PROJECT PROFILE ON MAGNASITE REFACTORY BRIKCS

1. Product	:	Magnasite Refractory Bricks
2. Quality Standards	:	IS: 1749 -1972Magnesite Refractories
3. Production Capacity quantity	:	6,000 MT
Value	:	Rs. 4.20 Crores
4. Month & Year	:	March 2011
5. Prepared by	:	MSME-DI, Guindy, Chennai.

1. Introduction:

All industries needing high temperature operations are depending o the Refractories Industry for materials of construction. The Refractories industry likewise depends upon these industries as the chief consumers of Refractories. Refractory materials have been classified I to three classes.

- Acid Refractories
- Neutral Refractories
- Basic Refractories.

Basic Refractories do not react with basic slag's and are thus of considerable importance of furnace linings where basic slag's are encountered as in basic open hearths and in furnaces for non ferrous metallurgical operations,. The basic Refractories are used for lining and construction of high temperature kilns and furnaces in the field of basic open hearth furnace, steel melting furnaces and other furnaces producing and refining non-ferrous metals etc.

2. Market Potential.

Throughout the Industrial world, the Refractories market is concerned by the requirements of traditional heavy industries such as Iron and Steel, cement and Allied Industries, Glass, Non –ferrous chemical, Petroleum and power, ceramic. Together with a multitude of miscellaneous requirements of these the iron and steel industry is by for the major consumer of Refractories. Particularly the demands of basic Refractories are increasing with development of Iron and Steel industry. These products are also required for repairing and maintenance of basic refractory furnaces.

In our country, few units are manufacturing magnasite refractory bricks, which they may not fulfill the actual demands, thus there is a wide scope for setting up a few more industries sin the line of activities.

3. Basis and Presumptions

- Total capacity of the unit is 20 ton, of magnasite refractory bricks per day in a single shift basis.
- The working capital requirements of full year i.e. 300 working days has been taken into consideration with 8 hours working in a day. The unit will be functioning on single shift basis for processing of body and shaping of the bricks where as firing operation of kiln will be continuous for three shifts.
- The salary proposed for the skilled and unskilled workers is taken in accordance with the minimum wages prescribed by the department of labour, Employment and Training, Govt. of Tamilnadu.
- Interest on fixed and working capital has been calculated @17% p.a.
- Land and construction cost of building in the scheme are based on average rates prevailing in the local area.

4. Implementation Schedule

Activity code	Activity description	Duration of months	Predecessor activities
A	Market survey	2.0	-
B	Preparation of Project report	1	A
C	Provisional registration	0.5	B
D	Sanction of loan	3	C
E	Release of funds	2	D
F	Acquisition of land	1	E
G	Approval from Govt.Agencies including labour, pollution control, plan etc.	1	F
H	Construction of building	5	G
I	Sanction of power connection	1	C
J	Recruitment of Administrative staff	2	I
K	Procurement of machinery and equipments.	2	G
L	Erection, installation and electrification	2	G,I,J,K
M	Procurement of raw materials	0.5	L
N	Recruitment of workmen	0.5	M
O	Commissioning and trail	1	N

5. Technical Aspects

5.1. Manufacturing Process :

The dead burnt magnasites are crushed under a Jaw Crusher and roll mill and then passed through screens to give 1/6" size particles. The magnasites particle can be obtained into three grades like 0.06-0.02 inch, 0.02 – 0.005 inch and less the no.005 inch.

These are mixed in the ratio of 45:10:45. After grinding the particles are passed through Magnetic separator to remove the metallic iron. After this, the bond is added, usually caustic magnesis, sulphite bye or Magnesium sulphate, Milk of lime etc. may be used as binding materials. The wet mixture is thoroughly mixed in a mixer and pressed into bricks in hydraulic press at a pressure of 14-15000 lbs/sp. And dried in well ventilated rooms in inch. After well dried bricks can be burnt in ol Kiln at temp. of 1500 ^{0} C.

5.2. Quality and Standards

IS:4613 -1980	Chemically bonded chrome magnasites Refractories for general purpose
IS: 4814-1980	Chemically boned Magnasite – Chrome Refractories for general purpose.
IS :4801-1980	Chemically boned Magnasite – Chrome Refractories for roof lining.
IS:3304 -1965	Brunt Magnesite– Chrome Refractories for general purpose.
IS: 3305-1965	Brunt Chrome Refractories for general purpose.
IS: 3607-1979	Magnesite for Chemical Industry
IS:1750-1977	Dead – burned pea magnasites
IS: 1749 -1972	Magnesite Refractories

5.3 Production Capacity (per annum)

Quantity : 6,000 mt

Value : Rs.4.20 crores

5**.4 Approximate Power : 200 HP**

5.5 Pollution Control Needs:

The flue gases bleaching out of chimney, the ash left out after burning of coal and dry magnasite dust are the main sources of pollution in the plant. In this scheme, the chimney of 30 meters height has been proposed which is sufficient for optimal dispersion of particulates matter. Moreover , the following precautions should be taken while setting up of a new unit.

