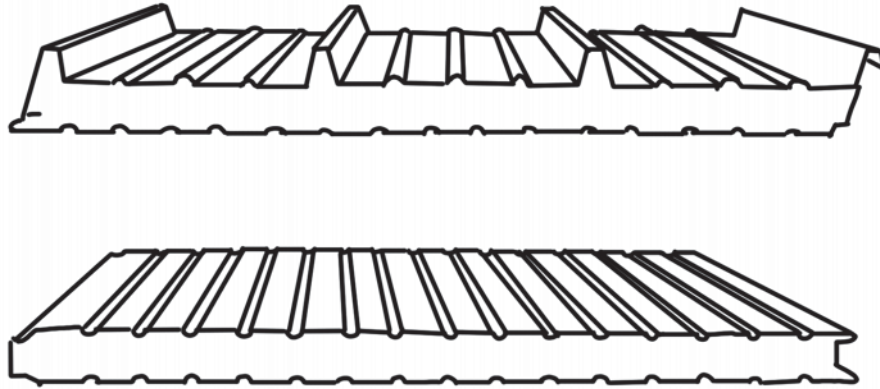


# PUF PANEL & PREFAB STRUCTURE



## 1.0 INTRODUCTION

Polyurethane Foam (PUF) is a closed cell plastic capable of being moulded into boards and blocks that can be used as construction material, which is both low on maintenance and durable. PUF leads to energy saving and reduced heating/cooling loads. These are normally available in PPGI sandwiched options of varying length. PUF applications can be found in cold rooms, refrigerated vehicles, Green buildings, warehousing and storage applications and low cost housing.

As per the requirement, Sandwiched PUF panels of different thickness and length can be manufactured with consistent chemical and physical properties according to relevant national/international standards. These PUF Panels are used in insulated buildings as Wall, Floor, and Roof Panels. The pre-engineered PUF Panels helps in reducing on site waste and ensure the quality of installation, greatly reducing the risk of air leakages, cold bridging and inconsistent insulation.

PUF is base component for any of the applications, be it cold storage, doors, mobile vans or residential / office use. Though there are number of insulation solutions PUF is preferred over others because of its superior insulation characteristics. When PUF is sandwiched between two powder coated GI sheets, it gives mechanical strength also. That is why PUF panels are very good proposition for walls as well as roofs. There is extensive use of PUF panels in medical industry, be it in operation theatres or pharmaceutical plants.

Pre-Engineered Building (PEB) based PUF insulated structures are widely used in defence housing,

warehousing etc. There is scope to customize all specific requirements with the proper technology.

The PUF Panels are generally used in the following:

- PUF Insulated Shelters/ Barracks
- High Altitude Habitat
- Ultra Light Weight Structures
- Ground+1 PEB Structures with PUF Insulation
- Bullet Proof Shelters and Permanent Defence (PD)
- Aircraft Hangers
- Industrial Buildings and sheds
- Low Cost Row Housing / Re-habilitation Colony.

Prefab technology involves use of factory-manufactured components in buildings. In large construction projects, various modules of the structure are cast off-site in factories and then assembled on the site. In the process, prefab materials such as wall and terrace blocks, wall panels, steel frames and plaster boards are used along with innovations such as the dry-wall technique. Pre-engineered building is very easy and quick to build. They can be easily constructed even in the area with space constraints as assembling of various building components do not require much space. As pre-engineered metal building is made up of metal, it is corrosion resistant, has good solidity and longer durability compared to standard buildings. They are planned, designed and almost pre-built at the factory itself. The building components just have to be assembled once they are transported to the desired location. They are pre-drilled, pre-cut, pre-welded and just need to be bolted together. This can often be done quickly and with a

minimum of professional assistance. Pre engineered steel buildings provide the planner to have innovative designs and have them successfully implemented as they can be constructed at places which have space constraints because they use assembling process for construction.

Pre-fabricated metal buildings have become a popular alternative to conventional buildings. This type of construction can be used for small storage buildings in a backyard of large industrial buildings. It also takes much less time to build these structures, compared to traditional buildings. With fewer components, the time it takes to complete a pre-engineered building is cut in half, compared to the time it takes to build a traditional structure. They require less maintenance than traditional buildings such as wood structures.

