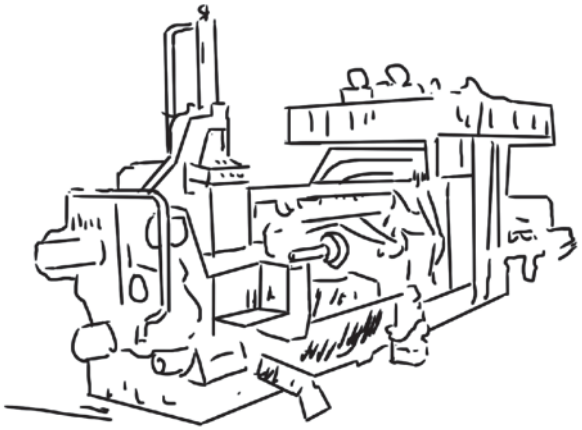
SEMI MECHANISED BRICK PLANT



1.0 INTRODUCTION

The normal brick industry is as majority of the units still employ age-old hand-moulding, sun-drying, moving or fixed chimney kiln burning methods. The industry can not operate year-round and provide steady employment. With the help of semi-mechanised brick plant the production cycle of the brick industries increases and the employment can be generated for longer period as 8 to 11 months, which in normal brick field is from 5 to 7 months only. Mechanization of the brick industry makes it more reliable, year-round stable employment with better quality. Semi Mechanised Building Bricks are made out of mixture of tank clay and lean clay. Semi-mechanised brick field have following advantages;

- Uniform mixing of soil and mixtures
- Sharp corners and smooth shape
- Uniform quality of bricks
- Uniform size of bricks
- Stronger and superior in quality

This project profile is for setting up of a semi-mechanised brick field unit with installed processing capacity of 30 lacs nos of bricks, based on 300 working days per annum and 8 working hours per day.

2.0 MARKET POTENTIAL

In spite of many brick firms, there is still growing demand for bricks in the region primarily due to several on-going large infrastructure projects (like hospitals, commercial complex, Schools, colleges, Govt. office buildings, other civil constructions, etc.) and moreover there is a significant growth in the domestic housing segment. As per the market information obtained, there are advance bookings of 1 - 2 months of which is clear indication of demand –supply gap and there is still scope for brick firms to meet the growing demands.

3.0 PROCESS DETAILS

The production process comprises of the following different process.

Clay Preparation: Preparation consists of transforming the clay rock into plastic mouldable material by a process of grinding and mixing with water

Extrusion: The clay body is mixed to a fairly stiff texture and is then loaded into an extruder where a worm screw pushes it along a barrel into a vacuum chamber which compresses it through a taper and out through a die. The die is mechanised to a precise size and shape larger than the finished size of the brick. The clay emerges as a continuous brick shaped column. The clay column is then cut into single bricks and palletised ready for the dryers or in some factories, are loaded directly onto kiln cars.

Drying: Before the bricks can be fired, as much moisture as possible must be removed or they will explode in the kilns. During drying the brick will shrink as the clay particles come together and they become strong enough to be stacked, but at this stage they have no weather resistant qualities.

Firing: Firing temperatures vary considerably between different clay types and are often quite critical. During firing, bricks undergo a physical change. Clay particles and impurities are fused together to produce a hard durable and weather resistant product. This is usually accompanied by further shrinkage and a colour change. Temperatures vary greatly depending on clay type but are generally in the range of 900 – 1200 degrees centigrade.

Cooling: Cold air is drawn into the kiln to cool the bricks slowly ready for sorting and packing. This air becomes hot and can be drawn off and recycled for use in the drying process.

4.0. COST OF THE PROJECT

The estimated project cost is given below:

(Rs. in lacs)

Particulars	Amount (Rs)
Land & site development	**Own Land/On Lease**
Building & civil works	**4.13**
Plant & Machinery	**24.11**
Misc. Fixed assets	**10.56**
Preliminary & pre-operative expenses	**2.44**
Contingencies & escalation @ 3%	**1.16**
Working capital	**4.33**
TOTAL	**46.73**

4.1 Land & Site Development:

Total Land: 4 Acres; Covered Area: 1,500 Sq. Ft.

