

# **ENGINEERING WORKSHOP**

## **1. INTRODUCTION:**

Engineering Workshop is essentially a service establishment having most versatile machine tools and some basic welding/ brazing /metallizing facility to enable it to take up manufacture of engineering spares for various units as sub-contractor/ ancillary unit for production of components as also for undertaking job work or repair jobs consisting of rebuilding of old components.

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

The engineering workshop is skill based activity and the capability to execute different jobs of component manufacturing depends on the facilities planned by entrepreneur.

Job work activities involve manufacture of machine parts like shafts and stems for industrial valves and fittings, pump, compressor components, electric motor parts, hardware items like, piping fittings and machining of cast component, steel forging and gear blank for machinery, to meet replacement needs.

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

Any person having ITI, Diploma or graduate having some experience can set up workshop

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

India is emerging as a manufacturing base for variety of mass produced products and components for variety of major industrial machines and Auto Industry.

The vehicle production and growing vehicle population, is leading to increasing investments by the industry players. The component industry for repair and replacement in auto sector has expanded by 14.3 per cent because of strong

growth in the spares or after-market sales demands which is likely to reach level of Rs 2.92 lakh crore (US\$ 44.90 billion) in the year 2017. The components industry accounts for almost seven per cent of India's Gross Domestic Product (GDP) and employs as many as 25 million people, both directly and indirectly. Besides, this, industrial machine components and sub systems, white goods, building wares, plastic moulds and dies, hydraulic systems, electronic peripherals and automation systems etc require services of component manufacturing and repair facilities from job work shops.

There are a very large number work shops in SME sector carrying out the job work for product manufacturers. Various types of components are required by entire range of industries not only for new parts but also for repair and replacement work. The unit clusters are mainly located in major industrial clusters Punjab, Haryana, Delhi and West UP, Maharashtra, Southern India in Gujarat. Many workshops are located in semi urban and rural areas. However many North East states, MP, Rajasthan etc, there are areas not having such workshops, offering scope.

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

The project of engineering workshop depends largely on skill level of entrepreneur and his team and facilities planned. Depending on the location of unit, workshop can focus on job work to produce parts for large machinery manufacturing industries viz pumps, motors, textile, paper, pharma chemical equipment producers, mining and mineral processing etc. sectors.

Auto and stationary engines, and industrial plants in the region around location of unit can be serviced viz. chemical plants, pharma plant, textile industry, food, dairy, agri post-harvest processing machinery, pulp and paper industry, etc. These units have many old and imported machines that may require replacement parts or repairs. There is always need for services of engineering work shop.

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

The job work or repair and rebuilding activities require several types of materials as per need like castings, forgings, steel rods and sections, plates etc. All materials are available in market or they are arranged by the customers.

## **7. MANUFACTURING PROCESS:**

The work shop has ever changing processes for job work and repair replacement and rebuilding work as it works as ancillary and service unit. The work shop machines decide processes. The most common processes carried out are turning, milling, shaping, special threading, grinding, lapping, gear shaping, rebuilding or metallizing and finishing. Sometimes the heat treatment etc. is also given out to such service units for components processed by the workshop.

## **8. MANPOWER REQUIREMENT:**

The unit shall require highly skilled service persons. The unit can start from 4 employees initially and increase to 12 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	2	2	3	4	4
2	Semi-Skilled/ Helpers	7000	2	4	5	6	6
3	Supervisor/ Manager	25000	0	0	0	0	0
4	Accounts/ Marketing	16000	0	1	1	1	1
5	Other Staff	7000	0	0	0	1	1
	TOTAL		4	7	9	12	12

## **9. IMPLEMENTATION SCHEDULE:**

The unit can be implemented within 3 months from the serious initiation of project work.