Some of the uses of Prefab structures are given below:

- Prefabricated Buildings
- Porta Cabins
- Security Guard Cabins
- Portable Toilets
- Labour Camps
- Cold Storages
- Portable Departmental Stores
- Pre Engineering Buildings
- Warehouse
- Factory

This project profile is for setting up of a PUF Panel and Prefab Structure manufacturing unit with installed capacity of 7500 sq mtr and 1500 MT per annum respectively.

## 2.0 MARKET POTENTIAL

The project is suitable in the North Eastern Region due to the growing construction works which is yet to be properly tapped. The boost of government spending and increased demand for housing as well as construction activity continues unabated in this part of the Country. North East is one of the few markets where the public sector spending in infrastructure and housing is significant along with the real estate activity happening in the private sector. Prefab construction in this region till now had been restricted to constructing small units like project site offices, cold storages, exhibition halls, portable cabins, kiosks, workshops and warehouses. But now with the country witnessing an infrastructure boom, even flyover construction and the Metro are applying the prefab construction techniques for the simple reason that

normal construction methods cannot be used due to safety issues at these sites and work can be finished faster and with ease.

Some of the growth areas in the economy of the region which can lead to demand of prefabricated structures are as hereunder:

- The exhibition industry is in a modernization mode and growing at a rapid pace. New trade shows are being held, new exhibition centres have been constructed and the market is opening up to foreign investors. The exhibition market witnessed significant growth in the last 15 years. Several new exhibition venues came up during this period in several cities.

- Education is one of the largest service sector industries characterized by a unique set of attributes. The formal education space is regulated and has a dominant share in the overall education market. Many corporate houses have / are planning to set up their own chain of pre-schools. Pre schools are viewed as attractive investment opportunities due to the growth potential.

- The Indian aviation industry is one of the fastest-growing aviation industries in the world with private airlines accounting for more than 75 per cent of the sector of the domestic aviation market. Over the past year investment in airport infrastructure in the region is growing.

- The Warehousing sector is growing at a rate of 35-40 per cent every year. The growth potential for this sector is huge with approximately significant nos of Govt initiated logistics parks are likely to come up.

- The residential segment leads the growth trajectory-nearly 75-80% of the total real estate space. Rapid urbanization, increase in number of households, rising income levels and easy availability of housing finance are among the main reasons cited for this trend.

Prefab structures and puf panels have their own positive aspect which is one of the major factors that ensures demand for the products. Some of these are:

- Reduced construction time: Structures are typically delivered in just a few weeks after

approval of drawings. Foundation and anchor bolts are cast parallel with finished, ready for the site bolting.

- Lower costs: Due to the systems approach, there is a significant saving in design, manufacturing and on site erection cost.
- Flexibility of expansion: Structures can be easily expanded in length by adding additional bays. Also expansion in width and height is possible by pre designing for future expansion.
- Large clear spans: Structures can be supplied to around 80M clear spans.
- Quality control: As structures are manufactured completely in the factory under controlled conditions the quality is assured.
- Low maintenance: Structures are supplied with high quality paint systems for cladding and steel to suit ambient conditions at the site, which results in long durability and low maintenance coats.
- Energy efficient roofing and wall systems: Structures can be supplied with polyurethane insulated panels or fiberglass blankets insulation to achieve required "U" values.
- Architectural versatility: Structures can be supplied with various types of fascias, canopies, and curved eaves and are designed to receive pre cast concrete wall panels, curtain walls, block walls and other wall systems.
- Single source responsibility: As the complete building package is supplied by a single vendor, compatibility of all the building components and accessories assured. This is one of the major benefits of the pre engineered building systems etc.

