# Prefeasibility study for Standard and minor parts factory

# Abstract

Minor part manufacturing management is based on two main sections including minor parts and standard parts. All kinds of bearing and expandable and discarded parts such as bolts, nuts, screws, pins, rivets, counterweights, washers, spacers and brackets and none metal components are some examples of minor parts considered here.



Sample of minor parts

# Prefeasibility study

• Production Capacity

Production capacity of Bolt & Nut				
Production Capacity (one working shift)/year	20,000			
Scrap rate	%5			
Production Capacity (approved part)	19,000			
Production Capacity (approved part)/month				
Production capacity of Spacer, Bracket and Gasket				
Production Capacity (one working shift)/year	25,000			
Scrap rate				
Production Capacity (approved part)	22,500			
Production Capacity (approved part)/month	1,875			
Production capacity of Rivet & Washer				
Production Capacity (one working shift)/year	25,000			
Scrap rate	%5			
Production Capacity (approved part)	23,750			
Production Capacity (approved part)/month	1,980			

#### • Investment

Devu	Description	Cost	
KOW	Description	Dollar	
0	Land		
0-2	Plant construction-minimum area 750 m2	225,000	
1	Installation & Technology		
1-1	Technology transfer and training	50,000	
1-2	Engineers establishment cost (5 people)	10,000	
1-3	Technician establishment cost (12 people)	7,200	
2	Minor parts Factory (Supply, Setting up & Installation)		
2-1	heat furnace (Atmosphere control)	60,000	
2-2	Heat treatment quench seal furnace	90,000	
2-3	Machine Nut Part Former Cold Forging	50,000	
2-4	machine Bolt former Cold Forging	120,000	
2-5	Forging 160 ton (Furnace+ Press)	90,000	
2-6	cold heading machine for rivet	10,000	
2-7	Press brake	30,000	
2-8	Wire cut	50,000	
2-9	Raw material cutting equipment	10,000	
2-10	Spark Machine	50,000	
2-11	machine Rolling tread	40,000	
2-12	thread roller	60,000	
2-13	Machine Laser Cutting	75,000	
2-14	Super Drill	30,000	
2-15	Machine Manual Turning	30,000	
2-16	Machine Manual Milling	60,000	
2-17	Milling CNC 3-Axis	150,000	
2-18	CNC – 2 or 3 Axis)) Turning Machine	100,000	
2-19	reciprocating surface grinder	60,000	
2-20	cylindrical grinder	60,000	
2-21	Center Less Grinder	60,000	
2-22	Machine Radial Milling	120,000	
2-23	Inspection and measurement equipment	40,000	
	Total	\$1,737,200	



Thread rolling machine for bolt and screw according to aviation standard



Hot forging machine for bolt and nut





Nut Part Former Cold Forging Machine

• Product size (M5 - M30)



cold heading machine for rivet

- Length of rivets (4mm to 36 mm)
- Diameter of rivets (up to 8 mm)



machine Bolt former Cold Forging

- Product size (M5-M30)
- Length of Bolts (up to 300 mm)



Laser cutting Machine

## • Fixed Cost

1	Minor part-Human Resource Cost	
1-1	Administrative and Engineering staff	
1-1-1	Staff numbers	
1-1-2	Technician numbers	
1-1-3	Monthly cost of engineering (5 people)	
1-1-4	Monthly cost of technician (12 people)	
1-1-5	Total cost of human resource	
1-1-6	Total cost of human resource per each part	\$1.50

### • Variable Cost

Bolt & Nut				
Average cost of material per each part	2\$			
Average cost of repair&maintenance per each part	1\$			
Total cost of forged parts	2\$			
Average cost of machining and thread per each part	5\$			
Total cost of complementary activities per each Part	2\$			
Average cost of qulity test per each Part	2\$			
Extra cost per each Part	1\$			
Total cost of material and production of each part	12\$			
Pin, Spacer, Brac	ket and Gasket			
Average cost of material per each part	10\$			
Average cost of repair & maintenance per each part	2\$			
Total cost	12\$			
production- As required Average cost of fixture	15\$			
process- As required Average cost of machining	20\$			
fixture production- As Average cost of control required	5\$			
process (Welding, Brazing Average cost of Joining and riveting)- As required	15\$			
drilling - As required Average cost of cutting and	5\$			
activities per each Total cost of complementary Part	5\$			
Extra cost per each Part	2\$			
Total cost of material and production of each part	79\$ ~12			
Washer & Rivet				
Average cost of material per each part	0.5\$			
Average cost of repair & maintenance per each part	0.1\$			
Total cost	0.6\$			
Average cost of machining and Grinding each part	0.5\$			
Extra cost per each Part	0.5\$			
Total cost of material and production of each part	1.6\$			

#### • Total Cost

Bolt & Nut			
	1st Phase		
Fixed cost	\$1.5		
Variable cost per each part	\$2		
Total cost	\$4		

Pin,Washer,Spacer,Bracket and Gasket			
	1st Phase		
Fixed cost	\$2		
Variable cost per each part	\$45		
Total cost	\$47		

Rivet and Pin			
	1st Phase		
Fixed cost	\$1.5		
Variable cost per each part	\$1.6		
Total cost	\$3		

Average cost of minor parts	\$21
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• Amortization

Due to inflation, increasing of infrastructure cost covers the amortization.

#### • Income Estimation

Income Estimation (3 years)							
Minor Parts	Ordered Quantity		Average Total Production Cost	Total	Average Total Selling Price of	Total Selling	Cross Drofit
	set	Total Quantity	of each part (Dollar)	Cost (Dollar)	Each Part (Dollar)	Price to Project	Gross Pront
Bolt and Nut	35	60,000	14\$	840,000\$	\$35	\$2,100,000	\$1,260,000
Pin,Spacer,Gasket and Bracket	35	65,000	47\$	3,055,000\$	\$70	\$4,550,000	\$1,495,000
Rivet and Washer	35	70,000	3\$	210,000\$	\$10	\$700,000	\$490,000
			Total ( of Production P	Gross Profit on and Selling to roject	\$3,245,000		