

# KITCHEN APPLIANCES

## 1. INTRODUCTION:

Home appliances are electrical and mechanical operated mechanisms / machines which accomplish kitchen and household functions, such as cooling/heating, cooking or cleaning. These home appliances are called white goods, kitchen appliances or Consumer or brown goods.

The appliances used in the kitchen includes juicers, electric mixers, meat grinders, coffee grinders, deep fryers, herb grinders, food processors, electric kettles, waffle irons, coffee makers, blenders and dough blenders, rice cookers, toasters, stoves, ovens, microwave ovens and induction cookers and exhaust chimney / hoods. Other appliances like dishwashers, water heaters, washing machines, trash grinders/ compactors, refrigerators, air conditioners, lighting systems and even water pumps are part of the kitchen/ home appliances range.

## 2. PRODUCT & ITS APPLICATION:

The kitchen appliances that are popular as per the latest trend are included here for consideration. Other appliances must be considered by the entrepreneur depending on production facilities planned.

### **Induction cooker:**

It heats a cooking vessel by magnetic induction, instead of by thermal conduction from a flame, or other heating element. Induction cooking is quite efficient, as it emits less waste heat into the kitchen, can be quickly turned off, and has safety advantages compared to gas stoves. Cook tops are also usually easy to clean, and the cook-top itself does not get very hot.

Inductive heating directly heats the vessel; very rapid increases in temperature can be achieved. Because the induction effect does not directly heat the air around the vessel, it offers energy efficiencies. The electronics and induction coil is cooled by air blower to safe level.

### **Microwave oven:**

It heats and cooks food by exposing it to electromagnetic radiation in the microwave frequency range. Microwaves induce molecules in the food to rotate and produce thermal energy in a process known as dielectric heating. Microwave ovens heat foods efficiently because excitation is fairly uniform in the high water content food item. Microwave ovens are popular for reheating previously cooked foods and cooking a variety of foods.

A variant of the conventional microwave is the convection microwave oven, made using combination of a standard microwave with radiant heat or convection heat source for customized cooking. It allows food to be cooked quickly, yet come out browned or crisped, as from a convection oven. Cookware used in a microwave oven has to be selected carefully as they have to be transparent to microwaves viz ceramic stone wares and certain plastic wares. The microwaves heat the food directly and the cookware is indirectly heated by the food.

**Food Processors:** These appliances normally have multiple functions, depending on the placement and type of attachment or blade. These functions normally include:

- Slicing/chopping fruits and vegetables
- Grinding items such as nuts, seeds, spices, meat, or dried fruit
- Shredding or grating cheese or vegetables
- Pureeing / emulsifying
- Mixing and kneading dough

The primary difference is that different food processors use interchangeable blades / disks attachments rather than a fixed blade and several blade rotation speed control are provided to make it multipurpose. The type of blade configuration and the rotation speed can give multiple operations on food items like mixing, grinding, cutting, etc. Mixers help automate the repetitive tasks of stirring, whisking or beating. When the beaters are replaced by dough kneading blades/ hook, a mixer may also be used to knead. They also have interchangeable bowls like wider and shorter, etc. of more proper shapes and sizes to suit the solid or semi-solid foods.

Some variants of food processors designed for specific types of tasks are described here below:

**Mixers and Blenders:** These are kitchen appliances used to mix, blend or emulsify food and other substances. A stationary blender consists of a blender jar with a rotating metal blade at the bottom, powered by an electric motor in the base. There is an immersion blender configuration available that has motor on top connected by a shaft to a rotating blade at the bottom. It can be used with any container.

**Dough Mixer:** It is used for kneading large quantities of dough. It is electrical motor driven a kneading bar in the center of the bowl. For automation, it is provided with timers and various controls speeds and bowl reversal action to suit the user's needs.

**Stick blender:** It is a very handy blender as it has no container of its own, but instead has a mixing head with rotating blades that can be immersed in a container like bowls containing hot items.

**Toaster:** It is a small electric appliance designed to brown sliced bread by exposing it to radiant heat, thus converting it into toast. The most common household toasting appliances are the pop-up toaster and toaster oven. Toasters have a control to adjust how much the appliance toasts the bread.

