PROJECT PROFILE ON MONOLITHIC REFRACTORIES

PRODUCT	:	MONOLITHIC REFRACTORIES
QUALITY STANDARDS	:	As per customer's specification
PRODUCTION CAPACITY (PER ANNUM)	:	Quantity: 3000 MT/Yr., Value: Rs. 2,50,50,000.
MONTH & YEAR OF PREPARATION	:	Sep. - Oct. '2010
PREPARED BY	:	Br. MSME-DI, Durgapur, WBSIDC Industrial Estate J. P. Avenue, Durgapur (W.B.) – 713212. Phone No. 0343-2557129

1. INTRODUCTION : Refractory Industry is an important field which caters the need of various consuming industries including core industries like Iron & Steel, Glass, Cement, Ceramic, Fertilizer, Petrochemicals, Power generation, Non-ferrous etc. In case of industries with high temperature activities, Refractories are essential. In Indian Standard, IS: 4041-1987, the word "Monolithic" is defined as 'Glossary of terms relating to Refractory Materials' as 'Jointless', for example as applied to linings that are rammed or cast in situ'. In the industry, the term Monolithic Refractories or Mololithics or simply Monoliths are applied to a group of refractory-cements, castables, ramming and gunning mixes that may be cast, poured, rammed, gunned or vibrated in place to form an integral furnace linings as opposed to being built of jointed brick work.

2. MARKET: With the development of the consuming industries, the demand for refractories in general and monolithics in particular is mainly linked. About 75% of the refractories produced in the country are being consumed by the iron and steel industries and the balance goes largely to the cement, glass, thermal power plant and such other industries. There has been a rapid change in the iron and steel industry during the past few decades,. The new techniques such as basic oxygen furnaces, continuous casting, etc. have called for special refractories. The technological changes and increasing demands for greater furnace output have made it imperative to turn to newer refractories and refractory installation techniques. Due to its inherent advantages, consumption of monolithic refractories has been continuously increasing while consumption of bricks and shapes has been declined. Thus, Monolithic Refractories is having very good scope in the market.

3. BASIS AND PRESUMPTIONS: Following points have been taken into consideration:

i). It has been taken into consideration that the unit will be running on a single shift basis for 300 days in a year.

ii). 1 to 3 months trial production is required to achieve full plant capacity.

iii). Interest rate of 12% is considered for Fixed & Working Capital.

iv). Margin money will vary from 10-25% depending upon the location and scheme adopted.

v). Operative period of the project is around 10 yrs. considering technology obsolescence rate and loan repayment period.

vi).The cost of land, construction charges, raw materials, machineries & equipments, consumables, salary & wages and other expenses are based on present prevailing conditions.

viii). Provisions for routine tests have been made in the scheme. It is presumed that facilities for other tests are available from out side agencies.

viii). Economy of the scheme is worked out assuming the product mix as : Silica Monolithics : 10%, High Alumina Monolithics : 20%, Basic Monolithics : 30% & Alumino-Silicate Monolithic :40%.

4. IMPLEMENTATION SCHEDULE:

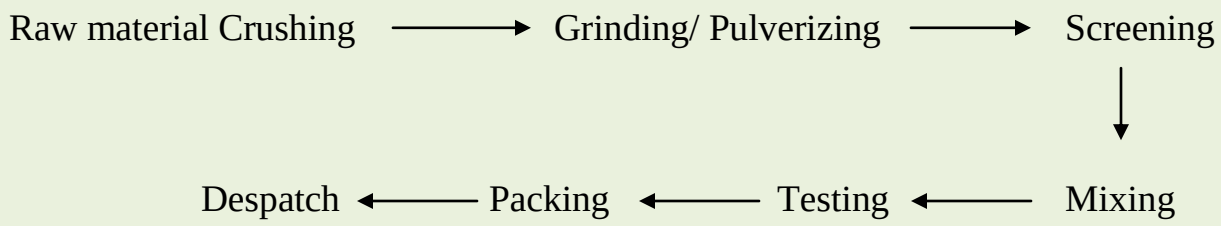
S. N.	Implementation Schedule	Activity Period (month ~ month)
1	Survey for data collection (regarding demand, raw material, power and fuel technology & pollution control etc.)	0 ~ 2nd
2	Project Document and EM Preparation	2nd ~ 3rd
3	Margin Money Arrangement	2nd ~ 3rd
4	Site Selection and Land Development	4th ~ 6th
5	Financial Assistance Arrangement	4th ~ 6th
6	Make shift Office	7th
7	Pollution Clearance	3rd ~ 5th
8	Electricity, Fuel and Water Arrangement	4th ~ 6th
9	Machine Selection, Order placement, Construction, Installation etc.	5th ~ 10th
10	Raw Material Selection, Order placement, Raw Materials Receipt	9th ~ 10th
11	Laboratory Installation	9th ~ 10th
12	Trial production	12th

