

PROJECT PROFILE
ON
HOT FORGED BOLTS & NUTS

Name of the Project	:	Hot forged bolts & nuts
Capacity	:	300 MT/Anum
Quality specification	:	As per market demand
Year of Preparation	:	Yr. 2012-13
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1. INTRODUCTION :

Bolts & nuts are a type of industrial fasteners used in various products, machines, structures etc. A fastener is used for joining, holding or assembling a single or multiple components. Bolts and nuts are in the category of repeated used fasteners. Bolts and nuts are in the category of headed and threaded fasteners. Based on the process of manufacture it is classified as machined bolts & nuts and hot forged bolts & nuts.

2. MARKET :

Hot forged bolts & nuts are among the most commonly used fasteners in the industrial transport, fabrication cum construction and automobile sectors. There are good number of Automobile Industry as well as auto workshop units in the country, which require hot forged bolts & nuts. Keeping the point in view there is a wide scope of establishing units producing hot forged bolts & nuts of different shapes and sizes.

3. BASIC AND PRESUMPTION :

This project has been prepared on the basis of the following presumptions :

1. Working hour per day : 8 Hrs. per shift and 300 working days per year.
2. Time period for achieving full capacity utilization : 3 Yrs.
3. Labour wages : As per local market value or otherwise as per minimum wages act.
4. Margin money : 20% of the total investment.
5. Land cost & construction of sheds : Leased from IADA or on rent.
6. Cost of machines & equipments : Based on indigenous market price.
7. Subsidies & Grant from Central/state Governments : Based on govt. policy.

4. IMPLEMENTATION SCHEDULE :

1. Preparation of detailed project report	- 1 Month
2. Provisional registration	- ½ Month
3. Sanction of Term Loan	- 1 Month
4. Acquisition of Land	- ½ Month
5. Civil Construction	- 1 Month
6. Procurement of machine and equipment	- 1 ½ Month
7. Arrangement of utilizes	- ½ Month
8. Procurement of raw materials	- ½ Month
9. Erection, installment and electrification	- 1.5 Month
10. Recruitment of stall	- ¼ Month
11. Commission of train run	- ¼ Month
12. Commercial production	- ¼ Month

5. TECHNICAL ASPECTS :

Hot forged bolts & nuts are manufactured by a process of hammering or pressing when the material is in a red hot condition or to be scientifically specific, when it is above the re-crystallization temperature of the material. The process of forming the product by hot forging is resorted to as this process invests certain advantages over the product manufactured by machining only. Some of these are saving in materials, better grain structure and grain flow, improved strength, high production and the like. At the same time it is tested after manufacturing operations in order to control mechanical properties of the components required to impart in it.

6. QUALITY SPECIFICATIONS :

The quality of hot forged bolts and nuts have to be superior and good in all aspects in order to fulfill the requirement of the customer and standard provided by the customer. The products are to be checked at every stage of operations with regard to the various critical dimension of products and its form. To achieve this right quality of material have to be used depending on the type and classification of the product. After completion of the process final

inspection as per the standard given are made. Necessary rectification in the process cycle is made if required to maintain the standard.

The BIS has formed a number of standards for fasteners like:-

IS 1363-1967 : Black hexagon bolts , nuts & lock nuts (dia 6-39mm)

IS 1367-1967 : technical supply conditions for threaded fasteners.

IS 4260-1967 : dimension of lengths and thread lengths for bolts, screws and studs.

IS 4172-1967 : dimension of radials under the head of bolts & nuts etc.

IS 6623-1972 : high tensile friction grip nuts etc.

7. PRODUCTION CAPACITY :

Bolts & nuts of 12 to 36 mm size : 300 MT per annum

8. POLLUTION CONTROL :

Heat treatment industry has a share in the present environmental degradation. So it requires NOC from Pollution Control Board of the State. Heat treatment Industry depending on the character of the production is a great source of heat, toxic gases, dust and noise. It also produces a large quantity of wastes such as irreclaimable ashes and scales. These all elements have individual contributory affect on the environmental degradation and causes unhealthy and unsafe, conditions within the unit. The important consideration to prevent pollution is the right choice of appropriate technologies to be adopted and correct installation of instruments and machinery.