### **3. DESIRED QUALIFICATIONS FOR PROMOTER:**

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

### **4. INDUSTRY OUTLOOK/TREND**

Traditional methods of cooking, conserving food and dish cleaning require tedious effort and time. Next generation population may not have the sufficient time to invest in these activities and may easily avail these alternatives, from retailers and

vendors. This has been the primary growth factor contributing to the global kitchen appliances market.

Besides food habits and preferences of consumers in urban India are also changing slowly. People are now more acquainted with Western food culture, and dishes which involve grilling, toasting and baking. This has increased the demand for small cooking appliances such toasters, fryers and electric grills. Growth is also being supported by players expanding the market by introducing new innovative products. The demand is triggered by adoption of modern kitchen aids and cooking being a big part of the Indian culture.

Consumer appliances is one of the fastest growing categories in India, and experienced healthy growth in 2015 - 2017 period and likely to continue in coming decades. The significant trends in the consumer durable industry include, companies entering this segment and existing companies expanding their product portfolio to include products in kitchen appliances in view of growing demand due to rising consumer's income, easy availability of credit and increased aspiration and desire of products. Advancement in technology and higher competition are driving price reductions across various consumer durable product segments.

India has the youngest population among st the major countries. Nearly two third of the country's population is below the age of 35 and nearly 50 per cent of that is below 25. There are 56 million people in the middle class. The young generation is associated with aspirational demand drivers and have been always dissatisfied with the status quo, wanting the best quality items possible. The young have greater access to satellite TV channels, are more technology savvy and have an affinity for a modem western lifestyle. These factors will certainly trigger more demand for high tech consumer durables.

## **5. MARKET POTENTIAL AND MARKETING ISSUES. IF ANY:**

Indian kitchen has transformed from being functional to fashionable. Indian women are increasingly becoming brand conscious and the same is extending to kitchen as

well. The hottest trends are reflective of what's on the customer's mind as they're choosing how to equip and furnish their homes. Innovation in kitchen appliances, as well as cook wares is leading to popularity of modular kitchens and convenience associated with such designs and all associated products viz cook wares and appliances.

As per one study, Indian consumers purchase over ten million units of choppers, food processors, mixer-grinder, hand blenders and other kitchen appliances in a year with sales growing by 5%. The mixer grinders category is the most popular appliance within the food preparation making up 85% of volume with revenue of almost \$372 million.

Kitchen appliances 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. Products range is wide from residential kitchens to commercial kitchen of large Hotels, restaurant, eateries, and public facilities like canteens, hospitals etc.

India Kitchen Appliances market recorded strong growth, with a CAGR of over 13% during review period of 2011-16. It is interesting to highlight that towns with population of less than one million alone has led to 10% annual growth with faster take-up of food processing appliances. The market is forecast to advance with a double digit CAGR of 15.41% during estimated period of 2017-22 and projected to reach over USD 7 billion by 2022.

As far as competitive landscape is concerned, kitchen appliances market is a fragmented market, wherein top 35 players having established brands account for over 55% of the market in value terms. There are over 60 SME units offering small appliances mainly in food pre processing and cooking sector viz pressure cookers, Roti makers etc. Many companies of electronics and other durable sectors including MNCs are making inroads in Kitchen segment. Despite the competition, appliances market has large population to serve both within the country and around the world. Higher disposable incomes, easy consumer credit and the growing working population are key drivers of demand for consumer appliances in India offering

excellent opportunities in India for both local and international players.

## **6. RAW MATERIAL REQUIREMENTS:**

Induction cook-top, requires coil of copper wire called litz wire, a bundle of many smaller insulated wires in parallel, a cook top made of copper, glass, nonmagnetic stainless steels, or aluminum that works as housing. A high frequency ~24 kHz alternating current power is supplied by inverter circuit. A thermostat, fan cooling unit for cook top and circuit, a ferromagnetic disk is also required.

For microwave oven a high-voltage power source, electronic power converter, a high-voltage capacitor, a cavity magnetron, magnetron control micro controller, wave guide, cooking chamber made of a sheet metal, a turntable or metal wave guide stirring fan and digital / manual control panel with either an analog dial-type or digital timer and a control panel with LED, LCD display for operation.

A Food Processor, Mixer Grinder, Blender, Kneaders etc. consist of housing, motor, blades, and food container. A bowl usually made of stainless steel aluminum or transparent plastic is used. A fan-cooled electric motor is secured into the housing by way of vibration dampers, and a small output shaft penetrates the upper housing and meshes with the blade assembly. The bowl either fits around the shaft through a rubber coupling or connected to blades through belt or gears. Different types of blades are available for cutting blending, beating, kneading, shredding or slicing blades are manufactured as per design. The motor has multiple electronic speed control unit and a selector switch fitted with safety fuses.