### 3.0 PROCESS DETAILS

**(i) PUF Panel:** Puf Panels are produced by the standard production process as per the set standard conforming to the requirement of the industry. The metal sheet is first profiled as per requirement of roof or wall or as per customer specification. Then the profiled sheet is cut to size in length and breadth with side 10 mm bent. The bed of the press is made ready for the given length and

breadth and of desired thickness using spacer. After that the profiled sheets are kept in place in the adjusted area of the press platform that travels inside the press on either side along with the cam lock at cam stations. The platform is rolled in and the press is raised to close. There is small orifice at the length side of press through which polyurethane liquid is injected as per set programme. In both the panel of upper and lower the panel head in press for appx 20 mins and then moved out and removed from the platform so that new set of profiled sheets are put along with cam locks. On removing from the press the panels are put on even surface and allowed to cool and ready for shipment. This process will go on and can be varied in sizes for length, width or the thickness.

(ii) Prefab Structure: The PFB production process primarily consists of FOUR major parallel processing lines, as under:

- Built-up members for Primary frame
- Cold forming for Secondary framing
- Profiling for Roof and Wall sheeting
- Accessories & Bracings like Gutters, down take pipes, ridge Vents, Skylights, clips etc.

The production & shipment of these components for a PFB structure uses following processes:

- Plate cutting using Shear/Plasma/Multi-torch for optimized use of plate area.
- H-beam welding on automatic welding machines using SAW or MIG welding process
- Fabrication for fitments like end plates, stiffeners and connections cleats.
- Cleaning the surface for painting
- Slitting HR coils for cold forming operations to make Z and C sections with punching
- Cutting and threading sag rods and bracing rods
- Fabrication of Diagonal bracing angles or pipes
- Profiling the Galvalume/Zincalume sheets for roofing and wall cladding
- Manufacturing Gutters, down take pipes in press bend
- Procuring and assigning required matching fasteners for connections
- Organizing some bought out accessories
- Quality control tests & inspection; and matching with project wise Bill of Quantities as given by the engineering department.
- Dispatching to project sites as per sequence of erection.

#### 4.0 COST OF THE PROJECT

The estimated project cost is given below.

Particulars	Amount (Rs lacs)
Land & Site Development	0.00
Building & Civil Works	20.30
Plant & Machinery	292.05
Misc. Fixed Assets	26.28
Preliminary & Pre-operative Expenses	14.39
Contingencies & Escalation @ 3%	10.16
Working Capital Margin	73.17
<b>TOTAL</b>	<b>436.34</b>

**4.1 Land & Site Development:** No cost has been considered for land & site development. It is assumed that the [Project will be set up in existing land].

**4.2 Building & Civil Works:** Details of building & civil works are given below.

Particulars	Area (Sqm)	Rate (Rs)	Amount (Rs)
Factory building (Open shed with CGI sheet roof, concrete floor)	400	3500	1400000
Store (Brick wall, CGI sheet roof, concrete floor)	40	6000	240000
Labor quarters	30	3500	105000
Weigh bridge platform	LS	LS	100000
<b>Sub total</b>			<b>1845000</b>
Add: Electrification, sanitation, etc @ 10%			<b>184500</b>
<b>TOTAL</b>			<b>2029500</b>
<b>Say (Rs. in lacs)</b>			<b>20.30</b>

**4.3 Plant & Machinery:** Details of plant & machinery are given below.

Particulars	Qty	Rate (Rs)	Amount (Rs)
Double head decoiler	1	1900000	1900000
Cut to length machine	1	3900000	3900000
Ribbing profile machine	1	2500000	2500000
Compressor	1	180000	180000
Air drier	1	70000	70000
Carriage system	1	1230000	1230000
Hydraulic panel	1	4870000	4870000
Polyurethane Foaming machine	1	4830000	4830000
Welding machine	20	65000	1300000
Gas cutting set	3	26000	78000
Drill machine (big)	2	110000	220000
Drill machine (small)	2	92000	184000
Pipe cutting machine	6	14500	87000
Grinding machine (big)	6	17600	105600
Grinding machine (medium)	4	13900	55600
Grinding machine (small)	2	8400	16800
Sheet rolling machine	1	1710000	1710000
aluminium profile cutter	1	275000	275000
Hand drill	2	5600	11200
Magnetic drill	6	57000	342000
Hand held sheet cutting machine	2	6500	13000
Angle cutting machine	1	872500	872500