Sr. No	Activities	Time Required in Months
1	Acquisition of Premises	-
2	Construction (if Applicable)	-
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 11.48 lakhs as shown below:

Sr. No	Particulars	In Lakhs
1	Land	-
2	Building	-
3	Plant and Machinery	7.40
4	Fixtures and Electrical Installation	0.85
5	Other Assets/ Preliminary and Preoperative Expenses	0.50
6	Margin for working Capital	2.73
	TOTAL PROJECT COST	11.48

## 11. MEANS OF FINANCE:

The project will require promoter to invest about Rs 4.91 lakhs and seek bank loans of Rs 6.57 lakhs based on 70% loan on fixed assets.

Sr. No	Particulars	In Lakhs
1	Promoters Contribution	4.91
2	Loan Finance	6.57
	TOTAL:	11.48

## 12. WORKING CAPITAL REQUIREMENTS:

Working capital requirements are calculated as below:

Sr. No	Particulars	Gross Amount	Margin %	Margin Amount	Bank Finance
1	Inventories	0.68	40	0.27	0.41
2	Receivables	2.19	50	1.10	1.10
3	Overheads	1.09	100	1.09	0.00
4	Creditors	0.68	40	0.27	0.41
	TOTAL	4.63		2.73	1.91

### 13. 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
	<b>Main Machines/ Equipment</b>				
1	Hacksaw machine	Nos	1	30000	30000
2	Lathe machines	Nos	1	100000	100000
3	Milling machine and all attachment	Nos	1	250000	250000
4	Shaping machine	Nos	1	40000	40000
5	Pillar Drill machine	Nos	1	100000	100000
6	Grinding threading Attachments	Nos	1	60000	60000
7	Welding Brazing set	Nos	1	80000	80000
8	Bench grinder	Nos	1	25000	25000
	Sub Total:				685000
	<b>Tools and Ancillaries</b>				
1	Tools and gauges	LS	1	30000	30000
2	Misc. tools etc.	LS	1	25000	25000
	Sub Total:				55000
	<b>Fixtures and Elect Installation</b>				
Sr. No	Particulars	UOM	Quantity	Rate	Total Value
1	Storage racks and trolleys	LS	1	5000	5000

2	Other Furniture	LS	1	5000	5000
3	Telephones/ Computer	LS	1	25000	25000
4	Electrical Installation	LS	1	50000	50000
	Subtotal:				85000
	Other Assets/ Preliminary and Preoperative Expenses	LS	1	50000	50000
	TOTAL PLANT MACHINERY COST				875000

All the machines and equipment are available from local manufacturers. The entrepreneur needs to ensure proper selection of product mix and proper type of machines and tooling to have modern and flexible designs. It may be worthwhile to look at reconditioned imported machines, dies and tooling. Some of the machinery and dies and tooling suppliers are listed here below:

1. Techno Machines  
Chikkanahalli Road,  
Opp. Shahi Exports (Unit No 6),  
Near Annapoorneshwari Temple, Bommanahalli,  
BENGALURU-560 068, INDIA
2. S. S. Engineering Works  
Ajit Khanna(Proprietor)  
Plot No. 100, Sector 6 IMT Manesar, Gurgaon - 122050, Haryana, India
3. Taurus Private Ltd Co  
No. 24, D 2 / E 3, Kiab Industrial, Area At Pivele  
Kiab Industrial Area  
Bengaluru - 560100 Karnataka, India
4. Micro Engineering Works;  
No. 6/140, Gandhi Nagar, Nallampalayam Road Nanjai Gounden, Pudur, G. N.  
Mills Post, Coimbatore - 641029, Tamil Nadu, India
5. S. G. Profile

Plot No. 201/1, Gala No. 56, Morya Industrial Estate, MIDC, Bhosari, Bhosari  
Midc,  
Pune-411026, Maharashtra, India

Other well-known machine manufacturers can be searched from directories/ internet. ACME TOOLINGS, Ace Manufacturing Systems Ltd., Batliboi Ltd., Bharat Fritz Werner Ltd., HMT Machine Tools Ltd., Advani Oerlikon Ltd, Bombay, Lakshmi Machine Works Ltd., Lokesh Machines Ltd., Praga Tools Ltd., Toolcraft Systems Pvt. Ltd.