All the electronic components and specialized standard components are procured from suppliers as per design and housing, cooking chamber etc. are produced in house. Electronic parts, hardware, components and raw materials are easily available.

## **7. MANUFACTURING PROCESS:**

Induction cook-top assembly consists of coil of copper wire placed under cook top

made of copper, glass, nonmagnetic stainless steels, or aluminum. The coil power supply unit like inverter circuit, transformer etc. are placed also placed under the cook top. And a fan cooling unit is also provided with a thermostat attached to cook top control overheating as also for cooking control. A ferromagnetic disk is provided which functions as a conventional hotplate. All the components are assembled and tested as per design specifications.

A microwave oven is assembled by placing the components and sub-assemblies like high-voltage power source, with transformer /electronic power converter, a high-voltage capacitor, magnetron, magnetron control circuit, a short wave guide to couple microwave power from the magnetron into the cooking chamber etc. are placed in metal housing and a cooking chamber. A turntable or metal wave guide stirring fan is placed and all components of circuit are connected with digital / manual control panel having LED, LCD display for operation. Manufacturing operation involves manufacturing the cooking chamber from sheet metal and assembly of magnetron, control circuit and other components.

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Housings for ovens, toaster etc. may be made from sheet metal, die cast metal, rigid plastic etc. The unit may set up sheet metal and machine shop for housing and components, motor winding shop and assembly and testing facilities. Sheet metal housings will involve cutting, shearing, or gas torching, etc., sheet bending on press brakes, punching manual or powered press, and assembly - joining of the pieces by spot and seam welding. Other Processes used are riveting, threaded fasteners, or bending and crimping and bead formations with help of special machines.

All parts are assembled on an assembly line that is fed with parts and sub-assemblies at specific stations. The final products undergo inspection and testing as per the specifications of design.

## 8. MANPOWER REQUIREMENT:

The unit shall require highly skilled service persons. The unit can start from 25 employees initially and increase to 70 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	8	10	15	18	20
2	Semi-Skilled/ Helpers	7000	12	15	20	25	30
3	Supervisor/ Manager	20000	0	1	1	1	1
4	Accounts/ Marketing	15000	2	2	4	4	6
5	Other Staff	7000	3	6	8	10	12
	TOTAL		25	34	48	58	69

## 9. 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 (Activities run concurrently)	6

## 10. COST OF PROJECT:

The unit will require total project cost of Rs 189.21 lakhs as shown below:

Sr No	Particulars	In Lakhs
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1	Land	25.00
2	Building	45.00
3	Plant and Machinery	67.50
4	Fixtures and Electrical Installation	6.85
5	<i>Other Assets/ Preliminary and Preoperative Expenses</i>	2.50
6	Margin for working Capital	42.36
	<b>TOTAL PROJECT COST</b>	<b>189.21</b>

## 11. MEANS OF FINANCE:

The project will require promoter to invest about Rs 79.07 lakhs and seek bank loans of Rs 110.14 lakhs based on 70% loan on fixed assets.

Sr No	Particulars	In Lakhs
1	Promoters Contribution	79.07
2	Loan Finance	110.14
	<b>TOTAL:</b>	<b>189.21</b>

## 12. WORKING CAPITAL REQUIREMENTS:

Working capital requirements are calculated as below:

Sr No	Particulars	Gross Amount	Margin %	Margin Amount	Bank Finance
1	Inventories	30.20	40	12.08	18.12
2	Receivables	24.52	40	9.81	14.71
3	Overheads	5.76	100	5.76	0.00
4	Creditors	36.79	40	14.71	22.07
	<b>TOTAL</b>	<b>97.26</b>		<b>42.36</b>	<b>54.90</b>

## 13. LIST OF MACHINERY REQUIRED:

Sr No	Particulars	UOM	Quantity	Rate	Total Value
	<b>Main Machines/ Equipment</b>				
1	Sheet Shearing Machine	Nos	1	200000	200000
2	Laser/ Plasma Profile cutting m/c	Nos	1	650000	650000
3	Press Brake	Nos	1	250000	250000