Thread cutting machine	1	645000	645000
Sub total			25395700
Add: Installation, transportation, taxes, etc @ 15%			3809355
TOTAL			29205055
Say (Rs. in lacs)			292.05

**4.4 Misc. Fixed Assets:** Details of miscellaneous fixed assets are given below.

Particulars	Qty	Rate (Rs)	Amount (Rs)
Installation of Transformer	1	1000000	1000000
250 kva DG set	1	889000	889000
Fire fighting equipment	LS	LS	100000
Workshop equipment	LS	LS	200000
Laboratory equipment	LS	LS	100000
Furniture & fixtures	LS	LS	50000
Miscellaneous items	LS	LS	50000
Sub total			2389000
Add: Installation, transportation, etc @ 10%			238900
TOTAL			2627900
Say (Rs. in lacs)			26.28

**4.5 Preliminary & Pre-operative Expenses:** Details of preliminary & pre-operative expenses are given below.

Particulars	Amount (Rs lacs)
Travelling expenses	1.00
Professional & other fees	1.00
Interest during implementation	11.89
Miscellaneous expenses	0.50
TOTAL	14.39

**4.6 Contingencies & Escalation:** Contingencies & escalation has been assumed at 3% of the cost of land & site development, building & civil works, plant & machinery and miscellaneous fixed assets.

**4.7 Working Capital:** Details of working capital are given below.

	Period (Days)	Amount (Rs lacs)		
		Year 1	Year 2	Year 3
Raw Materials	30	66.54	83.17	99.81
Power & fuel	30	0.60	0.75	0.90
Salary	30	3.55	3.57	3.59
Finished Goods/in process	30	72.17	89.29	106.40
Receivables	15	40.07	50.09	60.10
Total		182.93	226.86	270.80
Working Capital Margin in Year 1 (40%)	73.17			

**5.0 MEANS OF FINANCE**

The means of finance for the project is estimated as below.

Particulars	Percent	Amount (Rs lacs)
<b>EQUITY</b>		
A. Equity from Promoters	40%	174.54
B. Subsidy from Central/State Govt.	-	
<b>DEBT</b>		
Term Loan from Banks/FIs	60%	261.81
TOTAL	100%	436.34



**6.0 PROFITABILITY STATEMENT**

(Rs. in lacs)

Particulars	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7
<b>A. INCOME</b>							
Capacity utilisation	40%	50%	60%	60%	60%	60%	60%
Income from sales	975.00	1218.75	1462.50	1462.50	1462.50	1462.50	1462.50
<b>B. OPERATING EXPENSES</b>							
Raw Materials	809.55	1011.94	1214.33	1214.33	1214.33	1214.33	1214.33
Power & Fuel	7.30	9.12	10.94	10.94	10.94	10.94	10.94
Salary	43.20	43.42	43.63	43.85	44.07	44.29	44.51
Repair & Maintenance	3.39	3.56	3.73	3.92	4.12	4.32	4.54
Selling Expenses	9.75	12.19	14.63	14.63	14.63	14.63	14.63
Miscellaneous Expenses	4.88	6.09	7.31	7.31	7.31	7.31	7.31
Total Operating Expenses	878.06	1086.31	1294.57	1294.98	1295.39	1295.82	1296.26
Less working expenses capitalised	73.17	0.00	0.00	0.00	0.00	0.00	0.00
Operating profit	170.11	132.44	167.93	167.52	167.11	166.68	166.24
<b>C. FINANCIAL EXPENSES</b>							
Depreciation	17.76	17.76	17.76	17.76	17.76	17.76	17.76
Interest on Term Loan	35.34	32.64	26.75	20.86	14.97	9.08	3.19
Interest on WC Loan	17.56	21.78	26.00	26.00	26.00	26.00	26.00
Net Profit	99.45	60.26	97.42	102.90	108.38	113.84	119.29
Net cash accruals	117.21	78.02	115.18	120.66	126.14	131.60	137.06
Principal Repayment	0.00	43.63	43.63	43.63	43.63	43.63	43.63