5. TECHNICAL ASPECTS:

Manufacturing Process: Raw materials used for manufacture of Monolithics are crushed and ground with the help of Jaw Crusher and Pulveriser. After pulverizing materials are screened and stored in different sizes. Different raw materials of various sizes are taken as per required proportion and mixed in mixing machine. After proper mixing, materials are packed in suitable bags or container and sent for dispatch.

Quality Control and Standards: As basis for Quality Control, IS: 1335-1979, IS: 10047-1981 and IS: 10570-1983 may be used for carrying out the various tests of Monolithics.

6. PROCESS FLOW CHART:



7. PRODUCTION CAPACITY (P.A.):

Quantity: 3000 MT, Value: Rs. 2,50,50,000.

8. MOTIVE POWER: Approx. 85 HP.

9. POLLUTION CONTROL: As it is presumed that calcined and sintered raw materials will be procured from outside and there is no question of firing of the finished product in case of monolithics, possibility of air pollution due to emission of oxides of sulpher and carbon are completely eliminated. However, fine dust and grit are produced during the process of crushing, grinding, sieving and mixing of different batch ingredients. Due to attrition of particles, dust is thrown into the surrounding air. Dust also comes into the air during transferring the ground material from one place to another. Air pollution by dust constitutes a nuisance and is a health hazard. Thus, to prevent health hazards, Cyclonic Dust Collector, effective dust control system are to be installed in the plant.

10. ENERGY CONSERVATION: Attention is to be given for energy conservation in power consumption.

11. FINANCIAL ASPECTS:

A. Fixed Capital

	Area	**Rate**	***Value (Rs.)***
i. **Land & Building**	**(sq. ft.)**	**(Rs./ sq. ft)**	
Land	30000	50	1500000
Workshed	2000	200	400000
Raw material shed	1000	150	150000
Godown	1000	150	150000
Office	500	150	75000

	Boundary wall	LS		150000
			Total	**2425000**

ii . **Machinery & Equipment**

S. N.	***Description***	***Qty.***	***Rate (Rs.)***	***Value (Rs.)***
1	Jaw Crusher (225mm x 100mm), complete with 7.5 H.P. Motor.	1	100000	100000
2	Single row Roller Crusher (300mm dia.X 375mm face), complete with 7.5 HP Motor.	1	80000	80000
3	Pan Mill (1200mm pan dia.), with 7.5 HP Motor	1	100000	100000
4	Hammer Mill (375mm x 200mm), complete with 7.5 HP Motor.	1	80000	80000
5	Rotary Screen Set (cylinder = 425mm dia.X1800mm length), with 2 HP motor.	1	40000	40000
6	Bucket Elevator, complete with 2 HP Motor.	2	50000	100000
7	Double deck Vibrating screen (enclosed in dust proof casing), with 2 HP Motor.	1	50000	50000
8	Magnetic separator (rotating drum type)	1	30000	30000
9	Counter current mixer (100 litres cap.), complete with 10 HP squirrel cage induction motor.	1	150000	150000
10	Double shafted trough mixer (1200mm x 600mm x 600mm barrel size) with 5 HP motor.	1	110000	110000
11	Weighing Balance, Stitching Machine, Materials Handling equipments etc.	LS	100000	100000
12	Cyclone separator (10,000 cu.mtr/hr. cap.), complete with suction fan, suction hoods, ducting and stack & 15 HP Motor.	1	250000	250000
13	Testing Equipments And Apparatus	LS	500000	500000
15	Tools & jigs etc	LS	50000	50000

