PROJECT PROFILE ON GEAR BLANKS MANUFACTURING

1.	PRODUCT	:	GEAR BLANKS MANUFACTURING
2.	PRODUCTION CAPACITY	:	QUANTITY: 2 Lackh Nos (VALUE : Rs.111 LAKHS)
3.	MONTH & YEAR OF PREPARATION	:	APRIL, 2011
4.	PREPARED BY	:	Metallurgical Division, MSME-Development Institute, Narsapur 'X' Roads, Balanagar, Hyderabad-500 037. 040-23078131,132,133

GEAR BLANKS MANUFACTURING

I. INTRODUCTION:

Gear Blanks are produced by forging process of Metal forming in which hot metal at particular temperature, where the metal having the plastic state, is pressed in die. Forging can be carried out either in open or closed die. Dies are prepared by special steels like hot work tool steels and suitably heat treated to have proper hardness and toughness so that the dies can be capable of pressing hot metal without any deformation in the die during forging. The properties of forged Gear Blanks are considered to be better properties than any other metal forming process. Machined Forged Gear Blanks are used in Automobile sector for Two-Wheeler and Three-Wheeler.

II. PLANT CAPACITY PER ANNUM:

QUANTITY: 3.33 Lacks
VALUE : Rs.185 LAKHS

III. MARKET AND DEMAND ASPECTS:

Machined Forged Gear Blanks are consumed by various Automobile Industries of Two & Three Wheeler Sector. At present Automobile Industry growth is very fast in the country. The major consumers of the Gear Blanks are Bajaj Auto, Bajaj Tempo, Hero Honda, Kinetic Honda, TVS, Yamaha, Honda, etc. So the future prospects of the Unit are very bright and even the Unit can think for spares market.

IV. RAW MATERIALS:

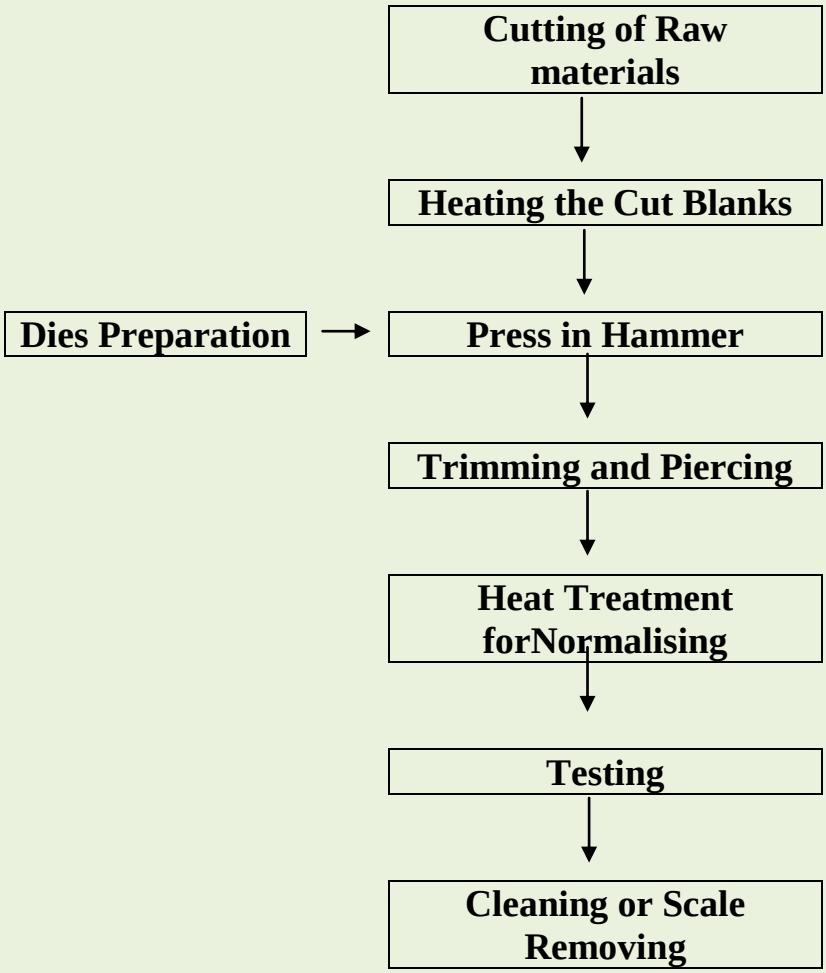
The main raw materials are steel rods, Die steel, fuels, etc which are locally available.