#### 14. PROFITABILITY CALCULATIONS:

Sr. No	Particulars	UOM	Year Wise estimates				
			Year 1	Year 2	Year 3	Year 4	Year 5
1	Capacity Utilization	%	35	45	50	55	60
2	Sales	Rs Lakhs	13.15	16.91	18.79	20.67	22.55
3	Raw Materials & Other Direct Inputs	Rs Lakhs	4.06	5.22	5.80	6.38	6.96
4	Gross Margin	Rs Lakhs	9.10	11.69	12.99	14.29	15.59
5	Overheads Except Interest	Rs Lakhs	7.79	7.79	7.79	7.79	7.79
6	Interest	Rs Lakhs	0.92	0.92	0.92	0.92	0.92
7	Depreciation	Rs Lakhs	0.88	0.88	0.88	0.88	0.88
8	Net Profit Before Tax	Rs Lakhs	-0.49	2.11	3.41	4.71	6.01

#### The basis of profitability calculation:

Unit will have capacity of providing Job Work services for specific components of up to 25000 nos per year. Depending on the type/ size, complexity volumes of components capacity may vary. The average cost of Job work may depend on volumes and the range is taken as Rs. 100 pc for very large volume to Rs.5000 per piece for smaller volumes and multiple operations.

The material requirements are almost nil as cast and forged components are supplied by customers. One time toolings / wearing material costs is taken at market rates. The unit may generate wastage/ scrap which is to be sold at @ Rs 20 ~ 80 per Kg depending on type. The income of same is added. Consumables costs also considered based on prevailing rate. 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 36.87 % of the installed capacity as depicted here below:

Sr. No	Particulars	UOM	Value
1	Sales at Full Capacity	Rs Lakhs	37.58
2	Variable Costs	Rs Lakhs	11.59
3	Fixed Cost incl. Interest	Rs Lakhs	9.58
4	Break Even Capacity	% of Inst Capacity	36.87

## 16. STATUTORY/ GOVERNMENT APPROVALS

The unit will require state industry unit registration with District Industry center. No other procedures are involved. For export, IEC Code and local authority clearances. The industry registration and approval for factory plan, safety etc are required as per factory inspectorate and labor laws. Other registration are as per Labor laws are ESI, PF etc. Before starting the unit unit will also need GST registration for procurement of materials as also for sale of goods. As such there is no pollution control registration requirements, however the unit will have to ensure safe environment through installation of chimney etc as per rules. Solid waste disposal shall have to meet the required norms. Entrepreneur may contact State Pollution Control Board where ever it is applicable.

## 17. BACKWARD AND FORWARD INTEGRATION



The machines and equipment offer scope for diversification in to producing several consumer and industrial parts/ components and parts. The unit can utilize the spare capacities. As such there is not much scope for organic backward or forward integration. The entrepreneur needs to ensure proper selection of Job mix and also be careful in maintaining product parameters in terms of dimensions, tolerances and geometric profiles along with final weights of products.

The workshop business needs building up reputation, ensuring reliability and quality of services rendered. Also personal rapport of key persons can generate good business volumes from OEM units and ancillary component unit. The location with good catchment area ensures good market potential to new business units.

## **18. TRAINING CENTERS/COURSES**

There are no specific training centers for production technology. However foundry technology can be obtained by joining as apprentice in foundry units. The Prototype Development Centers can provide some assistance and for foundry technology, casting, machining, dies and Tools development, courses run by centers of excellence viz Indo German Tool Room at Ahmedabad, Rajkot, Chennai, etc shall be helpful.

The most important scope of learning is in new product design and development by study of the new product designs, product range, features and specifications of leading Brands / competitors across the world by scanning the Internet and downloading data from websites of 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