

# **FASTENERS – STAINLESS STEEL**

## **1. INTRODUCTION:**

Stainless steel Fasteners are the special type made from this non corrosive material for several critical applications. They come in various shape and designs for variety of applications. Fasteners are made from various grades of Stainless steels have properties like heat and cold temperature resistance, corrosion resistance, fatigue strength and wear resistance.

## **2. PRODUCT & ITS APPLICATION:**

The stainless steel alloy is very important for special grades of fasteners used in power plants, boiler plants, chemical industries, food processing industry, pharmaceutical industry aerospace etc. Fasteners made from various grades of stainless steel with or without special coatings or plating are most suitable due to non-corrosive and non-reactive nature of stainless steels with most of the water based chemicals and liquids.

These metals also have good strength, heat resistance, etc. performance characteristics. The stainless steel fasteners made from various grades find application in all industrial products and machines from home appliances to electrical, electronics, chemical, automobiles, defense, to aerospace industries.

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

Any graduates with experience, preferably with mechanical/ metallurgical background.

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

The worldwide demand for industrial fasteners is forecast to amount to US\$93.8 billion. The outlook of fastener market prospects remains optimistic, mainly driven by the demand from automotive, construction, machinery, household appliances, aeronautic and space sectors; as

well as by economic and industrial policies in emerging economies.

The market size of the fastener industry in India is around US\$ 350 million. High tensile fasteners, produced by the organized sector, account for 70 per cent of the market. The mild steel fasteners, mainly produced by the unorganized sector contribute to the remaining 30 per cent of the market. Most of fasteners are located in large centers of Northern region, New Delhi and Gurgaon, Haryana, Southern area consisting of Chennai, Tamil Nadu and Bangalore, Karnataka. Western cluster encompasses Mumbai, Pune, Nashik and Aurangabad, and Gujarat.

Today, fastener manufacturers are facing a lot of challenges. There are certain restrictions and specifications that need to be followed by the manufacturers, due to difficulties in the manufacturing process. The lack of standardization across user industries is also a challenge. The increase in price of steel, the raw material for manufacturing high-tensile fasteners, could, however, put margins under pressure. Nonetheless, the demand for fasteners is expected to increase in the coming years. The expected growth in the sales of automobiles around the world, especially in India will fuel the market's growth prospects of fasteners .

One of trend observed in the market is emergence of self-clinching fasteners. Self-clinching fasteners are a reliable solution that offers reusable and permanent load-bearing threads. These are ideal for applications that involve thin sheet metals that require good pull out and torque loads to provide safe fastening. They are often installed during the fabrication process.

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

The analysts forecast global industrial fasteners market to grow at a CAGR of 4.05% during the period 2016-2020. While India has annual demand for organized sector alone is upwards of Rs 700 crore for high tensile fasteners that include SS fasteners. Much of the growth in demand for fasteners is attributed to the automobile industry, the largest end-user, which was as high as 17 %. The growth rate of the fastener industry is pegged at 10-15 per cent annually. In 2016, the Government of India undertook major infrastructure projects, viz. "Delhi-Mumbai Industrial Corridor" and "Smart Cities," Housing for All", etc will give rise to the buoyant demand for fasteners.

The stainless steel use is growing for fasteners due to several advantages it offers viz, longer life due to non-corrosive properties and they are now used widely from house hold purposes to industries. Electronics, pharma and food and dairy processing are always depending on various SS fasteners.

In view of growing industries for processed food, pharma, dairy, beverages, fruit juices, and kitchen appliances, the market size of SS Fasteners is growing at a rapid pace in both domestic and export markets. It is also anticipated to foresee significant growth in light rapid growth of pharma and food etc. industries as also growth of automotive, aerospace, electronics in the country. They are also used in the manufacture of medical equipment, industrial controls, and furniture and consumer appliances.

Stainless steel Industrial fasteners like nuts bolts and screws are expected to witness significant demand over the upcoming years and these products can be taken up by an entrepreneur. New unit can specialize in several fast moving varieties and focus on good productivity.

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

Stainless steel Wire rods of various diameters as per specifications are required. Different grades of stainless steel and alloy steels of shall be required. Other Consumables materials like lubricants, cooling oils, and heat treatment and surface treatment chemicals are also required.

## **7. MANUFACTURING PROCESS:**

The SS fastener manufacturing processes is similar to steel fastener manufacturing viz cold or hot forging and forming the head, shank and threads are rolled to get precision of dimension. Without cutting.

In modern fastening technology the majority of fasteners are made using the cold forming procedure. In this procedure, the fastener is formed, usually in multistage processes, by roll forging, cold extrusion and reducing, or a combination of these procedures. Threads are formed by roll forming.

The sequences of operation are:

1. Making of head on header machine.
2. Milling of head for as per different specifications in a special milling machine.
3. Rolling of thread on shank on automatic threading machine.
4. Heat treatment, surface treatment, annealing & tempering as per the need.
5. Galvanizing or Electroplating
6. Quality testing, Inspection and packing before dispatch.

The final products may undergo tumbling, polishing, pickling, phosphating, heat treatment and may be plated or coated with protective materials.

## **8. MANPOWER REQUIREMENT:**

The unit shall require highly skilled service persons. The unit can start from 15 employees initially and increase to 33 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	9	9	12
2	Semi-Skilled/ Helpers	7000	6	8	10	12	12
3	Supervisor/ Manager	25000	1	1	1	1	1
4	Accounts/ Marketing	16000	1	2	2	2	2
5	Other Staff	7000	4	4	4	6	6
	TOTAL		15	21	26	30	33

## **9. IMPLEMENTATION SCHEDULE:**

The unit can be implemented within 7 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	4
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 158.00 lakhs as shown below:

Sr. No	Particulars	In Lakhs
1	Land	15.00
2	Building	25.00
3	Plant and Machinery	65.50
4	Fixtures and Electrical Installation	4.00
5	Other Assets/ Preliminary and Preoperative Expenses	3.00
6	Margin for working Capital	45.50
	TOTAL PROJECT COST	158.00

## 11. MEANS OF FINANCE:

The project will require promoter to invest about Rs 73.62 lakhs and seek bank loans of Rs 84.38 lakhs based on 70% loan on fixed assets.