**6.1 Income from Sales:** Income from sales at installed capacity is estimated as below.

Product	Unit	Installed Capacity (MT)	Sale price (Rs/unit)	Amount (Rs)
Puf panel	Sqm	75000	1750	131250000
Prefab structure	kg	1500000	75	112500000
Income from sales at installed capacity (Rs)				243750000

**6.2 Raw Materials:** Expenses on raw materials at installed capacity is estimated as below.

Particulars	Unit	Qty required/unit	Rate (Rs)	Amount (Rs)
<u>Puf panel</u>				
Polyol	litres	1.09	210	229
ISO	litres	1.31	210	275
PPGI	sqm	2.00	430	860
Clamp lock	sqm	1.67	80	134
Expenses on raw materials per unit Puf panel (Rs)				1498
Add: Scaling loss @ 5%				75
Expenses on raw materials at installed capacity for Puf panel				117936000
<u>Pre fab structures</u>				
Pipe	kg	0.88	54	48
Flat	kg	0.07	50	4
Plate	kg	0.05	52	3
Expenses on raw materials per unit Pre fab structures (Rs)				54
Add: Scaling loss @ 5%				3
Expenses on raw materials at installed capacity for Pre fab structures				84451500
Expenses on raw materials at installed capacity (Rs)				202387500

**6.3 Power & Fuel:** Expenses on power & fuel at installed capacity is estimated as below.**A. Expenses on power**

Connected load	250
Avg load factor	70%
Proportion running on power	80%
Hrs/day	8
Days/annum	300
Annual power consumption	336000
Rate (Rs/unit)	5
Expenses on power per annum at 100% capacity (Rs)	1680000

**B: Estimate of Diesel**

Proportion running on fuel (diesel)	20%
Hrs/annum	480
Diesel consumption (litres/hr)	6
Diesel Price per litre	50
Expenses on diesel per annum at 100% capacity (Rs)	144000
Expenses on power & fuel at 100% capacity (Rs)	1824000

**6.4 Salary:** Expenses on salary in the 1<sup>st</sup> year is estimated as given below. It is assumed that salary expenses will increase @ 0.5% every subsequent year.

Particulars of Employees	Numbers	Salary/Month (Rs)	Cost/annum (Rs)
Manager	1	50000	600000
Supervisors	3	30000	1080000
Accounts Officer	1	25000	300000
Technicians/machine operators	10	12000	1440000
Sales staff	3	5000	180000
Unskilled workers/helpers	15	4000	720000
Expenses on salary in the 1st year (Rs)			4320000

**6.5 Repair & Maintenance:** Expenses on repair & maintenance in the 1<sup>st</sup> year is estimated as given below. It is assumed that expenses on repair & maintenance will increase @ 5% every subsequent year.

Particulars	Cost (Rs)	Rate	Amount (Rs lacs)
Building & Civil Works	20.30	1%	0.20
Plant & Machinery	292.05	1%	2.92
Misc. Fixed Assets	26.28	1%	0.26
Expenses on repair & maintenance in year 1			3.39

**6.6 Selling Expenses:** Selling expenses have been assumed at 1% of sales.**6.7 Miscellaneous Expenses:** Miscellaneous expenses have been assumed at 0.5% of sales.**6.8 Depreciation:** Depreciation has been calculated by straight line method. The details of calculation are given below.

Description	Cost (Rs)	Rate	Amount/annum (Rs lacs)
Building & Civil Works	20.30	3.34%	0.68
Plant & Machinery	292.05	5.28%	15.42
Misc. Fixed Assets	26.28	6.33%	1.66
TOTAL			17.76

**6.9 Interest on Term Loan & Principal Repayment:** Interest rate has been assumed at 13.5%. Duration of Loan repayment has been considered for a period of 7 years including moratorium period of 1 year with equal monthly instalments. The details of calculation are given below.