V. MANUFACTURING PROCESS:

Medium Carbon Steel Rods will be cut to the required length. Then cut blanks will be heated in Furnace to a temperature of 1350-1450° C. After attaining the required temperature, heated blanks are removed one by one from the furnace and pressed in the dies for forging operation. Forged Gear Blanks have to be trimmed and pierced for removal of excess material for getting finished products.

The forged gear blanks have to be sent for heat treatment of normalising to impart the refine grain structure and requisite properties as specified by the customer.

The Process of Flow Chart



VI. BASIS OF PROJECT SELECTION:

The activity is selected because technical background and having working experience in the field.

VII. PRESUMPTIONS:

Production Capacity:

The unit will run single shift of 8 hours and utilize 60% of its capacity in the first year.

UTILITIES:

The motive power of **75 HP** is required

1) The labour wages are considered as per market privilege.
2) The machinery cost is taken as per market privilege.
3) The rate of interest on the total investment is calculated as @ 15% per annum.

VIII. FINANCIAL ASPECTS:

1) FIXED CAPITAL:

i) Land & Building:
Land & Building 500 Sq. Mtr.. on rental basis: Rs.8,000/-PM

ii) **Machinery & Equipment**:

Sl. No.	Description	Quantity	Rate (Rs.)	Amount (Rs.)
1.	Power Hammer, Capacity of 1 MT with 25 HP Motor along with other accessories	1 No.	8,00,000	8,00,000
2.	Solid Frame type Trimming Press of 60T Capacity with 5 HP Motor and accessories	1 No.	2,50,000	2,50,000
3.	Oil fired Heating Furnace with blower of 3 HP Motor and other accessories	1	2,50,000	2,50,000
4.	Oil fired Normalising Furnace with 2 HP Motor	1	1,50,000	1,50,000
5.	Shot Blasting Machine with 5 HP Motor of 100 Kg. capacity	1	2,00,000	2,00,000
6.	Power Hacksaw Machine with 1 HP Motor	3	40,000	1,20,000
7.	Centre lathe heavy duty Machine with Motor and accessories of 10' length	1	1,80,000	1,80,000
8.	Drilling Machine Pillar Type	1	20,000	20,000
9.	Double ended Bench Grinder with 2 HP Motor	1	20,000	20,000
10.	Tools, Forging Dies and Equipments	LS	--	1,00,000
11.	Testing Equipments	LS	--	80,000

12.	Platform type Weighing Machine - 500 Kg. capacity	1 No.	30,000	30,000
13.	Office Furniture and Equipments	LS	--	30,000
14.	Installation and Erection Charges @ 10%			2,23,000
			TOTAL:	**24,53,000**

iii) Preliminary & Pre-operative Expenses: **Rs.27,000/-**

2) WORKING CAPITAL:

i) Raw Material

Sl. No.	Description	Quantity	Rate (Rs.)	Amount (Rs.)
1.	Medium Carbon Steel of EN8, EN16R, grade etc.	15 MT	30000/MT	4,50,000
2.	Consumables like Lubricating Oil, Shots, Packing Material, Cotton Waste, etc.	LS	--	70,000
			TOTAL:	**5,20,000**

ii) Personnel:

Sl. No.	Designation	Nos.	Salary per month (Rs.)	Amount (Rs.)
1.	Manager/Metallurgist	1	10,000	10,000
2.	Supervisor	1	6,000	6,000
3.	Skilled Workers	4	5,000	20,000
4.	Unskilled Workers	4	4,000	16,000
5.	Accountant/Stores Incharge	1	5,000	5,000
6.	Clerk/Typist	1	4,000	4,000
7.	Helper/Peon	2	3,000	6,000
8.	Watchman	1	2,500	2,500
			TOTAL:	**69,500**
			PERQUISITES @ 15%	**10,425**

GRAND TOTAL:	**79,925**
SAY:	**80,000**

iii) Utilities:

Sl. No.	Description	Amount(Rs.)
1)	Power, 600 Units @ Rs.4/- per Unit	24,000
2)	Water	1,000
3)	Furnace Oil	60,000
	TOTAL:	**85,000**

iv) Other Contingent Expenses:

Sl. No.	Description	Amount(Rs.)
1)	Rent	8,000
2)	Transportation & Conveyance	15,000
3)	Misc. Consumables	5,000
4)	Repairs & Maintenance	6,000
5)	Publicity and Advertisement	5,000
6)	Telephone Charges	2,000
7)	Postage & Stationery	1,000
8)	Insurance	2,000
	TOTAL:	**44,000**

v) Total Working capital (per month):

Sl. No.	Expenditure	Amount(Rs.)