There are mainly two methods for control of pollution in a small Industrial units :

1. By Exploiting Metrological and Topographical Conditions :

For small unit, the exploitation of natural draughts and climate conditions are best cheapest methods for dispersion of chimney emissions. Use of equipment like gas scrubbers, ventilation fans, washers etc require considerable capital investment and also in value running expenses.

2. By using various equipments for cleaning and dispersion of heat treatment emissions :

Use of high stack chimney and operating the unit at a time of favorable natural draught through chimney, helps to successfully disperse the dust and gases emitted from the unit at zero or negligible cost. Proper treatment and handling of the raw material also reduces the emission contents, particularly dust. Use of simple measures like removal of dust from the furnace charge, use of oil of proper strength with appropriate air blast will also help to a great extent.

10. ENERGY CONSERVATION :

It has become essential these days that the energy conservation efforts are needed to be strengthened substantially. The energy audit is an integral part of an energy conservation project and is the key to a systematic approach for decision. Various factors which affect fuel economy in industrial furnaces may be stated as :

1. Complete combustion with minimum excess air;
2. Proper heat distribution;
3. Operating at the desired temperature;
4. Reducing heat losses from openings,
5. Minimizing wall losses;
6. Waste heat recovery from flue gases;

The principles of good combustion for the proper selection and maintenance of fuel oil burner is very important and it has the main role. So, standard and good quality burner should be used for better conservation of oil fuel.

10. FINANCIAL ASPECTS : (hot forged bolts & nuts)

1. Fixed Capital :

i) Land and building :

Total Covered area : 300 sqm. Rent Rs. 10000 p.m.

Build up area : 120 sqm.

ii) Machinery & Equipments (Indigenous) :

SN	Description	No.	Rate	Amount (Rs.)
1.	Oil fired F/c with blower, 3HP Motor, oil tank, burner, pipe lines etc.	2	75000	150000
2.	Friction screw press 150 tone capacity, 15 HP Motor for forging bolts.	1	250000	250000
3.	Horizontal nut forging M/c (15 HP motor)	1	275000	275000
4.	Inclinable power press (50 MT capacity with 5 HP motor)	1	150000	150000
5.	Inclinable power press (30 MT capacity with 3 HP motor)	1	85000	85000
6.	Double spindle nut tapping M/c with 2 HP Motor	1	25000	25000
7.	'Adda' type 2 nd operation lathe for facing, chamfering, sizing etc. with 1 HP motor	1	70000	70000
8.	Thread rolling M/c with 10 HP motor	1	250000	250000
9.	Thread cutting M/c 'Landis type' 5HP motor	1	95000	95000
10.	Power Hacksaw 150 mm capacity (1 HP) motor	1	21000	21000
11.	Weighing balance, platform type capacity 200 KG	1	10000	10000
12.	Bench type drilling M/c 20 mm cap. with 0.75HP motor	1	15000	15000
13.	D E bench grinder 200 mm wheel with 1HP motor	1	10000	10000
14.	Dies, fixtures, tools gauges etc.	-	35000	35000
15.	Fire fighting equipments	1	7500	7500
16.	Hand tools & material handling equipments	LS	15000	15000
	Total :		--	1463500
	Electrification & Installation charges @ 10% of the machinery & equipment		--	146350
	Furniture & office equipment			115000
	Total :			1724850
	Pre operative expenses		--	50000
	Total :			1774850

1. Personnel :

Sl.No.	Designation	No.	Salary (pm)	Total (Rs.)
i	Supervisor/Engineer	1	14000	14000
ii	Skilled workers	1	12500	12500
iii	Semi-Skilled Workers	1	10000	10000
iv	Maintenance worker	2	9500	9500
v	Store-keeper-cum-clerk	1	11500	11500
vi	Watchman-peon	2	5500	11000
			Total :	68500
	Staff welfare@ 15%			10275
			Total :	78775

2. Raw Material (Per Month) :

SN.	Particulars	Qty.	Rate	Value
1.	MS Rods of desired sizes	28 MT	Rs.35000/-	980000
2.	Furnace oil	1500Lit.	Rs. 46/- per lit	69000
			Total:	1049000