(Rs in lacs)

Month	Year	1	2	3	4	5	6	7
Month 1	Opening balance	261.81	261.81	218.17	174.54	130.90	87.27	43.63
	Repayment	0.00	3.64	3.64	3.64	3.64	3.64	3.64
	Interest (13.5%)	2.95	2.95	2.45	1.96	1.47	0.98	0.49
	Closing balance	261.81	258.17	214.54	170.90	127.27	83.63	40.00
Month 2	Opening balance	261.81	258.17	214.54	170.90	127.27	83.63	40.00
	Repayment	0.00	3.64	3.64	3.64	3.64	3.64	3.64
	Interest	2.95	2.90	2.41	1.92	1.43	0.94	0.45
	Closing balance	261.81	254.53	210.90	167.26	123.63	80.00	36.36
Month 3	Opening balance	261.81	254.53	210.90	167.26	123.63	80.00	36.36
	Repayment	0.00	3.64	3.64	3.64	3.64	3.64	3.64
	Interest	2.95	2.86	2.37	1.88	1.39	0.90	0.41
	Closing balance	261.81	250.90	207.26	163.63	119.99	76.36	32.73
Month 4	Opening balance	261.81	250.90	207.26	163.63	119.99	76.36	32.73
	Repayment	0.00	3.64	3.64	3.64	3.64	3.64	3.64
	Interest	2.95	2.82	2.33	1.84	1.35	0.86	0.37
	Closing balance	261.81	247.26	203.63	159.99	116.36	72.72	29.09
Month 5	Opening balance	261.81	247.26	203.63	159.99	116.36	72.72	29.09
	Repayment	0.00	3.64	3.64	3.64	3.64	3.64	3.64
	Interest	2.95	2.78	2.29	1.80	1.31	0.82	0.33
	Closing balance	261.81	243.62	199.99	156.36	112.72	69.09	25.45
Month 6	Opening balance	261.81	243.62	199.99	156.36	112.72	69.09	25.45
	Repayment	0.00	3.64	3.64	3.64	3.64	3.64	3.64
	Interest	2.95	2.74	2.25	1.76	1.27	0.78	0.29
	Closing balance	261.81	239.99	196.35	152.72	109.09	65.45	21.82
Month 7	Opening balance	261.81	239.99	196.35	152.72	109.09	65.45	21.82
	Repayment	0.00	3.64	3.64	3.64	3.64	3.64	3.64
	Interest	2.95	2.70	2.21	1.72	1.23	0.74	0.25
	Closing balance	261.81	236.35	192.72	149.08	105.45	61.82	18.18
Month 8	Opening balance	261.81	236.35	192.72	149.08	105.45	61.82	18.18
	Repayment	0.00	3.64	3.64	3.64	3.64	3.64	3.64
	Interest	2.95	2.66	2.17	1.68	1.19	0.70	0.20
	Closing balance	261.81	232.72	189.08	145.45	101.81	58.18	14.54
Month 9	Opening balance	261.81	232.72	189.08	145.45	101.81	58.18	14.54
	Repayment	0.00	3.64	3.64	3.64	3.64	3.64	3.64
	Interest	2.95	2.62	2.13	1.64	1.15	0.65	0.16
	Closing balance	261.81	229.08	185.45	141.81	98.18	54.54	10.91
Month 10	Opening balance	261.81	229.08	185.45	141.81	98.18	54.54	10.91
	Repayment	0.00	3.64	3.64	3.64	3.64	3.64	3.64
	Interest	2.95	2.58	2.09	1.60	1.10	0.61	0.12
	Closing balance	261.81	225.44	181.81	138.18	94.54	50.91	7.27
Month 11	Opening balance	261.81	225.44	181.81	138.18	94.54	50.91	7.27
	Repayment	0.00	3.64	3.64	3.64	3.64	3.64	3.64
	Interest	2.95	2.54	2.05	1.55	1.06	0.57	0.08
	Closing balance	261.81	221.81	178.17	134.54	90.90	47.27	3.64
Month 12	Opening balance	261.81	221.81	178.17	134.54	90.90	47.27	3.64
	Repayment	0.00	3.64	3.64	3.64	3.64	3.64	3.64



	Interest	2.95	2.50	2.00	1.51	1.02	0.53	0.04
	Closing balance	261.81	218.17	174.54	130.90	87.27	43.63	0.00
	Principal Repayment	0.00	43.63	43.63	43.63	43.63	43.63	43.63
	Interest	35.34	32.64	26.75	20.86	14.97	9.08	3.19

**6.10 Interest on Working Capital Loan:** Interest rate on working capital loan has been assumed at 16%. Details of calculation are given below.