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

Particulars	Area (Sqft)	Rate (Rs)	Amount (Rs)
Machinery cum Office Shed	1000	275	275000
Material Storage	500	200	100000
		Sub total	**375000**
Add: Electrification, water supply and sanitation @ 10%			37500
		TOTAL	**412500**
		Say (Rs. in lacs)	**4.13**

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

Particulars	Qty	Rate (Rs)	Amount (Rs)
High Drought Kiln with accessories	1	1200000	1200000
Wheel Barrows	15	4000	60000
Extrusion Brick Making Machine	1	789000	789000
Miscellaneous Equipment	LS	--	75000
		Sub total	**2124000**
Add: Installation, transportation, etc @ 10%			212400
		TOTAL	**2411400**
		Say (Rs. in lacs)	**24.11**

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

Particulars	Qty	Rate (Rs)	Amount (Rs)
Transformer	1	450000	450000
DG Set	1	375000	375000
Water Pump Set	1	25000	25000
Drying Fans	100	850	85000
Office Furniture's	LS	--	5000
Miscellaneous items	LS	--	20000
		Sub total	**960000**
Add: Installation, transportation, etc @ 10%			96000
		TOTAL	**1056000**
		Say (Rs. in lacs)	**10.56**

4.5 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.

4.6 Preliminary & pre-operative expenses: Details of preliminary & pre-operative expenses are given below.

(Rs. In lacs)

Particulars	Amount (Rs)
Travelling expenses	10000
Professional & other fees	50000
Interest during implementation	134076
Miscellaneous expenses	50000
TOTAL	244076
Say (Rs. in lacs)	**2.44**

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

(Rs. in lacs)

	Period (Days)	Total Current Assets		
		Year 1	Year 2	Year 3
Raw materials	15	2.86	3.33	3.81
Power & utility	30	0.23	0.27	0.31
Salary	30	0.68	0.69	0.69
Finished Goods	15	3.35	3.85	4.35
Receivables	15	3.70	4.32	4.93
Total		**10.82**	**12.45**	**14.09**
Working capital margin in Year 1 (40%)	**4.33**			

5.0 MEANS OF FINANCE

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

(Rs. in lacs)

Particulars	Percent	Amount
EQUITY		
A. Equity from Promoters	**40%**	**18.69**
B. Subsidy from Central/State Govt.	**-**	
DEBT		
Term Loan from Banks/Financial Institutions	**60%**	**28.04**
TOTAL	**100%**	**46.73**

6.0 PROFITABILITY STATEMENT

(Rs. in lacs)

Particulars	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7
A. INCOME							
Production capacity (Nos./annum)	3000000	3000000	3000000	3000000	3000000	3000000	3000000
Capacity utilisation	60%	70%	80%	80%	80%	80%	80%
Production/ annum at capacity utilisation	**1800000**	**2100000**	**2400000**	**2400000**	**2400000**	**2400000**	**2400000**
Price of Bricks (Rs/Piece)	5	5	5	5	5	5	5
Total income/annum	**90.00**	**105.00**	**120.00**	**120.00**	**120.00**	**120.00**	**120.00**
B. OPERATING EXPENSES							
Raw materials	69.48	81.06	92.64	92.64	92.64	92.64	92.64
Power & utility	2.81	3.28	3.75	3.75	3.75	3.75	3.75