1)	Raw Material	5,20,000
2)	Salaries & Wages	80,000
3)	Utilities	85,000
4)	Other Contingent Expenses	44,000
	TOTAL:	**7,29,000**

vi) Working Capital Requirement for Three months

Total Recurring Expenditure (per month) x 3 :Rs.7,29,000 x 3

= **Rs.21,87,000/-**

vii) <u>Total Capital Investment:</u>

Fixed Capital : Rs.24,80,000/-

Working Capital : Rs.21,87,000/-

Total : Rs.46,67,000/-

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viii) <u>FINANCIAL ANALYSIS</u>

1) <u>Cost of Production (per Annum):</u> <u>Amount/Rs.</u>

a)	Recurring Expenditure	87,48,000
b)	Depreciation on Furnace @ 20%	80,000
c)	Depreciation on Tools & Die @ 25%	25,000
d)	Depreciation on Machinery @ 10%	1,92,300
e)	Depreciation on Office Furniture @ 20%	6,000
f)	Interest on Total Capital Investment @ 15%	7,00,050
	TOTAL:	**97,51,350**

2) **<u>Turnover (per Annum):</u>** **<u>Amount/Rs.</u>**

a)	By sale of Forged Gear Blanks 2,00,000 Nos. @ Rs.55/-	1,10,00,000

b)	By sale of Scrap 8 MT @ Rs.12,000/- MT	96,000
	TOTAL:	**1,10,96,000**

3) **Net Profit (Per Year)**

Net Profit = Total Sales – Cost of Production
= 1,10,96,000 – 97,51,350
= **Rs.13,44,650/-**

4) **Net Profit Ratio** = $\frac{\text{Net Profit}}{\text{Sales Turnover}}$ x 100 =

= $\frac{13,44,650}{1,10,96,000}$ x100 = **12.12%**

5) **Rate of Return** = $\frac{\text{Net Profit}}{\text{Total Investment}}$ x 100 =

$\frac{13,44,650}{46,67,000}$ x100 = **28.81%**

ix) BREAK-EVEN ANALYSIS(B.E.P):

FIXED COST:		**Amount/Rs.**
a)	Rent	96,000
b)	Depreciation	2,97,300
c)	40% of Salary & Wages	3,84,000
d)	40% of other Contingent Expenses excluding Rent & Insurance	1,63,200
e)	Insurance	24,000
f)	Interest on Total Capital Investment	7,00,050
	TOTAL:	**16,64,550**

x) <u>BREAK-EVEN POINT</u>:

$$\textbf{B.E.P.} = \frac{\text{Fixed Cost}}{\text{Fixed Cost + Profit}} \times 100 = \frac{16,64,550}{16,64,550 + 13,44,650} \times 100$$

= **<u>55.32%</u>**

xi) List of Machinery, address

1. Plant and Machinery

1. Standard Engg. Co. Ltd.
   NSE Estate, Goregaon, **Mumbai-63**.

2. M/s. Pioneer Equipment Co. (P) Ltd.
   139, Meadows Street, P.B. No.1909, **Mumbai-1**

3. M/s. R.K. Tools
   Industrial Area, **Ludhiana**

4. M./s. Globe Engg. Co.
   2524, C.G. Road, **Delhi**

5. M/s. Engineering & Industrial Foundry Co.
   Ramnagar**, Coimbatore**

6. M/s. Fuel Injection Eequiment
   Ichalkuranji, **Distt. Kolhapur**

7. M/s. Acm Mfg. Co. Ltd.
   Construction House
   Ballard Estate, **Mumbai**

8. M/s. Killick Nixon & o. Ltd.
   Home Street, **Mumbai**

9. M/s. Banrju Chakraverty & Co. (P) Ltd.
   125, Canning Street, **Calcutta**

10. M/s. Atlas Engg. Industries
    G.T. Road, **Batala**

2. Raw Materials

1. **SAIL or local market**
2. **VSP**

3. Resource centre of technology:

1. **Indian Institute of Foundry and Forge Technology, Rurkela**
2. **National Metallurgical Research Laboratory, Jamshedpur,**