3. Utilities (per month) :

1.	Electrical power 35.8 KWH @ 6/- per KWHx6x25 =	32227
2.	Water	2500
	Total:	34727

4. Other Contingent expenses (Per Month) :

SN	Particulars	:	Amount (Rs.)
1.	Rent	:	10000
2.	Postage & Stationary	:	2500
3	Consumable	:	2000
4	Repair & maintenance	:	5000
5.	Transport & Conveyance	:	3500
6	Unforeseen expenses	:	4500
	Total	:	27500

5. Working Capital (Per Month) :

1.	Raw Material	:	1049000
2.	Personnel	:	78775
3	Utilities	:	34727
4	Other contingent exp.	:	27500
	Total	:	1190002
Total Working Capital for three months =1190000 X 3			: 3570000

6. COST OF THE PROJECT :

1.	Fixed investment on M/cs. & Equipments	:	1774850
2.	25 % of Working capital (3570000 x 25%)	:	892500
	Total	:	2667350
	Say (Rs.)	:	2667500

11. MACHINERY UTILIZATION :

The scheme is on the basis of 100 % efficiency on single shift basis, considering 25 working days in a month. This project is based on operations like material heating to forging temperature, forgings, trimming, normalizing & rough machining etc the break-even-point has come to 43 % which will be achieved on giving care at different operational stage and full capacity utilization is needed for full achievement. The repayment period of the project is three Years.

12. FINANCIAL ANALYSIS :

1. Cost of Production (per year)

1.	Recurring cost (1190000 x 12)	14280000
2.	Depreciation (15% x 1463500)	219525
3.	Interest on investment @ Rs. 14% x 2667350=	373429
	Total:	14872954
	or say (Rs.)	14873000

2. Turn Over (per year)

1.	Bolts & nuts 300 MT x @ Rs.55000 / MT =	16500000
2.	Forging scrap & rejections 24 MT x @30000/MT =	72000
	Total:	16572000

3. Profit (per year) :

$$\begin{aligned} \text{Or Annual Sales} - \text{Cost of Production} &= \text{profit} \\ &= 16572000 - 14873000 = \text{Rs.1699000/-} \end{aligned}$$

4. Net Profit on sales (per year) :

$$\begin{aligned} \text{Net Profit} \times 100 / \text{Total Sale} \\ &= 1699000 \times 100 / 16572000 = 10\% \end{aligned}$$

5. Rate of Return :

$$\begin{aligned} \text{Net Profit} \times 100 / \text{Total Investment} \\ &= 1699000 \times 100 / 2667350 = 63\% \end{aligned}$$

6. Break Even Point :

Fixed Cost :

1.	40% salary & wages (78775x12) x 40%	378120
2.	40% utilities & other expenses (746724x40%)	298690
3.	Depreciation furnace Dies & Tools @ 15% x 1463500	219525
4.	Interest on total capital investment @ 14% x 2667500	373450
	Total:	1269785
	or say	1269800

BEP :

Fixed Cost x 100 / Fixed Cost + Profit

$$= 1269800 \times 100 / (1269800+1699000) = 43\%$$

$$\text{DSCR} = \frac{\text{Profit+Depriciation+Int on term Loan}}{\text{Int. on TL +Installment of TL}} \quad \text{or} \quad \frac{1699000+122600 + 373429}{373429 + 875835} = \frac{2195029}{1249264} = 1.75:1$$

13. NAME & ADDRESS OF PLANT & MACHINERY:

1. M/s Westman Engg. (P) Ltd. Dumdum Road, Kolkata
2. M/s Macro Furnaces (P) Ltd, Faridabad (Haryana)
3. M/s Wellmake Engg. Corpn. Ltd., Mayapuri Phase – IB-104, New Delhi
4. M/s Patel Furnace & Forging (P) Ltd, A2/510, GIDC Estate Makarpura, Vadodra.
5. M/s Metatherm Furnace Pvt. Ltd.
6. M/s High-Temp. Furnace Pvt. Ltd. 1-C, II-Phase, Peenya Industrial Area, Post Box No. 5809, Bangalore – 560058.
7. M/s. Blue Steel Engineers Pvt. Ltd.
Blue Steel House, D-12 MIDC, Marol Ambhri (East),
Mumbai-400 073
8. M/s. Inspection Instruments Corpn.
Sherif Douj Street, Zakaria Bldg.,
Mumbai-400 003