16	Office Furniture & equipment.	LS	80000	80000
	Electrification & installation	LS	100000	100000
			Total	**1920000**

iii. **Pre-operative expenses** **75000**

TOTAL FIXED CAPITAL (i+ii+iii) **4420000**

B. Working Capital (Per month)

i) **Salary & Wages (Per Month):**

Sl.	***Personnel***	***Nos.***	***Salary (Rs.)***	***Total (Rs.)***
1	Manager	1	10000	10000
2	Supervisor (Tech & Non-Tech)	3	6000	18000
3	Skilled Workers	3	4000	12000
4	Semi-Skilled Workers	5	3000	15000
5	Unskilled Workers.	7	2500	17500
	Peon	2	2500	5000
6	Watchaman	2	2500	5000
	Perquisites @15% of salaries			12375
				94875

ii) Raw Materials (Per Month):

Sl.	***Item***	***Qty.(MT)***	***Rate***	***Value (Rs.)***
1	Raw Fire clay	20. MT	@ Rs.400/- per MT	8000
2	Calcined Fire clay/ Grog	32. MT	@ Rs.1,300/- per MT	41600
3	Calcined Bauxite	53. MT	@ Rs.2,500/- per MT	132500
4	Calcined Kyanite	32. MT	@ Rs.6,000/- per MT	192000
5	Quartzite	28. MT	@ Rs.700/- per MT	19600
6	Chromite	20. MT	@ Rs.4,500/- per MT	90000
7	Dead Burnt Mangesite	50. MT	@ Rs.8,500/- per MT	425000
8	Calcined Dolomite	5. MT	@ Rs.3,500/- per MT	17500
	Fused Alumina grains	22. MT	@ Rs.24,000/- per	528000

9		5. MT	MT @ Rs.28,000/- per MT	140000
10	High Alumina Cement			
11	Chemical reagents.	LS		10000
12	Packing materials	LS		20000
			Total	**1624200**

iii)	**Utilities (per month)**			***Value (Rs.)***
1	Electrical Power (70 KWHrxRs.4.00x8Hrs.x25 Days)		56000	56000
2	Water	LS	1000	1000
				57000

iv)	**Other contingent expenses (Per Month) :**	***Value (Rs.)***
	Postage, Stationery, Telephone etc.	2000
	Transport Charges.	3000
	Repair & Maintenance	3000
	Advertisement/ Publicity	2000
	Other Misc. Expenses	5000
		15000

v)	**Total Working Capital (per month)**	***Value (Rs.)***
1	Salary & Wages	94875
2	Raw Materials	1624200
3	Utilities	57000
4	Other contingent expenses	15000
		1791075

vi)	**Working Capital for 3 months**	**5373225**

vii)	**Total Capital Investment**	***Value (Rs.)***
i)	Fixed Capital	4420000

ii)	Working Capital	5373225
		9793225

12. FINANCIAL ANALYSIS:

1	**Cost of Production (per year)**			***Value (Rs.)***
	Total recurring cost (per year)			21492900
	Depreciation on Building @ 5%	5%		46250
	Depreciation on machinery & equipment @ 10%	10%		169000
	Depreciation on office equipment @20%	20%		16000
	Depreciation on Tools, jigs etc. @25%	25%		12500
	Total interest on capital investment @ 12%	12%		1175187
				22911837
			or say,	**22911800**

2 Turnover per year

Sl No:	**Item**	**Qty.(MT)**	**Rate(Rs.)**	**Value (Rs.)**
I	300 tons of Silica monolithics	300	@ Rs.3,500/- per MT	1050000
II	600 tons of High Alumina monolithics	600	@ Rs.17,000/- per MT	10200000
III	900 tons of Basic monolithics	900	@ Rs.10,000/- per MT	9000000
IV	1200 tons of Alumino-Silicate monolithics	1200	@ Rs.4,000/- per MT	4800000
			Total	**25050000**