(Rs. in lacs)

Particulars	Year 1	Year 2	Year 3
Total current assets	182.93	226.86	270.80
Bank Loan (60%)	109.76	136.12	162.48
Interest @ 16%	17.56	21.78	26.00

## 7.0 DEBT SERVICE COVERAGE RATIO (DSCR)

(Rs. in lacs)

Year	1	2	3	4	5	6	7	TOTAL
Net Profit	99.45	60.26	97.42	102.90	108.38	113.84	119.29	
Depreciation	17.76	17.76	17.76	17.76	17.76	17.76	17.76	
Interest	35.34	32.64	26.75	20.86	14.97	9.08	3.19	
Total	152.55	110.66	141.93	141.53	141.11	140.68	140.25	968.71
Interest	35.34	32.64	26.75	20.86	14.97	9.08	3.19	
Loan repayment	0.00	43.63	43.63	43.63	43.63	43.63	43.63	
Total	35.34	76.28	70.39	64.50	58.61	52.72	46.82	404.65
DSCR	4.32	1.45	2.02	2.19	2.41	2.67	3.00	

Average DSCR = 2.39

## 8.0 BREAK EVEN POINT (BEP)

(Rs. in lacs)

Year	1	2	3
A. Net sales	975.00	1218.75	1462.50
B. Variable cost			
Raw Materials	809.55	1011.94	1214.33
Power & Fuel	7.30	9.12	10.94
Selling Expenses	9.75	12.19	14.63
Miscellaneous Expenses	4.88	6.09	7.31
Interest on Working Capital Loan	17.56	21.78	26.00
Total variable cost	849.03	1061.12	1273.20
C. Contribution (A-B)	125.97	157.63	189.30
D. Fixed & Semi-fixed Costs			
Salary	43.20	43.42	43.63
Repair & maintenance	3.39	3.56	3.73
Interest on Term Loan	35.34	32.64	26.75
Depreciation	17.76	17.76	17.76
Total fixed cost	99.69	97.38	91.88
E. BREAK EVEN POINT	79.14%	61.77%	48.54%
F. BEP at operating capacity	31.66%	30.89%	29.12%
G. Cash BEP	26.02%	25.25%	23.49%

**9.0 INTERNAL RATE OF RETURN (IRR)**

(Rs. in lacs)

Year	0	1	2	3	4	5	6	7
<b>CASH OUTFLOW</b>								
Capital Expenditure	338.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Working Capital	0.00	182.93	43.94	43.94	0.00	0.00	0.00	0.00
Total (A)	338.62	182.93	43.94	43.94	0.00	0.00	0.00	0.00
<b>CASH INFLOW</b>								
Profit After Tax		99.45	60.26	97.42	102.90	108.38	113.84	119.29
Add: Depreciation		17.76	17.76	17.76	17.76	17.76	17.76	17.76
Add: Interest		35.34	32.64	26.75	20.86	14.97	9.08	3.19
Add: Salvage Value								
Total (B)	0.00	152.55	110.66	141.93	141.53	141.11	140.68	140.25
<b>NET FLOW (B-A)</b>	-338.62	-30.37	66.72	97.99	141.53	141.11	140.68	140.25

IRR = 16%

**MACHINERY SUPPLIERS**

- (a) Mechwell Controls  
135/31, Rajendra Park, Opp. Bhardwaj Hospital (Near Railway Station)  
Gurgaon (Haryana), 122 001 - (India)
- (b) Manorath Engineering Works  
A- 2775, S. G. M. Nagar, 25 Feet Road, Faridabad - 121 001, Haryana, India
- (c) Avanzaro Technologies  
C - 70, Beta - 1, District G. B. Nagar, Greater Noida - 201 301, Uttar Pradesh, India