1. Kiln should set up preferably atleast two km away from residential areas and fruit gardens.
2. No unit should be set up in sensitive areas as notified by state pollution control board.
3. To avoid dusting of kiln in a locality, the distance between two kiln should be more than one km.

5.6 Energy Conservation Needs

The refractory industry is highly energy intensive. Therefore, proper energy conservation system must be incorporated to ensure higher productivity, in order to ensure optimum combustion of fuel, provision of orsat apparatus has been made which will give the ratio of combustion products in the fire gases enabling close control of primary and secondary air.

6. FINANCIAL ASPECTS

6.1. FIXED CAPITAL :

(a)Land & Building:

Land one acre 10,00,000

6.1.b **Building**

S.N	DESCRIPTION	Area (meter square)	Rater per (meter square)	AMOUNT Rs
	Administrative Block	80	4000	4,00,000
2	Production shed	400	3000	12,00,000
3	Laboratory and quality control	50	4000	2,00,000
4	Boundary wall etc.			1,00,000
	TOTAL			19,00,000

6.1.c. Machinery and Equipment :

S.N	DESCRIPTION	QTY	RATE	AMOUNT
1	Jaw crusher size 12" x12" with 15 HP motor with complete accessories	2,20,000	1	2,20,000
2	Perforated pan mill pan size 7' dia. Roller with 42"x 12 complete with 30 HP electric motor etc.	2,50,000	1	2,50,000
3	Impact Grinder Disc size 18" with 30 HP Motor etc	2,20,000	1	2,20,000
4	Vibrating screen size 4' x2' with 2 HP motor	20,000	1	20,000
5	Rotary screen comprising different meshes with 5HP motor	40,000	1	40,000
6	Bucket elevator with 5HP motor	40,000	1	40,000
7	Electric magnetic separator Drum type	40,000	1	40,000
8	Double shaft u mixer size of barrel 6'x2'x2' with 10HP motor etc	70,000	1	70,000
9	Horizontal pug mill fitted with wire cutting table with 20HP motor	2,70,000	1	2,70,000
10	Friction screw press suitable for making both bricks and deep articles stroke 21" complete with 15HP Motor	1,50,000	2	1,50,000
11	Hand press screw type with die	25,000	2	50,000
12	Shuttle kiln	30,00,000	1	33,60,000
13	Platform type weighing machine	10,000		10,000
14	Thermo –couple	20,000		20,000
15	Water pumping set complete with pipe fittings and 2 HP motor	50,000	1 set	50,000
	Total			**48,10,000**

6.1.d. Testing equipments (Indigenous)

S.N	DESCRIPTION	QTY	AMOUNT
1	Drying oven 12"x12"12"	1 no	50,000
2	Chemical Balance	1 no	10,000
3	Platinum crucible with lid 25ml capacity	1 set	30,000
4	Calorimeter	1 no	**5,000**
5	Agate pestle and motor side 6" to ID	1set	**5,000**
6	Hot plate punching champers water bath	LS	10,000
7	Glass apparatus, test sieves and other misc, items		10,000
8	Cold MOR testing machine		30,000
	Total		1,50,000

6.1.e. Energy Conservation Equipments (indigenous)

S.N	DESCRIPTION	QTY	AMOUNT
1	Energy meter	1 no	8,000
2	Power factor meter	1 no	8,000
3	Onset apparatus	1no	30,000
	Total		**46,000**

6.1.f. Pollution equipments (Indigenous)

S.N	DESCRIPTION	QTY	AMOUNT
1	Vacuum cleaner	1 no	10,000
2	Dust collector	1 no	15,000
	Total		**25,000**

6.1.g. other Expenses

S.N	DESCRIPTION	QTY	AMOUNT
1	Electrification and installation charges @ 10% of machinery and equipments on	Ls	2,51,550
2	Cost of dies & moulds etc	Ls	2,00,000
3	Cost of office equipments working tables racks etc	Ls	1,50,000
	Total		**6,01,550**

Total plant and machinery Rs.56,32,550/-

6.1.h. Pre-operative Expenses

S.N	DESCRIPTION		AMOUNT
1	Consultancy charges and project preparation etc		75,000
2	Travelling expenses		15,000
3	Misc. expenses including non refundable deposits, insurance etc.		10,000
	Total		**1,00,000**

6.1.i . Total Fixed Capital

S.N	DESCRIPTION		AMOUNT
1	Land		10,00,000
2	Building		19,00,000
3	Plant and machinery		56,32,550
4	Pre-operative expenses		1,00,000
	Total		**1,42,65,100**

7. RECURRING EXPENDITURE (PER MONTH):

(a)Raw Material Per Month: Rs.

