FASTENERS – STEEL

1. INTRODUCTION:

Fasteners are the hardware device that mechanically joins or affixes two or more objects together. They come in various shape and designs to ensure the joining purposes in variety of applications. They are also used to join similar as well as dissimilar materials together.
Fasteners are made from various metals – from mild steel and non-ferrous metals to stainless steel, alloy steels, vanadium, and titanium etc. materials of highest tensile strength with variety of properties like heat and cold temperature resistance, corrosion resistance, fatigue strength and wear resistance.
The most used types are screw, rivets and different types of bolts, nuts, washers.

2. PRODUCT & ITS APPLICATION:

The following are types of fastener designs available for the purpose viz bolt, Screw, circlip, hook and loop fastener, latch, nail, cotter pin, dowel, linchpin, split pin, rivet, snap fastener, threaded fastener, nut, screw, washers, Lock washers, Machine keys, Screw hooks, wing nuts, dome nuts, Spring pins, Spring washers, Wood screws etc.

In many cases, special coatings or plating may be applied to metal fasteners to improve their performance characteristics by, for example, enhancing corrosion resistance. Common coatings/plating includes zinc, chrome, and hot dip galvanizing.

These fasteners find application in all industrial products and machines from home appliances to electrical, electronics, chemical, automobiles, defense, to aerospace industries. There is no man made product is possible without fasteners.

3. DESIRED QUALIFICATIONS FOR PROMOTER:

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

4. INDUSTRY OUTLOOK/TREND

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 worldwide demand for industrial fasteners is forecast to amount to US$93.8 billion.

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.

The expected growth of housing construction, infrastructure and automobiles sectors around the world, and in India will fuel the market's growth prospects of fasteners.

5. MARKET POTENTIAL AND MARKETING ISSUES. IF ANY:

The industrial fasteners market size is quite huge with growing demand in both domestic and export markets and is anticipated to foresee significant growth in light of its increasing usage in various end-use industries including automotive, aerospace, machinery and electronics. They are used in the manufacture of medical equipment, industrial controls, furniture and consumer appliances, engines, suspension system, and wheels.

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. 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.

The key driver for the industry is the importance of industrial fasteners in the automotive and industrial products. 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 with good manufacturing machines and materials. New unit can specialize in several fast moving varieties and focus on good productivity.

6. RAW MATERIAL REQUIREMENTS:

Wire rods of various diameters as per the fastener specifications are required. Mild steel, low carbon, high carbon and alloy steels of various grades are used for fasteners as per the specifications. Consumables like lubricants, cooling oils, and heat treatment and plating chemicals may also be required.

7. MANUFACTURING PROCESS:

The manufacturing processes are of two different types are prevalent. In general screws are produced by machining stock material to get shank and threads. However the new technology of material and manufacturing consists of cold forging and forming the head, shank and threads 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 pressure forging, cold extrusion and reducing, or a combination of these procedures. Threads are formed by roll forming. No or insignificant material is wasted or lost in the process.

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 electro-less plated, galvanized or coated with organic 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 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	1
	Total Time Required (Some Activities run concurrently)	3

10. COST OF PROJECT:

The unit will require total project cost of Rs 130.78 lakhs as shown below:

Sr. No	Particulars	In Lakhs
1	Land	15.00
2	Building	25.00

3	Plant and Machinery	55.00
4	Fixtures and Electrical Installation	3.70
5	Other Assets/ Preliminary and Preoperative Expenses	3.00
6	Margin for working Capital	29.08
	TOTAL PROJECT COST	130.78

11. MEANS OF FINANCE:

The project will require promoter to invest about Rs 54.51 lakhs and seek bank loans of Rs 54.51 lakhs based on 70% loan on fixed assets.

Sr. No	Particulars	In Lakhs
1	Promoters Contribution	54.51
2	Loan Finance	76.28
	TOTAL:	130.78

12. WORKING CAPITAL REQUIREMENTS:

Working capital requirements are calculated as below:

Sr. No	Particulars	Gross Amount	Margin %	Margin Amount	Bank Finance
1	Inventories	17.80	40	7.12	10.68
2	Receivables	22.60	50	11.30	11.30
3	Overheads	3.54	100	3.54	0.00
4	Creditors	17.80	40	7.12	10.68
	TOTAL	61.74		29.08	32.66

13. LIST OF MACHINERY REQUIRED:

Sr. No	Particulars	UOM	Quantity	Rate	Total Value
	Main Machines/ Equipment				

1	Cold Head Forming Machines	Nos	3	350000	1050000
2	Bolt Head slot milling machine	Nos	2	250000	500000
3	Bolt thread Rolling machines	Nos	6	350000	2100000
4	Tumbling/ Polishing Barrels	Nos	3	100000	300000
5	Pickling Plant	Nos	1	350000	350000
6	Annealing Furnace	Nos	1	350000	350000
7	Plating Plant	Nos	1	250000	250000
8	Packing machines	Nos	2	100000	200000
	Subtotal:				5100000
	Tools and Ancillaries				
1	Tooling and Dies spares	LS	1	300000	300000
2	Misc tools etc.	LS	1	100000	100000
	Subtotal:				400000
	Fixtures and Elect Installation				
	Storage racks and trolleys	LS	1	100000	100000
	Other Furniture	LS	1	20000	20000
	Telephones/ Computer	LS	1	50000	50000
	Electrical Installation	LS	1	200000	200000
	Subtotal:				370000
	Other Assets/ Preliminary and Preoperative Expenses	LS	1	300000	300000
	TOTAL PLANT MACHINERY COST				**6170000**

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

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				
			Year 1	Year 2	Year 3	Year 4	Year 5
1	Capacity Utilization	%	40	50	60	75	85
2	Sales	Rs Lakhs	135.60	169.50	203.40	254.26	288.16
3	Raw Materials & Other Direct Inputs	Rs Lakhs	106.79	133.49	160.19	200.23	226.93

4	Gross Margin	Rs Lakhs	28.81	36.01	43.22	54.02	61.22
5	Overheads Except Interest	Rs Lakhs	10.57	10.57	10.57	10.57	10.57
6	Interest	Rs Lakhs	10.68	10.68	10.68	10.68	10.68
7	Depreciation	Rs Lakhs	8.67	8.67	8.67	8.67	8.67
8	Net Profit Before Tax	Rs Lakhs	-1.11	6.10	13.30	24.10	31.31

The basis of profitability calculation:

The Unit will have capacity of 300 MT of Fasteners per year with product mix consisting of standard products in screws bolts and nuts up to 12 mm shank diameter. The unit can also produce special – non standard HT screws, bolts and nuts for automobile, construction and other industries. The bulk /Distributor sales prices for MS and HT screws, bolts and nuts range from Rs 50 to Rs 350 per Kg for standard products depending on steel grade, and head type, length of screw. The raw material used are MS and HT steel wire rod for which price ranges from Rs 40 to Rs 120 per Kg. The material requirements are considered with wastage/ scrap of 8 % of finished products and scrap to be sold at @ Rs 25 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 41.53 % of the installed capacity as depicted here below:

Sr. No	Particulars	UOM	Value
1	Sales at Full Capacity	Rs Lakhs	339.01
2	Variable Costs	Rs Lakhs	266.98
3	Fixed Cost incl. Interest	Rs Lakhs	29.92
4	Break Even Capacity	% of Inst Capacity	41.53

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 Bhubaneshwar 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.