3 Net Profit per year (Before taxes)

Total Sales - Cost of Production **2138200**

4 Net Profit Ratio

$$\frac{\text{Net Profit per Year x 100}}{\text{Turnover per Year}}$$ **8.54%**

5 Rate of Return

$$\frac{\text{Net Profit per Year x 100}}{\text{Total Capital Investment}}$$ **21.83%**

6 Break-even Point

Fixed Cost

Total Depreciation	243750
Total interest on capital investment	1175187
40% on salaries	455400
40% of other contingent expenses	72000
	1946000

$$\textbf{BEP} = \frac{\text{Fixed Cost x 100}}{\text{(Fixed Cost + Profit)}}$$ **= 47.65%** **Say, 48.00%**

13. NAME & ADDRESSES OF SUPPLIERS OF MACHINERY AND EQUIPMENTS

1 M/s. Amic Industries (P) Ltd., 86D, Dr. Suresh Sarkar Road, Kolkata.
2 M/s. Hari Machines Ltd., O.B. No. 5, Rajgangpur, Sundargarh, Orissa.
3 M/s. Keshab Machinery (P) Ltd., 25, Swallow Lane, Kolkata.
4 M/s. Durgapur Engineering Co. Ltd., MARSHALL HOUSE, 33/1, N. S. Road, Kolkata.
5 M/s. Frigmaires Engineers, Palamal Tower, 9th Floor No. 903, Near New Council Hall, Nariman Point, Mumbai.
6 M/s. Veenedyt, P.B. No. 16458, Mahim, Bombay
7 M/s. Corporated Ceramists, 50/2, Lenin Sarani, 2nd Floor, Kolkata.
8 M/s. D.K. Engineering Works, 8/C, Panchanantala New Road, Belgharia, Kolkata.
9 M/s. Jaycee Traders, 12, Gitanjli, 1st Floor, Plot No. 378, Mumbai.
10 M/s Perfect Machine Tools Corpn.,1,Smith Road, Chennai-1
11 M/s Hindustan Engineering Company, 123/7, G.L.Tagore Road, Baranagar, Bonhoogly, Kol-35

14. NAME & ADDRESSES OF SUPPLIERS OF RAW MATERIALS & CHEMICALS:

1 M/s Tata Refractories Ltd., P.O. Belpahar, Sambalpur, ORISSA – 768218.
2 M/s. Carborandum Universal Ltd., Refractories Division, TIAM house Annexe, III Floor, 28, Rajaji Road, CHENNAI-600001
3 M/s. Orient Abrasives Ltd., GIDC Indl. Area, PORBANDAR – 360577.
4 M/s. Dalmia Magnesite Corpn., Salem-636012 (T.N.)
5 M/s. Valley Magnesite Ltd., Maithan Road, Chirkunda, DHANBAD – 828002
6 M/s. The Associated Cement Companies Ltd.,
Cement House, 121, Maharshi Karve Road, MUMBAI – 400020
7 M/s. Indian Aluminium Co. Ltd.,
KOLKATA – 700071
8 M/s. Khaitan refractories (P) Ltd., Nainital, (U.P.)
9 M/s. Bagmar Bausite Industries, P.O. Keskal, Bastar (M.P.)
10 M/s. Industrial Minerals & Mill, Stores Traders (P) Ltd., 10/IC, Mercentile Buildings, Lall Bazar, Kolkata.
11 M/s. Refractories Minerals, 170, Aurobindo Sarani, P-3/1, Grey Street Extn., Kolkata.

15. <u>RESOURCE CENTER OF TECHNOLOGY:</u>

i. Govt. College of Engg. & Ceramic Technology, Kolkata-10
ii. CGCRI, Jadavpur, Kolkata -32
iii. CMERI, Durgapur, W.B. – 16
iv. Br. MSME-DI, Durgapur, W.B. – 12
v. NIT, Durgapur, W.B. – 16
vi. NIT, Rourkela, Odissa.

16. LIST OF THE UNITS SET UP BY USING THIS PROJECT PROFILE:

In this region, there are some units to produce such products. However, this project profile is prepared considering the present trends.