4	Hydraulic Press	Nos	1	350000	350000
5	Mech. Power Press	Nos	1	150000	150000
6	Manual Shearing Press	Nos	2	40000	80000
7	Manual Sheet Folding Machines	Nos	2	45000	90000
8	Electrical Motor Winding Shop	Nos	1	650000	650000
9	Electronic Circuit assly and Test Shop	Nos	2	250000	500000
10	Spot Seam Welding M/c	Nos	2	80000	160000
11	Profile Rolling Machine	Nos	1	350000	350000
12	Beading Curling Machine	Nos	1	120000	120000
13	Milling machine	Nos	1	300000	300000
14	Pillar Drill	Nos	2	50000	100000
15	CNC and Traub Lathes	Nos	3	250000	750000
16	Assembly Line with Inspection Stations		1	450000	450000
17	Sand Blasting Machine	Nos	1	150000	150000
18	Pickling and Surface treatment	Nos	1	150000	150000
19	Spray/ Powder Paint Shop	Nos	2	250000	500000
20	Paint Baking oven	Nos	1	200000	200000
<b>Sr No</b>	<b>Particulars</b>	<b>UOM</b>	<b>Quantity</b>	<b>Rate</b>	<b>Total Value</b>
	<b>Tools and Ancillaries</b>				
1	Misc. equipment Dies tools etc.	LS	1	500000	500000
2	Hand Tools and gauges	LS	1	100000	100000
	<b>Fixtures and Elect Installation</b>				
	Storage and transport bins	LS	1	250000	250000
	Office Furniture	LS	1	35000	35000
	Telephones/ Computer	LS	1	50000	50000
	Electrical Installation	LS	1	350000	350000
	Other Assets/ Preliminary and Preoperative Expenses	LS	1	250000	250000
	<b>TOTAL PLANT MACHINERY COST</b>				7685000

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 and tooling to have modern and flexible utensil designs. 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. Other well-known machine manufacturers who can be searched from internet are:  
Batliboi Ltd. Mumbai, Bharat Fritz Werner Ltd, HMT Machine Tools Ltd, Praga Tools Ltd.  
Toolcraft Systems Pvt. Ltd. etc

#### **14. PROFITABILITY CALCULATIONS:**

<b>Sr No</b>	<b>Particulars</b>	<b>UOM</b>	<b>Year Wise estimates</b>
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			<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>	<b>Year 5</b>
1	Capacity Utilization	%	40	50	60	70	80
2	Sales	Rs. Lakhs	294.29	367.87	441.44	515.01	588.59
3	Raw Materials & Other Direct Inputs	Rs. Lakhs	241.57	301.96	362.35	422.74	483.13
4	Gross Margin	Rs. Lakhs	52.73	65.91	79.09	92.27	105.46
5	Overheads Except Interest	Rs. Lakhs	19.12	19.12	19.12	19.12	19.12
6	Interest	Rs. Lakhs	15.42	15.42	15.42	15.42	15.42
7	Depreciation	Rs. Lakhs	12.19	12.19	12.19	12.19	12.19
8	Net Profit Before Tax	Rs. Lakhs	6.01	19.19	32.37	45.55	58.74

The basis of profitability calculation:

The Unit will have capacity of 100000 nos of appliances. The food processing appliances like Induction cooker, hand blender/ chopper, Roti maker, toasters etc are considered for product mix consisting appliances of modern designs. The running sizes /types/ designs will be selected. The bulk /Distributor sales prices of appliances range from Rs 5 00 to Rs 2000 per unit, depending on type/design/volume. The input materials consist of steel rods/ sheet metal, plastic molded parts viz knobs/ handles, switches etc, Aluminum die cast parts, induction coils, electrical motor core assemblies etc as per design. The cost of materials range from Rs 15 to Rs 250 per Kg. The material requirements are considered with wastage/ scrap of 1.5 % of finished products and scrap to be sold at @ Rs 30 ~ 60 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 35.44 % of the installed capacity as depicted here below:

Sr No	Particulars	UOM	Value
1	Sales at Full Capacity	Rs. Lakhs	735.73
2	Variable Costs	Rs. Lakhs	603.91
3	Fixed Cost incl. Interest	Rs. Lakhs	46.72
4	Break Even Capacity	% of Inst Capacity	35.44

## **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 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 durable 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 design or production technology. However the dies and Tools development courses run by several centers of excellence viz CIPET centers, 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](http://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