S.N	**DESCRIPTION**	**QTY**	**RATE**	**AMOUNT**
1	Magnasite powder clinker	500mt	5000	25,00,000
	TOTAL			**25,00,000**

(b) Salaries & Wages Per Month : Rs.

Sl. No	DESIGNATION	NO	SALARY	Amount
1	Works manager	1	20,000	20,000
2	Foreman	1	15,000	15,000
3	Supervisor (Tech)	2	8,000	16,000
4	Sales Assistant	2	8,000	16,000
5	Fireman	1	7,000	7,000
6	Machine operator	4	7,000	28,000
7	Skilled workers	6	5,000	30,000
8	Lab. Assistant	1	5,000	5,000
9	Mechanical/ Elect. Technician	1	5,000	5,000
10	Die marker	1	5,000	5,000
11	Semi –skilled workers	32	4,000	1,28,000
12	Accountant	1	7,000	7,000
13	Clerk	2	5,000	10,000
14	Peon	1	4,000	4,000
	Total	66		2,84,000
	15% perquisites			42,600
	Total			**3,26,600**

(c)Utilities Per Month : Rs.

S.N	**DESCRIPTION**	**AMOUNT**
1	Power 200 HP	1,50,000
2	Oil 15300 liter @Rs.50/- per liter	7,50,000
	TOTAL	**9,00,000**

(d)Other Expenses Per Month : Rs.

S.N	DESCRIPTION	AMOUNT
1	Maintenance and repair	10,000
2	Stationery	1,500
3	Postage	1,000
4	Telephone, telegram	5,000
5	Advertisement publicity	15,000
6	Insurance	2,000
7	Travelling expenditure	10,000
8	Consumable stores	5,000
9	Miscellaneous	10,000
	TOTAL	**59,500**

8. RECURRING EXPENDITURE PER MONTH:

a + b + c + d = Rs.3786100

9.. RECURRING EXPENDITURE FOR 3 MONTHS

3786100 X 3 = 1,13,58,300

10. Total Project Cost

a. Fixed Capital 1,42,65,100

b. Working capital 1,13,58,000

Total **2,56,23,400**

11. Financial Aspects

a. Cost of Production (Per Year) Rs

1. Recurring expenditure 4,54,33,200
2 Depreciation on building @10% on 19,00,000/- 1,90,000
3. Depreciation on plant and machinery @10 % 5,03,100
4. Depreciation on dies & moulds @ Rs.25% on Rs.1,00,000/- 25,000
5. depreciation on furniture @ Rs.20%on Rs.50,000/- 10,000
6. Interest on total investment 12.5% on Rs.2,56,23,400/- 32,02,925

Total 4,93,64,225

b. Turnover Per Annum :

By sale of 6000MT Magnesite bricks and blocks of standard size and special of different grades at an average rate of Rs.9350/- Rs.5,61,00,000/-

c. Profit Per Annum :

Turnover - Cost of Production
5,61,00,000 - 4,93,64,225
= 67,35,725/-

(a) % of profit on sales = $\frac{\text{Profit/annum X 100}}{\text{Turnover}}$

= $\frac{6735725 \text{ X } 100}{56100000}$

= **12%**

b) Rate of Return = $\frac{\text{Profit/annum X 100}}{\text{Total Capital investment}}$

= $\frac{6735725 \text{ X } 100}{25623400}$

= **26%**

12. Break Even Analysis:

(1) Fixed cost per annum:

a. Total Depreciation	=	7,28,100
b. Interest on investment	=	32,02,925
c. 40% of salary and wages	=	1,30,640
d. 40% of other expenses & Utilities excluding Insurance	=	3,83,800
		44,45,465

(2) Profit per annum = Rs. 67,35,725**/-**

Break Even Point = $\frac{\text{Fixed Cost/annum * 100}}{\text{Fixed cost/annum + Profit/annum}}$

= $\frac{4445465 \text{ X } 100}{11181190}$ **= 39%**

Suppliers of Machinery & Equipments

1. M/s. Vijaya Prakash Industries
   N.H.18, Near Sarada Mandiram,
   P.O.Kolathara, Calicut, Kerala – 675655

2. M/s. St Vincents Industries
   Convent Road, Calicut, Kerala – 673033.

3 M/s. John's and sons Foundry & Engg works
   Veliyur, Trichur, Kerala – 680021.

4 M/s. Mookens Engg. Poothols, Tirchur, Kerala.

5 M/s. Amic Industries (P) Ltd.,
   No:10, BT Road, Belghoria, Calicut – 700056.

6 M/s. Keshab Engg.Co. Ltd.,
   No:25, Swallow Lane, Calcutta-1.

Suppliers of raw materials

Magnasite – available from Tamilnadu Minerals Suppliers.