Salary	8.30	8.34	8.38	8.43	8.47	8.51	8.55
Repair & Maintenance	0.68	0.70	0.71	0.72	0.74	0.75	0.77
Other Expenses	0.27	0.32	0.36	0.36	0.36	0.36	0.36
Total Operating Expenses	**81.54**	**93.69**	**105.84**	**105.90**	**105.95**	**106.01**	**106.07**
Operating profit	**8.46**	**11.31**	**14.16**	**14.10**	**14.05**	**13.99**	**13.93**
C. FINANCIAL EXPENSES							
Depreciation	2.08	2.08	2.08	2.08	2.08	2.08	2.08
Interest on Term Loan	2.24	2.07	1.70	1.32	0.95	0.58	0.20
Interest on Working Capital Loan	0.52	0.60	0.68	0.68	0.68	0.68	0.68
Net Profit	**3.62**	**6.56**	**9.71**	**10.02**	**10.34**	**10.66**	**10.98**
Net cash accruals	**5.70**	**8.64**	**11.79**	**12.10**	**12.42**	**12.74**	**13.05**
Principal Repayment	0.00	4.67	4.67	4.67	4.67	4.67	4.67

6.1 Production capacity: Total production of **Bricks** at 100% capacity utilization is estimated as below.

No. of bricks/annum	3000000 Nos.
Total production per annum at 100% capacity (Nos)	**3000000 Nos.**

6.2 Raw materials: Total expenses on raw materials at 100% capacity utilization are estimated as below.

Particulars	Qty Reqd	Price per truck (10 Ton Load) (In Rs.)	Amount (Rs.)
Clay Soil @ 3.5 Ton per 1000 bricks	10500 Tons	4000	4200000
Coal for burning @150 Kg per 1000 bricks	450 Tons	150000	6750000
Firewood @ 70 Kg per 1000 bricks	210 Tons	30000	630000
Expenses on raw material at 100% capacity (Rs)			11580000

6.3 Power & Utility: Total expenses on power & utility at 100% capacity utilization is estimated as below.

Particulars	Quantity	Power (Kw)	Total (Kw)
Plant & machinery	--	44.76	44.76
General Lighting	10	0.10	1.00
Total power requirement/ day (Kw)			45.76

No. of hrs/day	8
Nos. of days/annum	300
Annual power requirement (kwh)	109824
Rate per unit (Rs)	3.50
Expenses on power (Rs)	384384
Estimate of Utility	
Expenses on Diesel	66000
Expenses on other Utility (Rs)	18000
Expenses on power & Utility at 100% capacity (Rs)	**468384**

6.4 Salary: Total expenses on salary in the 1st year are 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	9200	110400
Kiln Operator	2	5000	120000
Skilled workers	5	4000	240000
Unskilled workers	10	3000	360000
Expenses on salary in the 1st year (Rs)			**830400**

6.5 Repair & Maintenance: Total expenses on repair & maintenance in the 1st year is estimated as given below. It is assumed that expenses on repair & maintenance will increase @ 2% every subsequent year.

(Rs. in lacs)

Particulars	Cost (Rs)	Rate	Amount (Rs)
Building & civil works	4.13	1.00%	0.04
Plant & Machinery	24.11	2.00%	0.48
Misc. Fixed assets	10.56	1.50%	0.16
Expenses on repair & maintenance in year 1			**0.68**

6.6 Other Expenses: Other expenses have been assumed at 0.3% of sales realisation.

6.7 Depreciation: Depreciation has been calculated by straight line method. The details of calculation are given below.

(Rs in lacs)

Description	Cost (Rs)	Rate	Amount/ annum (Rs)
Building & civil works	4.13	3.34%	0.14
Plant & Machinery	24.11	5.28%	1.27
Misc. Fixed assets	10.56	6.33%	0.67
TOTAL			**2.08**