Sr. No	Particulars	In Lakhs
1	Promoters Contribution	73.62
2	Loan Finance	84.38
	TOTAL:	158.00

## 12. WORKING CAPITAL REQUIREMENTS:

Working capital requirements are calculated as below:

Sr. No	Particulars	Gross Amount	Margin %	Margin Amount	Bank Finance
1	Inventories	30.36	40	12.14	18.22

2	Receivables	34.96	50	17.48	17.48
3	Overheads	3.73	100	3.73	0.00
4	Creditors	30.36	40	12.14	18.22
	TOTAL	99.41		45.50	53.91

### 13. LIST OF MACHINERY REQUIRED:

Sr. No	Particulars	UOM	Quantity	Rate	Total Value
	<b>Main Machines/Equipment</b>				
1	Cold Head Forming Machines	Nos	2	525000	1050000
2	Bolt Head slot milling machine	Nos	2	325000	750000
3	Bolt thread Rolling machines	Nos	6	470000	2800000
4	Tumbling/ Polishing Barrels	Nos	2	100000	200000
5	Pickling Plant	Nos	1	350000	350000
6	Annealing Furnace	Nos	1	350000	350000
7	Heat treatment – unit	Nos	1	400000	400000
9	Packing machines	Nos	2	100000	200000
	subtotal:				6100000
	<b>Tools and Ancillaries</b>				
1	Tooling and Dies spares	LS	1	350000	350000
2	Misc. tools etc.	LS	1	100000	100000
	subtotal:				450000
	<b>Fixtures and Elect Installation</b>				
	Storage racks and trolleys	LS	1	100000	100000
	Other Furniture	LS	1	20000	20000
	Telephones/ Computer	LS	1	50000	50000
	Electrical Installation	LS	1	230000	230000
	subtotal:				400000
	Other Assets/ Preliminary and Preoperative Expenses	LS	1	300000	300000
	TOTAL PLANT MACHINERY COST				7250000

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. M/s. Perfect Machine Tools Co. Pvt. Ltd.  
Bell Building, Sir P.M. Road, Fort, Mumbai
2. Y. S. INTERNATIONAL INC.  
F-129, Second Floor, Rajouri Garden, New Delhi - 110027, India
3. J.P. Industries  
Vavdi, Survey No. 31, Plot 12, Behind Tata Perfect Show Room,  
Gondal National Highway, Rajkot-360004, Gujarat, India
4. HARDGRIP (INDIA)  
E-247, PHASE 4, FOCAL POINT, Ludhiana, Punjab, 143001, India
5. Metal Master Engg  
701, 702, MMRDA Lodha, Near Lodha Aqua, Opposite Thakur Mall,  
Off. Dahisar Check Naka, Mira Road (E),  
Mumbai-401107, Maharashtra, India
6. Kalsi Machine Tools  
Plot No. 59- 60, Industrial Area, Phase- 1,  
Chandigarh - 160002, India
7. ABM Fastners India  
79A, Pocket GG-1, VikasPuri,  
New Delhi - 110018, India

Other well-known machine manufacturers who can be searched from internet are Batliboi Ltd., Bharat Fritz Werner, HMT Machine Tools, Praga Tools, Toolcraft Systems.

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

Sr. No	Particulars	UOM	Year Wise Estimates
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			Year 1	Year 2	Year 3	Year 4	Year 5
1	Capacity Utilization	%	40	50	60	75	85
2	Sales	Rs Lakhs	209.78	262.23	314.67	393.34	445.78
3	Raw Materials & Other Direct Inputs	Rs Lakhs	182.16	227.69	273.23	341.54	387.08
4	Gross Margin	Rs Lakhs	27.63	34.53	41.44	51.80	58.70
5	Overheads Except Interest	Rs Lakhs	10.57	10.57	10.57	10.57	10.57
6	Interest	Rs Lakhs	11.81	11.81	11.81	11.81	11.81
7	Depreciation	Rs Lakhs	9.75	9.75	9.75	9.75	9.75
8	Net Profit Before Tax	Rs Lakhs	-4.50	2.40	9.31	19.67	26.57

The basis of profitability calculation:

The Unit will have capacity of 200 MT of Fasteners per year with product mix consisting of standard products in screws bolts and nuts up to 12 mm diameter. The unit can also produce special application screws bolts and nuts for construction and chemical/ pharma/ food industry. The bulk /Distributor sales prices for SS screws, bolts and nuts range from Rs 200 to Rs 300 per Kg for standard products, while the special designs fasteners are sold from Rs 250 to Rs 450 per Kg. The of SS wire rods range from Rs 160 to Rs 200 per Kg. The material requirements are considered with wastage/ scrap of 4 % of finished products and scrap to be sold at @ Rs 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 46.52 % of the installed capacity as depicted here below:

Sr. No	Particulars	UOM	Value
1	Sales at Full Capacity	Rs Lakhs	524.45



2	Variable Costs	Rs Lakhs	455.39
3	Fixed Cost incl. Interest	Rs Lakhs	32.13
4	Break Even Capacity	% of Inst Capacity	46.52

## **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 tailor made products for consumer for their 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 Bhubaneswar 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.