out parts like Bakelite knobs and valve assembly can be sourced from bulk manufacturers/ suppliers. The material requirements are considered with wastage/ scrap of 8 % of

finished products and scrap to be sold at @ Rs 30 ~ 80 per Kg. and the income of same is added. Energy Costs are considered at Rs 7 per Kwh. The depreciation of plant is taken at 10 % and Interest costs are taken at 14 -15 % depending on type of industry.

15. 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

16. STATUTORY/ GOVERNMENT APPROVALS

The unit shall need industrial unit registration of state. The industry registration and approval for factory plan, safety for Fire requirement, registration as per Labor laws ESI, PF etc shall be required as per rules and applicability. Before starting the unit unit will also need GST registration for procurement of materials as also for sale of goods. There are no pollution control requirements, while unit will have to ensure solid waste/ scrap disposal in proper manner. Entrepreneur may contact State Pollution Control Board where ever it is applicable.

17. BACKWARD AND FORWARD INTEGRATION

The machines and equipments offer scope for diversification in to producing other consumer and industrial parts/ components by using the spare capacities and machine capabilities which may be attempted. As such there is not much scope for organic backward or forward integration.

18. TRAINING CENTERS/COURSES

There are no specific training centers for this product design or production technology. However the dies and Tools development courses run by several centers of excellence viz Indo German Tool Room at Ahmedabad, Rajkot, Chennai, and CTTC Bhubaneshwar etc shall be helpful.

The most important scope of learning is in new product design and development by associating with institutes like NID etc. Entrepreneur may also study the new product designs, product range, features and specifications of leading Brands / competitors across the world by scanning the Internet and downloading data. Viz. North American, Europe, China etc markets.

Udyamimitra portal (link : www.udyamimitra.in) can also be accessed for hand-holding services viz. application filling / project report preparation, EDP, financial Training, Skill Development, mentoring etc.

Entrepreneurship program helps to run business successfully is also available from Institutes like Entrepreneurship Development Institute of India (EDII) and its affiliates all over India

Disclaimer:

Only few machine manufacturers are mentioned in the profile, although many machine manufacturers are available in the market. The addresses given for machinery manufacturers have been taken from reliable sources, to the best of knowledge and contacts. However, no responsibility is admitted, in case any inadvertent error or incorrectness is noticed therein. Further the same have been given by way of information only and do not carry any recommendation.

Source:- Udyami Mitra/Sidbi