6.8 Interest on term loan & principal repayment: Interest rate has been assumed at 8%. 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	28.04	28.04	23.36	18.69	14.02	9.35	4.67
	Repayment	0.00	0.39	0.39	0.39	0.39	0.39	0.39
	Interest (8%)	0.19	0.19	0.16	0.12	0.09	0.06	0.03
	Closing balance	**28.04**	**27.65**	**22.97**	**18.30**	**13.63**	**8.96**	**4.28**
Month 2	Opening balance	28.04	27.65	22.97	18.30	13.63	8.96	4.28
	Repayment	0.00	0.39	0.39	0.39	0.39	0.39	0.39
	Interest	0.19	0.18	0.15	0.12	0.09	0.06	0.03
	Closing balance	**28.04**	**27.26**	**22.58**	**17.91**	**13.24**	**8.57**	**3.89**
Month 3	Opening balance	28.04	27.26	22.58	17.91	13.24	8.57	3.89
	Repayment	0.00	0.39	0.39	0.39	0.39	0.39	0.39
	Interest	0.19	0.18	0.15	0.12	0.09	0.06	0.03
	Closing balance	**28.04**	**26.87**	**22.20**	**17.52**	**12.85**	**8.18**	**3.50**
Month 4	Opening balance	28.04	26.87	22.20	17.52	12.85	8.18	3.50
	Repayment	0.00	0.39	0.39	0.39	0.39	0.39	0.39

	Interest	0.19	0.18	0.15	0.12	0.09	0.05	0.02
	Closing balance	**28.04**	**26.48**	**21.81**	**17.13**	**12.46**	**7.79**	**3.12**
Month 5	Opening balance	28.04	26.48	21.81	17.13	12.46	7.79	3.12
	Repayment	0.00	0.39	0.39	0.39	0.39	0.39	0.39
	Interest	0.19	0.18	0.15	0.11	0.08	0.05	0.02
	Closing balance	**28.04**	**26.09**	**21.42**	**16.74**	**12.07**	**7.40**	**2.73**
Month 6	Opening balance	28.04	26.09	21.42	16.74	12.07	7.40	2.73
	Repayment	0.00	0.39	0.39	0.39	0.39	0.39	0.39
	Interest	0.19	0.17	0.14	0.11	0.08	0.05	0.02
	Closing balance	**28.04**	**25.70**	**21.03**	**16.35**	**11.68**	**7.01**	**2.34**
Month 7	Opening balance	28.04	25.70	21.03	16.35	11.68	7.01	2.34
	Repayment	0.00	0.39	0.39	0.39	0.39	0.39	0.39
	Interest	0.19	0.17	0.14	0.11	0.08	0.05	0.02
	Closing balance	**28.04**	**25.31**	**20.64**	**15.97**	**11.29**	**6.62**	**1.95**
Month 8	Opening balance	28.04	25.31	20.64	15.97	11.29	6.62	1.95
	Repayment	0.00	0.39	0.39	0.39	0.39	0.39	0.39
	Interest	0.19	0.17	0.14	0.11	0.08	0.04	0.01
	Closing balance	**28.04**	**24.92**	**20.25**	**15.58**	**10.90**	**6.23**	**1.56**
Month 9	Opening balance	28.04	24.92	20.25	15.58	10.90	6.23	1.56
	Repayment	0.00	0.39	0.39	0.39	0.39	0.39	0.39
	Interest	0.19	0.17	0.13	0.10	0.07	0.04	0.01
	Closing balance	**28.04**	**24.53**	**19.86**	**15.19**	**10.51**	**5.84**	**1.17**
Month 10	Opening balance	28.04	24.53	19.86	15.19	10.51	5.84	1.17
	Repayment	0.00	0.39	0.39	0.39	0.39	0.39	0.39
	Interest	0.19	0.16	0.13	0.10	0.07	0.04	0.01
	Closing balance	**28.04**	**24.14**	**19.47**	**14.80**	**10.12**	**5.45**	**0.78**
Month 11	Opening balance	28.04	24.14	19.47	14.80	10.12	5.45	0.78
	Repayment	0.00	0.39	0.39	0.39	0.39	0.39	0.39
	Interest	0.19	0.16	0.13	0.10	0.07	0.04	0.01
	Closing balance	**28.04**	**23.75**	**19.08**	**14.41**	**9.73**	**5.06**	**0.39**
Month 12	Opening balance	28.04	23.75	19.08	14.41	9.73	5.06	0.39
	Repayment	0.00	0.39	0.39	0.39	0.39	0.39	0.39
	Interest	0.19	0.16	0.13	0.10	0.06	0.03	0.00
	Closing balance	**28.04**	**23.36**	**18.69**	**14.02**	**9.35**	**4.67**	**0.00**
Principal Repayment		**0.00**	**4.67**	**4.67**	**4.67**	**4.67**	**4.67**	**4.67**
Interest		**2.24**	**2.07**	**1.70**	**1.32**	**0.95**	**0.58**	**0.20**

7.0 DEBT SERVICE COVERAGE RATIO (DSCR)

(Rs. in lacs)

Year	1	2	3	4	5	6	7
Profit After Tax (Net Profit)	3.61	6.56	9.70	10.02	10.34	10.65	10.97
Depreciation	2.08	2.08	2.08	2.08	2.08	2.08	2.08
Interest	2.24	2.07	1.70	1.32	0.95	0.58	0.20
Total	**7.93**	**10.71**	**13.48**	**13.42**	**13.37**	**13.31**	**13.25**
Interest	2.24	2.07	1.70	1.32	0.95	0.58	0.20
Loan repayment	0.00	4.67	4.67	4.67	4.67	4.67	4.67
Total	**2.24**	**6.74**	**6.37**	**6.00**	**5.62**	**5.25**	**4.88**
DSCR	**3.54**	**1.59**	**2.12**	**2.24**	**2.38**	**2.54**	**2.72**

Average DSCR = 2.30

8.0 BREAK EVEN POINT (BEP)

(Rs. in lacs)

Year	1	2	3
A. Net sales	**90.00**	**105.00**	**120.00**
B. Variable cost			
Raw materials	69.48	81.06	92.64
Power & utility	2.81	3.28	3.75
Other expenses	0.27	0.32	0.36
Interest on Working Capital Loan	0.52	0.60	0.68
Total variable cost	**73.08**	**85.25**	**97.42**
C. Contribution (A-B)	**16.92**	**19.75**	**22.58**
D. Fixed & Semi-fixed Costs			
Salary	8.30	8.35	8.39
Repair & maintenance	0.68	0.70	0.71
Interest on Term Loan	2.24	2.07	1.70
Depreciation	2.08	2.08	2.08
Total fixed cost	**13.31**	**13.19**	**12.87**
E. BREAK EVEN POINT	**78.65%**	**66.80%**	**57.02%**
F. BEP at operating capacity	**47.19%**	**46.76%**	**45.62%**
G. Cash BEP	**39.82%**	**39.39%**	**38.25%**

9.0 INTERNAL RATE OF RETURN (IRR)

(Rs. in lacs)

Year	0	1	2	3	4	5	6	7
CASH OUTFLOW								
Capital Expenditure	39.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Working Capital	0.00	10.82	1.63	1.63	0.00	0.00	0.00	0.00
Total (A)	**39.96**	**10.82**	**1.63**	**1.63**	**0.00**	**0.00**	**0.00**	**0.00**
CASH INFLOW								
Profit After Tax		3.61	6.56	9.70	10.02	10.34	10.65	10.97
Add: Depreciation		2.08	2.08	2.08	2.08	2.08	2.08	2.08
Add: Interest		2.24	2.07	1.70	1.32	0.95	0.58	0.20
Add: Salvage Value								
Total (B)	**0.00**	**7.93**	**10.71**	**13.48**	**13.42**	**13.37**	**13.31**	**13.25**
NET FLOW (B-A)	**-39.96**	**-2.88**	**9.07**	**11.85**	**13.42**	**13.37**	**13.31**	**13.25**

IRR = 19%

Sl. No.	Name of the Machinery Suppliers	Communication Address
1.	M/s Bhavesh Secure Technologies Pvt Ltd	D-1, Madani Complex, 100 Feet Road, Gandhipuram, Coimbatore, Tamil Nadu, Pin - 641 012.
2.	M/s Jayem Manufacturing Co.	C - 99, Sector – 4, Noida, U.P.
3.	M/s Off-Tech (India),	203, City Plaza, 564, M. G. Road, Regal Square, Indore.